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आज़ादी का
अमृत महोत्सव



10th
Convocation Report
2022



भारतीय प्रौद्योगिकी संस्थान इन्दौर
Indian Institute of Technology Indore

Website: www.iiti.ac.in

About Us

In keeping with India's vision to become a world leader in Science and Technology and to usher in a new revolution, resulting in an unprecedented economic growth, Government of India reassessed the need of technical manpower and decided to set up eight new IITs. Six of them started functioning back from the academic year 2008-09. These were established at Hyderabad, Gandhinagar, Rajasthan, Ropar, Patna and Bhubaneswar. IIT Indore and IIT Mandi started functioning from July 2009.

Indian Institute of Technology Indore located in Madhya Pradesh, known as IIT Indore or IITI, is an institute of national importance established by the Government of India in 2009. It is one of the eight new IITs, started by the Ministry of Human Resource Development (India), Government of India. The institution started functioning from 2009-10 in a temporary campus at Institute of Engineering and Technology of Devi Ahilyabai University under mentorship of IIT Bombay. Shri Arjun Singh, the Union HRD Minister, laid the foundation of the permanent campus, spread over an area of around 501.42-acre (2.1 km²), on 17th February 2009 at Simrol, a location on Khandwa Road about 25 km from the city of Indore.

Since February 2016, IIT Indore has started functioning from its permanent campus. All the Administrative Offices, Material Management Section, Finance and Account Section, The School of Basic Sciences, The School of Humanities and Social Sciences, The School of Engineering, Basic Science Labs and Engineering Labs are all established in this campus. The Central Library is also situated on this campus.

Office of the Registrar Meetings of the Authorities held during the F.Y: 2021-2022	
Board of Governors:	Three meetings held on : 13.08.2021, 08.11.2021, 16.02.2022
Finance Committee:	Three meetings held on : 12.08.2021, 08.11.2021, 16.02.2022
Building and Works Committee:	Two meetings held on : 29.10.2021, 03.02.2022
Senate:	Two meetings held on : 02.08.2021, 01.11.2021

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Director's Message



Indian Institute of Technology Indore (IIT Indore) is one of the second generation IITs and it has grown exponentially through its research and academic activities as one of the top-ranking institutions in the country and is at a remarkable position in the global rankings as well. The Institute has more than 2300 students and about 175 faculty members and each one of them is an expert in their domain. We have BTech programs in 5 disciplines and MTech in 8 disciplines, and MS (Research) and MSc programs in 5 disciplines each. We also offer a joint MS degree in Data Science and Management with Indian Institute of Management Indore, which is an on-line program and is becoming very popular. We offer PhD degrees in all the disciplines of Technology, Sciences and Humanities and Social Sciences. At any given point of time, we have about 550 PhD students on roll. There are several UG and PG programs in the pipeline in the coming years.

Research has been one of the brightest highlights of IIT Indore. Besides having over 4000 publications in high impact factor journals, teams of students and faculty members have developed over 80 technologies that are at various stages of evolution. One example of the mega project which the institute has recently received, is the DRISHTI Cyber Physical System project, where translational research and technology development activities in the domain of Cyber Physical Systems are being carried out. The total outlay of the project is about Rs. 100 crores which is supported by the Department of Science and Technology, Government of India. The institute has also several Centers of Excellence supported under the DST-FIST programme with a total funding outlay of Rs 22 crores. We also have a Center for Futuristic Defense and Space Technologies, that has generated more than Rs. 5 crores funding since its inception a few years ago.

In line with the vision of the National Education Policy (NEP), the institute rededicates itself on striving for excellence through the following specific objectives:

1. **Catalyzing Translational Research:** There is a tremendous amount of excellent research that is undertaken at the institutions like IIT Indore, which needs to be translated efficiently to operational and functional products, and then to be converted to commercially viable products. The institute envisions itself pioneering in becoming a translational research hub and facilitating conversion of fundamental scientific and technological research to commercially and technologically feasible solutions. We are planning to establish a Translational Research Ecosystem at the institute, where several technologies which have been developed in-house, can be translated to useful products for the benefit of industry and society.
2. **Enhancing Student Teaching and Learning Programme:** the institute now intends to create, evolve, and implement new methods and courses in its academic programmes to facilitate learning of the students from diverse spectra of life. To do so, many new UG and PG programmes are being designed, new courses are being formulated to make education holistic in nature and innovative methods of teaching and learning are being introduced.
3. **Societal Connect through Rural Immersion and Technological Development:** On the societal level, we at IIT Indore have keen interest in contributing to the society and support people at the bottom of the pyramid. We would like our students to provide them with technological solutions to the problems they face. We have a program named 'TITLI' 'Technological Innovations for Tribal Livelihoods', under which we have introduced two new courses for our students that are titled 'Immersion for Rural Technology

Development’ and ‘Design Thinking for Rural Applications’. Both these courses involve field visits to understand the needs of the rural population and develop solutions. We are also working with an NGO to set up a training center for Rural Healthcare workers. Here, we plan to provide primary healthcare training to the youth from rural areas, so that they can act as a mediator between remote patients and urban doctors. All these initiatives are offered by our ‘Centre for Rural Development and Technology (CRDT)’ at IIT Indore.

4. **Grounding students for Entrepreneurial Skills:**In the rapidly changing world it is indeed essential to train our youth to become self-reliant. Bridging the gap between the knowledge and its applications in the real world can be achieved through systematic efforts in developing Entrepreneurial Skills. We have established ACE Foundation, the first Section 8 Company of the institute to support young minds and the out-of-the-box ideas of doing business.

5. **Nurturing Industry and Corporate Relations:**In the growing and seamless global value chain systems, it is pertinent to connect fundamental research to the needs of the present-day industries. The researchers and students equally require connecting with the industries in all sectors to understand the challenges on both sides and fill the gaps. In this context, we will be conducting a Corporate and Industry Connect Program on August 20, where we will be inviting several industries around IIT Indore to discuss their requirements in view of the expertise available at IIT Indore. There will be several panel discussions, where the industry experts and IIT Indore faculty members will interact with each other. We plan to conduct such programs periodically to remain in constant touch with the industries.

It is a matter of pride for the institute to have its Tenth Convocation on August 13, 2022. Padma Vibhushan, Dr Anil Kakodkar, Former Chairman of the Atomic Energy Commission of India and Former Secretary to the Government of India, will grace the occasion as Chief Guest. I feel delighted to share that this year we have 486 students who are graduating with flying colours. Those who could achieve accolades in their academic performance include the recipients of the President of India Gold Medal, Institute Silver Medals, Best BTech Project Award, Buti Foundation Gold Medal for the best woman student securing the highest CPI among all graduating students of Masters Programmes; and VPP Menon Gold Medal for Best PhD Thesis by a Graduating Woman candidate. The graduating batch also needs to be specially appreciated as they went through the toughest times of the pandemic of Covid 19 and could complete their graduation on time. I wish all the graduating students a very bright future and all the success in their career and life.

Professor Suhas S Joshi

Director IIT Indore

Board of Governors



Chairman

Professor Deepak B. Phatak

Indian Institute of Technology Indore

Members

Professor Suhas S. Joshi

Director, Indian Institute of Technology Indore,
since w.e.f. January 31, 2022

Professor Neelesh Kumar Jain

Director (Officiating), Indian Institute of Technology Indore,
up to January 30, 2022

Shri Rakesh Ranjan

Additional Secretary (TE), Govt. of India Ministry of Education

Shri Akash Tripathi

Principal Secretary
Department of Technical Education & Skill Development,
Govt. of Madhya Pradesh

Professor Yogesh M. Joshi

Department of Chemical Engineering, IIT Kanpur

Professor Dhananjay V. Bhatt

Professor (Retd.), Department of Mechanical Engineering
S. V. National Institute of Technology, Ichchhanath, Surat

Shri Manoj Kohli

Executive Chairman, SB Energy (Soft Bank Group) New Delhi

Professor Anand Parey (Senate Nominee)

Professor, Department of Mechanical Engineering,
Dean, Resources Generation IIT Indore
Up to February 28, 2022

Mr. S.P. Hota

Registrar I/c,
(Secretary to BoG) IIT Indore

Institute Functionaries



Director, IIT Indore

Prof. Suhas S. Joshi
w.e.f. January 31, 2022



Director (Officiating), IIT Indore

Professor Neelesh Kumar Jain
up to January 30, 2022



Dean, Academic Affairs

Dr. Devendra Deshmukh



Dean, Administration

Dr. Pritee Sharma



Dean, Research & Development

Dr. I.A. Palani



Dean, Student Affairs

Dr. Santosh Kumar Vishvakarma
(w.e.f. Sept 26, 2018 to Sept 23, 2021)



Dean, Student Affairs

Dr. Srivathsan Vasudevan
w.e.f. Sept 24, 2021



Dean, Infrastructure Development

Dr. Manish Kumar Goyal



Dean, International Affairs & Outreach

Prof. Avinash Sonwane



Dean, Resources Generation

Professor Anand Parey



Registrar I/c, IIT Indore

Mr. S. P. Hota

Associate Deans

Academics (PG Programs)	:	Dr. Eswara Prasad
Korimilli Academics (Infrastructure)	:	Dr. Antony Vijesh
Academics (UG Programs)	:	Prof. Ram Bilas Pachori
Faculty Affairs	:	Dr. Amod C. Umarikar
Research and Development- I	:	Prof. Ruchi Sharma
Research and Development- II	:	Dr. Bodhisatwa
Mazumdar Administration	:	Dr. Santosh Hosmani
Infrastructure Development-I	:	Dr. Guru Prakash
Student Affairs	:	Dr. Sanjeev Singh
International Affairs and Outreach-I	:	Prof. Raghunath Sahoo
International Affairs and Outreach-II	:	Prof. Sanjay Kumar Singh

Heads of School

Humanities and Social Sciences	:	Dr. Nirmala Menon
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Heads of Departments

Computer Science & Engineering	:	Dr. Somnath Dey
Electrical Engineering	:	Prof. Vipul Singh
Mechanical Engineering	:	Prof. Santosh Kumar Sahu
Chemistry	:	Prof. Biswarup Pathak
Mathematics	:	Dr. Niraj Kumar Shukla (w.e.f. September 13, 2022)
	:	Dr. Md. Aquil Khan (up to September 12, 2021)
Physics	:	Dr. Pankaj R. Sagdeo
Astronomy, Astrophysics & Space Engineering	:	Prof. Abhirup Datta
Biosciences & Biomedical Engineering	:	Prof. Amit Kumar
	:	Dr. Debashish Nayak (w.e.f January 8, 2021 to July 21, 2021)
Metallurgy Engineering & Materials Science	:	Dr. Vinod Kumar
Civil Engineering	:	Dr. Abhishek Rajput (w.e.f. March 15, 2022)
	:	Prof. Neelima Satyam Devarakonda (up to March 14, 2022)

Heads of Centers and Services

Center of Advanced Electronics	:	Prof. Mukesh Kumar
Computer and Information Technology Center	:	Dr. Neminath Hubballi
Center of Futuristic Defense and Space Technology	:	Dr. Indrasen Singh
Center of Innovation, Incubation, Entrepreneurship and Industry Relations	:	Dr. Swaminathan R.
Center for Rural Development and Technology	:	Prof. Sandeep Chaudhary
DST-FIST Center of Excellence in Gear Engineering	:	Prof. Neelesh Kumar Jain
Sophisticated Instrument Center (SIC)	:	Prof. Suman Mukhopadhyay
Center for Indian Scientific Knowledge Systems	:	Prof. G. S. Murthy
Center for Electric Vehicle & Intelligent Transport Systems	:	Dr Amod C. Umarikar
Counseling Services	:	Prof. Aruna Tiwari
Training & Placement	:	Dr. Pavan Kumar Kankar
Central Workshop	:	Dr. Dan Sathiaraj

Senate

Prof. Suhas S. Joshi

Director, IIT Indore and Chairman, Senate

External Experts

Professor Himanshu Rai

Director
Indian Institute of Management Indore,
Prabandh Shikhar, Rau-Pithampur Road,
Indore - 453556, M.P. India

Mr. B Anil Baliga

Ex-Executive Vice President
VE Commercial Vehicles Ltd,78-86,
Industrial Area No. III, A. B. Road,
Dewas - 455001, M.P. India

Prof. Ajay Kumar Jain

Professor
(Organization Behaviour) Dean,
Executive Graduate Programs &
Consultancy, Management Development
Institute, Mehrauli Road,
Sukhrali,Gurgaon - 122 007, India

Shri Debashis Das

Director
Raja Ramanna Centre for Advanced
Technology (RRCAT), Indore - 452013,
M.P. India

Prof. Abhiram G. Ranade

Professor
Department of Computer Science &
Engineering, Indian Institute of
Technology Bombay, Powai, Mumbai -
400076, India

Deans

Dr. Devendra L Deshmukh

Dean, Academic Affairs, Associate Professor,
Mechanical Engineering

Dr. Manish Kumar Goyal

Dean of Infrastructure Development,
Professor, Civil Engineering

Dr. I. A. Palani

Dean, Research and Development,
Professor, Mechanical Engineering

Professor Anand Parey

Dean, Alumni and Corporate Relations
Professor, Mechanical Engineering

Dr. Pritee Sharma

Dean, Administration,
Professor,
School of Humanities and Social Sciences

Prof. Avinash Sonwane

Dean, International Relations
Professor, Department of BSBE

Dr. Srivathsan Vasudevan

Dean, Student Affairs,
Associate Professor, Electrical Engineering

Heads of Departments

Dr. Abhishek Rajput

HOD, Civil Engineering,
Assistant Professor, Civil Engineering

Dr. Santosh Kumar Sahu

HOD, Mechanical Engineering,
Professor, Mechanical Engineering

Dr. Vinod Kumar

HOD, Metallurgy Engineering and
Material Science (MEMS) Assistant Professor

Dr. Pankaj R. Sagdeo

HOD, Physics, Professor, Physics

Dr. Neeraj Kumar Shukla

HOD, Mathematics, Associate Professor

Dr. Somnath Dey

HOD, Computer Science and Engineering,
Associate Professor

Dr. Vipul Singh

HOD, Electrical Engineering,
Professor

Dr. Amit Kumar

HOD, Biosciences and Biomedical Engineering (BSBE)
Professor

Dr. Biswarup Pathak

HOD, Chemistry, Professor

Dr. Nirmala Menon

HOD, School of Humanities and Social Sciences (SHSS)
Professor

Professors

Computer Science and Engineering

Prof. Narendra S. Chaudhari
Prof. Aruna Tiwari
Prof. Abhishek Srivastava
Prof. Kapil Ahuja

Mechanical Engineering

Prof. Neelesh Kumar Jain
Prof. Anand Parey
Prof. I. A. Palani
Prof. Bhupesh Kumar Lad
Prof. Santosh Kumar Sahu
Prof. Ritunesh Kumar
Prof. Dhinakaran Shanmugam

Electrical Engineering

Prof. Ram Bilas Pachori
Prof. Abhinav Kranti
Prof. Vimal Bhatia
Prof. Santosh Kumar Vishvakarma
Prof. Shaibal Mukherjee
Prof. Vipul Singh
Prof. Prabhat Kumar Upadhyay
Prof. Trapti Jain
Prof. Mukesh Kumar

Chemistry

Prof. Rajneesh Misra
Prof. Suman Mukhopadhyay
Prof. Apurba Kumar Das
Prof. Sampak Samanta
Prof. Sanjay Kumar Singh
Prof. Biswarup Pathak

Civil Engineering

Prof. Sandeep Chaudhary
Prof. Manish Kumar Goyal
Prof. Neelima Devarakonda Satyam

Biosciences and Biomedical Engineering

Prof. Avinash Sonawane
Prof. Ganti. S. Murthy
Prof. Amit Kumar
Prof. Prashant Kodgire

Physics

Prof. Subhendu Rakshit
Prof. Krushna R. Mavani
Prof. Sarika Jalan
Prof. Preeti Anand Bhobe
Prof. Rajesh Kumar
Prof. Sudeshna Chattopadhyay
Prof. Raghunath Sahoo

Astronomy, Astrophysics and Space Engineering

Prof. Abhirup Datta

Humanities and Social Sciences

Prof. Nirmala Menon
Prof. Pritee Sharma
Prof. Ruchi Sharma

Metallurgical Engineering and Materials Science

Prof. Parasharam Maruti Shirage

Mathematics

Prof. Swadesh Kumar Sahoo

Other Authorities

Convener, Health Center Advisory Committee

Dr. Sharad Gupta
Associate Professor,
Biosciences and Biomedical Engineering

Workshop Superintendent, Central Workshop

Dr. Anand Petare

Secretary, Senate

Mr. S. P. Hota
Registrar I/c, IIT Indore

Chief Warden

Dr. Lalit Borana
Assistant Professor, Civil Engineering

Academic Secretary, Student Gymkhana

General Secretary, Student Gymkhana

Mission

The driving force behind the 21st Century is the development of knowledge-intensive societies. It has led to establishment of new Institutes of higher learning in India. Indian Institute of Technology Indore, established in 2009, is part of the initiative that envisages India as a global knowledge and technology leader. Continuing with the tradition of the older IITs, IIT Indore aims to play an active role in propelling India on her growth-trajectory by focusing on research-based education and innovation driven research and entrepreneurship. IIT Indore aims to achieve this mission with humanistic concerns.

Vision

Academics

- To inculcate and promote an academic community with independence of thought and free expression of research and innovation ideas.
- To provide a balance of continuously updated knowledge with an extensive hands-on training on sophisticated facilities.
- To start new academic programs in the futuristic areas such as data science, electric vehicles, intelligent transport system, space engineering, Indian scientific knowledge, etc.
- To increase internationalization of the Institute by selecting increasing number of international students and engaging distinguished international faculty in teaching and research.
- To increase candidates from Industries, Defense forces, and Engineering Institutions in different PG and PhD programs.
- To increase involvement of adjunct faculty from Industries for teaching, research, and innovation.
- To involve experts from reputed industry and Foreign Universities for curricula design.

Research, Development, and Entrepreneurship

- Promote inter-disciplinary research in science, engineering, and humanities and social sciences.
- Conduct disruptive and social impacting research some chosen areas such as sustainable development, climate change, food and water security.
- Promote industry-oriented research leading to new products, processes, and technologies.
- Focus on convergence of life sciences, medical sciences, and agricultural sciences with engineering.
- Promote culture of start-ups and entrepreneurship by establishing of Industrial Research Park which will be a focal point in Central India.
- Aggressive patenting and protection of IPR.

Objectives

- Enhancement of academic, technological, and social outreach of the Institute through societal research, education, healthcare, sanitation, and rural development.
- Development of world class research and learning facilities for industries, teaching and research institutions.
- Skill development and scaling up the research and innovation towards the national requirements.
- To contribute to development of world class technological innovation in Engineering and Biomedical instrumentation, Defense, E-vehicles, alternate energy resources, etc.

Departments and Faculty Profiles

Department of Astronomy, Astrophysics and Space Engineering

The Discipline of Astronomy, Astrophysics and Space Engineering (DAASE) has expanded significantly from such a thought and expanded significantly from 2015 and in the last academic year. I am happy to report that our strength has grown to nine regular faculty members, one Ramanujan Faculty Fellow, one INAE Distinguished Professor, thirty eight PhD research scholars, and 41 PG students.

DAASE is an unique department in the IIT system in the field of Space research and Astronomy cultivating research with the unique blend of science and engineering. We collaborate with other departments within IIT Indore and outside to work on novel projects. Students graduating at PG or PhD level are well placed in their respective career endeavors mostly abroad but also in reputed Institutes in India.

DAASE has major involvement in the outreach. We have developed a concept Tinkering Lab in Astronomy and Space mainly in the line of the New Education Policy. Our outreach events are well attended by school and college students of Indore and across Central India on both offline and online mode.

Academic Programs

- 1) PhD Program (since 2016)
- 2) BTech Minor program in Astronomy and Space Engineering (since 2017)
- 3) MTech program in Space Engineering (since 2021)
- 4) MS (by research) program in Space Sciences and Engineering (since 2021)

NUMBER OF FACULTY MEMBERS:	
PROFESSOR	1
ASSOCIATE PROFESSOR	1
ASSISTANT PROFESSOR GRADE II	1
ASSISTANT PROFESSOR GRADE I	6
VISITING PROFESSOR/INAE FELLOW/RAMANUJAN FELLOW	2
NO. OF POST DOC FELLOWS	1

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	-	
MTech	9	-
MSc	40	16
MS (by research)	8	-
PhD	44	6

R&D ACTIVITIES

DAASE faculty members work on several projects in the following areas

- 1) **Astronomy and Astrophysics**– Connected to three Mega Science Projects of India – Square Kilometer Array (SKA), Thirty Meter Telescope (TMT) and LIGO India (Gravitational Wave Observatory) – Funding comes from DST, DAE, CSIR, MoE (Ministry of Education)
- 2) **Space Technology** - Connected to few Mega Science projects and space missions with ISRO – funding comes from ISRO, MoE, DST
- 3) **Earth and Atmospheric Sciences** - Connected to remote sensing applications and climate/weather studies – funding comes from DST, ISRO, MoES, etc.

Notable Activities in the Department

- 1) DAASE has been awarded the DST-FIST grant at level 2 (Rs. 3.2 crore)
- 2) Prof. Hari Hablani received the prestigious INAE Distinguished Professor Award
- 3) Two faculty members received DST-SIRE award for International Linkages and visit

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	7	
ONGOING PROJECTS	17	
COMPLETED	8	1

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	1	4	15	72

Dr. Abhirup Datta

Professor and Head of Department

abhirup.datta@iiti.ac.in

PhD, New Mexico Institute of Mining and Technology (NMIMT)

National Radio Astronomy Observatory (NRAO), USA

**Previous Employment details before joining IIT Indore:**

- 1) Senior Research Associate- Center of Astrophysics and Space Astronomy, University of Colorado Boulder, USA - March, 2013-September, 2015
- 2) NASA Postdoctoral Fellow- Center of Astrophysics and Space Astronomy, University of Colorado Boulder, USA- March 2011- March, 2013
- 3) Pre-Doctoral Fellow/ Research Assistant- National Radio Astronomy Observatory/ New Mexico Tech, Socorro, USA- 2007 – 2010

Present academic association(s) with other Institution(s):

- 1) Member of International Astronomical Union (IAU) since 2018
- 2) Visiting Associate at IUCAA, Pune, India since July, 2016
- 3) Senior Member of IEEE since February, 2021.
- 4) Square Kilometre Array (SKA) - Science Working Group Co-Chair

Details of Research Area:

- 1) Radio Astronomy from Ground and Space,
- 2) ML/AI applications in Space Sciences,
- 3) Space Weather and Image Processing,;
- 4) Data Science

Details of Research Highlights:

- 1) Observational Cosmology - Study of the Early Universe in the Dark Ages, Cosmic Dawn, and Epoch of Reionization – HI 21cm Cosmology – Simulation, Modeling, Observations, and Data Analysis;
- 2) Large Scale Structures: Radio and X-ray Observations of Clusters of Galaxies;
- 3) Techniques: Aperture synthesis, Calibration Effects, and Imaging in Radio Interferometry;
- 4) Space Weather and Ionosphere: Using GNSS, NaVIC and low-frequency radio astronomy;
- 5) Multi-wavelength observations of the Radio Deep-fields, Multi-messenger Astronomy AstroStatistics;
- 6) Machine Learning and Big Data; Sustainability Research.

Details of Projects active:

- 1) Space Instrumentation Systems Laboratory- As PI --- DST-FIST--- 2022-2027;
- 2) Multiwavelength study of Legacy Radio Deep Fields using AstroSat data -- As PI --- ISRO-- 2022-2025;
- 3) Pilot survey of CMB polarized foregrounds using a Single Dish --- As PI --- MHRD-SPARC -- 2019-2022;
- 4) Imaging the first billion years of the universe with next-generation telescopes -- As CO-PI -- MHRD-SPARC -- 2019-2022;
- 5) SEAMS mission-- As Co-PI -- ISRO -- 2019-2022

Total number of Books published/under process

1

Total number of Journal Articles published/under process: 15 - Published, 4 - under review**Total number of courses/conferences/workshops organized:** 3 Conferences and 6 Courses**Any other Achievements, Awards and Recognitions:**

- 1) Invited Speaker at the annual Astronomical Society of India Meeting, March 2022
- 2) Invited to give a colloquium at DTP, TIFR, Mumbai in 2022.

List of UG course(s) taught: 1) AA 201 - Introduction to Astronomy - Autumn, 2021**List of PG course(s) taught:**

- 1) AA 407/607 - Remote Sensing - Autumn 2021
- 2) AA 403/603 - Space Engineering - Autumn 2021
- 3) AA 405/605 - Space Detectors - Autumn 2021
- 4) AA 406/606 - Kalman Filtering - Autumn 2021
- 5) AA 474/674 - Radio Astronomy - Spring 2022
- 6) AA 608 - AstroStatistics - Spring 2022
- 7) AA 476/676 - GNSS - Spring 2022

Total number of PG dissertation(s) guided: 1 Graduated, 4 - Active (1 MS, 1 MTech, 2 MSc)

Dr. Siddharth Savyasachi Malu, FRAS.

Associate Professor

siddharth@iiti.ac.in

PhD, University of Wisconsin-Madison

**Previous Employment details before joining IIT Indore:**

6 months - CTO of Redwood Associates, Bangalore;

2 years - Postdoctoral Fellow at Raman Research Institute;

2 years - Postdoctoral fellow at IUCAA;

5 years - Research Associate at University of Wisconsin-Madison (PhD student);

1 year - Junior Research Associate of DST at St. Stephen's College, Delhi

Details of Research Area: Radio Astronomy Instrumentation**Details of Research Highlights:** Completed work on the IIT Indore Radio Interferometer (IIRI)**Details of Projects active:** CSIR Grant**Total number of Journal Articles published/under process**

1

Any other Achievements, Awards and Recognitions: Elected Fellow of the Royal Astronomical Society**List of UG course(s) taught:** AA 303, AA 471N**List of PG course(s) taught:** AA 671N, PH 601**Dr. Bhargav Vaidya**

Assistant Professor Grade-I

bvaidya@iiti.ac.in

PhD,



Max Planck Institute for Astronomy, Heidelberg, Germany

Previous Employment details before joining IIT Indore:

1. Postdoctoral Fellow at the University of Leeds, United Kingdom for a period of 2 years and 5 months (Sept, 2011 to Jan, 2014)

2. Postdoctoral Fellow at the University of Torino, Italy for a period of 3 years and 3 months (February 2014-April 2017)

Present academic association(s) with other Institution(s):

1. Affiliate Faculty Member with the Center of Excellence of Space Sciences in India (CESSI) at IISER Kolkatta

2. Visiting Associate Member with the Inter-University Center for Astronomy and Astrophysics, Pune (IUCAA)

Details of Research Area: The research emphasis during the aforementioned time period can be divided into two distinct categories: A) The group has been engaged in the development of numerical frameworks capable of bridging the gap between microphysical processes and large-scale dynamics in astrophysical and space plasma environments. In this regard, we have simulated and quantified the effect of particle acceleration at sub-parsec and parsec scales in AGN jets and within the inner heliosphere as a result of CME-generated shocks. B) The second objective was to adopt a General Relativistic Magneto-hydrodynamics code in order to comprehend the complex dynamics of accretion flow in the vicinity of a super-massive Black Hole.

Details of Research Highlights:

1. In Giri et al. 2022a, we used a state-of-the-art hybrid framework that couples Lagrangian particles with an Eulerian fluid grid to understand X-shaped radio galaxies using a back-flow model. This study demonstrated for the first time the role of weak turbulent shocks within the X-shaped wing in particle re-acceleration. This significant discovery makes the back-flow model a formidable candidate for a universal mechanism.

2. Kundu et al. 2021 developed a novel algorithm to solve the Fokker-Planck Equation that couples diffusive shock and stochastic acceleration. This framework provides a more accurate toolkit for studying AGN jet lobe particle acceleration.

3. Dihingia et al. 2021 simulated flow around a supermassive black hole from an accretion disk using GRMHD. This study demonstrated layered jet structure, where slower disk winds engulf the inner fast and relativistic jet flow.

Details of Projects active: There were three projects active during the said period. Their details are follows -

1. Title: Synthetic Observatory for X-shaped radio galaxies; Funding Agency : CSIR; Total Funding Sanctioned : INR 19 Lacs. End date : August 2021.

2. Title: SAJEMA: Simulating AGN Jets in the Era of Multi-messenger Astronomy Funding Agency : Max Planck Society; Total Funding Sanctioned : 100,000 Euros End date : June 2024.

3. Title : A modular and physics based numerical framework for the inner heliosphere Funding Agency : Indian Space Research Organisation (under RESPOND Programme) Total Funding Sanctioned : INR 2723000 End Date : December-2024 Additionally, I am involved as part of the core faculty member team in the IITI DRISHTI CPS Foundation, the Technology Innovation Hub established at IIT Indore as part of the National Mission for Inter-disciplinary Cyber Physical Systems

Total number of Journal Articles published/under process 11

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: Awarded the ISRO RESPOND grant in January 2022 to develop a modular space weather assessment framework as part of the scientific contribution to the Aditya L1 mission (India's mission for observing the Sun)

List of UG course(s) taught: AA 478 : Space Weather [Autumn 2021], AA 472N : Galactic and Extragalactic Astronomy [Spring 2021]

List of PG course(s) taught: AA 601N: Astrophysical Fluids and Plasma [Autumn 2021], AA 678: Space Weather [Autumn 2021], AA 672N: Galactic and Extragalactic Astronomy [Spring 2021], AA609: Computational Methods in Astronomy and Space Sciences.[Spring 2021]

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 5

Dr. Suman Majumdar

Assistant Professor Grade-I

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PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore:

1. Postdoctoral Research Associate, Department of Physics, Imperial College London, UK (December, 2015-April,2018).

2. Postdoctoral Fellow, Department of Astronomy, Stockholm University, Sweden (December, 2012 - November, 2015).

Present academic association(s) with other Institution(s):

1. Academic Visitor, Scuola Internazionale Superiore di Studi Avanzati (SISSA), Trieste, Italy (since November,2019).

2. Academic Visitor, International Centre for Theoretical Physics (ICTP), Trieste, Italy (since June, 2019).

3. Academic Visitor, Department of Physics, Imperial College London, UK (since May, 2018).

Details of Research Area: Cosmology with Statistical Inference, Cosmic Dawn and Epoch of Reionization, Cosmology with Line Intensity Mapping, 21-cm Cosmology, Square Kilometre Array, Simulations of CD-EoR and Large Scale Structures, N-body Simulations, Statistical Inference, Low Frequency Radio Interferometry.

Details of Research Highlights:

1. We have demonstrated that it is possible to distinguish the dominant physical process in the IGM during cosmic dawn using the 21-cm bispectrum through the future observations of this era by the SKA.

2. We have shown that one can use the topology of the 21-cm maps (estimated through the largest cluster statistics) during the reionization to distinguish the inside-out or outside-in reionization scenarios.

3. We have also demonstrated that one can improve the constraints on the reionization parameter using the 21-cm bispectrum compared to the power spectrum statistics.
4. We have developed an emulator for the 21-cm bispectrum using an Artificial Neural Network. This has helped us in the faster estimation of this statistic which is further used in an MCMC pipeline for parameter estimation.
5. We have developed simulations to test the feasibility of cross-correlation between the CII and 21-cm line observations of the CD-EoR. We have demonstrated that it is possible to probably recover the reionization history from this cross-correlation.

Details of Projects active:

1. "Observing the Cosmic Dawn in Multicolour using Next Generation Telescopes" a Core Research Grant from SERB, DST, GoI (2022-2025), (25 lacs).
2. SIRE Fellowship from SERB (~10000 USD) to visit Denmark Technical University, Copenhagen, Denmark.
3. "Unveiling the Cosmic Dawn: novel techniques to study the reionization of the early universe" funded by the ASEM-DUO fellowship (2020-2022), (6000 euro).
4. "Imaging the first billion years of the universe with next-generation telescopes" funded under the "Scheme for Promotion of Academic and Research Collaboration (SPARC)" from the Ministry of Education, India (2019-2022), (54 lacs).

Total number of Journal Articles published/under process 12

Total number of courses/conferences/workshops organized:

Organized SAZERAC 21cm 2022 international conference (14-17 March 2022) in collaboration with University of Sussex, UK and University of Texas, USA. http://sazerac-conference.org/21cm_2022/

Any other Achievements, Awards and Recognitions: SIRE Fellowship from DST-SERB (2022), (10000 USD □ 950000 INR).

List of UG course(s) taught: AA 471: Relativity and Cosmology

List of PG course(s) taught: AA 608: Astrostatistics, AA 609: Computational Methods in Astronomy and Space Sciences, AA 471/671: Relativity and Cosmology, AA 651: M.Sc. Astronomy Lab – I

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided 3

Dr. Saurabh Das

Assistant Professor Grade-I
saurabh.das@iiti.ac.in
PhD, University of Calcutta



Previous Employment details before joining IIT Indore:

DST INSPIRE Faculty at Indian Statistical Institute during 2015-2018 (3 years)

DST INSPIRE Faculty at IIT Indore during 2018-2019 (8 months) before joining as an Assistant Professor at DAASE, IITI in 2019.

From 2009-2015 (6 years), worked as an Assistant Professor at Institute of Radiophysics and Electronics, University of Calcutta under ISRO's SSPS program.

Details of Research Area: My research interests include precipitation and climate change, atmospheric remote sensing and wave propagation in atmosphere and ionosphere. My current research involves understanding of precipitation microphysics in tropical and arctic regions. In collaboration with ISRO, Ka band signal propagation under rainy condition and prediction of extreme weather condition using GNSS/NavIC signals are other important areas of my research.

Details of Research Highlights: We have demonstrated the impact of rain drop speed variations in radar

retrieval of rainfall. We also demonstrated the generation of gravity waves due to thunderstorms and its propagation in the ionosphere affecting GNSS applications. A deep learning based algorithms for solar wind forecasting is also developed.

Details of Projects active:

- (1) SERB- sponsored project on "Modeling of major weather disturbances, especially cyclones, using Deep Neural Networks",
- (2) SERB-SIRE project titled "Precipitation characterization using satellite and ground-based radar"

Total number of Journal Articles published/under process 7

Total number of courses/conferences/workshops organized 3

Any other Achievements, Awards and Recognitions: Received SERB-SIRE Fellowship, 2022.

List of UG course(s) taught: AA 303 - IoT for Space Applications

List of PG course(s) taught: (1) AA 407/607 - Remote sensing for Atmospheric and Space Sciences, (2) AA 476/676 - Satellite Based Navigation Systems, (3) AA 406/606 - Random signals and applied Kalman Filtering, (4) AA 608 – Astrostatistics

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Manoneeta Chakraborty

Assistant Professor Grade-I

manoneeta@iiti.ac.in

PhD, Tata Institute of Fundamental Research (TIFR)



Previous Employment details before joining IIT Indore:

- DST INSPIRE faculty fellow, Discipline of Astronomy, Astrophysics and Space Engineering, Indian Institute of Technology Indore, June 2017 – July 2019
- Post-doctoral research fellow, High energy astrophysics group, Sabanci University, January 2015 – April 2017
- Visiting Researcher, Inter-University Centre for Astronomy and Astrophysics (IUCAA) and INAF-Brera, October 2014 – December 2014

Details of Research Area: Compact Objects, Neutron stars, Black holes, Pulsars, Magnetars, X-ray binaries, ULXs, EM counterparts of Gravitational waves, Transients, Fast Radio Bursts, Multi-wavelength high time-resolution Astronomy, High-energy Astronomy, Radio Astronomy

Details of Research Highlights:

1. Investigated the long-term spectral and timing evolution of a neutron star atoll LMXB source for characterizing the emission mechanism with unprecedented broadband coverage [Kashyap et al. 2022b].
2. Investigated the broadband sub-pulse drifting behaviour of a pulsar to probe drift modes, sparks, and emission heights [Janagal et al. (2022)]
3. Investigated the broadband behavior of a neutron star Z source for the the purpose of probing the variability and radiative characteristics at high intensities
4. Studied thermonuclear bursts using high time resolution wideband multi-instrument data to probe the ignition mechanism and disk-burst interaction process [Kashyap et al. (2022a), Guver et al. (2022), Guver et al. (2021)]
5. X-ray/UV correlation studied to infer about the irradiated disk scenario and the origin of the ultra-luminosity in the ULX source [Vinokurov et al. (2022)]

Details of Projects active:

1. Probing the extreme physics around compact objects in binary and isolated systems through investigations of their burst and outburst behaviour, Duration: 01.06.2017 to 31.05.2022, Funding Agency: DST, Under the DST INSPIRE Faculty scheme;
2. Study of Accretion and Outflow Mechanisms in Compact Objects in X-ray Binaries, Duration: 3 years (starting April 2021). Funding Agency : ISRO, Department of Space

Total number of Journal Articles published/under process 5

Any other Achievements, Awards and Recognitions: Member of the International Astronomical Union (IAU), Member of SKA-India Working Group on Education and Outreach

List of UG course(s) taught: AA 201- Introduction to Astronomy, Undergraduate level, Fall 2021

List of PG course(s) taught:

AA 602 - Advanced topics in Astronomy and Astrophysics, PhD and M.Sc. Astronomy, Spring 2022

AA 474/674 - Radio Astronomy, PhD and M.Sc. Astronomy, Spring 2022

AA 605 - Detectors and Sensors for Space observations, PhD and postgraduate level, Fall 2021

AA 471/671 - Relativity and Cosmology, PhD and postgraduate level, Fall 2021

Total number of PhD student(s) guided 3



Dr. Amit Shukla

Assistant Professor Grade-I

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PhD, Indian Institute of Astrophysics, Bangalore

Previous Employment details before joining IIT Indore:

Visitor Post Doctoral position at Inter-University Centre for Astronomy and Astro- physics, Pune, India. (January 2019 – August 2019)

Post Doctoral Fellow, Institute for Theoretical Physics and Astrophysics, Universität Würzburg, Würzburg, Germany. (March 2016 – September 2018)

Post Doctoral Fellow, Institute for Particle Physics, ETH, Zurich, Switzerland. (November 2014 – November 2015)

Post Doctoral Fellow, Department of High Energy Physics, Tata Institute of Fundamental Research, Mumbai, India. (May 2013 – November 2014)

Present academic association(s) with other Institution(s): IUCAA, Pune (Visiting Associates)

Details of Research Area: My primary research interest is to study gamma-ray Astronomy, Active galactic nuclei, Blazars, High Energy Astrophysics using Multi-wavelength & multi-messenger observations. In particular, my research interests include the study of astrophysical jets of Active Galactic Nuclei (AGN), GRBs.

Details of Research Highlights: We studied a very high energy emission from AGN named BI Lac and searched for inverse Compton hump in Fermi-LAT detected GRBs.

Details of Projects active: We studied a very high energy emission from AGN named BI Lac and searched for inverse Compton hump in Fermi-LAT detected GRBs. Search of delayed GeV emission from GRBs. Long-term optical and γ -ray variability of the blazar PKS 1222+216, AstroSat Study of Giant (Type II) outbursts in the Be/X-ray binary XTE J1946+274: revealing two classes of Giant outbursts?, Variability study of BL Lacertae, Pinning down the jet-launching mechanism in NGC 1275

Total number of Journal Articles published/under process 4

List of PG course(s) taught: PH 601

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Narendra Nath Patra

Assistant Professor Grade-I
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PhD, National Centre for Radio Astrophysics,
Tata Institute of Fundamental Research

**Previous Employment details before joining IIT Indore:**

Pancharatnam fellow (October 2018 to October 2021) Raman Research Institute
Visiting postdoctoral fellow (August 2015 to August 2018) National Centre for Radio Astrophysics, Tata Institute of Fundamental Research

Details of Research Area: Radio Astronomy, Dark matter in galaxies, Galaxy formation and evolution process, Interstellar Medium of Galaxies, Astronomical instrumentation, etc.

Details of Research Highlights:

1. We have investigated the star forming regions in nearby galaxies and examined its connection to the ISM.
2. We have developed parallel algorithms to identify galaxies in a large HI spectral cube.
3. We have conducted an HI GMRT archival survey to form a large sample to investigate key sciences related to galaxy formation and evolution.

Details of Projects active:

1. Investigating galaxy formation and Evolution process using observation of nearby galaxies.
2. Developing digital backend for IIT Indore Radio Interferometer

Total number of Journal Articles published/under process 4

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: Life member of Indian Radio Science Society

List of PG course(s) taught: AA 602 - Advanced topics in Astronomy and Astrophysics

Dr. Unmesh Khati

Assistant Professor Grade-II
unmesh.khati@iiti.ac.in
PhD, Indian Institute of Technology Bombay

**Previous Employment details before joining IIT Indore:**

Postdoctoral Fellow, NASA-Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, USA. 2 years and 2 months

Present academic association(s) with other Institution(s): UWG Member, ESA NASA Multi-mission Analysis and Algorithm Platform (MAAP)

Details of Research Area: I am involved with the NASA-ISRO SAR (NISAR) mission Science Team for development of algorithms for dynamic monitoring of changes in the ecosystems and carbon content mapping. Further I am also working with our research group at IIT Indore for ecosystem studies, change detection, flood mapping, Interferometric analysis and 3-D mapping using tomographic techniques.

Details of Research Highlights: Developing algorithms using ALOS-PALSAR and NISAR simulated data. Using polarimetric and interferometric products for (a) forest above-ground biomass mapping, and (b) ecosystem change detection and monitoring. Combining multi-sensor data (SAR, lidar, optical and field instrumentation) using the ESA-NASA Multi-Mission Analysis and Algorithm Platform (MAAP) cloud computing environment for large-scale product generation using analysis ready data (ARD) in preparation for the upcoming NISAR mission.

Details of Projects active: Detection of deforestation in tropical forests using Sentinel-1 SAR time-series. Funded by - IIT Indore Young Faculty Research Seed Grant. Funding - Rs. 10 lakh. Duration - May 2022 to April 2024

Total number of Journal Articles published/under process 3

Total number of courses/conferences/workshops organized 2

List of PG course(s) taught: AA 404 - Spacecraft and Payload Attitude Dynamics, Control and Pointing

Department of Biosciences and Biomedical Engineering



Department of Biosciences and Biomedical Engineering (BSBE) at the Indian Institute of Technology Indore was founded in July 2012 with a vision of establishing a Center of Excellence that will focus on human resource development and research in Biosciences, Bioengineering, and Biomedical Engineering. The Department of BSBE aims to be internationally recognized in Bio-related areas and produce the leaders of tomorrow in the field, with the integrated use of training and career development efforts to improve individual, group, and organizational effectiveness.

Facilities:

The Department of Biosciences and Biomedical Engineering has several state-of-the-art laboratories. The BSBE department has a Cell Culture Facility with Class II A2 biosafety cabinets, fluorescence microscopes, electroporator, CO₂ incubators, etc. Additionally, we have wet laboratories for performing Molecular Biology, Biochemistry and Microbiology experiments that include Real time PCR, 96 well plate reader, gel doc, etc. Moreover, BSBE has set up a Instrumentation Center with the following Sophisticated Instruments:

1. FACS Sorter [BD FACS AriaIII Fusion – equipped with 4 laser]
2. FACS Analyser [BD LSRFortessa –equipped with 5 laser]
3. Confocal Microscope [Olympus, which includes FLIM (Fluorescence lifetime imaging microscopy), FCS (fluorescence correlation spectroscopy), and Multi-photon emission imaging with Mai Tai Femto- second laser]
4. Proteomics facility [AKTA avant, Isoelectric focusing, 2D gel electrophoresis]



Confocal Microscopy



FACS Facility



Isoelectric Focusing



2D Gel Electrophoresis



Gel Doc. System



Discovery Studio



AKTA Avant

Academic Programs:

In the BSBE department there are eleven core faculty members (Professor - 04, Associate Professor-06, Assistant Professor (Grade-1) – 01).

The academic programs consist of the MSc (Biotechnology) and the PhD. In the MSc (Biotechnology) program, students are admitted through JAM & GAT-B. The department also offers a minor degree for BTech students in Biomedical Engineering. In the coming years, the department intends to start BTech and MTech Programs.

Our vibrant group of faculty members aspire to create an ambience for the smooth pursuit of scholarly activities in research as well as training on the study of life and living organisms, ranging from simple bacteriophage to complex multicellular organisms such as humans; with the focus being on structure, function, growth, origin, evolution, distribution, and taxonomy. In addition to basic biology research, the BSBE department seeks to contribute to applied research on practical problems in the country.

With the application of engineering principles, design concepts of biology, medicine, and other sciences, the group hopes to devote its energy and expertise on translational technology innovations to achieve improved longevity, health, and well-being for humans; to pursue research and development activities resulting in discoveries in imaging techniques, diagnostic kits; and novel therapies.

NUMBER OF FACULTY MEMBERS:		11
PROFESSOR		04
ASSOCIATE PROFESSOR		06
ASSISTANT PROFESSOR GRADE I		01
ASSISTANT PROFESSOR GRADE II		Nil
NO. OF POST DOCTORAL FELLOWS		
		07

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
MSc	20	09
PhD	30	12

R & D Activities

1. Prof. Amit Kumar: The main area of research of AK Lab (Prof. Amit Kumar) is focussed on Drug Discovery and target Identification for various diseases including cancer, infectious and neurological disorders. His research group has identified several molecules and their molecular target in several pathogenic bacteria and viruses. This work was highlighted by various news media (Republic News, The Science Wire, The Hindu Business line, down to Earth, Biotechnika etc).

2. Prof. Avinash Sonawane: The Cellular Immunology and Disease biology Group, led by Prof. Avinash Sonawane, works on modulation of host immunity during tuberculosis infection, anti-tuberculosis drug development and diagnostics. His group also works on development of asparaginase based therapy for blood cancer treatment.

3. Prof. Ganti S. Murthy: The Sustainable Technologies Laboratory team led by Prof. Murthy broadly focuses on developing sustainable solutions for a resource-constrained world. Sustainable solutions are technically feasible, economically viable, resource sustainable, environmentally conscious and socially acceptable. The research group is specifically focused on sustainable bioprocessing and engineered systems analysis. They employ a combination of experimental and theoretical approaches to conduct multi scale and systems level analyses. They study the nutrient-energy-water nexus with a particular focus on building the resilience of agro-ecological systems to pulse and pressure disturbances.

4. Prof. Prashant Kodgire: Prashant Kodgire's ongoing research is broadly in the area of Molecular Immunology and Molecular Biology, especially focusing on immunoglobulin gene regulation and understanding the molecular basis of somatic hypermutation (SHM) of immunoglobulin (Ig) genes. His group's current efforts are on identifying the molecular mechanisms of action and targeting of activation-induced cytidine deaminase (AID) on the Ig genes. These studies are important for determining how the varied repertoire of antibody genes is created with the potential to react against any foreign antigenic substance, including tumor cell antigens. Besides aiding the defense against tumors by creating potent anti-cancer antibodies, SHM can have a negative effect as a promoter of cancer by giving rise to B cell lymphomas and leukemias. Understanding somatic mutation will aid in the investigation of the cellular, genetic and environmental causes of B lymphocyte malignancies as well as in learning how to influence the production of high-affinity antibodies against infectious agents and tumor antigens.

5. Dr. Mirza S. Baig: The Macrophage Biology Group, led by Dr. Mirza S. Baig, aims to explore an in-depth understanding of macrophage biology to unravel events actively involved in the development of immunological diseases. The group is actively involved in identifying therapeutic targets in macrophages and drug discovery strategies for chronic inflammatory diseases and cancer.

6. Dr. Kiran Bala: The Algal Ecotechnology and Sustainability Group, led by Dr. Kiran Bala, works on investigating the microbial bioproducts targeting various environmental applications including bioremediation, biofuels and bioplastics etc.

7. Dr. Sharad Gupta: The BioPhysics and Bioengineering Research Group, led by Dr. Sharad Gupta, focuses on developing non-invasive tools for disease diagnosis and biological sample characterization. Specifically, his research group is working on a Bio-nanotechnology based approach for bio-fluid analysis, NIR imaging, biophotonics, and silk and other biomaterials based regenerative medicine.

8. Dr. Hem Chandra Jha: The Infection bioengineering Group, led by Dr. Hem Chandra Jha, deals with infection and coinfections of various pathogens such as Helicobacter pylori, oral bacterias, Epstein Barr Virus, and Plasmodium. The possible role of these pathogens is studied in different cancers (i.e., gastric and oral cancer) and neurodegenerative diseases (e.g., Multiple sclerosis and Alzheimer's disease). Besides,

the group also works in the domain of SARS-CoV-2 mediated host interaction and use of traditional medicine components for the treatment of these diseases.

9. Dr. Parimal Kar: The Computational Biophysics Group, led by Dr. Parimal Kar, works on investigating the conformational dynamics of proteins, glycans, and protein-glycan complexes using multiscale simulations. The group also works on computer-aided drug discovery. We study the phosphorylation-induced conformational dynamics of kinases implicated in autoimmune disorders and hypertension. We also work on the conformational plasticity of kinases implicated in neurological disorders, such as Down Syndrome and Alzheimer's disease.

10. Dr. Abhijeet Joshi: Therasens lab led by Dr. Abhijeet Joshi work in the domain of bionanotechnology, nanomedicine, biomaterials and fluorescence-based biosensors and translating them to point care devices.

11. Dr. Sunil Kumar Boda: The Biomaterials and Tissue Engineering group led by Dr. Sunil Kumar Boda works on the design of biomedical implants and synthetic grafts/ scaffolds for musculoskeletal tissue engineering. Further, the group works across the research themes of bioadhesives/ surgical sealants, biomimetic peptides, biofabrication and organ-on-a-dish technologies development.

Notable Activities in the Department:

- The QIP Program on “Emerging Techniques and Application in Biosciences and Bioengineering Research” is scheduled from March 21, 2022 to March 26, 2022. In which following BSBSE faculty members have given lectures as an expert:
 1. Prof. Prashant Kodgire
 2. Dr. Abhijeet Joshi
 3. Dr. Parimal Kar
 4. Dr. Sharad Gupta
 5. Prof. Ganti S Murthy
 6. Prof. Amit Kumar
 7. Dr. Sunil Kumar Boda
- Organized MPVS on Traditional and Modern Healthcare conference by Dr. Hem Chandra Jha & Dr. Parimal Kar in Dec 2021.
- Organized six days of hands-on training Karyashala by Dr. Hem Chandra Jha titled “Isolation and characterization of DNA/RNA/Protein from various infected samples” in July 2022.

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	3	NIL
ONGOING PROJECTS	20	NIL
COMPLETED	5	NIL

Publications:

	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	7	14	3	107

Dr. Amit Kumar

Professor and Head of Department
 amitk@iiti.ac.in
 PhD, IIT Roorkee

**Previous Employment details before joining IIT Indore:**

Research Associate (2010-2011)- The Scripps Research Institute, USA
 Postdoctoral fellow (2009-2010)- SUNY, Buffalo, USA

Details of Research Area: Drug Discovery, Target Identification for diseases

Total number of Journal Articles published/under process	18
Total number of courses/conferences/workshops organized	2
List of PG course(s) taught: BSE 631- Biochemistry, BSE 613- Microbiology	3
Total number of PG dissertation(s) guided	3
Total number of PhD student(s) guided	4

Dr. Sharad Gupta

Associate Professor
 shgupta@iiti.ac.in
 PhD, IIT Kanpur

**Previous Employment details before joining IIT Indore:**

- 1- Postdoctoral Fellow, Department of Biomedical Engineering, Tufts University
- 2- Academic Coordinator, Department of Bioengineering, University of California Riverside
- 3- Assistant Project Scientist and Lecturer, Department of Bioengineering, University of California Riverside
- 4- Assistant Project Scientist, Department of Physics and Astronomy, University of California Riverside
- 5- Assistant Professor, Department of Biosciences and Biomedical Engineering, IIT Indore

Details of Research Area: I am interested in interdisciplinary science and technology. My research lies at the intersection of Optics, Biology, and Biomaterials. My research is focused on non-invasive/minimally invasive disease diagnosis, NIR Imaging, Biomaterials, Bionanotechnology for theranostics, and regenerative medicine. He has supervised several Ph.D. and M.Sc. students. He is focused on developing technologies that will serve society directly. In this direction, he is currently working on developing indigenous technology for bovine sperm sexing with the help of light scattering tools to improve the quality of dairy animals and their products.

Details of Research Highlights: I have published 45 international peer-reviewed research articles, 16 international peer-reviewed conference proceeding papers, and 4 patents. I am carrying out research projects funded by national funding agencies such as DBT, ICMR, MSME, and DST.

Details of Projects active:

- 1- "Optically active biocompatible nanoparticles for imaging and photothermal therapy", from Indian Council of Medical Research.
- 2- "Development of polarized angular light scattering and microfluidics technology for bovine sperm sexing", from Department of Biotechnology,
- 3- "Development of a portable nano-trap enhanced Raman spectroscopy (NTERS) system for disease diagnosis via body fluids analysis," from the Ministry of Micro, Small, & Medium Enterprises.

Total number of Journal Articles published/under process: 7 publications

List of UG course(s) taught: BSE 102 Biosciences

List of PG course(s) taught: BSE 633 Basics of Physics, Chemistry and Mathematics

Total number of PhD student(s) guided 3

Dr. Kiran Bala

Associate Professor

kiranb@iiti.ac.in

PhD, GJUST, Hisar, Haryana

**Previous Employment details before joining IIT Indore:**

DBT Scientist (DAVV, Indore) July, 2012 – Oct., 2012

UGC Post Doctoral Fellow (Anna University, Chennai) Feb., 2009- Feb., 2011

Research Associate (TERI, Delhi) Nov., 2007 – Feb., 2009

Present academic association(s) with other Institution(s): Member, Indian Young Academy of Sciences (INYAS) 2022-2027**Details of Research Area:** Bioremediation, Microbial Bioproducts**Details of Research Highlights:** Ms. Palak Saket received India-UK "Newton Bhaba Phd placement fellowship" to visit University of Huddersfield, UK (June, 2022 – September, 2022).**Details of Projects active:** Received funding under the National Post Doctoral Fellowship (NPDF) scheme from SERB with Project entitled "Effect of growth modulators on biomass and phycobiliproteins from cyanobacteria" (2022-2025), Teachers Associateship for Research Excellence (TARE) scheme from SERB with Project entitled "Isolation, purification and therapeutic evaluation of novel peptides and bioactive compounds as DPP-IV inhibitors from magneto-primed soybean seeds and algae species for diabetes treatment" (2020-2023), Ø German Academic Exchange Service (DAAD) funded project for LUH-IIT Indore Partnership under the "A New Passage to India Program" (2019-2023), Ø MoES, Delhi funded project entitled, "Innovative and efficient algae based system to reduce carbon dioxide emissions: A possible remedy to climate change " (2018-2022) Ø SERB, Delhi funded project entitled "An innovative approach for development of an efficient and integrated algae bioenergy production system using biosynthesized nanoparticles" (2018-2022)**Total number of Journal Articles published/under process** 15**Total number of courses/conferences/workshops organized** 1**Any other Achievements, Awards and Recognitions:**

- Received MP SHEROES Award-2022 as women scientist (by MIC and ABVP)
- Got selected as one of the 75 women in STEAM in the country to be featured in the second edition of She is (2022).
- Indian National Young Academy of Sciences (INYAS)-INSA Member fellow – 2022 to 2026.

List of PG course(s) taught: Microbiology (BSE 609), Biochemistry (BSE 611), Biochemistry Lab. (BSE 651), Microbiology Lab. (BSE 659)**Total number of PG dissertation(s) guided** 1**Total number of PhD student(s) guided** 3**Dr. Hem Chandra Jha**

Associate Professor

hemcjha@iiti.ac.in

PhD,

BITS Pilani, Rajasthan

**Previous Employment details before joining IIT Indore:**

1. March 2010-March 2015 :Post Doctoral Fellow at Dept of Microbiology, School of Medicine at University of Pennsylvania, USA.

2. March 2015-June 2016: Research Associate at University of Pennsylvania, Philadelphia, USA

Details of Research Area: Sars-Cov-2 biology, Virus-bacteria mediated gastric and oral cancer, virus-parasite mediated cerebral malaria, virus mediated neurodegeneration.**Details of Research Highlights:** Our research findings has been cited and appreciated by SERB-DST and Ministry

of Education, India. Also various print/e media cited and make our research output available to society. We are able to show the importance of SARS-CoV-2 mutations. How comorbidities associated with SARS-CoV2 is shown. We also found virus-bacteria co-infection model for gastric cancer progression. How therapeutics can be design against, viruses and chronic bacterial infection.

Details of Patents filled/awarded: We have filled two patents in this duration.

First 12 amini acid peptide of Epstein barr virus is able to make Alzheimers.

Second one for four peptides of Epstein Barr Virus which has capabilities to cause Multiple Sclerosis.

Details of Projects active:

1. Prognostic Biochemical Markers for COVID-19 associated neurological sequelae: Understanding through Machine Learning.
2. Prognostic Biochemical Markers for COVID-19 associated neurological sequelae: Understanding through Machine Learning.
3. Identifying The Biomarkers And Mechanism Of Immunomodulators Like Cytokines And Chemokines In Epstein-Barr Virus And Helicobacter Pylori Co-Infected Gastric Cancer.

Total number of Books published/under process	3
Total number of Journal Articles published/under process	16
List of PG course(s) taught: BSE 606: Molecular Virology and Viral pathogenesis, BSE 629- Genetics, BSE 628- Genomics & Proteomics	
Total number of PG dissertation(s) guided	4
Total number of PhD student(s) guided	4

Dr. Mirza S Baig

Associate Professor

msb.iit@iiti.ac.in

PhD, CSIR – Central Drug Research Institute



Previous Employment details before joining IIT Indore:

1. Associate Professor: Indian Institute of Technology Indore (IITI) (2018-present)
2. Assistant Professor: Indian Institute of Technology Indore (IITI) (2017-2018)
3. Ramalingaswami Fellow: Indian Institute of Technology Indore (IITI) (2015-2017)
4. Research Scientist: Mayo Clinic, Rochester, USA (2014-2015)
5. Postdoctoral Research Scientist: The University of Illinois at Chicago (UIC), Chicago, USA (2010-2014)
6. Research Associate: Indian Institute of Toxicology Research (IITR), Lucknow (2009-2010)

Present academic association(s) with other Institution(s):

1. International Collaborative Research Award (2022) from Osaka University for mentoring the research project at Osaka University, Japan
2. IUBMB Mid-Career Research Fellowship (2021) from The International Union of Biochemistry and Molecular Biology (IUBMB) to visit the University of Illinois at Chicago, USA (Collaborative Research).
3. ASM-IUSSTF Indo-US Professorship (2021) from The American Society for Microbiology (ASM) to visit the University of California, USA (Collaborative Research).

Details of Research Area:

- Innate Immunity and Inflammation
- Drug discovery and development for chronic inflammatory diseases and cancer

Details of Research Highlights:

- Inflammation and cancer- Our research focuses on the understanding of cell signaling pathways and transcriptional mechanisms that regulate the activation of macrophages in inflammation and cancer. Macrophage activation by microbial pattern recognition receptors, such as Toll-like receptors (TLRs), is critical for innate and adaptive immunity and has been extensively studied. However, these cells also play essential roles in resolving inflammation, maintaining tissue homeostasis and immune tolerance. We understand relatively little about the signaling pathways and molecular mechanisms that control the functions of macrophages in the context of their role in various chronic inflammatory conditions,

including some cancers, rheumatoid arthritis, atherosclerosis, etc.

- Virtual drug screening and repositioning- We utilize virtual or computer-aided drug design methods to model new compounds complementary to a target protein's shape and charge against inflammation and cancer. These virtually designed lead-like compounds could later be synthesized for biochemical and cellular testing. Drug repositioning can provide a safer alternative to developing new compounds as the repurposed drugs are clinically approved, have proven bio-availabilities, and well-characterized side-effect profiles.

Details of Projects active:

Title - Identification of novel molecular mechanism underlying macrophage phenotypic change during colorectal cancer progression. Duration – 1 Year Funding Agency - Japan Agency for Medical Research and Development (AMED) and the New York Academy of Sciences (NYAS) Brief Description - The study will focus on understanding the novel mechanism of inflammation-driven colorectal cancer progression. Identification of novel targets and designing the novel small molecule/peptide will serve the new approaches for a therapeutic strategy for colorectal cancer.

Total number of Journal Articles published/under process 18

Total number of courses/conferences/workshops organized: Visited Osaka University as a foreign mentor for a collaborative drug discovery and development program

Any other Achievements, Awards and Recognitions:

1. International Collaborative Research Award (2022) from Osaka University for mentoring the research project at Osaka University, Japan
2. IUBMB Mid-Career Research Fellowship (2021) from The International Union of Biochemistry and Molecular Biology (IUBMB) to visit the University of Illinois at Chicago, USA (Collaborative Research).
3. International Collaborative Research Award (2021) from the Japan Agency for Medical Research and Development (AMED), Japan, and the New York Academy of Sciences (NYAS), the USA for international collaborative research work.
4. ASM-IUSSTF Indo-US Professorship (2021) from The American Society for Microbiology (ASM) to visit the University of California, USA (Collaborative Research).

List of PG course(s) taught: BSE611 (Biochemistry); BSE621 (Cell and Molecular Biology); BSE622 (Molecular Diagnostics)

Total number of PhD student(s) guided 5

Dr. Parimal Kar

Associate Professor

parimal@iiti.ac.in

PhD, Michigan Technological University, USA



Previous Employment details before joining IIT Indore:

- Assistant Professor, IIT Indore (December 2017 to February 2022)
- Visiting Research Associate, Michigan State University, USA (June 2012- February 2016)
- Postdoctoral Fellow, Max Planck Institute of Colloids and Interfaces, Potsdam, Germany (January 2010 - May 2012)
- Graduate Intern, Los Alamos National Laboratory, USA (June 2009- December 2009)
- Visiting Research Fellow, Research Center Juelich, Germany (February 2008 – July 2008)

Details of Research Area:

Multiscale modeling of biomolecular recognition, protein-ligand interactions.

Computer-aided Drug Discovery.

Free energy simulations and enhanced sampling methods.

Modeling host-pathogen interactions in infectious diseases and innate immune response.

Interaction of carbohydrates (glycans) with proteins and membrane.

Details of Research Highlights: The Computational Biophysics Group, led by Dr. Parimal Kar, works on investigating the conformational dynamics of proteins, glycans, and protein-glycan complexes using multiscale simulations. The group also works on computer-aided drug discovery. We study the phosphorylation-induced conformational dynamics of kinases implicated in autoimmune disorders and

hypertension. We also work on the conformational plasticity of kinases implicated in neurological disorders, such as Down Syndrome and Alzheimer's disease.

Details of Projects active:

Project Title: Redesigning of antibody and finding novel inhibitors for dengue virus using computational approaches

Funding Agency: Department of Science and Technology (DST)/National Supercomputing Mission

Duration: 2021—2023

Role: Principal Investigator

Total number of Journal Articles published/under process	18
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: BSE 102	
List of PG course(s) taught: BSE 633, BSE 618	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	7

Dr. Abhijeet Joshi

Associate Professor

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PhD, IIT Bombay



Previous Employment details before joining IIT Indore:

- Assistant Professor, Discipline of Biosciences and Biomedical Engineering, IIT Indore (2018-2022)
- INSPIRE Faculty, Centre for Biosciences and Biomedical Engineering, IIT Indore (2015-2018)
- IYBA Fellow, Department of Biosciences and Bioengineering, IIT Bombay, Mumbai (2012-2015)
- Lecturer, Department of Pharmaceutics, NIPER-Ahmedabad, Gujarat (2011-12)

Details of Research Area: Biomedical Engineering, Biosensors, Drug Delivery

Details of Research Highlights:

- Interdisciplinary areas of biosensors, drug delivery, novel materials for biomedical applications, nano-biotechnology and theragnostic.
- Fabricating novel materials and methods to develop them to enable advances in healthcare and environmental areas.

Details of Patents filled/awarded: Sandeep Choudhary, Tanmay Vyas, Abhijeet Joshi, PORTABLE BIOSENSING SYSTEM AND METHOD FOR MILK, SPOILAGE AND ADULTERATION DETECTION, Indian Patent Application, 202121023242, 2021/05/25

Details of Projects active:

1. DBT NER: Quantum Dot Based Biosensor for Early Detection of Prostate Cancer Using multiple biomarkers in Biological samples,

2. Title: Nasal delivery of anti-retroviral theranostic nano-enabled carriers Duration: 2015 - 2021

Total number of Journal Articles published/under process	18
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: BSE 102: Introduction to Biosciences	
List of PG course(s) taught: BSE 625: Emerging Technologies	
Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided	4

Dr. Avinash Sonawane

Professor
asonawane@iiti.ac.in
PhD, University of Marburg, Germany

**Previous Employment details before joining IIT Indore:**

I worked from 2009 -2018 as an Assistant Professor (2009-2010), Associate Professor (2011-2015) and Professor (2015-2018) at KIIT University, Bhubaneswar.

Present academic association(s) with other Institution(s): Visiting Professor at Leibniz Medical Centre, Borstel, Germany

Details of Research Area: Our group works on modulation of host immunity during Mycobacterium tuberculosis infection, development of anti-tuberculosis drug molecules, and modulation of bone marrow stem cell microenvironment during Mycobacterium tuberculosis infection. Our group also works on the development of asparaginase based therapy for the treatment of primary and relapse acute lymphatic leukemia.

Details of Research Highlights: Using protein engineering approach, we developed novel asparaginase variants that can improve the treatment of primary and relapse acute lymphatic leukemia. These newly developed asparaginase variants are significantly less immunogenic, more stable, therapeutically more efficient and does not cause any organ toxicity. Currently these variants are under phase I/II clinical trial. In a parallel study, we identified novel M. tuberculosis virulence factors that help in evasion of host innate and adaptive immune responses.

Details of Patents filled/awarded: (Granted)

1. Avinash Sonawane and Ranjit Mehta (418/KOL/2013). Novel Asparaginase Mutant. (Patent Grant No. 365651)
2. Chelvam Venkatesh, Premansh Dudhe, Meena Asha Krishnan and Avinash Sonawane (201921029311). Metal-free, solvent-free synthesis of fused-pyrido heterocycles: Biological efficacy against cancer and multi-drug resistant pathogens. (Patent Grant No. 366986, US Patent No. 16931838) Filed:
 1. Avinash Sonawane, Vikram Gota, Mainak Biswas, Soumika Sengupta (2021) E. coli L-asparaginase variant for the treatment of acute lymphoblastic leukemia (ALL)

Details of Projects active:

1. Project Co-ordinator and Principal Investigator (Multi-institutional Grant) Project (2021-2023): Phase I/II Clinical trial of a novel asparaginase mutant for the treatment of primary and relapse acute lymphatic leukemia Funding Agency: BIRAC, India Amount: 199.9 Lakhs
2. Co- PI Project: Development of disinfection systems for the prevention and spread of CoVID-19 through indoor air. Funding Agency: BIRAC, India 2021-2022
3. Principal Investigator Project: Development of Novel Benzo Fused Heterocycles to Improve the Treatment of Drug Resistant Tuberculosis. Funding Agency: DBT, India.
4. 2017-2023 Principal Investigator Project: To study the role of mesenchymal stem cells in the pathogenesis of tuberculosis in bone marrow Funding agency: DBT, India.
5. 2018-2022 Principal Investigator Project Pharmacological evaluation of a novel asparaginase used for the treatment of acute lymphoblastic leukemia (ALL) Funding agency: BRNS, India
6. 2020-2022 Principal Investigator Project Development of theranostic targeted magnetic nanoparticles for diagnostics and treatment of tuberculosis Funding agency: Indo-Russia (DST-RFBR)

Total number of Books published/under process: Biological Applications of Nanoparticles, Springer (Under Process)

Total number of Journal Articles published/under process

9

Any other Achievements, Awards and Recognitions:

1. National Bio Entrepreneurship award, 2021.
2. Best Technology Development award, IIT Indore, 2021

List of PG course(s) taught: 1. Genetics (BSE629). 2. Animal and Plant Biotechnology (BSE 623). 3. Immunology	
Total number of PG dissertation(s) guided	4
Total number of PhD student(s) guided	11

Dr. Ganti Suryanarayana Murthy

Professor

ganti.murthy@iiti.ac.in

PhD, University of Illinois at Urbana-Champaign



Previous Employment details before joining IIT Indore:

- 2017-2022, Professor (tenured), Biological and Ecological Engineering, Oregon State University, Corvallis, Oregon, USA
- 2013-2017, Associate Professor (tenured), Biological and Ecological Engineering, Oregon State University, Corvallis, Oregon, USA
- 2007-2013, Assistant Professor (tenure track), Biological and Ecological Engineering, Oregon State University, Corvallis, Oregon, USA

Present academic association(s) with other Institution(s):

- 2019-Present, Professor, Department of Biosciences and Biomedical Engineering, IIT Indore
- 2022-Present, Courtesy Professor, Biological and Ecological Engineering, Oregon State University, Corvallis, Oregon, USA
- 2021-Present, National Coordinator, Indian Knowledge Systems of Ministry of Education, Govt. of India
- 2020-Present, Head, Center for Indian Scientific Knowledge Systems, IIT Indore

Details of Research Area:

Murthy's group broadly focuses on developing sustainable solutions for a resource-constrained world. Sustainable solutions are technically feasible, economically viable, resource sustainable, environmentally conscious and socially acceptable.

Dr. Murthy's research is specifically focused on sustainable bioprocessing and engineered systems analysis. His group employs a combination of experimental and theoretical approaches to conduct multi scale and systems level analyses. They study the nutrient-energy-water nexus with a particular focus on building the resilience of agro-ecological systems to pulse and pressure disturbances.

Details of Research Highlights:

1. Developing India's first continuous hydrothermal liquefaction system
2. Development of novel bioreactor control strategies for fermentation control
3. Development of novel solid state bioreactor designs
4. Understanding the emissions of toxic contaminants of emerging concern from the degradation of non-stick coatings in Indian cooking.
5. Development of machine learning models for high fidelity crop yield predictions.

Details of Projects active:

1. Design and evaluation of multi-objective controller for a continuous biocrude reactor. SERB, DST. (2021-2024). Rs. 5,180,164. PI
2. Hours to Milliseconds: Leveraging machine learning methods to reduce the computation time for crop yield prediction. National Supercomputing Mission/High Performance Computing. (2021-2023). Rs. 1,258,000. PI
3. Development of disinfection systems for the prevention and spread of CoVID-19 through indoor air. BIRAC, DST. (2021-22). Rs. 2,965,760. PI
4. India-Korea Joint Network Centre for Environmental Cyber Physical Systems.(2021-2024). Rs. 11,784,720. Co-PI

Total number of Books published/under process 1

Total number of Journal Articles published/under process 9

Total number of courses/conferences/workshops organized: 1-course, 2-workshops

List of UG course(s) taught: BSE 102 Biosciences

List of PG course(s) taught: BSBE Seminar (BSE 697/797); Bioprocess Engineering and Technology (BSE 624)

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 4

Dr. Sunil Kumar Boda

Assistant Professor Grade-I

sunilboda@iiti.ac.in

PhD, Indian Institute of Science (IISc), Bangalore



Previous Employment details before joining IIT Indore:

2022 - Present, Assistant Professor Grade - I,

Department of Biosciences and Biomedical Engineering, Indian Institute of Technology Indore

2019 - 2022, Postdoctoral Associate, University of Minnesota, Minneapolis, Minnesota, USA

2017 - 2018, Postdoctoral Research Associate, University of Nebraska Medical Center, Omaha, Nebraska, USA

Details of Research Area: Biomaterials and Tissue Engineering, Biomimetic peptides, Bioadhesives, Biofabrication and Organ-on-a-Dish Models, Antimicrobials

Details of Research Highlights: At my newly upcoming lab in IIT Indore, we have initiated projects in the following areas –

- (i) Development of surgical adhesives/ glues for soft/ skin tissue sealing around percutaneous metallic prostheses,
- (ii) Biomimetic nanofibrillar cell instructive scaffolds for tendon tissue engineering

Details of Projects active:

- Promoting soft tissue seal formation around percutaneous osseointegrated implants (POI) to minimize peri-prosthetic infection at the skin-implant interface, funded by the Department of Biotechnology (DBT), Govt. of India (2022-2027) to PI: Dr. Sunil Kumar Boda
- Biomimetic nanofibrillar cell instructive scaffolds for tendon tissue engineering, funded by the Young Faculty Research Seed Grant (YFRSG) scheme, IIT Indore (2022-2024) to PI: Dr. Sunil Kumar Boda

Total number of courses/conferences/workshops organized: Delivered an expert lecture on 'Emerging Techniques in Bioscience and Bioengineering Research' as part of the QIP short term course organized by the BSBE department in March, 2022

Any other Achievements, Awards and Recognitions: Dr. R. L. Thakur Memorial Award from the Indian Ceramic Society (Dec, 2021)

List of PG course(s) taught: Co-instructor for BSE 624: Bioprocess Engineering and Technology

Dr. Prashant Kodgire

Professor

pkodgire@iiti.ac.in

PhD, IIT Bombay, Mumbai

**Previous Employment details before joining IIT Indore:**

University of Chicago (March 2008 to May 2012)

Details of Research Area: Prashant Kodgire's ongoing research is broadly in the area of Molecular Immunology and Molecular Biology, especially focusing on immunoglobulin gene regulation and understanding the molecular basis of somatic hypermutation (SHM) of immunoglobulin (Ig) genes. His group's current efforts are on identifying the molecular mechanisms of action and targeting of activation-induced cytidine deaminase (AID) on the Ig genes. These studies are important for determining how the varied repertoire of antibody genes is created with the potential to react against any foreign antigenic substance, including tumor cell antigens. Besides aiding the defense against tumors by creating potent anti-cancer antibodies, SHM can have a negative effect as a promoter of cancer by giving rise to B cell lymphomas and leukemias. Understanding somatic mutation will aid in the investigation of the cellular, genetic and environmental causes of B lymphocyte malignancies as well as in learning how to influence the production of high-affinity antibodies against infectious agents and tumor antigens.

Details of Research Highlights: *Helicobacter pylori* is a Gram-negative bacterium that causes chronic inflammations in the stomach area and is involved in ulcers, which can develop into gastric malignancies, gastric mucosa-associated lymphoid tissue lymphoma (MALT) and gastric carcinoma. *H. pylori* attaches and colonizes to the human epithelium using some of their OMPs. HomB and HomA are the most studied OMPs from *H. pylori* as they play a crucial role in adherence, hyper biofilm formation, antibiotic resistance and are also associated with severe gastric malignancies. The role of HomA and HomB in pathogenesis concerning their structure and function has not been evaluated yet. Our recent structural and functional studies suggest the potential role of HomA and HomB in immune response modulation strategies used by *H. pylori* to evade the immune response. These results provide a better understanding of pathogenesis and assist in identifying novel targets for therapy.

Details of Projects active: Structural Insights of Outer Membrane Proteins (OMPs): Combating Gram-negative Bacterial Pathogens, Indian Council of Medical Research, Govt. of India and Splicing, chromatin and somatic hypermutation of immunoglobulin genes, Department of Science and Technology, Govt. of India, and Expression of recombinant polypeptides from Sevit Healthcare.

Total number of Journal Articles published/under process 7

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

- General Secretary, Madhya Pradesh Vigyan Sammelan MPVS-2021
- National Convenor, Vidhyathi Vigyan Manthan (VVM)
- Coordinator, MEGA Science Experiment of VVM in 2021.
- Coordinator, Guinness World Records, IISF-2021 in which 3 new World Records were made.

List of UG course(s) taught: BSE102 (Biosciences) as guest instructor.

List of PG course(s) taught: BSE601 (Advanced Molecular Biology); BSE702 (Applied Genetic Engineering); BSE627 (Research Methodologies and Scientific Communication skills); BSE797 (PhD Seminar Course); BSE625 (Emerging Technologies) as guest instructor.

Total number of PG dissertation(s) guided 4

Total number of PhD student(s) guided 5

Department of Civil Engineering

The Department of Civil Engineering has been functioning since 2016 with a focus on basic and applied research to solve real world problems. The Department offers a four-year course leading to the bachelor's degree in Civil Engineering and PHD in Civil Engineering. The faculty of civil engineering and students are actively involved in sponsored research projects funded by various organisations of the Government of India as well as industries/consultancy projects throughout the country and abroad. The Department has an active and dynamic faculty member with international exposure having expertise in diverse field of civil engineering like Structural, Geotechnical, Transportation, Water resource and Environmental engineering. The CE faculty has been recognized at different platforms across the world as committee chairs/members, outstanding reviewers, editorial board members. The Department of civil engineering looks forward to establishing itself, nationally and globally, as a premier academic Center with active industry interaction and national/international collaborations.

Academic Programs

The Department runs BTech and PhD Programs in Civil Engineering. The Department also hosts Postdoctoral Fellows in various specializations, sponsored by the Institute, sponsored research projects and other agencies.

NUMBER OF FACULTY MEMBERS: (Assistant/Associate/ Full Professors)	14
PROFESSOR	03
ASSOCIATE PROFESSOR	00
ASSISTANT PROFESSOR GRADE II	03
ASSISTANT PROFESSOR GRADE I	08
NO. OF POST DOC FELLOWS	02

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	52	35
MTech	-	-
MSc	-	-
PhD	-	03

Notable Activities in the Department

The department has been awarded several research and industrial consultancy projects (around 52 projects) and the value in Rs. are 2.36 crores. Our dynamic faculty and students are recognized at various platforms, some of key achievements are as following.

- Prof. Manish Kumar Goyal has got the Prof S N Gupta Memorial Lecture Award, Indian Society of Hydraulics, 2021 and Ranked in Top 2% scientist in list prepared by Stanford University and among the top 500 of the world's more than 42000 researchers in the in the sub-area "environmental engineering (Meteorology and Atmospheric Sciences)- 2021 and 2022.
- Dr Lalit Borana has been invited as visiting Fellow in the Hong Kong Polytechnic University.
- IIT Hyderabad chosen and invited Dr. Abhishek Rajput among 48 young stars of the country based on the accomplishments belongs to academia, scientists, and industrialist across the country in National Frontiers of Engineering Symposium NatFoE-2021, under the flagship of Indian National Academy of Engineering INAE.

- Prof. Sandeep Chaudhary awarded 1 patent on “composition for preparation of paver block utilizing rubber waste”.
- Prof. Neelima Satyam has been received the CIDC Vishwakarma Academician Award 2021, from Construction Industry Development Council (Established by Planning Commission, Government of India and the Construction Industry) and overseas famous scientist project (Grant no. 2020A1414010268) from Ministry of Science and Technology, Guangdong, China for visiting Shantou University, 2020- 2021
- Dr. Mohd. Farooq Azam became the National correspondent for World Glacier Monitoring Services Switzerland.
- Ms. Minu Treesa Abraham, PhD Student working under the supervision of Prof. Neelima Satyam, Department of Civil Engineering, got selected for the prestigious Humboldt fellowship for Postdocs.
- Mr. Gyanesh Patnaik, PhD Student working under the supervision of Dr. Abhishek Rajput, Department of Civil Engineering, got the best paper award at the International Conference of Structural Engineering and Construction Management (SECON'21).

R&D ACTIVITIES

The department of civil engineering is having expertise in various sub streams of Civil Engineering like Structural, Geotechnical, Transportation, Water resource and Environmental engineering.

Thrust Area of focused research and applications

- Structural Engineering
- Geotechnical Engineering
- Concrete Technology
- Impact mechanics
- Earthquake Engineering
- Environmental Engineering
- Hydrology & Water Resource Engineering
- Disaster Management
- Smart cities, Urban planning
- Municipal Solid Waste Management
- Structural Health Monitoring
- Sustainable Construction
- Water-Energy-Foodnexus
- Himalayan Glaciology

PROJECTS:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	-	-
ONGOING PROJECTS	16	-
COMPLETED	10	-

PUBLICATIONS:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	1	28	37	111

Dr. Abhishek Rajput

Assistant Professor Grade-I and Head of Department
 abhishekrjput@iiti.ac.in
 PhD, IIT Roorkee



Previous Employment details before joining IIT Indore:
 Post Doctoral Fellow at Korean Ships and Offshore Research Institute,
 Republic of Korea, 1 Year Months

Details of Research Area: Structural behaviour of concrete and metals under projectile impact and blast loading, Finite element modelling and simulations, Large deformations of concrete at low, medium and high strain rates, Structural crash-worthiness.

Details of Research Highlights: An experimental and computational study is going on advanced stage where a finite element model has been developed to validate the experimental results and further cater the mechanics of the behaviour of concrete slabs and reinforcement under projectile impact loading.

Details of Projects active:

1. Prestressed concrete under high rate of loading at varying temperature of Indian sub-continent by CSIR.
2. Development of optical sensing system for sustainable construction by MSME.

Total number of Journal Articles published/under process 5

Any other Achievements, Awards and Recognitions:

- IIT Hyderabad chosen and invited me among 48 young stars of the country based on the accomplishments and belongs to academia, scientists, and industrialist across the country. National Frontiers of Engineering Symposium NatFoE-2021, under the flagship of Indian National Academy of Engineering INAE.

- Best Paper Award to Ph.D. student Mr. Gyanesh Patnaik in Seccon 21 International conference of structural engineering and construction management held on May 12-15, 2021, FISSAT Kerala, India.

List of UG course(s) taught: CE 203 Fluid Mechanics-I, CE 307 Design of Structure-I, CE 253 Fluid Mechanics Lab-I, CE 308 Design of Structure-II, CE 358 Design Laboratory-II

Total number of PhD student(s) guided 1.5

Dr. Neelima Satyam

Professor
 neelima.satyam@iiti.ac.in
 PhD, IIT Delhi



Previous Employment details before joining IIT Indore:

IIIT Hyderabad (2009-2017)

Details of Research Area: Landslide hazard assessment, modelling and monitoring, Biocementation, MICP Treatment of sand dunes, Performance of evaluation Hot Mix Asphalt using various fillers, Seismic Hazard Assessment

Details of Research Highlights: We are working on rainfall and earthquake-induced Landslide hazard assessment, monitoring and modelling. In the above mentioned time span we have also worked on the wind erosion mitigation of Calcareous Desert Sand using MICP treated. The research of our group was also focused on the effect of use of various filler materials on the performance of modified asphalt.

Details of Patents filled/awarded:

Nitin Tiwari and Neelima Satyam: Patent application No. 2021105096, Australian Innovation Patent (Status: Granted on 09/05/2022)

Minu Treesa Abraham, Neelima Satyam and Biswajeet Pradhan: Patent No. 2021106606, Australian Innovation Patent (Status: Granted on 10/11/2021)

Details of Projects active: Development of Landslide Early Warning System and Real Time Monitoring, Uttarakhand , NRDMS, DST (NRDMS/LS/34229/2020)

Total number of Books published/under process 10
Total number of Journal Articles published/under process 35
List of UG course(s) taught: CE 408 - Foundation Engineering - Autumn 2021, CE 354 - Soil Mechanics Laboratory-II - Spring 2022, CE 206 - Geodesy and Surveying I - Spring 2022 (co-teaching)
Total number of PhD student(s) guided: 1 (submitted) 2 (ongoing)

Dr. Sandeep Chaudhary

Professor
schaudhary@iiti.ac.in
PhD, Indian Institute of Technology Delhi



Previous Employment details before joining IIT Indore:
Served as a faculty (various positions) at the Department of Civil Engineering, Malaviya National Institute of Technology Jaipur, India from October 1996 – May 2017

Details of Research Area:

1. Sustainable Construction Practices
2. Novel Bricks and Blocks
3. Microstructure and Durability of Concrete
4. Advanced Characterisation Techniques
5. Waste management in building construction materials
6. Structural Engineering
7. Composite Bridges

Details of Research Highlights: The principal domain of research activities in the academic year 2021-22 was Sustainable Construction Practices, with focus on waste upcycling, building product development, and construction practice optimization. As part of waste upcycling extensive work has been carried on valorization of waste tyre rubber as an environment friendly, energy absorbing, fall preventing and slip resisting concrete. Other upcycled wastes include agricultural, industrial, and mining wastes. As an outcome of the research activities three novel products were developed, i.e., bacterial self-healing rubberized concrete, slip and fall based accident preventing concrete pavement, and naturally coloured bi-layered composites. As a part of construction practice optimization studies have been carried on SCM utilization at pan India level and fire safety for robust application of LC3 concrete. In addition to this several other research has been carried out on rheology of concrete, geopolymer, and characterization studies.

Details of Patents filled/awarded: Two patents were awarded

1. Gupta, T., Chaudhary, S., Sharma, R. K., and Jain, S. (2020). "Method of Preparation of Conplas Paver Block Utilizing waste Polythene.", Grant No. 396218, Grant Date : 05/05/2022
2. Gupta, T., Sharma, R. K., Chaudhary, S., and Siddique, S. (2020). "Composition for preparation of Paver Block utilizing rubber waste.", Grant No. 3825236, Grant Date : 27/12/2021

Details of Projects active:

1. "A comprehensive rheology based thixotropic fluid flow model for improved control on 3D printing of concrete" funded by SERB, DST, GOI. (2021- 2024).

2. "Safeguarding heritage structures using seismic metamaterials" funded by SPARC, MHRD. (2019-2021). Collaborating Institutes: Université Aix-Marseille, France and Imperial College London, UK.
3. "Waste characterization and possible gainful utilization of induction melting furnace dust" funded by Jaideep Ispat & Alloys Pvt. Ltd., Moira Sariya, India. (2021-2022).

Total number of Books published/under process	3
Total number of Journal Articles published/under process	10
Total number of courses/conferences/workshops organized	3

Any other Achievements, Awards and Recognitions:

1. Invited by the Government of the Russian Federation to create a world-class research laboratory at NPI, Russia and lead a Project on Carbon-neutral technologies for recycling large-tonnage fuel wastes to produce functional geopolymer materials.
2. A novel developed technology, compressed coloured bi-layer brick, was transferred to the industry as the first technology transfer of IIT Indore.
3. Associate Editor, Journal of The Institution of Engineers (India): Series A: Civil, Architectural, Environmental and Agricultural Engineering
4. Convener for the Conference on (Sustainable Habitat, Energy, Climate Change and Environment" under Madhya Pradesh Vigyan Sammelan & Expo (MPVS -2021) jointly organized by IIT Indore, MPCST and Vigyan Bharati from 22nd-25th December 2021.

List of UG course(s) taught: 1. Structural Mechanics – III (CE 306), 2. Sustainable Construction (CE 412/612), 3. Solid Mechanics (CE 201), 4. Solid Mechanics Lab (CE 251)

List of PG course(s) taught: Sustainable Construction (CE 412/612)

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided: 3 (1 submitted, 2 ongoing)

Dr. Lalit Borana

Assistant Professor Grade-I

lalitborana@iiti.ac.in

PhD, The Hong Kong Polytechnic University



Previous Employment details before joining IIT Indore:

The Hong Kong Polytechnic University, Hong Kong - 08 Months as Post Doc Fellow(2016-2017)

Only Geotechnics Limited, Hong Kong- 1 yr 6 months as Geotechnical Engineer (2015-2017)

The Hong Kong Polytechnic University, Hong Kong - 1 year 05 Months as Post Doctoral research.(2014-2015)

Consulting Engineering Services (India) PVT Ltd, New Delhi: 1 year 05 Month as Assistant Engineer(2008-2009)

Details of Research Area:

- Unsaturated Soil Mechanics
- Fiber optic sensors in Geotechnical Engineering & Geotechnical health monitoring
- Soil-Structure Interface
- Soft Soil and Creep
- Ground Improvement Technics

Details of Research Highlights: Ground Improvement of problematic soils using industrial and other waste materials. Application of Optical Fibre sensing technologies for condition monitoring of structures.

Details of Projects active:

Funding Agency: Ministry of MSME, Government of India. Development of Optical sensing system for sustainable development (2021-2022).

Funding Agency: Council of Scientific and Industrial Research, Government of India.: Pre-stressed Concrete under high rate offloading at varying Temperature of Indian subcontinent. (2021-2024)

Total number of Books published/under process	1
Total number of Journal Articles published/under process	8
Total number of courses/conferences/workshops organized	1
Any other Achievements, Awards and Recognitions:	
1. Outstanding Reviewer for 2021" by the Journal of performance of Constructed Facilities , American Society of Civil Engineers (ASCE).	
2. Editorial Board member for the International Journal of Geosynthetics and Ground Engineering, Springer Nature.	
3. Lead Guest Editor for Special issue on Frontiers for Sustainable and Green Approaches in Geotechnical and Geoenvironmental Engineering in the journal of Frontiers in Built Environment.	
4. Editor's Choice 2020 paper- International Journal of Geosynthetics and Ground Engineering, Springer Nature	
5. Member for International Society for Environmental Geotechnology (2021- till date)	
6. Best Paper Presentation Award - IIT Indore and NIDM- 2021	
7. Panel Member for discussion on unsaturated soil , TC 106- IGS / ISSMGE. Dec 2021	
8. Co-Chair for Materials -II session. GeoChina 2021.	
List of UG course(s) taught: CE-303 Soil Mechanics-I, CE 353-Soil Mechanics laboratory-I, CE-304 Soil Mechanics-II	
Total number of PhD student(s) guided	2

Dr. Manish Kumar Goyal

Professor
mkgoyal@iiti.ac.in
PhD, IIT Roorkee



Previous Employment details before joining IIT Indore:
I worked as a faculty member at IIT Guwahati and previously
I was Post Doctoral Fellow at Nanyang Technological University Singapore
and McGill University, Canada.

Details of Research Area: His research areas include climate change, water resources, biodiversity, hydrological and hydrodynamic modelling, soil carbon sequestration, anthropogenic changes, risk and resilience with big data application.

Details of Research Highlights:

- (1) Analysed extreme precipitation weather events in different climatic conditions
- (2) Investigates how the regional terrestrial carbon dynamics respond to flash droughts
- (3) A field study for assessment of groundwater interactions using isotopes of water in dry and wet region
- (4) A blockchain-based framework to improve the current drought risk management system to facilitate the drought fatalities

Details of Projects active: Multi-hazard Disaster Risk & Resilience: Practical Learning and Step-by-Step Guide for to Improve Disaster Resilience at City Levels ; Compound extremes using variance transform method

Total number of Journal Articles published/under process	19
Total number of courses/conferences/workshops organized	3
Any other Achievements, Awards and Recognitions:	
• Ranked in Top 2% scientist in list prepared by Stanford University and among the top 500 of the world's more than 42000 researchers in the in the sub-area "environmental engineering (Meteorology and Atmospheric Sciences)- 2020 and 2021	
• Editor- PLOS-Climate	
• Prof S N Gupta Memorial Lecture Award, Indian Society of Hydraulics, 2021	
List of UG course(s) taught: Hydrology (CE 301) and Fluid Mechanics-2 (CE 204)	
Total number of PhD student(s) guided	2

Dr. Mohd. Farooq Azam

Assistant Professor Grade-I
farooqazam@iiti.ac.in
PhD, University of Grenoble, France



Previous Employment details before joining IIT Indore:
Worked as INSPIRE Faculty Fellow at National Institute of Hydroxy,
Roorkee between March 2015 and November 2017 (2 years and 9 months).

Details of Research Area: My main research area is impacts of climate change on Himalayan Cryosphere including glaciers, snow covers and permafrost. In my research I work extensively using field methods combined with remote sensing and modelling approaches to understand evolution of Himalayan water resources.

Details of Research Highlights: Published two papers in SCIENCE (one paper as first author and one as co-author)

Details of Projects active:

1. Core Research Grant (CRG): "Mass Balance and Dynamics investigations on Drang Drung Glacier in Zaskar Himalaya", Total Funds = 40.95 Lakhs (Role: PI),
2. ISRO-REPOOND project: "Retrieval of hydrological parameters and development of glacio-hydrological model in Chandra Basin including satellite and field observations. Total budget = 30.1 Lakhs), (Role: PI),
3. Space Application project (SAC) "Glacier Studies on Drang Drung Glacier", Total budget = 34.4 lakhs (Role: PI),
4. British Council Project "Listening to Ice - Learning from Glaciers and Glacial", Total budget = 50 lakhs, Role: Indian PI).

Total number of Journal Articles published/under process:

Published = 10 (peer reviewed) and
under communication = 5 (all peer reviewed journals)

Any other Achievements, Awards and Recognitions:

1. Became National correspondent for World Glacier Services (WGMS, Switzerland). The nomination was made by Department of Science and Technology India.
2. Department of Science and Technology developed a research documentary covering our paper in SCIENCE.
3. Invited to visit Institute of Geosciences (Grenoble, France) for two months in 2022.

List of UG course(s) taught: 1. Water Resource Engineering (CE 402), 2. Design of Open Channel Flow (CE 361), 3. Geodesy II (CE 302)

Total number of PhD student(s) guided: 7 (one student defended and one student did open seminar).

Dr. Saikat Sarkar

Assistant Professor Grade-I
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PhD, IISc Bangalore



Previous Employment details before joining IIT Indore:
Postdoc at Texas A&M University (2015-2017),
Visiting Assistant Professor at IIT Bhubaneswar (2017-2018)

Details of Research Area: Solid mechanics, Fracture and failure of structures, Metamaterials, Inverse problems, Large scale computation in mechanics

Details of Research Highlights:

- i) Proposal of a seismic metamaterial-based strategy towards mitigating earthquake hazard,
- ii) Proposal of a metamaterial-based backing panel for protective armors

- iii) Capturing functional relations in fluid–structure interaction via machine learning,
- iv) A nonequilibrium thermodynamic theory for visco-plastic materials,
- v) Derivative-free theory for beams and plates,
- vi) A pre-stressing-based strategy for simultaneously enhancing strength and toughness of a material with periodic inclusions.

Details of Projects active:

1. SERB, ECR (Government of India) funded research project titled, 'A peridynamics-like framework to predict failure of concrete structures.' (Sole Investigator).
2. SPARC (Government of India) funded research project titled, 'Safeguarding heritage structures using seismic metamaterials.' (co-PI with collaborators from India, France and UK).

Total number of Books published/under process: 2 (book chapters)

Total number of Journal Articles published/under process:

3 International journal papers published,

3 are under review and

3 more are to be communicated soon.

List of UG course(s) taught: Structural Mechanics II (CE 305), Engineering Geology Lab. (CE 359), Structural Mechanics I (CE 202), Geodesy Lab. II (CE 352)

Total number of PG dissertation(s) guided: 2 (as co-PI, students are from the MEMS department)

Total number of PhD student(s) guided: 2 (as sole investigator)

Dr. Kaustav Bakshi

Assistant Professor Grade-I

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PhD, Jadavpur University



Previous Employment details before joining IIT Indore:

- Assistant Professor Grade II, Indian Institute of Technology Indore [December 2018 – May 2021]

- Assistant Professor, Heritage Institute of Technology Kolkata [July 2013 – December 2018]

- Guest Faculty, Jadavpur University Kolkata [July 2010 – December 2015]

Details of Research Area: • Structural Engineering, • Structural dynamics, • Failure predictions, • Composite Structures,

• Numerical simulations, • Stability of thin walled structures, • Plates and shells

Details of Research Highlights: • Static bending of composite shell roofs, • Stiffened laminated composite shell roofs,

• First and progressive ply failure predictions, • Free and forced vibration analysis, • Geometrically nonlinear analysis,

• Buckling analysis of composite shells

Details of Projects active:

1. Title: Third Party Structural Audit of MaharajWada building, Ujjain, Madhya Pradesh. Duration: One month, Funding Agency: Ujjain Smart City Limited. Brief Description: The health assessment of old MaharajWada building was carried out using load test.

2. Title: Vetting of Structural Drawings of 3 control room buildings. Duration: One month Funding Agency: Madhya Pradesh Power Transmission Company Limited. Brief Description: The review of old structural designs and drawings.

Total number of Books published/under process

2

Total number of Journal Articles published/under process:

1. K. Bakshi (2021), A Numerical Study on Nonlinear Bending Performance of Transversely Loaded Composite Singly Curved Stiffened Surfaces, The Journal of Strain Analysis for Engineering Design, vol. 56, No. 7, pp. 430 - 442.

2. M. Paul, K. Bakshi and RB Sahu (2021), An Analytical Model for Radial Consolidation Prediction Under Cyclic Loading, Geomechanics and Engineering, vol. 26, No. 4, pp. 333 - 343
 3. K. Bakshi (2021), A Numerical Study on Nonlinear Vibrations of Laminated Composite Singly Curved Stiffened Shells, Composite Structures, vol. 278, pp. 114718.

Any other Achievements, Awards and Recognitions: Best paper of a session awarded during ASMA 2021 organized by NIT Silchar

List of UG course(s) taught: Design Lab I (CE 357), Design of Structures III (CE 404), Prestressed Concrete (CE 448), Structural Mechanics I (CE 202) and Geodesy Laboratory I (CE 257)

Total number of PhD student(s) guided 1

Dr. Guru Prakash

Assistant Professor Grade-I

guruprakash@iiti.ac.in

PhD, University of Waterloo, Canada



Previous Employment details before joining IIT Indore:

Post-doctoral fellow (2017-2018) - University of Waterloo, Canada

Details of Research Area:

1. Structural health monitoring
2. Damage detection and localization in steel beams
3. Reliability assessment
4. Impact loading
5. Design of rubberised concrete for impact loading

Details of Research Highlights:

1. Ballistic performance of quasi-isotropic CFRP laminates under low velocity impact
2. Damage detection and localization in bridge components using static and dynamic responses
3. Reliability assessment of bridges under fatigue loading
4. A Bayesian approach to dam health monitoring using dam responses
5. A review of dam health monitoring literature
6. Determination of optimum content of rubberised concrete for impact loading

Details of Projects active:

Project: Assessment of road condition and repair cost estimation using a cyber physical system.

Funding Agency: IITI DRISHTI CPS Foundation under NM-ICPS scheme

Total number of Journal Articles published/under process 6

Any other Achievements, Awards and Recognitions: Reviewed several journal articles including Journal of reliability engineering and system safety, Journal of mechanics based design of structures and machines, and Journal of mechanical systems and signal processing.

List of UG course(s) taught: CE-307 Design of Structure-I, CE 308- Design of structure-II, and CE 203- Fluid Mechanics-I

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Priyansh Singh

Assistant Professor Grade-I

priyansh@iiti.ac.in

PhD, Indian Institute of Technology Delhi



Previous Employment details before joining IIT Indore:

Assistant Professor, Birla Institute of Technology and Sciences Pilani, Pilani Campus (Feb 2019 -June 2020)

Visiting Faculty, Birla Institute of Technology and Sciences Pilani, Pilani Campus (July 2018 -Feb 2019)

Details of Research Area:

- Probabilistic approach to characterise laboratory rutting and fatigue behaviour
- Incorporation of waste plastic in asphalt mixture
- Effect of compaction energy on aggregate degradation
- Characterisation of permanent deformation of asphalt mixture.
- Back-calculation methods for prediction of pavement layer moduli.

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 1

List of UG course(s) taught: IC153: Engineering Graphics, CE 257 Civil Engineering Drawing, ES 302 Environmental Studies: Scientific and Engineering Aspects, CE 359 Engineering Geology Laboratory, CE 310 Transportation Engineering-I, CE 406 Transportation Engineering II

Total number of PhD student(s) guided 1

Dr. Gourab Sil

Assistant Professor Grade-II

gourabsil@iiti.ac.in

PhD, IIT Bombay



Previous Employment details before joining IIT Indore:

i) Worked as research associate in Dept. of Civil Engineering, IIT Bombay 4 months from May 2019 to September 2019

ii) Worked as Visiting Faculty in Dept. of Civil Engineering, BITS Pilani Rajasthan 9 months from September 2019 to June 2020.

Details of Research Area: Highway Safety, Performance Based Geometric Design of Highways

Details of Research Highlights: Research work on "Drivers' Ability to Distinguish Consecutive Horizontal Curves" has been accepted for publication in Canadian Journal of Civil Engineering. It highlights that drivers' perception of curve sharpness is an important factor for designing a consistent and safe highway alignment. A model for predicting drivers' ability to distinguish consecutive horizontal curves was proposed. Using that model design nomograms and a geometric design process have been developed for relevant applications.

Details of Projects active: Title: Analysis and Modelling of Drivers' Perception and Performance of Operational Measures for Geometric Design Consistency and Safety Evaluation of High-Speed Roadways Sponsoring agency: Science and Engineering Research Board (SERB) Grant amount: 16.9 L Role: PI Duration: 31 Dec. 2021 - Ongoing

Total number of Journal Articles published/under process 3

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: International Travel Support (ITS) (for young scientist) by Science & Engineering Research Board (SERB).

List of UG course(s) taught: Transportation Engineering I, Transportation Engineering II, Engineering Geology, Geodesy Lab II

Total number of PhD student(s) guided: 2 (ongoing)

Dr. Mayur Shirish Jain

Assistant Professor Grade-I

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PhD, Indian Institute of Technology Guwahati



Previous Employment details before joining IIT Indore:

National Institute of Construction Management and Research, Pune (2 years 6 months)

Details of Research Area: Rapid Composting Techniques; Kinetic modelling of Bio-waste degradation; Circular economy in environmental engineering; Soil Revitalization via waste utilization; C&D Waste quantification and environmental risks; Techno-economic and sustainability assessment.

Details of Research Highlights: My research area focused mainly in solid waste management especially biological treatment of organic waste. In-vessel composter found to be very effective to manage successfully treated wastes such as sewage sludge, aquatic waste and municipal waste. The study findings indicated addition of recalcitrant carbon aid in achieving better compost conditions and nutritional compost quality. Further, also research indicated that addition of such compost in soil improved soil physical and biological properties which in further aid in improving fertility of soil.

Details of Projects active: Potential of the emerging Institute in India towards sustainable development goal via solid waste management (Funded by YFRSG IITI)

Total number of Journal Articles published/under process

4

List of UG course(s) taught: CE-208 - Water and Wastewater Engineering; ES-302 - Environmental Studies: Scientific and Engineering Aspects

Dr. Ashootosh Mandpe

Assistant Professor Grade-II

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PhD, Academy of Scientific & Innovative Research (AcSIR),

CSIR - National Environmental Engineering Research Institute (CSIR-NEERI),
Nagpur

Previous Employment details before joining IIT Indore:

I have got awarded his Ph.D. (Engineering) from the Academy of Scientific & Innovative Research (AcSIR) with a 9.53 CGPA in April 2021.

The title of my doctoral thesis was titled 'Sustainable Utilization of Fly Ash in In-vessel Composting of Agricultural Wastes' from which I have published five research/review articles in high impact factor, SCI-indexed, peer-reviewed journals.

I had cleared various national-level examinations multiple times, including GATE and UGC-NET.

I was also awarded fellowships like CSIR-Direct SRF, UGC-NET JRF, and BANRF-BARTI (Govt. of Maharashtra) to pursue his doctoral studies.

I have presented my work at many international conferences and has won several awards.

I have thorough knowledge regarding various aspects of Environmental Engineering, specifically in Solid Waste Management and have experience of more than five years (August 08, 2016 - September 12, 2021) of working in the CSIR-National Environmental Engineering Research Institute (CSIR-NEERI), Nagpur.

For my doctoral work, I have developed a rapid composting technology for field application and will be filing a patent for the same.

Apart from this, I have also been involved actively in various research and consultancy projects during his stay at CSIR-NEERI, Nagpur.

I was also awarded Best Young Researcher Award (Late Shri. P.S. Dutt Memorial Award) for Research Scholars by CSIR-NEERI, Nagpur in 2019.

Details of Research Area: I am currently working in the field of Solid Waste Management in general, focusing on the Biovalorization of Municipal solid wastes, Contaminants of emerging concern (CECs), Remediation of Persistent Organic Pollutants, Landfill mining, Waste to Energy, and Circular Economy.

Details of Research Highlights: During July 2021 - June 2022, Dr. Ashootosh Mandpe has published 5 research articles working in the area of Bioremediation of persistent organic pollutants, Lifecycle assessment of solid waste management, Anaerobic digestion of municipal solid wastes in peer-reviewed high-impact factor SCI-indexed journals such as Bioresource technology (Elsevier), Chemosphere (Elsevier), Environmental Research (Elsevier), Environmental Geochemistry and Health (Springer Nature), Environmental Science and Pollution Research (Springer Nature). He has also published 6 book chapters in Elsevier, Taylor and Francis, New India Publishing House during the aforementioned duration.

Till date, he has published 20 research/review articles, 9 book chapters having 188 google scholar citations and have generated a cumulative impact factor of 141.004 (h Index: 7, i10 Index: 7).

1. Ashootosh Mandpe, Ayushman Bhattacharya, Sonam Paliya, Vinay Pratap, Athar Hussain, Sunil Kumar, 2022. Life-cycle assessment approach for municipal solid waste management system of Delhi city. Environmental Research, p.113424. (Impact Factor: 8.431)



2. Sonam Paliya, Ashootosh Mandpe, M. Suresh Kumar, Sunil Kumar, 2021. Polybrominated diphenyl ethers in the Environment: A wake-up call for concerted action in India. Environmental Science and Pollution Research, pp.1-23. <https://doi.org/10.1007/s11356-021-15204-7> (Impact Factor: 5.190)
3. Sonam Paliya, Ashootosh Mandpe, M. Suresh Kumar, Sunil Kumar, Rakesh Kumar, 2022. Assessment of polybrominated diphenyl ether contamination and associated human exposure risk at municipal waste dumping sites. Environmental Geochemistry and Health, pp.1-17. (Impact Factor: 4.898)
4. Takum Nalo, Sonam Paliya, Ashootosh Mandpe, Nabam Rich, Ajay Bharti, Sunil Kumar, 2022. Co-digestion of municipal solid waste with lignocellulosic waste in mesophilic environment. Chemosphere, p.133852. (Impact Factor: 8.943)
5. Sonam Paliya, Ashootosh Mandpe, Divyesh Bhisikar, M Suresh Kumar, Sunil Kumar, 2022. Polybrominated diphenyl ethers (PBDEs) in Indian wastewater treatment plant: Occurrence, mass flow and removal. Chemosphere, p.135055. (Impact Factor: 8.943)
- Details of Patents filled/awarded: Patent titled 'Process optimization for utilization of fly ash as bio-compost enhancer' has been submitted to CSIR-URDIP and is in process of filing in Indian Patent Office.

Details of Projects active:

- Completed a consultancy project titled 'Vetting of Detailed Project Report titled "Performance Evaluation of the Existing APCT with Respect to Requirement of Installation of Secondary Fugitive Emission Control System.' costing 1, 77,000/- Rupees.
- I am actively working on a project titled "Bio-valorization of Organic Fraction of Municipal Solid Waste through Biomethanation and Composting Techniques: A Zero Waste Discharge Approach' under Young Faculty Research Seed Grant (YFRSG) scheme.

Total number of Journal Articles published/under process: 5 research articles were published, and 2 articles were communicated in SCI-indexed journals.

Total number of courses/conferences/workshops organized: I was a Panelist in Sessions "C1-C5: Technology & Innovation" in Sixth India Water Impact Summit (IWIS-2021) themed "River Resources Allocation - Planning and Management at the Regional Level" held during December 09-14th 2021.

Any other Achievements, Awards and Recognitions:

- Invited as a Panelist in Sessions "C1-C5: Technology & Innovation" in Sixth India Water Impact Summit (IWIS-2021) themed "River Resources Allocation - Planning and Management at the Regional Level" held during December 09-14th 2021.
- Delivered a lecture on 'ठोस अपशिष्ट: हानिकारक प्रभाव एवं प्रबंधन' in 'विज्ञान पर चर्चा – अधिवेशन' organized by 'Ek Bharat – Shrestha Bharat' Club at Indian Institute of Technology, Indore on February 23, 2022.
- Delivered lecture on 'Rules And Legislations for Solid Waste Management in the Indian Context' in AICTE sponsored One Week Online Short-Term Training Program on "Neoteric Developments in Solid Waste Management" organized by National Institute of Technology Arunachal Pradesh during March 21-25th 2022
- Delivered a lecture on 'Sustainable Approaches for Valorization of Agricultural Waste' in One Month Certificate Course on 'Biofertilizer formulation from agricultural waste and crop improvement through Biotechnology" organized by Department of Biotechnology and Department of Environment Science, Kamla Nehru College, RTM Nagpur University on April 05, 2022.

List of UG course(s) taught: CE-208 Water and Wastewater Engineering; ES-302 Environmental Studies: Scientific and Engineering Aspects

List of PG course(s) taught: ES-302 Environmental Studies: Scientific and Engineering Aspects

Dr. Priyank J. Sharma

Assistant Professor Grade-II

priyanksharma@iiti.ac.in

PhD, Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat



Previous Employment details before joining IIT Indore:

Assistant Professor (on contract), Punjab Engineering College

(Deemed to be University), Chandigarh (Feb. - June 2021; Aug. - Oct. 2021)

Postdoctoral Scholar, Florida Atlantic University, Boca Raton, Florida, USA (Apr. - Sept. 2020)

Assistant Manager, Essar Projects (India) Limited, Jamnagar, Gujarat (June 2010 - July 2012)

Details of Research Area:

- Hydroclimatology and Climate Extremes; Climate Change Impact on Basin Hydrology;
- Streamflow Analysis and Modelling; Hydroinformatics

Details of Research Highlights:

- (1) Climate change impact assessment on river basin scale;
- (2) Improving streamflow predictions through machine learning approaches;
- (3) Climate variability influences on hydroclimatic extremes;
- (4) Development of methodologies for hydrologic model evaluation

Details of Projects active:

- (1) Title - Improving Hydrologic Predictions through Machine Learning Approaches; Funding agency - Young Faculty Research Seed Grant, IIT Indore;
- (2) Title - Study of water oozing problem at Dalchi village; Funding agency - NTPC Limited

Total number of Books published/under process:

- (1) Book Title - Stationarity: A Gentle Introduction; Authors - Ramesh S. V. Teegavarapu and Priyank J. Sharma; Publisher - World Scientific Publishing Co. Pte. Ltd., Singapore; Status - In progress (to be completed by Sept. 2022);
- (2) Book Title - Climate Change Impact on Water Resources: Proceedings of 26th International Conference on Hydraulics, Water Resources and Coastal Engineering (HYDRO 2021); Editors - P. V. Timbadiya, Vijay P. Singh and Priyank J. Sharma; Publisher - Springer Nature Singapore Pte Ltd.; Status - In progress (to be completed by Sept. 2022);
- (3) Book Title - Hydrology and Hydrologic Modelling: Proceedings of 26th International Conference on Hydraulics, Water Resources and Coastal Engineering (HYDRO 2021); Editors - P. V. Timbadiya, P. L. Patel, Vijay P. Singh and Priyank J. Sharma; Publisher - Springer Nature Singapore Pte Ltd.; Status - In progress (to be completed by Sept. 2022)

Total number of Journal Articles published/under process:

- (1) Teegavarapu, R. S. V., and Sharma, P. J. (2021). Non-overlapping block stratified random sampling approach for assessment of stationarity. *Journal of Hydrologic Engineering*, 26(7), 04021020-1-25.;
- (2) Sharma, P. J., and Teegavarapu, R. S. V. (2021). Influences of local hydroclimatology and teleconnections on Florida's precipitation and temperature variability. *Hydrological Processes*, 35(9), e14347 1-17.;
- (3) Teegavarapu, R. S. V., and Sharma, P. J. (2021). Influences of climate variability on regional precipitation and temperature associations. *Hydrological Sciences Journal*, 66(16), 2395-2414.;
- (4) Teegavarapu, R. S. V., Sharma, P. J., and Patel, P. L. (2022). Frequency-based performance measure for hydrologic model evaluation. *Journal of Hydrology*, 608, 127583, 1-22.;
- (5) Sharma, A., Patel, P. L., and Sharma, P. J. (2022). Influence of climate and land-use changes on the sensitivity of SWAT model parameters and water availability in a semi-arid river basin. *Catena*, 215, 106298.;
- (6) Teegavarapu, R. S. V., and Sharma, P. J. (2022). Reply to Discussion of "Nonoverlapping Block Stratified Random Sampling Approach for Assessment of Stationarity", *Journal of Hydrologic Engineering*. [Accepted]

Total number of courses/conferences/workshops organized: Co-organizing secretary, 26th International Conference on Hydraulics, Water Resources and Coastal Engineering (HYDRO 2021) held at SVNIT Surat, India during December 23-25, 2021.

Any other Achievements, Awards and Recognitions:

- (1) Panelist at the 1st IAHR Online Forum in the Technical Session on "Climate-Change Sensitive Water Resources Management" on July 01, 2021.
- (2) Panelist in the 6th India Water Impact Summit [IWIS-2021] organized by the Centre for Ganga River Basin Management and Studies (cGanga), IIT Kanpur under the aegis of the National Mission for Clean Ganga (NMCG), Government of India during 9-14 December 2021.

List of UG course(s) taught: (1) Geodesy-I (CE 206), (2) Fluid Mechanics Lab-II (CE 254)

Department of Computer Science and Engineering

The Department of Computer Science and Engineering (CSE) was set up in July 2009. It offers Bachelor of Technology (BTech), Master of Science by Research (MS Research), and Doctor of Philosophy (PHD) programs. The department adopts a modern approach to teaching wherein students are rendered in adequate academic freedom to innovate and learn in the process. State of the art facilities including the latest software and advanced hardware are available in various laboratories for the use in both teaching and research. This facilitates adequate implementation of major BTech projects and for verification and validation of research results. The faculty members of the department are from diverse streams and specializations. Being a part of an emerging and relatively new institute, together with extremely competent research faculty, the CSE faculty of IIT Indore offer a unique interactive platform for the students to explore the arena of fundamental and applied research.

Academic Programs

The Department of CSE offers Bachelor of Technology (BTech), Master of Science by Research (MS Research), and Doctor of Philosophy (PHD) programs. A total of 35 PHD, 15 MS Research and 463 B. Tech students have graduated from the Department of CSE until July 2022. Currently, the department has 28 PHD, 20 MS Research and 240 BTech students.

NUMBER OF FACULTY MEMBERS:	
PROFESSOR	
ASSOCIATE PROFESSOR	
ASSISTANT PROFESSOR GRADE II	
ASSISTANT PROFESSOR GRADE I	
NO. OF POST DOC FELLOWS	

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	82	83
PhD	-	5
MS	12	8

R&D Activities

Current CSE faculty members and students focus on a wide range of emerging research areas. These include

- Networking, Network Security, System Security, Cloud Computing, Cloud Security, Dependable Systems & Network Management, and Enterprise Management.
- Embedded Systems (Cyber-physical Systems, Internet-of-Things, Wireless Sensor Networks, etc.), their Formal Verification (Model Checking, Abstract Interpretation, Program Transformation & Generation, Program Analysis) and Semantics-based Emulation of Languages & Systems.
- Algorithms and Theoretical Computer Science, Algorithmic Graph Theory, Computational Complexity.
- Computational Science & Engineering, Numerical Linear Algebra, Numerical Analysis and Optimization
- Big Data Analytics, Soft Computing, Computational Intelligence, Artificial Intelligence, Learning Algorithms, Neural Networks, Genetic Algorithms, Evolutionary Approaches, and Game Artificial

Intelligence (AI)..

- Pattern Recognition, Computer Vision, Image Processing, Biometrics, Human-Computer Interaction, Machine Learning, and Deep Learning
- Hardware Security, Side Channel Analysis Attacks on Cryptographic Implementations, Security Aspects in Emerging VLSI Technologies, Security of Hardware Accelerator and Machine Learning for VLSI.
- CAD-VLSI, EDA, High-Level Synthesis, IP core Security, Hardware Trojan, Fault Security, Digital Watermark in Digital Chip, Optimization of Hardware Accelerators, and Design Automation.
- Service-Oriented Systems, Dynamic Systems, Geographically Distributed Development Environments, Agile Techniques, Software-as-a-Service and Wireless Sensor Networks.
- Natural Language Processing, Social Network Analysis, Information Retrieval, and Data Mining.
- Autonomous vehicles, Certification framework for Safety Assurance in Autonomous Vehicles.

Notable Activities in the Department

1. THE World University Rankings 2022: Indian Institute of Technology Indore ranked 201–250 globally and 2nd in India.
2. A total of 35 PHD, 15 MS Research and 463 B. Tech students have graduated from the Department of CSE until July 2022.
3. Miten Shah and team secured 1st ranked among 22 other IITs for Inter IIT Tech Meet 10.0 problem statement "Blue Yonder's Next-Gen Optimized Delivery Ecosystem".
4. Graduating student, Mr. Kasturi Ajit Sharma, of CSE receives The Institute Silver Medal in the 2021 Convocation of IIT Indore.
5. Sarthak Jain secured 1st position in Bruteforce 3.0 Cybersecurity Hackathon organized by HackerEarth.
6. Prof. Aruna Tiwari is appointed as a Woman Independent Director on the board in M.P.Paschim Kshetra Vidyut Vitaran Company Limited in Jan 2022.
7. Dr. Anirban Sengupta is elected Fellow of IETE in 2022.
8. Dr. Anirban Sengupta is Featured in 'Stanford University's Top 2% Scientists as well as in 'Stanford University's Top 0.27% Scientists in Computer hardware and architecture area' in 2021.

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	6	-
ONGOING PROJECTS	14	-
COMPLETED	3	-

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	4	5	14	30



Dr. Somnath Dey

Associate Professor and Head of Department
 Email@iiti.ac.in
 PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore:

Senior Project Officer / Researcher: SRIC, IIT Kharagpur: Oct. 2007 to Dec. 2012

Present academic association(s) with other Institution(s): Associate Professor

Details of Research Area: Biometric Security, Fingerprint Liveness Detection, Fingerprint MasterPrint Attack Detection, Face Presentation Attack Detection, Traffic Sign-board Detection and Recognition

Details of Research Highlights: Biometric recognition system refers to automatic recognition of individuals based on their unique physical or behavioural traits. The recent advancement in technologies has made biometric systems more affordable and as a result they are deployed in a variety of smart consumer devices such as mobile phones and tablets. However, it suffers from security and privacy invasion challenges. The compromise of a biometric data may cause permanent loss of identity of a user since biometric data can be spoofed. My research group is working to address these issues. They are looking for a sufficiently robust liveness detection and presentation attack detection mechanism for fingerprint and face biometrics. The proposed method are developed based on deep learning methods.

Details of Projects active:

- 1) Fingerprint Liveness Detection: The objective of this research is to develop a novel fingerprint liveness detection technique which can work for cross material and cross sensor.
- 2) Face Presentation Attack Detection: The objective of this research is to design and develop a methodology to prevent different types of presentation attack for face recognition system.
- 3) Traffic Sign-board Detection and Recognition: The objective of this research is to develop a real time algorithm for detecting and recognizing traffic in unconstrained environment in Indian roads.

Total number of Journal Articles published/under process 1

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

Senior Member IEEE

Member of High Power Committee for GST Council form by Chief Minister, Madhya Pradesh.

TPC Member: The Sixth IAPR International Conference on Computer Vision & Image Processing (CVIP2021)

Track Chair: 3rd International Conference on Frontiers in Computing and Systems (COMSYS-2022) 19th - 21st December 2022

List of UG course(s) taught: CS 302- Computer Graphics and Visualizations, CS 352- Computer Graphics and Visualizations Lab

List of PG course(s) taught: CS 412/CS 612-Pattern Recognition

Total number of PG dissertation(s) guided

2

Total number of PhD student(s) guided

2

Dr. Narendra S. Chaudhari

Professor

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PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

Nanyang Technological University, Singapore, Duration 2001 to 2009

(7 years 7 months)

Ministry of Defense Govt of India (attached to Devi Ahilya Univ., Indore), Duration: 1988 to 2001 (13 Years 6 months)

Present academic association(s) with other Institution(s):

Margadarshak (honorary assignment as per AICTE Scheme) to Avantika University, Ujjain (M.P.)

Details of Research Area: AI and machine learning, game AI, network security and mobile computing, novel neural network models like binary neural nets and bidirectional nets, context free grammar parsing, optimization, parallel algorithms, and graph isomorphism problem.

Details of Research Highlights: Some important contributions:

(i) Adversarial Learning in Deep Neural Networks,

(ii) Authentication Protocols and Security Mechanisms for Cellular Networks,

(iii) rerouting strategies in Multi-Protocol Label Switching (MPLS) networks,

Total number of Books published/under process: Discrete Mathematics (Under Process; as per AICTE Model Curriculum) AICTE revised syllabus, to be reviewed and published by AICTE)

Total number of Journal Articles published/under process

4

Total number of courses/conferences/workshops organized

2

Any other Achievements, Awards and Recognitions:

(1) Juror - Tata InnoVista, annual flagship event for recognizing and celebrating innovations of Tata companies, July 2021

(2) Juror - Aegis Graham Bell Awards (AGBA) for new innovators in the area of Data Science and Artificial Intelligence - Innovations in Analytics, Feb. 2022

(3) Juror - Aegis Graham Bell Awards (AGBA) for innovations in Digital Transformations in the area of Telecom and Banking, Nov. 2021

(4) Reviewer for book: Artificial Intelligence: Search Methods for Problem Solving, Cambridge University Press, Oct. 2021.

Reviewer - PhD. Theses from IIT Roorkee, IT BHU, Varanasi, JNTU, Hyderabad, University of Mauritius.

(5) Reviewer - Journals: IEEE Access, Neurocomputing, Indonesian Journal of Electrical Engineering and Computer Science, etc.

List of UG course(s) taught: 2 Course Code: CS 201: Discrete Mathematical Structures, CS 202: Automata Theory and Logic

Dr. Aruna Tiwari

Professor
artiwari@iiti.ac.in
PhD, RGPV Bhopal (MP)



Previous Employment details before joining IIT Indore:

Associate Professor in Shri Govindaram Sakseria Instt. of Technology & Science, Indore (MP) from 2008 to 2012.

Reader in Shri Govindaram Sakseria Instt. Of Technology & Science, Indore (MP) from 2005 to 2008.

Lecturer in Shri Govindaram Sakseria Instt. Of Technology & Science, Indore (MP) from 2001 to 2005.

Lecturer in Shri Vaishnav Instt. Of Tech. & Sc., Indore from 1997 to 2001

Present academic association(s) with other Institution(s):

ICAR-Indian Institute of Soybean Research, Indore, CSIR Central Engineering Electronics Research Institute Pilani, IIT Jodhpur, CDAC Pune, NCL Pune, University of York, UK, Mahindra University Hyderabad

Details of Research Area:

- (a) Scalable machine learning for Big Data Handling
- (b) Design of Generative Adversarial Network for the anomaly detection in Video
- (c) High performance computing of ML algorithms for Genomics data
- (d) Design of Evolutionary & Multilabel classifiers

Details of Research Highlights: Scalable machine learning algorithms are extended & testing is carried out on Supercomputing infrastructure; PARAM Shakti and PARAM Siddhi accessed under NSM funded project. These algorithms are being tested for real life Plant Genomics data provided by ICAR-IISR Indore Deep learning algorithms are being developed and further enhanced for designing multi-label classification and anomaly detection in video data. For this, a HPC server is established under the MeitY funded Consortium Project on "Resource Constrained AI".

Details of Patents filled/awarded: Dr. Ashish Verma, Dr. Aruna Tiwari, Dr. Neetesh Kumar, Sanjay Patidar, Upendra Singh, Road Asset Management, India, 202041057251 , 2022

Details of Projects active:

(1) National Supercomputing Mission, HPC Applications Development Funded Research Project by DST in collaboration with the Ministry of Electronics and Information Technology (MeitY): "A Novel Scalable High-Performance Machine Learning Algorithms for NGS Analysis of Genomics Data at Exascale Level".

(2) Council of Scientific and Industrial Research (CSIR), Delhi, Govt. of India: "A novel integrated scalable system for Protein sequence and SNP data analysis using clustering and classification".

(3) The Ministry of Electronics and Information Technology (MeitY), Union Government of the Republic of India: Resource Constrained Artificial Intelligence: "Design of Novel Algorithms for Action Recognition using Generative Adversarial Networks".

(4) Indo-Norwegian collaboration in intelligent offshore mechatronics systems (INMOST), Norwegian Research Council (RCN) under INTPART Scheme: Mobility Project (Approved in 2020 for three years).

Total number of Books published/under process 2

Total number of Journal Articles published/under process 7

Total number of courses/conferences/workshops organized 3

Any other Achievements, Awards and Recognitions:

Organized two national level workshops on "Sustainable Agriculture Using Bharat Agri-Grid Ecosystem" (28-29 June 2022) and "High Performance Computing (HPC) in the Agriculture Domain" (14-16 July 2021) under the National Supercomputing Mission (NSM) from Supercomputer Education and Research Center (SERC) is hosted by IIT Indore, ICAR-IISR Indore, and Mahindra University Hyderabad in collaboration with IIT Jodhpur, C-DAC Pune, IISC Bangalore, CEERI-Pilani, NCL Pune and IIT Kharagpur in virtual mode.

Delivered a talk on AI/ML in the program of "Vigyan Par Charcha" in association with the Rajya

Shiksha Kendra (M.P. Govt.), Bhopal Madhya Pradesh, on September 15, 2021.
 Special Session for the IEEE International Conf. on Fuzzy Systems 2021 (FUZZ-IEEE 2021), Luxembourg, Handling Uncertainty in Interpretable AI on "Scalable Incremental Fuzzy Learning Techniques for Big Data and Genome Sequence Analysis" from Jul 11-14, 2021.
 Recruited as a Professor at IIT Indore on Feb 17, 2022.
 Appointed as a Woman Independent Director on the board in M.P. Paschim chetra Vidyut Vitaran Company Limited in Jan 2022.
 Acted as convener for the track on "Gender Issues in Science & Technology" in Madhya Pradesh Vigyan Sammelan 2021 and organized 2 pre-conference events.
 Invited speaker at TCS iON DIRECT Channel for the webinar on the topic "Careers in Artificial Intelligence" for Students (9th onwards/UG/PG Students) from across India.
 Invited for the panel on "Technology Conclave 2021" organized by C-DAC, July 29, 2021. Title of the presented talk: "Scalable Feature Extraction and Clustering Algorithms: Its Application to Genome Sequence Analysis".
 Organized First one day RuTAG (Rural Technology Action Group) Workshop at IIT Indore in collaboration with IIT Delhi on Nov 11, 2021. One product is copyrighted: "A mobile app for Ground Water Management" in collaboration with RuTAG IIT Delhi.

List of UG course(s) taught: Machine Learning: CS403, Computational Intelligence: CS304N, Computational Intelligence Lab: CS354
 List of PG course(s) taught: Machine Learning: CS603
 Total number of PG dissertation(s) guided 5
 Total number of PhD student(s) guided 5

Dr. Abhishek Srivastava

Professor
 asrivastava@iiti.ac.in
 PhD, University of Alberta, Canada



Previous Employment details before joining IIT Indore:
 Assistant Professor, Department of Computer Science and Software Engineering, Rose-Hulman Institute of Technology, Terre Haute, Indiana, USA Duration: September 2011 to May 2012

Present academic association(s) with other Institution(s): Visiting Professor, Purdue University, 1 month, April 2022

Details of Research Area: The broad area of my research is service-oriented systems most commonly realised through web-services. More recently, my group has been interested in applying these ideas in the realm of Internet of Things. The ideas explored include coming up with technology agnostic solutions for seamlessly linking heterogeneous IoT deployments across domains. Further, we are also delving into utilising Machine Learning adapted for constrained environments to effectively make sense of the huge amounts of data that emanate from the vast network of IoT deployments.

Details of Research Highlights: The research endeavours of my group at early detection of fires at the Melghat Tiger Reserve was covered by INDIAai in July 2021; by the Times of India in September 2021; and by the Alberta Machine Intelligence Institute (AMII), Canada Newsletter in October 2021.

Details of Projects active:

- 1) Ensuring Data Security in IoT Environments through Machine Learning Techniques; Funding Agency: IITI DRISHTI CPS Foundation under NM-ICPS; Role: Principal Investigator (2022-2023);
- 2) An approach to localise fires and optimise distribution of fire detection nodes at the Melghat Tiger Reserve; Funding Agency: Defries-Bajpai Foundation, USA; Role: Principal Investigator (2022-2024);
- 3) Use of Hidden Markov Models to Effectively Assess Rumours on Social Networks; Funding Agency:

Science and Engineering Research Board, Government of India (MATRICS scheme); Role: Principal Investigator (2020-2023);

4) Transnational Partnership for Excellent Research and Education in Disruptive Technologies for a Resilient Future; Funding Agency: Research Council of Norway (An INTPART Project); Role: Indian Principal Investigator (2020-2023)

Total number of Journal Articles published/under process:

1) Arun Kumar, Zhijie Wang, Abhishek Srivastava, A Novel Approach for Classification in Resource Constrained Environments, ACM Transactions on Internet of Things, 2022;

2) Seemandhar Jain, Prarthi Jain, Prabhat K. Upadhyay, Jules M. Moualeu, Abhishek Srivastava, An Energy Efficient Health Monitoring Approach with Wireless Body Area Networks, ACM Transactions on Computing for Healthcare, 2021;

3) Ankit Jain, Abhishek Srivastava, Privacy-Preserving Efficient Fire Detection System for Indoor Surveillance, IEEE Transactions on Industrial Informatics, 2021.

Total number of courses/conferences/workshops organized: Organised the Second International Workshop on Big Data Driven Edge Cloud Services (BECS 2022), co-located with the ICWE 2022, Bari, Italy, July 8, 2022

Any other Achievements, Awards and Recognitions:

1) Delivered an 'invited talk' on Monitoring Assisted Living Environments at Purdue University in April 2022

2) Invited to participate in 'AI Week' organised by the Alberta Machine Intelligence Institute (AMII), Canada, held in Edmonton, Canada in May 2022

List of UG course(s) taught: CS 103, Computer Programming, IC 151, Computer Programming Laboratory

Total number of PG dissertation(s) guided: 2 (graduated); 2 (ongoing)

Total number of PhD student(s) guided: 4 (ongoing)

Dr. Aniruddha Singh Kushwaha

Assistant Professor Grade-I

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PhD, Indian Institute of Technology (IIT) Bombay



Previous Employment details before joining IIT Indore:

Senior Research Scientist (IIT-Bombay) 2 years and 4 months

Details of Research Area: Software Defined Networking, Network Programmability, High Speed Network Design

Details of Projects active: "Deadline aware scheduling using network programmability" Young Faculty Seed Research Grant IIT-Indore

Total number of Journal Articles published/under process

1

Dr. Anirban Sengupta

Associate Professor

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PhD, Toronto Metropolitan University

Previous Employment details before joining IIT Indore:

Toronto Metropolitan University



Details of Research Area: Hardware Security, CAD for VLSI

Details of Patents filled/awarded:

Anirban Sengupta "Design Space Exploration System and Method Thereof Using a Bacterial Foraging Optimization Mechanism", Patent No. 366323, 2021, Granted by Indian Patent Office (IPO)

Anirban Sengupta "Design Space Exploration of Optimal k-Cycle Transient Fault Tolerant Datapath Based on Multi-Objective Power-Performance Tradeoff", Patent No. 392356, 2022, Granted by Indian Patent Office (IPO)

Total number of Books published/under process:

Aditya Anshul, Rahul Chaurasia, Anirban Sengupta "Securing Hardware Coprocessors against Piracy using Biometrics for Secured IoT systems", IET Book "Artificial Intelligence for Biometrics and Cybersecurity", 2022, Invited Book Chapter Aditya Anshul, Shikha Gupta, Anirban Sengupta, Hardik Panchal "Global Value Chain Vs Supply Chain for IoT, Consumer Electronics, and Digital Semiconductors", UTHM Book "Evolution of Information, Communication and Computing System", 2022, Invited Book Chapter Anirban Sengupta "Introduction: Secured and optimized hardware accelerators for DSP and image processing applications", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Cryptography driven IP steganography for DSP Hardware Accelerators", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Double Line of Defence to Secure JPEG Codec Hardware for Medical Imaging Systems", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Multimodal Hardware Accelerators for Image Processing Filters", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Integrating Multi-key based Structural Obfuscation and Low-level Watermarking for Double Line of Defence of DSP Hardware Accelerators", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Fingerprint Biometric for Securing Hardware Accelerators", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Key-triggered Hash-chaining based Encoded Hardware Steganography for Securing DSP Hardware Accelerators", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta "Designing Secured N-point DFT Hardware Accelerator using Obfuscation and Steganography", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta, Mahendra Rathor "Structural transformation and obfuscation frameworks for Data-intensive IPs", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Anirban Sengupta, Mahendra Rathor "Structural transformation and obfuscation frameworks for Data-intensive IPs", IET Book "Secured Hardware Accelerators for DSP and Image processing applications", 2021, Print: 978-1-83953-306-8, eBook: 978-1-83953-307-5 Mahendra Rathor, Anirban Sengupta "Particle Swarm Optimization driven DSE based Low Cost Hardware Security for Securing DSP IP Cores", Springer Book "Advances in Nature-inspired Cyber Security and Resilience", 2021, Invited Book Chapter Anirban Sengupta, Rahul Chaurasia "Hardware IP Cores for Image Processing Functions", IOP Book "Advances in Image and Data Processing using VLSI Design", 2021, Invited Book Chapter Anirban Sengupta, Rahul Chaurasia, Prasad Pradeep "Secured Integrated Circuit (IC/IP) Design Flow", CRC Book "Nanoelectronics for Next-generation Integrated Circuits", 2021, Invited Book Chapter

Total number of Journal Articles published/under process:

Anirban Sengupta, Rahul Chaurasia "Securing IP Cores for DSP applications using Structural Obfuscation and Chromosomal DNA Impression", IEEE Access, Volume: 10, May 2022, pp. 50903 - 50913 Rahul Chaurasia, Aditya Anshul, Anirban Sengupta, Shikha Gupta "Palmprint Biometric vs Encrypted Hash based Digital Signature for Securing DSP Cores Used in CE systems", IEEE Consumer Electronics (CEM), Accepted, 2022 Anirban Sengupta, Rahul Chaurasia, Tarun Reddy "Contact-less Palmprint Biometric for Securing DSP Coprocessors used in CE systems", IEEE Transactions on Consumer Electronics (TCE), Volume: 67, Issue: 3, August 2021, pp. 202-213 Anirban Sengupta, Mahendra Rathor "Facial Biometric for Securing Hardware Accelerators", IEEE Transactions on Very

Large Scale Integration Systems (TVLSI) , Volume: 29, Issue: 1, Jan. 2021, pp. 112 - 123 Wei Hu, Chip-Hong Chang, Anirban Sengupta, Swarup Bhunia, Ryan Kastner, Hai Li "An Overview of Hardware Oriented Security and Trust: Threats, Countermeasures and Design Tools", IEEE Transactions on Computer Aided Design of Integrated Circuits & Systems (TCAD), Invited Paper, Volume: 40, Issue: 6, June 2021, pp. 1010-1038 W Hu, CH Chang, Anirban Sengupta, S Bhunia, R Castner, H Li "Hardware Oriented Security and Trust", IEEE Transactions on Computer Aided Design of Integrated Circuits & Systems (TCAD), Accepted, 2021

Total number of courses/conferences/workshops organized: Mahendra Rathor, Anirban Sengupta, "Signature Biometric based Authentication of IP Cores for Secure Electronic Systems", Proceedings of 7th IEEE International Symposium on Smart Electronic Systems (formerly iNIS), invited paper, India, Dec 2021; Rahul Chaurasia, Anirban Sengupta, "Securing Reusable Hardware IP cores using Palmprint Biometric", Proceedings of 7th IEEE International Symposium on Smart Electronic Systems (formerly iNIS), India, Dec 2021

Any other Achievements, Awards and Recognitions: Awarded/Elected 'Fellow' of The Institution of Electronics & Telecommunication Engineers (IETE), 2022; Honored as 'Featured IEEE Distinguished Visitor' of IEEE Computer Society, 2021

List of UG course(s) taught: CS 206 - Logic Design, CS 256 - Logic Design Lab, CS 305 - Computer Architecture, CS 355- Computer Architecture Lab

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 3

Dr. Kapil Ahuja

Professor

kahuja@iiti.ac.in

PhD, Virginia Tech, USA

Previous Employment details before joining IIT Indore:

Postdoctoral Research Fellow, Max Planck Institute in Magdeburg (Germany), 1 year



Present academic association(s) with other Institution(s): Visiting Professor at LU Hannover, Germany (May – June 2022)

Details of Research Area:

I work on Mathematics of Data Science and Simulation (MODSS); specifically, in the below.

* Computer Science - machine learning, network science, and algorithms.

* Mathematics - optimization, game theory, and numerical methods.

Some recent research problems solved are as follows:

* Supervised and Unsupervised Learning for Systems Biology.

* One Class Classification for Online Learning and Anomaly Detection.

* Game Theoretic Approach to Social Cloud.

* Stability Analysis and Preconditioners applied to Model Order Reduction.

* Novel Optimization Algorithms for Steganography & Chip Routing.

* Error Estimation in Modelling of Non-Newtonian Fluid Flow.

Details of Research Highlights: This year's most important research breakthrough was development of multigoal-oriented a posteriori error control for stationary fluid-structure interaction (FSI). Here, a novel combined functional was formulated such that several quantities of interest were controlled simultaneously. As localization technique for mesh refinement, we employed a partition-of-unity. Our algorithmic developments were substantiated with several numerical tests such as an elastic lid-driven cavity and an elastic bar in a chamber, both with two goal functionals. These examples yielded very good error reductions as well as estimators, and therefore excellent effectivity indices. The resulting adaptive meshes localized the different goal functionals very well too.

Details of Projects active:

- (1) Title: IIT Indore and LU Hannover Partnership in Physics, Chemistry, Bio Science & Computational Science Duration: 2019-2023 Funding Agency: A New Passage to India scheme of DAAD, Germany Funding Amount: 398,000 EUR (3.2 Crores INR) Brief Description: PI from the Indian side
 (2) Title: A Digital Narratology of Technology as Literary Actors and Artefacts of Settings in Indian English Novels Duration: 2019-2022 Funding Agency: SPARC Scheme of Ministry of Education, India Funding Amount: 50 Lakhs INR Brief Description: Co-PI from the Indian side

Total number of Books published/under process	2
Total number of Journal Articles published/under process	3
Total number of courses/conferences/workshops organized	3

Any other Achievements, Awards and Recognitions:

- (1) Prof. Ahuja is invited to LU Hannover (Germany) for research collaboration and research talk (May – June 2022).
 (2) Prof. Ahuja supervised and graduated large number of B.Tech. project students (twelve) in academic year 2021-2022 (May 2022).
 (3) Prof. Ahuja's continues to be on editorial board of IETE Journal of Research (Taylor & Francis; IF 2.33; Feb 2022).
 (4) Prof. Ahuja's PeerJ paper is among Top 5 most viewed in Computational Biology and Plant Science articles published in 2021 (Jan 2022).
 (5) Prof. Ahuja's fourth PhD student (Dr. Aditya A. Shastri) successfully defended his thesis and graduated (July 2021).
 (6) Prof. Ahuja is invited as a panelist for Workshop on High Performance Computing in Agriculture Domain, under National Supercomputing Mission of Gol (July 2021).
 (7) Prof. Ahuja has published 6 research papers (3 journal, 3 conference proceedings) and 2 books at reputed places from July 2021 to June 2022.

List of UG course(s) taught: Optimization Algorithms & Techniques (CS 307), Optimization Algorithms & Techniques Lab (CS 357), Machine Learning (CS 403)

List of PG course(s) taught: Machine Learning (CS 603) (cross-listed with CS 403)

Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	4

Dr. Sidharth Sharma

Assistant Professor Grade-II
 sidharth@iiti.ac.in
 PhD, IIT Bombay



Previous Employment details before joining IIT Indore:

Post-doctoral experience at IIT Bombay (From Oct 2020 - Jan 2022)
 total of 1 year and 4 months.

Details of Research Area: His research interests are in the broad area of the of the communication networks. His work focuses on the management of the service provider networks designed using state-of-art technologies such as Software-defined networks (SDN) and Network Function Virtualization (NFV).

Details of Research Highlights: Designed an IP router using Graph Neural Networks (GNNs). Performance modelling of a Programmable switch and Virtual network Function.

Details of Patents filled/awarded: A. Singh, S. Sharma, A. Gumaste, "Using graph neural networks to create table-less routers," US Patent 11,310,119, 2022.

Total number of Journal Articles published/under process	1
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Dr. Surya Prakash

Associate Professor
 surya@iiti.ac.in
 PhD, IIT Kanpur



Details of Research Area: The research field of Dr. Surya Prakash includes Biometrics, Pattern

Recognition, Image Processing, Computer Vision, Machine Learning, Deep Learning, Printer Forensics and Medical Image Processing. He is currently working on the development of efficient and secure biometric techniques for human recognition using face, ear and fingerprint data. His efforts are also towards development of technologies for securing biometric templates, particularly for fingerprint based biometric systems. He is also currently working in the domain of printer forensics and exploring its usage of machine learning in securing the interface between the printers and the human. He is also working towards utilization of artificial intelligence and machine learning technologies in the domain of medical image processing and automatic diagnostics.

Details of Research Highlights:

- Biometric template security
- Human recognition using 2D and 3D data of face and ear
- Image quality assessment and enhancement
- Printer forensics
- Medical image processing and automatic diagnostics

Total number of Books published/under process	1
Total number of Journal Articles published/under process	3
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: CS419/619: Computer Vision	
List of PG course(s) taught: CS419/619: Computer Vision	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	2

Dr. Gourinath Banda

Associate Professor

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PhD, Roskilde University



Previous Employment details before joining IIT Indore: Currently,

he is working as Associate Professor in Embedded Systems with University of Southern Denmark's Electrical Engineering Section, Odense, Denmark. Previously, he worked at Samsung India R&D's Advanced technology Group as Chief Engineer, where he made inventions that enhance safe confluence in user interface interactions on mobile phones, for which he holds granted patents from USPTO. At, IIT Indore, while working as Associate Professor, he made an invention that conserves electrical energy, which is granted with patent protection at IPO. He has an highly interdisciplinary background with: a PhD in Computer Science, where he researched and developed a synergistic formal verification framework to analyse correctness of Cyber Physical Realtime Embedded Systems; MSEngg in Mechatronics, where he developed the HARTEX kernel and BTEch in Mechanical Engineering. He works in applied research in a wide range of topics such as Autonomous cars, Blockchains, Cyber Physical Systems, Digital Transformation, Embedded Systems, Formal verification, etc. that translate to endtoend solutions taking the shape of products often released on MIT opensource license.

Present academic association(s) with other Institution(s):

1. Associate Professor in Embedded Systems, University of Southern Denmark: Dec2021 - July2022
2. Associate Professor in Computer Science and Engineering, IIT Indore: Dec 2021

Details of Research Area: Autonomous Cars, Blockchain, Cyber Physical Systems, Digital Transformation, Embedded Systems, Formal Verification, Mechatronics Systems Engineering, Realtime Systems, Robotics, Static Analysis

Details of Research Highlights:

1. IMPRINT2C Consortium Research Project resulted in a quadruped robot;
2. For Cyber Physical Systems, developed the runtime environment of Realtime Kernels, namely, HaRSaRK and HaRSaRK_Multi

Details of Patents filled/awarded: Holds two granted patents for inventions in the areas of mobile systems and energy conservation, from USPTO and IPO, respectively;

Details of Projects active: IMPRINT2C Consortium Project with members from IIT Patna, IIT Dhanbad and IUCS Kolkata

Total number of Books published/under process: Book Chapter in "Advances in Blockchain Technology for Cyber Physical Systems" titled "Blockchain Based Medical Records System"

Total number of Journal Articles published/under process 3

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

1. Received the Vritika grant to conduct internship programme of "Satellite Systems Simulation";

2. Successfully completed the programme

List of UG course(s) taught: CS303 Operating Systems

Total number of PhD student(s) guided 2

Dr. Neminath Hubballi

Associate Professor

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PhD, IIT Guwahati



Previous Employment details before joining IIT Indore: Before joining IIT Indore I have worked in Hewlett-Packard, Infosys labs and Samsung R&D. At Hewlett-Packard I developed a software for integrating two applications using message oriented middleware. In Infosys Lab we worked on security aspects of distributed computing and developed methods to measure security related SLA violations. While at Samsung I developed an authentication technique for mobile phones.

Present academic association(s) with other Institution(s): City University of London - Visiting Professor

Details of Research Area: Our research group works in the broad area of cyber security focusing on identification of exploitable vulnerabilities and developing defense techniques. Our recent works have been in the following areas • Fault Detection in Networks: Our research group has been working on developing methods for monitoring Computer Networks for identifying and localizing faults. This is done with active measurements with periodic test queries sent to various network elements to assess their health status. • Performance Optimization of Deep Packet Inspection: Deep Packet Inspection has applications in providing Quality of Service to various applications and cyber security related monitoring. This is one of the most computationally demanding operation. Our research group has been working on developing methods to improve operational speed of Deep Packet Inspection. This is achieved by minimizing the quantum of content screened and implementing Deep Packet Inspection methods on hardware platforms. • Anomaly Detection: Despite various security methods adopted for protecting networked systems and applications, cyber-attacks are inevitable. Anomaly detection methods help in detecting any abnormal behaviors observed by monitoring various events and network traffic. Our group has developed such methods to detect anomalies against different applications like Secure Socket Shell, Dynamic Host Configuration Protocol and Hypertext Transfer Protocol.

Details of Research Highlights: We have developed methods for detecting attacks against web servers through active measurements. Currently developing techniques to mitigate the attacks through software defined networks.

Details of Projects active:

Title: Digital Forensic Knowledge Integration And Intelligence (DIREKT-Intel) Sponsoring Agency:

SPARC Period: 2019-2022, Title: DPIAccelerator: Hardware Implementation of Deep Packet Inspection

Sponsoring Agency: CSIR (PI: Dr. Bodhisatwa Mazumdar, Co-PI:Neminath Hubballi) Period: 2020-2023,

Title: Detecting Collusion and Data Manipulation Attacks in Smart- Grid Networks Sponsoring Agency: IHUB-NTIHAC, IIT Kanpur (PI: Dr. Neminath Hubballi) Period: 2021-2024

Total number of Journal Articles published/under process	5
Total number of courses/conferences/workshops organized	2
Any other Achievements, Awards and Recognitions: Visited City University of London under DUO-India fellowship for collaborative research.	
List of UG course(s) taught: CS 418 and CS 427	
List of PG course(s) taught: CS 618 and CS 627	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	4

Dr. Bodhisatwa Mazumdar

Assistant Professor Grade-I
 bodhisatwa@iiti.ac.in
 PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore:

Dr. Bodhisatwa Mazumdar was a Post-doctoral researcher in New York University Abu Dhabi for 2 years and 8 months. During this period, he was involved in building the side channel analysis setup in the DfX laboratory of the university. During this stay, his research focus was on power based side channel analysis of logic locking techniques and for a class of stream ciphers.

Present academic association(s) with other Institution(s): Visiting position in IIIT Pune.

Details of Research Area: Dr. Bodhisatwa Mazumdar is presently involved in fault analysis of lightweight cryptographic primitives and cryptoprocessors implemented in RISC-V architectures. His research focus is on persistent and semi-persistent fault analysis of SPN block ciphers.

Details of Research Highlights: Developed semipermanent fault analysis models on GIFT and Elephant authenticated ciphers. Also, our research group developed mitigation techniques to thwart MasterPrint based attack in fingerprint biometric detection methods.

Details of Projects active:

- 1) CSIR Project, "DPIAccelerator: Hardware Accelerators for Deep Packet Inspection (DPI) Applications".
- 2) NTIHAC-IHUB Project: "A fault attack resistant crypto-accelerator for ultra-lightweight encryption protocols of GIFT family in RISC-V architecture."

Total number of Journal Articles published/under process	2
Total number of courses/conferences/workshops organized	2

Any other Achievements, Awards and Recognitions: Best Paper Award in IEEE Transactions on Emerging Topics in Computing for the paper, ""Removal Attacks on Logic Locking and Camouflaging Techniques," authored by M. Yasin, B. Mazumdar, O. Sinanoglu and J. Rajendran.

List of UG course(s) taught: CS 417/617: Cryptography and Network Security, CS 428/628: Algorithmic Graph Theory

List of PG course(s) taught: CS 417/617: Cryptography and Network Security, CS 417/617: Cryptography and Network Security, EV 402/602: Vehicular Communication Systems, CS 428/628: Algorithmic Graph Theory

Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided	2

Dr. Puneet Gupta

Assistant Professor Grade-I
 puneet@iiti.ac.in
 PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:

Post-doctoral Researcher in Department of Signal Processing, Tampere University, Finland from 29/08/2018 to 28/02/2019 for 6 months.

Scientist in TCS Innovation Lab from 07/7/2016 to 18/08/2018 for 2 years and 1 months.

Senior student research associate, Project Associate, and scientist in IIT Kanpur from Post PhD to 31/03/2016 for 4.5 months.

Details of Research Area:

My broad research interests include Computer Vision, Deep Learning, and Image Processing . I work to make the current technology useful for human beings by analyzing their behavior. I have worked on fusing multiple biometric traits for authentication; analyzing facial expressions using deep learning; measuring the human-vitals (which are, heart rate, breathing rate and blood pressure) using unobtrusive and non-contact human videos; and cross-modal learning. These play indispensable role in security; affective computing; ambient intelligence; and health-care. Currently, I am working in: Improving the efficacy of human vital measurements and human expression understanding. Explore feasibility of human vital parameters and their expressions in authentication; remote and affordable health care like estimating stress or estimating cardiac diseases; fitness monitoring; lie detection to avoid frauds; affective computing applications (like video summarization and commercial advertisement rating); monitoring suspicious intent for psychotherapy; and augmented reality by improving the face synthesis. Explore Cross-modal learning that aims to improve the single modality representations by leveraging unlabeled data from the remaining modalities. Zero-shot learning and Big-data are few examples that follow the similar principle. Furthermore, it is shown that sound classification can be improved by jointly learning the image and sound modalities. Such astonishing improvements inspires me to conduct the research in simultaneously learning the features of multiple modalities.

Details of Research Highlights:

We are the first one to study adversarial attacks on Lip Reading Models for the word recognition task. The proposed attack successfully fools the state-of-the-art ALR systems based on sequential and temporal convolutional architectures. It is capable of crafting adversarial examples in both targeted and untargeted scenarios, even circumventing popular transformation based defences such as feature squeezing and JPEG compression. We are the first to perform an adversarial attack that fools the AVSR model and the detection network simultaneously. We successfully circumvent popular defences while maintaining imperceptibility. We proposed a novel face anti-spoofing method based on respiratory signals. We are the first ones to utilize the respiratory signals drive from an input face video to detect a 3D face mask.

Details of Projects active:

1. Title: Spatio-spectral deconvolution of Hyperspectral images Project Investigator: Dr. Puneet Gupta Sponsoring Agency: Indian Space Applications Organisation (ISRO) Duration: 2021 - 2024 Funding Amount: INR 30,49,000

2. Title: Heart rate monitoring from non-contact face videos using Deep Learning Project Investigator: Dr. Puneet Gupta Sponsoring Agency: Science & Engineering Research Board (SERB) Duration: 2020-2022 Funding Amount: INR 30,33,840

Total number of Journal Articles published/under process	8
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: CS 208: Software engineering (Sole instructor) [Spring 2021], CS 258: Software engineering lab (Sole instructor) [Spring 2021], CS 203: Data structure and algorithms (Sole instructor) [Autumn 2021], CS 253: Data structure and algorithms lab (Sole instructor) [Autumn 2021]	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	5

Dr. Ranveer Singh

Assistant Professor Grade-I
 ranveer@iiti.ac.in
 PhD, IIT Jodhpur



Previous Employment details before joining IIT Indore: IIT Dhanbad (December 2019-May 2020), Postdoc fellow, Technion (December 2017-October 2019)

Present academic association(s) with other Institution(s): IIT Roorkee, ISI-Delhi

Details of Research Area: Ramanujan Graphs, Permanent vs Determinant of a matrix

Details of Research Highlights:

1. Random construction of Ramanujan graphs towards fast communication topologies
2. Study of some class of matrices for which permanent can be written as the determinant in polynomial time

Details of Projects active: DST: Towards a faster algorithm for matrix determinant and the permanent

Total number of Books published/under process: Interplay of graphs and matrices

Total number of Journal Articles published/under process 3

Total number of courses/conferences/workshops organized 3

List of UG course(s) taught: Advanced Algorithms, Design and Analysis of Algorithms

List of PG course(s) taught: Advanced Algorithms

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 0

Dr. Nagendra Kumar

Assistant Professor Grade-II
 nagendra@iiti.ac.in
 PhD, IIT Hyderabad



Previous Employment details before joining IIT Indore:

Prior to joining IIT Indore, I was a scientist at Institute for Infocomm Research (I2R), Agency for Science, Technology and Research (A*STAR), Singapore from May 2019 to May 2020.

Details of Research Area: Research Areas: Natural Language Processing, Social Network Analysis, Deep Learning, Artificial Intelligence, and Data Mining

Details of Research Highlights: I works on different problems related to Natural Language Processing, Social Network Analysis, Deep Learning, Artificial Intelligence, and Data Mining. I am currently working on a problem of Information Diffusion and Information Summarization in Social Networks.

Total number of Books published/under process: Niharika Ganji, Arnab Sinhamahapatra, Shubhi Bansal Nagendra Kumar, CoviIS: A Real-Time Covid Help Information System using Digital Media, In 3rd International Conference on Data Science and Applications (ICDSA), 2022 (Under Process)

Total number of Journal Articles published/under process:

1. Shubhi Bansal, Kushaan Gowda, Nagendra Kumar, A Hybrid Deep Neural Network for Multimodal Personalized Hashtag Recommendation, In IEEE Transactions on Computational Social Systems (TCSS), 2022.

2. Niharika Ganji, Arnab Sinhamahapatra, Shubhi Bansal, Nagendra Kumar, CoviIS: A Real-Time Covid Help Information System using Digital Media, In 3rd International Conference on Data Science and Applications (ICDSA), 2022.

Total number of courses/conferences/workshops organized: Worked as a Resource Person for the

workshop on Computer Vision-the Artificial Intelligence for an Eye, IIT Indore

Any other Achievements, Awards and Recognitions:

1. Co-Convener of the conclave on Micro, Small and Medium Enterprise (MSME) under Madhya Pradesh Vigyan Sammelan & Expo (MPVS-2021)
2. Delivered a talk on Frequent Pattern Mining at AICTE (QIP) sponsored Online Short-Term Course on Computer Vision-the Artificial Intelligence for an Eye
3. Delivered a talk on Data Science Industrial Perspective at Defence Institute of Advanced Technology (DU) Pune

List of UG course(s) taught: Data Base & Information Systems (CS 207), Data Base & Information Systems Lab (CS 257), Compiler Techniques (CS 308), Compiler Techniques Lab (CS 358)

Total number of PG dissertation(s) guided: 1 (ongoing)

Total number of PhD student(s) guided: 2 (ongoing)

Dr. Chandresh Kumar Maurya

Assistant Professor Grade-I

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PhD, IIT Roorkee



Previous Employment details before joining IIT Indore: NIT Delhi.

5 months.

Details of Research Area: Artificial Intelligence Natural Language Processing Machine Learning Deep Learning

Details of Research Highlights: Dr. Chandresh is passionate about building practical and theoretical models and algorithms for multimodal data (Text+Image+Video+Speech). Why we need to build such a system is that we perceive and interact with our environment through many sensori organs such as eyes, ears, mouth, etc.

Details of Projects active: 1. Fake news detection; 2. Continual learning; 3. Radiology report generation

List of UG course(s) taught: CS 309-parallel computing. 2. CS 426- NLP

List of PG course(s) taught: CS 426- NLP

Total number of PG dissertation(s) guided

1

Total number of PhD student(s) guided

0

Dr. Ayan Mondal

Assistant Professor Grade-II

ayanm@iiti.ac.in

PhD, IIT Kharagpur



Previous Employment details before joining IIT Indore:
Postdoctoral Research Engineer, Univ Rennes, INRIA, CNRS, IRISA, Rennes, France [October 2020 – October 2021]

Details of Research Area: Internet of Things (IoT) Networks

Details of Research Highlights:

- (1) Traffic management in software-defined IoT networks;
- (2) Resource orchestration in edge- and cloud-enabled IoT platforms; and (3) Ensuring connectivity in wireless and ad-hoc sensor networks

Details of Projects active:

- (1) Title: Enabling Edge Computing for Software-Defined Internet of Everything (SD-IOE), Sponsoring Agency: IIT Indore, Period: 2022-2024; and (2) Title: Distributed and Trustworthy Edge-AI Network Architecture for Future 6G-Enabled Healthcare (DISTECH-6G), Sponsoring Agency: INDIFICORE (Indo-Finland Collaboration), Period: 2022-2023

Total number of Journal Articles published/under process

2

Total number of courses/conferences/workshops organized

10

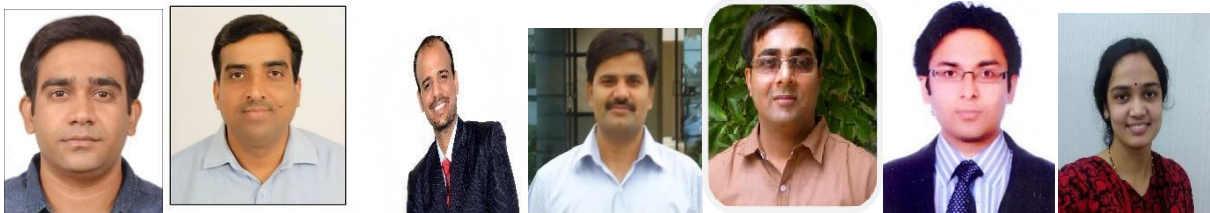
Any other Achievements, Awards and Recognitions:

- (1) Delivered four invited lectures on the softwarization and Sensor-cloud for IoT
- (2) TPC member of conferences - ANTS 2022, ICADCML 2023, 3ICT 2022, CICN 2022, and CSI 2022

List of UG course(s) taught: Computer Networks (CS 306), Computer Networks Lab (CS 356)

Total number of PhD student(s) guided: 1 (On-going)

Department of Electrical Engineering



The department of electrical engineering at IIT Indore was established in the year 2009. Over the years the Department has grown significantly in terms of its faculty strength and research activities. Presently the department has seventeen faculty members and two DST INSPIRE faculties. The department is presently engaged at conducting cutting edge research in the interdisciplinary area(s) of Power electronics, power systems, Integration of renewable energy sources, smart grid, VLSI design, nanotechnology and nanoelectronics, communications systems and networking, wireless communications, image processing, signal processing and RF-microwave. The department of EE strives for promoting internal and external collaborations. The department aims to play an active role in propelling India in its growth trajectory through innovative inter-disciplinary research and imparting quality education through its academic programs at undergraduate and postgraduate levels.

Academic Programs

The vision of the department is to impart quality education and promote inter-disciplinary, industry-oriented advanced scientific research to address the challenges and develop future technologies having relevance to industrial and societal requirements. The department of Electrical Engineering (EE) at IIT Indore has been a major center for both academic and research programs in various specializations. The department presently offers an undergraduate program, one MS(Res) program and two MTech programs in (i) Communications and Signal Processing, (ii) VLSI Design and Nanoelectronics and a PHD program. The department has graduated 104 PHD students since its inception. Our past PHD students have been absorbed in other IITs as well. Around 73 more students are presently pursuing their PhD from the department. One international student also joined the department.

NUMBER OF FACULTY MEMBERS	17
PROFESSOR	9
ASSOCIATE PROFESSOR	3
ASSISTANT PROFESSOR GRADE II	3
ASSISTANT PROFESSOR GRADE I	2
DST INSPIRE FELLOWS	2
NO. OF POST DOC FELLOWS	2

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	85	65
M. Tech. CSP	15	13
M. Tech. VDN	15	10
MS (Res)	10	-
Ph.D.	13	11

R&D Activities

The department of electrical engineering has a strong foothold in research and development and has been actively engaged in securing and implementing projects funded by external funding agencies. Needless to mention that the department has secured a high-value project of INR 1.4 crores approximately under DST-Nano mission and another high-value project under the DST-FIST worth INR 2.3 crores has been running in the department. Besides, this in the academic year (AY) 2021-22 the department has been awarded ten new research projects, twenty new research projects are at present under execution and close to ten additional projects have been successfully completed. The projects were funded by DST, SERB, CSIR, DRDO, ISRO etc. Faculty members of the department published ~72 journal papers, yet another indicator of the quality of research work pursued by the department of electrical engineering. As another outcome of the cutting-edge research undertaken at the department three patents have been filed and four additional were awarded in the AY 2021-22.

Notable Activities in the Department

The faculty members of EE strive to instill analytical and practical skills in the students. This is systematically achieved by incorporating various sub-components as a part of the regular course

learning and evaluation, industry-relevant projects, field trips and real-time assignments that would substantially benefit in understanding and utilization of concepts. In addition to that, students of various categories have been supported to attend numerous conferences, competitions, and winning laurels. An interdisciplinary approach followed by EE faculty members has emerged, taking up some of these engineering problems as projects and internships that our students have successfully solved. This has resulted in collaborations with the industry for sponsored research. Through our industry outreach activities, the department has also been instrumental in getting some consultancy projects.

Some of the notable achievements by the department's faculty members during the AY 2021-22, are as given below: -

- Prof. Ram Bilas Pachori ranked #22 in India among Top Scientists for 2022 in the field of Computer Science by Research.com.
- Prof. Ram Bilas Pachori received IETE - Prof SVC Aiya Memorial Award, September, 2021.
- Prof. Prabhat K Upadhyay was awarded Nokia Foundation Fellowship, 2022.
- Dr. Saptarshi Ghosh secured Motohisa Kanda Award (2022), Young Scientist Award from URSI (2022).
- Prof. Ram Bilas Pachori and Dr. Saptarshi Ghosh were listed in the world's top 2% scientists in the study carried out by J. Bass and others at Elsevier BV and Stanford University in October, 2021.
- Prof. Shaibal Mukherjee became the associate editor of IEEE Sensors journal, he also backed the adjunct Associate Professor at RMIT University, Melbourne, Australia. He has also been awarded IETE fellow, 2022.
- One of our PHD student Mr. Narendra Vishvakarma was awarded PMRF fellowship in the AY 2021-22.
- Prof. Trapti Jain became the IEI and IETE fellow, 2021, she is also the vice-chair of IEEE PES and founding chair of IEEE MP section (PES) chapter, 2022.
- Prof. Vivek Kanhangad vice president of IEEE biometrics council.

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	10	0
ONGOING PROJECTS	20	1
COMPLETED	10	1

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	0	7	37	72



Dr. Vipul Singh

Professor and Head of Department
vipul@iiti.ac.in
PhD, Kyushu Institute of Technology, Japan

Previous Employment details before joining IIT Indore:

Post Doctoral Researcher, at Research Institute of Electronics, Shizuoka University, Hamamatsu, Japa worked for a period of 1 year 8 months from 01/04/2009 to 19/11/2010.

Details of Research Area: Organic electronics, optoelectronics, oxide semiconductors, device fabrication and characterization

Details of Research Highlights: We have successfully demonstrated OTFTs having high photosensitivity and responsivity. The selective control of morphology of the organic thin films was utilized for improved photo response of these OFETs. Additionally utilizing the relatively low bandgap conducting polymers we successfully demonstrated NIR sensitive OTFTs typically suited for biomedical applications.

Details of Projects active: "Research and Development of Multiband UV Photodetector Using Oxide Semiconductor"; The project is aimed towards development of multi band UV photodetectors utilizing wide bandgap oxide semiconductors.

Total number of Journal Articles published/under process: 10 Journal articles published

Total number of courses/conferences/workshops organized: 5 conference papers published

List of UG course(s) taught: Basic Electrical & Electronics Engineering, EE-104, Discrete Device Fabrication and Characterization Lan, EE-653
Analog Circuits, EE-204, Analog Circuits Laboratory, EE-254

List of PG course(s) taught: Organic Electronics, EE-431/631.

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 2

Dr. Ram Bilas Pachori

Professor
pachori@iiti.ac.in
PhD, Indian Institute of Technology Kanpur



Previous Employment details before joining IIT Indore:

- Assistant Professor at Communication Research Center, International Institute of Information Technology, Hyderabad, India from 01 April, 2008 to 30 November, 2009.
- Post-Doctoral Fellow at the Charles Delaunay Institute, University of Technology of Troyes, Troyes, France from 01 April, 2007 to 31 March, 2008.

Present academic association(s) with other Institution(s): Guest Faculty, Kalinga Institute of Industrial Technology (KIIT), Bhubaneswar, India, November-December, 2021.

Details of Research Area: His research interests include Signal and Image Processing, Biomedical Signal

Processing, Non-stationary Signal Processing, Speech Signal Processing, Brain-Computer Interfacing, Machine Learning, and Artificial Intelligence (AI) and Internet of Things (IoT) in Healthcare.

Details of Research Highlights: He has 259 publications which include journal papers (158), conference papers (71), books (08), and book chapters (22). He has also three patents: 01 Australian patent (granted) and 02 Indian patents (filed). His publications have been cited approximately 11000 times with h-index of 56 according to Google Scholar. He has been ranked #22 in India among top scientists for 2022 in the field of Computer Science by Research.com website (March, 2022). He has been listed in the world's top 2 % scientists in the study carried out at Stanford University, USA (October, 2020 and October, 2021).

Details of Patents filled/awarded:

1. B. Fatimah, P. Singh, A. Singhal, and R.B. Pachori, System and method for biometric identification using ECG signals, Australian Patent, Patent no. 2021106695, Granted, 08 December, 2021.
2. R.B. Pachori and K. Das, System and method for predicting Parkinson's disease, Indian Patent, Patent application no. 202221027358, Filed, 12 May, 2022.

Details of Projects active:

1. Implementation of Indo-South Korea Joint Network Center for Environmental Cyber Physical Systems, Department of Science and Technology, Government of India & Ministry of Science and ICT, Republic of Korea, Rs. 1,17,84,720, Investigator, Three years (January, 2021- January, 2024).
2. Automated classification system for human emotions based on physiological signals, Council of Scientific and Industrial Research (CSIR), Rs. 23,96,160, PI, Three years (March, 2021- March, 2024).
3. Development of an affordable wearable IoT-GPS enabled intelligent vital signs monitor for smart health monitoring services, Grant in aid, Department of Health Research, Indian Council of Medical Research (ICMR), Rs. 1,23,49,960, PI, Two years (January, 2021-January, 2023).
4. Advanced nonlinear filtering using improved quadrature rule, Science and Engineering Research Board (SERB), 33, 00,000, Co-PI, Three years (February, 2020-February, 2023).
5. Indo-Norwegian collaboration in intelligent offshore mechatronics systems (INMOST), Norwegian Research Council (RCN) under INTPA RT Scheme, 56,20,000 NOK (42, 000 NOK for IIT Indore), Co-PI, Three years (2020-2023).

Total number of Books published/under process	4
Total number of Journal Articles published/under process	30
Total number of courses/conferences/workshops organized	1

Any other Achievements, Awards and Recognitions:

1. DAAD scholarship at Free University of Berlin, Germany, for a period of two months (July-September, 2022), under Bilateral Exchange of Academics, 2022, May, 2022. (Invited by Prof. Radoslaw Martin Cichy and awarded by DAAD German Academic Exchange Service).
2. Best paper award, XXIV International Conference on Digital Signal Processing and Its Applications (DSPA 2022), 30 March-01 April, 2022, Moscow Russia.
3. Ranked #22 in India among Top Scientists for 2022 in the field of Computer Science by Research.com website, 01 March, 2022.
4. Listed in the world's top 2% scientists in the study carried out by J. Bass and others at Elsevier BV and Stanford University (<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/3>), October, 2021.
5. IETE - Prof SVC Aiya Memorial Award, September, 2021.

List of UG course(s) taught: EE 202: Signals and Systems, EE 307: Communication Systems

List of PG course(s) taught: EE 740: Speech Signal Processing, EE 701: Time-Frequency Analysis

Total number of PG dissertation(s) guided	3
Total number of PhD student(s) guided	2

Dr. Santosh Kumar Vishvakarma

Professor

skvishvakarma@iiti.ac.in

PhD, Indian Institute of Technology Roorkee, Uttarakhand, India



Previous Employment details before joining IIT Indore:

Post-Doctoral Fellow, University Graduate Center (UNIK), Kjeller, Norway: 01/2009 – 07/2010

Lecturer, College of Engineering Roorkee, Roorkee, India: 07/2013 – 12/2004

Present academic association(s) with other Institution(s): Faculty, Center for Advanced Electronics (CAE), IIT Indore

Details of Research Area: Energy-Efficient and Reliable SRAM Memory Design, Hardware-Efficient Architecture for DNN Accelerators, SRAM-based In-Memory Computing Architecture for Edge AI, Reliable, Secure Design for IoT Application, Design for Reliability

Details of Research Highlights: Nanoscale Devices, VLSI Circuit and System Design (NSDCS) Research Group, led by Dr. Santosh Kumar Vishvakarma, is actively involved in cutting-edge research and development to in-memory computing for edge AI applications, efficient and reliable memory chip design, efficient and configurable hardware accelerator for DNN accelerators. It has developed and analyzed various efficient and reconfigurable architecture for hardware accelerator algorithms. Various activation functions are developed for DNN applications. He has been supervising many research projects and dissertations toward PhD (17 completed, 1 thesis under review & 5 ongoing), MTech (21 completed & 2 ongoing), and BTech (39 completed & 4 ongoing) degrees. The research work has contributed to a significant number of publications in IEEE journals and conferences.

Details of Patents filled/awarded:

[1] Bhupendra Singh Reniwal and Santosh Kumar Vishvakarma, "Offset Compensated Data Sensing Technique for Low Energy Embedded SRAM", Patent Application no. 201621034132, Filed: 5th October 2016, Published: 6th June 2018, Patent no. 394437, Granted: 7th April 2022.

[2] Vikas Vijayvargiya and Santosh Kumar Vishvakarma, "High-Performance Double Gate Tunnel Field Effect Transistor For Low Power Applications", Patent Application no. 201721000199, Filed: 3rd January 2017, Published: 6th July 2018, Patent no. 388463, Granted: 3rd February 2022.

Details of Projects active:

[1] Title: Neuromorphic Computing for Autonomous Vehicles, Funding Agency: Science and Engineering Research Board (SERB), Govt. of India Duration: 12 Months (January 2012 - January 2023) Amount: 24,000 USD (INR 22,39,252).

[2] Title: Indo-South Korea Joint Network Center for Environmental Cyber Physical Systems Funding Agency: Department of Science and Technology (DST), Government of India Duration: 3 Years (2021 – 2024) Amount: INR 1,17,84,720.

[3] Title: Indo-Norwegian collaboration in Intelligent Offshore Mechatronics Systems (INMOST) Funding Agency: Norwegian Research Council (RCN) under INTPART Scheme Duration: 3 Years (2020 – 2023) Amount: 56,20,000 NOK (INR 4,86,26,175) (42,000 NOK for IIT Indore).

[4] Title: Hybrid SRAM Memory Architecture for Multi-Core Processor Funding Agency: Science and Engineering Research Board (SERB), Govt. of India Duration: 3 Years (November 2018- October 2021) Amount: INR 10,05,000

Total number of Books published/under process 3

Total number of Journal Articles published/under process: Published: 11, Under Process: 8

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

- [1] Two Indian patents were granted to Dr. Santosh Kumar Vishvakarma.
- [2] Dr. Santosh Kumar Vishvakarma was elevated to the rank of Senior Member, IEEE for significant research contribution to society in the field of VLSI Circuit and System Design.
- [3] The team led by Dr. Santosh Kumar Vishvakarma got selected in the list of 30 Finalist for the Swadeshi Microprocessor Challenge amongst the 6,169 Teams that participated in the Challenge organized by Ministry of Electronics and Information Technology, Govt. of India
- [4] PhD student Mr. Narendra Singh Dhakad has been awarded India's Science and Engineering Research Board (SERB) Overseas Visiting Doctoral Fellowship Program (OVDF) 2022 at Purdue University, USA.

List of UG course(s) taught: EE 440 Analog and Mixed Signal IC Design, EE 422 Digital Circuit Design, EE 154 Basic Electrical and Electronics Engineering Lab, EE 208 Digital Systems

List of PG course(s) taught: EE 640 / EE 440 Analog and Mixed Signal IC Design, EE 622 / EE 422 Digital Circuit Design, EE 651 Digital Circuit Design Laboratory, EE 654 Analog and Mixed Signal IC design Lab

Total number of PG dissertation(s) guided 4

Total number of PhD student(s) guided 8

Dr. Abhinav Kranti

Professor
 akranti@iiti.ac.in
 PhD, University of Delhi



Previous Employment details before joining IIT Indore:

Post-doctoral fellow at Université catholique de Louvain, Belgium (2002 – 2004).
 Research fellow at Queen's University of Belfast, UK (2005 - 2009).
 Researcher at Tyndall National Institute, University College Cork, Ireland (2010)

Details of Research Area: Capacitorless DRAM, steep switching devices, vertically stacked transistors, material-device-circuit co-design

Details of Research Highlights:

1. Showcased memory feasibility (for standalone and embedded applications) through reconfigurable transistors.
2. Development of an analytical modeling framework for ultralow power logic design with MFMIS transistors.

Details of Projects active: Functionality enhancement of reconfigurable transistors by implementing standalone and embedded 1T-DRAM

Total number of Journal Articles published/under process 5

List of UG course(s) taught: EE 203: Electronic Devices, EE 253: Electronic Devices Lab, EE 104: Basic Electrical and Electronics Engineering

List of PG course(s) taught: EE 421/621: MOS Devices and Modeling

Total number of PG dissertation(s) guided: 2 (M.Tech) submitted and 1 (MS Research) ongoing

Total number of PhD student(s) guided: Ongoing 2 students

Dr. Srivathsan Vasudevan

Associate Professor
 svasudevan@iiti.ac.in
 PhD, Nanyang Technological University, Singapore



Previous Employment details before joining IIT Indore:
 Singapore General Hospital as a Research Associate where he has been working on prostate cancer diagnosis

Details of Research Area: Srivathsan is working on building photoacoustic imaging for biomedical applications like cancer diagnosis. His lab works to get the research from bench to bed side.

Details of Research Highlights: Biophotonics lab headed by Srivathsan has built a cost-effective compact instrument for thyroid cancer diagnosis. Some clinical trials in collaboration with Christian Medical College Vellore (CMC) has been carried out

Details of Projects active: "Indigenous, cost-effective, non-invasive device for patient specific respiratory motion management in high precision image guided radiotherapy treatment."

Total number of Journal Articles published/under process 1

Total number of courses/conferences/workshops organized 1

List of UG course(s) taught: EE 202 Signals and Systems, EE 301N Microprocessor and Digital System Design,

List of PG course(s) taught: EE638 - System on Programmable Chip Design

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided 1

Dr. Prabhat Kumar Upadhyay

Professor
 pkupadhyay@iiti.ac.in
 PhD, Indian Institute of Technology Delhi



Previous Employment details before joining IIT Indore:
 Assistant Professor, Department of Electronics & Communication Engineering, BIT Mesra, Ranchi, July 2011-April 2012

Present academic association(s) with other Institution(s):
 Nokia Visiting Professor, Centre for Wireless Communications (CWC), University of Oulu, Finland, May-August 2022

Details of Research Area: Main research interests include Wireless and Mobile Communication, Cooperative Relay Communications, Spatial Diversity Techniques, Multiple-Input Multiple-Output (MIMO) Systems, Simultaneous Wireless Information and Power Transfer (SWIPT), Cognitive Radio and Spectrum Sharing Techniques, Hybrid Satellite-Terrestrial Relay Systems, Physical Layer Security,

Wireless Body Area Networks, Internet-of-Things (IoT) Networks, Molecular Communications and Nanonetworking.

Details of Research Highlights:

Wireless Communications (WiCom) Research Group, led by Dr. Prabhat K. Upadhyay, is actively involved in cutting-edge research and development to cater to the emerging needs of the next generation wireless communication systems. It has developed and analyzed various spectral-efficient algorithms and spatial diversity schemes that will help the design of future wireless networks to accommodate the increasing data traffic demands over a limited spectrum. He has been supervising many research projects and dissertations toward PhD (7 completed & 5 ongoing), MTech/MS(R) (10 completed & 1 ongoing), and BTech (23 completed & 3 ongoing) degrees. The research work has contributed a significant number of publications in IEEE journals and conferences.

Details of Projects active:

(1) Title - Design and Development of Large-Scale Ambient Energy Harvesting Wireless Networks (LargEWiN) Duration - 2019-2022 (3 Years) Funding Agency - BRICS: CNPq-Brazil, DST-India, MOST & NSFC-China, and DST & NRF-South Africa Brief Description - This project aims to empower the large-scale wireless networks with the ambient energy harvesting and the emerging communication technologies to promote the green economy in a more efficient, reliable, and sustainable manner. It seeks to address the system performance, planning, and resource allocation problems by exploiting cooperation among available network resources with renewable and/or radio frequency (RF) energy sources for implementation of Large-Scale Ambient Energy Harvesting Wireless Networks (LargEWiN). Especially, it intends to integrate the more appealing millimeter wave (mmWave) technology into LargEWiN for its potential futuristic deployment. (2) Title - Development of Green and Secure Communication Techniques for Future Wireless Networks Duration - 5 Years (2017-2022) Funding Agency - Young Faculty Research Fellowship under 'Visvesvaraya PhD Scheme for Electronics & IT' of MeitY, Govt. of India Brief Description - The project aims at development of energy-efficient network planning and resource allocation strategies in the context of green wireless communications. The wireless techniques used for improving spectral efficiency often lead to decrease in energy efficiency and vice-versa. Therefore, a careful design for future wireless networks is desirable in view of both energy and spectral efficiency. Moreover, owing to the broadcast nature of the medium and the associated security vulnerabilities, it is important to augment secrecy even at physical layer of communications. (3) Title - Hybrid Satellite-Aerial-Terrestrial Networks for Future Generation Communication Capabilities (HySATEN) Duration - 3 Months (May - August 2022) Funding Agency - Nokia Foundation, Finland Brief Description - This project aims at empowering HySATEN with the future generation communication capabilities to advance the ICT in a more efficient, reliable, and sustainable manner. It focuses on addressing the HySATEN design, planning, and resource allocation problems by exploiting collaboration among available network resources with hierarchical spectrum sharing for beyond 5G/6G wireless network deployment.

Total number of Journal Articles published/under process 10

Total number of courses/conferences/workshops organized 3

Any other Achievements, Awards and Recognitions: Nokia Foundation Visiting Professor Grant, 2022; Exemplary Editor Award, IEEE Communications Letters, 2021.

List of UG course(s) taught: EE 306 Digital Communications, EE 154 Basic Electrical and Electronics Engineering Lab

List of PG course(s) taught: EE 643 Detection and Estimation Theory and EE 642 Wireless Communications

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided 2

Dr. Trapti Jain

Professor
traptij@iiti.ac.in
PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:

Before joining IIT Indore in June 2012, she has served as an Assistant Professor in School of Computing and Electrical Engineering at IIT Mandi from December 2010 to 8th June 2012. She has also served in Electrical Engineering Department at Madhav Institute of technology and Science (MITS), Gwalior from May 1999 to November 2010.

Details of Research Area: Her research interests include synchrophasor applications in power systems, grid integration of renewable energy systems, artificial intelligence applications to power systems and data analytics in smart grid

Details of Research Highlights: We have worked towards development of power system monitoring tools, which utilizes time synchronized data obtained from Phasor Measurement Units (PMUs). PMUs report data at a high sampling rate varying from 25 samples/sec to 100 samples/sec. This enables monitoring the power grid dynamics at a high resolution. We have developed a method based on Weibull distribution, called Weibull-based Excursion Transient and Oscillatory (WETO), to identify events with fast and slow dynamics using wide area frequency measurements obtained from PMUs. The proposed method can identify the time of inception, location and severity of the event in near real-time using only a single parameter, known as variability. This method has been validated on real PMU data obtained from Indian as well as North American grid disturbances. The method is able to detect the events within a time window of 5 cycles using only frequency measurements.

Details of Projects active: Two projects are active during the said duration. The first project titled "Development of Control Schemes to Enhance Stability and Dynamic Performance of Islanded AC Microgrids" is sponsored by SERB under SERB-POWER grant and the budget sanctioned is around 41 lakhs. The second project titled "Readiness and Interest of Organizations for Adopting Emerging Technologies like AI and ML" is sponsored by DSIR and the budget sanctioned is around 11 lakhs.

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: Served as Vice-Chair of IEEE PES/IAS Joint Chapter of Bombay Section upto December 2021. After the formation of IEEE MP Section, founded the IEEE PES Chapter and currently serving as Chair of this chapter.

List of UG course(s) taught: 1. EE 309 Electrical Measurements and Instrumentation 2. EE 308 Power Systems

List of PG course(s) taught: EV 605 Electric Machines and Drives

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 3

Dr. Vivek Kanhangad

Associate Professor

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PhD, The Hong Kong Polytechnic University



Previous Employment details before joining IIT Indore:

Visiting Faculty at International Institute of Information Technology (IIIT-B) for 2 years and 5 months

Details of Research Area: Deep learning for computer vision and Image analysis with focus on Biometrics and Biomedical Applications.

Details of Research Highlights: Pattern Recognition and Image Analysis (PRIA) research group at IIT Indore is primarily engaged in addressing research problems related to biometric recognition. With the development of high-resolution fingerprint scanners, high-resolution fingerprint-based biometric recognition has received increasing attention. Level-3 fingerprint features, which include very fine details such as pores, are generally observable in fingerprint images having a resolution greater than 800 dpi. Pore features have been found to be effective for fingerprint recognition. High-resolution fingerprint recognition is mainly centred around local descriptors created using pore patches. Although these methods provide good verification performance, they are not well-suited for identification due to poor computational performance and variable and large template size caused by the variable number of useful pore patches. Recently, we have developed a deep learning model that overcomes this problem by learning to generate a fixed-sized global descriptor while also taking into account the finer level-3 features by infusing domain knowledge using a multi-task architecture. Our approach employs a CNN with two branches simultaneously trained to generate descriptors and pore-intensity maps.

Details of Projects active: Title - AI-driven High Resolution Image Generation from Text Descriptions in Smartphones; Duration – 20 months (June 2022-January 2024); Funding Agency - Oppo/OnePlus India Research and Development Private Limited; Brief Description - With significant advances in mobile computing, AI-driven smartphone applications are being developed to boost user engagement. Imagine being able to generate perfectly natural-looking or realistic images in mobile devices based on the user's voice or text descriptions. Using such an application, the users will be able to create customized images with different colour combinations and features that may not exist otherwise. The users may set such artificially created but natural-looking images as wallpaper for smartphones' home screen, lock screen, or use it for any other purpose. This project aims to develop a framework for generating high-resolution natural-looking images from the user's text or voice descriptions in smartphones.

Total number of Books published/under process 2

Total number of Journal Articles published/under process 4

Total number of courses/conferences/workshops organized: Publicity co-chair for National Conference on Communications (NCC 2022)

Any other Achievements, Awards and Recognitions:

Vice President (Education), IEEE Biometrics Council

Editorial board member of IEEE Biometrics Council Newsletter

Member of IEEE SMC technical committee on Biometrics and Applications.

List of UG course(s) taught: EE 304: Digital Signal Processing

List of PG course(s) taught: EE 441/641: Advanced Signal Processing, EE 644: Image Processing

Total number of PhD student(s) guided 2

Dr. Saptarshi Ghosh

Assistant Professor Grade-I

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PhD, Indian Institute of Technology Kanpur



Previous Employment details before joining IIT Indore:

Aug' 2017 – Nov' 2018: Postdoctoral Research Fellow in Chung-Ang University, Seoul, South Korea

Present academic association(s) with other Institution(s): May'2022 - July'2022: Visiting Fellow, Tokyo Institute of Technology, Japan

Details of Research Area: (1) Electromagnetics, (2) Frequency selective surfaces, (3) Metamaterials, (4) Microwave absorbers, (5) Microwave antennas

Details of Research Highlights:

- (1) Experimental demonstration of different types of passive and active microwave absorbers
- (2) Use of frequency selective surfaces to realize different types of microwave devices, e.g. filters, polarizers, absorbers, rasorbers, antennas
- (3) Exploitation of metamaterial properties to construct ultra-thin and flexible structures
- (4) Use of cutting-edge technologies, such as 3D printing, inkjet printing, liquid metal technology to realize electromagnetic devices
- (5) Development of microwave and mm-wave antennas

Details of Patents filled/awarded: Saptarshi Ghosh, and Maharana Pratap Singh, "Compact Wideband Millimeter-Wave Power Divider using Substrate Integrated Waveguide," Applied, September 2021.

Details of Projects active:

- (1) Title - Design and Development of Millimeter-Wave Array Antenna for 5G Mobile Communication (Role: PI); Duration -2 Years; Funding Agency – DST-JSPS
- (2) Title - Compact Wideband Millimeter-Wave Power Divider Using Substrate Integrated Waveguide (Role: PI); Duration -2 Years; Funding Agency – SERB-TETRA
- (3) Title - Simulation, Modelling, and Visualization of Reconfigurable Intelligent Surface based Communication System (Role: PI); Duration -1 Year; Funding Agency –IITI DRISTI, CPS

Total number of Books published/under process 1

Total number of Journal Articles published/under process: 05 (journals), 15 (conferences)

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

- (1) Motohisa Kanda Award (2022): Recipient of the Motohisa Kanda Award for one paper entitled "Broadband Polarization-Insensitive Tunable Frequency Selective Surface for Wideband Shielding", which received the highest citations among all the papers published in the last 5 years (2017-2021) in IEEE Transactions on Electromagnetic Compatibility.
- (2) Young Scientist Award (2022): Selected as one of the Young Scientist Awardees in 3rd URSI Atlantic Radio Science Meeting (AT-AP-RASC 2022) to be held in Gran Canaria, Spain on May 29- June 3, 2022.
- (3) Outstanding Reviewer Award (2022): Selected as one of the Outstanding Reviewers of IEEE Transactions on Antennas and Propagation for the Year 2020-2021.
- (4) Outstanding Reviewer Award (2021): Selected as one of the Outstanding Reviewers of IEEE Antennas and Wireless Propagation Letters for the Year 2020.
- (5) Top 2% Most Influential Scientists List (2021): Selected in Stanford University's Top 2% Most Influential Scientists List for the Year 2020.

List of UG course(s) taught: (1) Basic Electrical and Electronics Engineering (EE 104); (2) Analog Circuits (EE 204); (3) Electromagnetic Waves (EE 305)

List of PG course(s) taught: Antennas and Propagation (EE 448/648)

Total number of PG dissertation(s) guided

2

Dr. Swaminathan R

Assistant Professor Grade-I
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PhD, IIT Kharagpur



Previous Employment details before joining IIT Indore:

Served as a Research Fellow at Nanyang Technological University (NTU) Singapore between June 2015 to February 2019. Duration of services: 44 Months

Details of Research Area: Current research interests include but not limited to Efficient design of Space-air-ground integrated networks (SAGIN) for 6G communication, Unmanned-Aerial-Vehicle (UAV)-assisted free space optics (FSO) communication, Intelligent Receiver Design, and Intelligent-Reflecting-Surfaces (IRS)-aided FSO and RF communications.

Details of Research Highlights:

- 1) Our research group has published 3 SCI/SCI-E indexed Journal articles including 2 IEEE Journals/Transactions, 5 IEEE National/International conference articles, and 1 Book Chapter
- 2) As of now, 2 sponsored research projects (one as PI and another one as Co-PI) are ongoing, 1 research project was completed as PI, and 1 Consultancy project is ongoing. Further, 2 research projects have been submitted for possible funding to various funding agencies
- 3) Mr. Narendra Vishwakarma, PhD Student from our lab, is a Recipient of prestigious Prime Minister's Research Fellowship
- 4) 13 online invited lectures in various educational institutions including NITs, IITs, IIITs have been delivered
- 5) Organized a AICTE-QIP sponsored online STC with total number of participants equal to 92
- 6) Two internship students received online training in our research group

Details of Projects active:

1. High-Altitude Platform Station based Hybrid FSO/RF Communication for Future Satellite Communication Systems (PI, Dec 2019 to June 2022)
- 2) Statistical Modelling and Analysis of Reconfigurable-Intelligent-Surfaces-Assisted Hybrid FSO/RF System (PI, From Feb. 2022)
- 3) Development of Landslide Early Warning System and Real-time Monitoring, Uttarakhand (Co-PI, from June 2020)
- 4) Opinion on Functionality of Telecommunication towers and Telecommunication Equipment installed on Telecom Tower (Consultancy Project, from June 2022)

Total number of Books published/under process: 1 Book Chapter

Total number of Journal Articles published/under process: 3 Published and 1 Under Review

Total number of courses/conferences/workshops organized: 1 QIP course organized

Any other Achievements, Awards and Recognitions: Participated in Intra-Staff Badminton Tournament and Secured Third Position

List of UG course(s) taught: 1. EE 303 Probability and Random Processes 2. EE 104 Basic Electrical and Electronics Engineering

List of PG course(s) taught: 1. EE 642 Wireless Communications 2. EV 402/602 Vehicular Communication

Total number of PG dissertation(s) guided

2

Total number of PhD student(s) guided: 3 (Ongoing, Including 1 Co-supervisor)

Dr. Sumit Gautam

Assistant Professor Grade-II
sumit.gautam@iiti.ac.in
PhD, University of Luxembourg



Previous Employment details before joining IIT Indore:

1. Consultant at Incluso AB : BTS Algorithm and Channel Modeling Expert (Client: Huawei Technologies Sweden AB), Gothenburg, Sweden. August 2021 to December 2021.
2. Post-Doctoral Research Associate at University of Luxembourg. March 2020 - July 2021.

Details of Research Area: Simultaneous Wireless Information and Power Transfer, Caching, Optimization Methods, Hybrid Active-and-Passive Cooperative Communications, and Precoding for Multi-group Multicast systems.

Details of Research Highlights: Recent research articles have been published in eminent journals such as: IEEE Access, IEEE Open Journal of the Communications Society (OJ-COMs), and MDPI Sensors (invited paper); and prestigious conferences like: IEEE CAMAD and IEEE VTC. One Start-up Research Grant Project has also been submitted to SERB. Serving as voluntary Reviewer for renowned conferences and journals.

Total number of Journal Articles published/under process: Journals: 03, Conference Papers: 02

List of UG course(s) taught: EE306: Digital Communications (Second half)

Dr. Vijay A. S.

Assistant Professor Grade-II
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PhD, IIT Bombay



Previous Employment details before joining IIT Indore:

A. S. Vijay received the B.Tech. degree in Electrical Engineering from the Visvesvaraya Technological University, Karnataka, India in 2010 and the M.Tech. and PhD degrees from the Indian Institute of Technology, Bombay, Mumbai, India in 2012 and 2020 respectively. He was a battery systems engineer at Sony Energy Devices Corporation, Japan from 2012 to 2014 and worked as a post-doctoral fellow at IIT Bombay in 2021.

Details of Research Area: His research interests include real-time simulation, power level emulation, power electronics in distributed generation and power quality.

Details of Research Highlights: The research is focused on addressing the aspects of proportional load power sharing between distributed generators in islanded AC microgrids and new control strategies for the same have been worked upon. Another issue is the suppression of circulating currents and the aspects of power quality issues like unbalanced and non-linear loads.

Total number of Journal Articles published/under process: 3 Journals published, 2 under review

Any other Achievements, Awards and Recognitions: Naik and Rastogi Award for Excellence in Ph.D.

Research, IIT Bombay. Excellence in Ph. D. Thesis

List of UG course(s) taught: EE 206: Electrical Machines and Power Electronics (Spring 2022), EE 256: Electrical Machines & Power Electronics Laboratory (Spring 2022)

Dr. Appina Balasubramanyam

Assistant Professor Grade-II
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 PhD, Indian Institute of Technology Hyderabad



Previous Employment details before joining IIT Indore:
 Assistant Professor, IIITDM Kancheepuram (10/2019-07/2022)
 Postdoctoral fellow, IIT Madras (04/2019-10/2019)
 Senior Design Engineer, Ineda Systems Pvt. Ltd. (09/2018-03/2019)

Details of Research Area: Image and video processing, Multimedia quality assessment, Display technology

Details of Research Highlights: Subjective analysis on image and video content. Objective analysis. Mathematical modeling based on statistical analysis and machine learning methods

Details of Projects active: Title - A Decision-Making Algorithm for Driving Assistance System based on Environment Visibility Conditions. Duration - Dec 2020 – Dec 2022 Funding Agency - SERB – DST, Start-Up Research Grant (SRG).

Total number of Journal Articles published/under process 1

Dr. Mukesh Kumar

Professor
 mukesh.kr@iiti.ac.in
 PhD, Tokyo Institute of Technology Japan
Details of Research Area: Nanoelectronics, Integrated Photonics



Details of Projects active:
 1 On-Chip Control of Polarization and Delay in Arrayed Waveguide Grating MEITY (2021-2024) Principal Investigator
 2 Nanophotonic Structures Based on Composite Materials for Integrated Silicon Photonic Devices SERB (2021-2024) Principal Investigator
 3 Fabrication of Silicon Photonic Nanostructured Devices for Optical Communication and Interconnects Nano Mission, DST (2019-2022) Principal Investigator
 4 Silicon Nanophotonic Platform for Optical Guidance and Control in Broadband Communication CSIR (2020-2023) Principal Investigator
 5 Photonic Crystal based Hollow Waveguide for Optical Communication DRDO (2016-2019) Principal Investigator
 6 Nano Optoelectronics Sensing platform for fast and efficient Lab-On-Chip applications SERB, DST (2016-2019) Principal Investigator
 7 Integrated nanophotonic platform for Communication and Bio-Sensing CSIR (2015-2018) Principal Investigator

Total number of Journal Articles published/under process 5
 Total number of courses/conferences/workshops organized 1
 Any other Achievements, Awards and Recognitions: Associate Editor, IEEE Photonics Journal
 Total number of UG course(s) taught 2
 Total number of PG course(s) taught 2

Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	2

Dr. Abhinoy Kumar Singh

Inspire Faculty

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PhD, Indian Institute of Technology Patna



Previous Employment details before joining IIT Indore:

I worked at Shiv nadar University as an Assistant Professor for four months (Dec. 2016 to Apr 2017). Then, I moved to Canada for pursuing postdoctoral research at McGill University, Canada, where I worked for a year and a month (May 2017 to May 2018). I returned India in June 2018 and joined Adani Institute of Infrastructure Engineering, where I worked for four months (June 2018 to Oct. 2018). In Oct. 2018, I joined IIT Indore and working here for the last three years and nine months.

Details of Research Area: During July 2021 - June 2022, I worked on developing estimation and filtering algorithms for the state-of-art sensor-data analysis. I developed various estimation and filtering algorithms to address several challenges appearing the sensor- data, such as delayed measurements and intermittently missing measurements. I also worked on developing continuous glucose estimation algorithm, which can be used in developing an artificial pancreas.

Details of Research Highlights: During July 2021-June 2022, I got three journal publications and one book chapter accepted/published. I also had three research projects active during this period, two as PI and one as Co-PI. During this period, four PhD students were working in my lab and one MTech student completed his thesis work

Details of Projects active:

1. New estimation and filtering algorithms, and their possible application in continuous glucose monitoring, Inspire Faculty Project, Ref. no. DST/INSPIRE/04/2018/000089, Department of Science and Technology (DST), Amt: 35 Lakhs, Duration: 5 years (Oct 2018-Oct 2023).
2. Advanced Nonlinear Filtering Using Improved Quadrature Rule, Core Research Grant (CRG), Ref.no. CRG/2019/001356, Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Amt: 29.37 Lakhs, Duration: 3 years (Feb 2020-Feb 2023).
3. Indo-Norwegian collaboration in Intelligent Offshore Mechatronics Systems (INMOST), Norwegian Research Council (RCN) under INTPART Scheme, Amt: 56,20,000 NOK (INR 4,86,26,175) (42, 000 NOK for IIT Indore), Duration: 3 years (2020-2023). Collaborator: Lead Partner in Norway: Prof. Jing Zhou and Prof. Linga Reddy Cenkeramaddi, University of Agder (UiA), Norway, Participants from other institutes: Prof. Houxiang Zhang from NTNU, Norway, Dr. Jan Einar Gravdal from NORSE, Norway, Dr. Saidi Reddy Parne from NIT Goa, India, Dr. Santosh Kumar Vishvakarma, Co-Principal Investigator: Prof. Ram Bilas Pachori, Dr. Aruna Tiwari and Dr. Abhinoy Singh from IIT Indore, Dr. Rama Krishna Sai Gorthi from IIT Tirupati and Dr. Shaikshavali Chitraganti from IIT Palakkad.

Total number of Journal Articles published/under process	6
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List of UG course(s) taught: EE 205: Introduction to Electrical Systems, EE 302: Control Systems, EE 154: Basic Electrical and Electronics Engineering Lab, EE 352: Control Systems Lab

Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided	4

Dr. Nitya Tiwari

Inspire Faculty

nityatiwari@iiti.ac.in

PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

Worked as chief engineer at Samsung Research Institute Bangalore for 2 years and 5 months.

Details of Research Area: My research interests are in the areas of speech signal processing and digital signal processing. During Ph.D., I was involved in developing speech enhancement and dynamic range compression techniques for use in hearing aids. To gain industry experience and due to family commitments, I joined Samsung Research Institute Bangalore after Ph.D. where I am currently employed in the voice intelligence team as Chief Engineer. My work at Samsung involves developing speech pre-processing algorithms, including deep-learning-based noise suppression for automatic speech recognition systems.

Details of Research Highlights:

- (i) Time-domain single channel speech enhancement to improve speech quality and intelligibility,
- (ii) Noise aware speech enhancement to improve the perception in day-to-day noisy situations,
- (iii) Multichannel speech enhancement to improve the perception by separating the target speech from noise source located in spatially different direction,
- (iv) Binaural speech enhancement to preserve the binaural cues necessary for locating the direction of arrival of the source of speech, and
- (v) Implementation of these techniques on a smartphone as a low-cost alternative to hearing aids.

Details of Patents filled/awarded: Filed in 2019. Awarded in 2022. US Application No.: 17/272,507
Based on: PCT/IN2019/050630 Title: "Personal Communication Device as a Hearing Aid with Realtime Interactive User Interface"

Details of Projects active: DST/INSPIRE/04/2020/002163

List of UG course(s) taught: EE304 Digital signal processing

List of PG course(s) taught: EE740 Speech signal processing

Dr. Amod C. Umarikar

Associate Professor

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PhD, IISc Bangalore



Previous Employment details before joining IIT Indore:

Assistant Professor, IIT Indore, September 2009- June 2016

Lecturer BITS Pilani Goa Campus March 2009 - September 2009

Details of Research Area: Applications of Power Electronics in Renewable Energy Systems, Power Quality Monitoring

Details of Research Highlights:

- 1) Study of Grid Connected PV Inverters controlled as Grid Forming Converters.
- 2) Study of Standalone Photovoltaic Systems

Details of Projects active: DST SERB, "Development of Control Schemes to Enhance Stability and Dynamic Performance of Islanded AC Microgrids" 2021-2024 (Ongoing), Rs. 41,07,664/- (Co-PI)

Total number of Journal Articles published/under process	2
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: 1) EE201: Network Theory 2) EV408/608: Hybrid Electric Vehicles 3) EE206: Electric Machines and Power Electronics	
List of PG course(s) taught: 1) EE601: Power Electronics	
Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided	4

Dr. Vimal Bhatia

Professor
 vbhatia@iiti.ac.in
 PhD, The University of Edinburgh (QS-15), UK



Previous Employment details before joining IIT Indore:
 Worked in various IT industries in India and the UK

Present academic association(s) with other Institution(s): IIT Delhi

Details of Research Area: Research interests are in the broader areas of Communications, non-Gaussian non-parametric Signal Processing, nonlinear Signal Processing, machine/deep learning with applications to 6G, Quantum Communications, Image Processing, IoT, and Photonics.

Details of Research Highlights: "Best Student Poster" Award in the 5th IEEE Workshop on Recent Advances in Photonics (IEEE WRAP 2022) held at IIT Bombay. 5 patents have been granted. Overall more than 80 IEEE Journals with 28 IEEE Transactions, and the highest IEEE publication having IF 12.7. DST Observer for Entrepreneurship courses in MP

Details of Patents filled/awarded: 05 awarded

Details of Projects active: External projects as PI : 6G Connectivity for Sustainable Development Targeted at Rural and Remote Communities (International); Edge Caching for High Capacity Wireless Networks exploiting Big Data Analytics and Machine Learning (International); Centre for Secure and Resilient Quantum Optical Networks (International); Design and Implementation of Non-orthogonal Multiple Access Techniques for Future Wireless Systems; AI/ML for 6G (international); Design and Analysis of Non-Orthogonal Multiple Access Technique for IoT Devices; Deep Learning BAsed Laser Biospeckle Technique for Detection of Seed Quality Parameters

Total number of Books published/under process	2
Total number of Journal Articles published/under process	20
Total number of courses/conferences/workshops organized	5
Any other Achievements, Awards and Recognitions: Fellow OSI	
List of UG course(s) taught: EE 306: Digital Communications, EE 446/646: Information and Coding Theory, EE 356: Communications Lab, EE 154: Basic Electrical and Electronics Engineering Lab	
List of PG course(s) taught: EE 446/646: Information and Coding Theory, EE 603: Optimization Techniques	
Total number of PG dissertation(s) guided	5
Total number of PhD student(s) guided	8

Dr. Shaibal Mukherjee

Professor
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 PhD, University of Oklahoma, USA



Previous Employment details before joining IIT Indore: Post Doctoral Research Scientist, Center of Quantum Devices (CQD), Electrical Engineering and Computer Science, Northwestern University, Illinois, USA Duration: June 2009 - July 2010

Present academic association(s) with other Institution(s): Adjunct Faculty at RMIT University, Melbourne, Australia

Details of Research Area: The Hybrid Nanodevice Research Group (HNRG) led by Prof. Shaibal Mukherjee in Electrical Engineering at IIT Indore explores new physics of micro- and nano-structured materials, and to apply this knowledge in realizing advanced tools and devices for chemical, biological, optical, electronic and energy applications. HNRG has been actively involved in diverse research domains including design, fabrication, testing, and packaging of high-performance devices in: (a) RRAM/Artificial Neurons, (b) Photovoltaic, (c) Biochemical sensors to detect toxic gases and chemicals in the environment, (d) HFETs/HEMTs for high-power and high-frequency systems, (e) LED/Photodetectors. HNRG has strong collaborative research activities with eminent researchers, scientists, and experts from industries and institutions in India and abroad. Some of these Indian institutions and industries are IISc, IIT Bombay, CEERI Pilani, RRCAT, and M/s. Fourvac Technologies. Some of these foreign institutions are RMIT (Australia), Oak Ridge National Laboratory (USA), University of Oklahoma (USA), Novosibirsk State University (Russia), Shinshu University (Japan), Karlsruhe Institute of Technology (Germany), and M/s. Elettrorava spa (Italy). Former PhD students after doing their doctoral research work from HNRG are successfully placed in IITs, NITs, IIIT, IISc, SNU, and Japan.

Details of Research Highlights: (a) Low-cost HEMTs/HFETs for DC-to-DC converters (b) Novel 2D RRAM devices for image processing and neuromorphic computation (c) Next-generation ultrathin and low-cost photovoltaic (d) Flexible and low-cost bio-chemical sensors (e) High-performance UV detectors

Details of Projects active: 1. Impact of spacer layer in ZnO-based MOSHFET, DST SERB, INR 57,31,264, February 2022 – February 2025, Role: PI 2. Memristive Devices and Systems for Neuromorphic Computation, CSIR, INR 15,87,500, January 2021 – January 2024, Role: PI 3. 2D-TMD and carbon dot embedded metal-oxide nanomaterials for ultrasensitive and ultrasensitive H₂S detection, MHRD STARS, INR 99,70,000, December 2019 – December 2022, Role: PI 4. HEMT-based Sensors for IoT-enabled Water Quality Analysis, TIH IoT CHANAKYA GROUP (PhD, PG, UG) FELLOWSHIP PROGRAM 2021-22, INR 15,64,800, January 17, 2022 – January 16, 2024, Role: PI 5. 2D TMD Based Biomedical Sensor for Smart Health Monitoring via IOT, TIH IoT CHANAKYA GROUP (PhD, PG, UG) FELLOWSHIP PROGRAM 2021-22, INR 13,04,400, January 17, 2022 – July 16, 2023, Role: PI 6. On-chip polarization and delay control in arrayed waveguide grating, Ministry of Electronics and Information Technology, INR 79,00,000, October 2021-May 2024, Role: Co-PI 7. Design and implementation of non-orthogonal multiple access techniques for future wireless systems, Ministry of Communications and Information Technology, INR 42,46,480, March 2021 – August 2023, Role: Co-PI 8. Fabrication of Silicon Photonic Nanostructured Devices for Optical Communication and Interconnects, DST Nano Mission, INR 1,50,00,000, May 2019 – May 2022, Role: Co-PI

Total number of Books published/under process: 2 book chapters

Total number of Journal Articles published/under process 12

Total number of courses/conferences/workshops organized 3

Any other Achievements, Awards and Recognitions: (1). IETE Fellow, 2022; (2). Founding Chair of IEEE Madhya Pradesh Section Electron Devices Society (EDS) Chapter, 2022; (3) 2021 IEEE Nanotechnology Council (NTC) Best Chapter Award 2021; (4) Appointed as Associate Editor for IEEE Sensors Journal; (5) Recipient of 2021 Japan Society for the Promotion of Science (JSPS) Invitational

Fellowship Award

List of UG course(s) taught: Nanotechnology and Nanoelectronics (EE 429/EE 629); VLSI Systems and Technology (EE 311); VLSI Technology (EE 435/EE 635); Basic Electrical and Electronics Engineering Lab (EE 154);

List of PG course(s) taught: Nanotechnology and Nanoelectronics (EE 429/EE 629); VLSI Technology (EE 435/EE 635); Discrete Device Fabrication and Characterization Lab (EE 653)

Total number of PG dissertation(s) guided

4

Total number of PhD student(s) guided

10

Department of Mechanical Engineering

The Department of Mechanical Engineering is one of the oldest and largest departments in the Institute involving 24 full-time faculty members and over 10 full-time administrative and technical staff members. The Department offers science and engineering/technology based curriculum that focuses on imparting skills in technical education, problem solving and innovation of new technologies. The department has state-of-the-art research facilities to support the academic and research programs. One of our major objectives is to provide quality engineering education with basic and specialized engineering training for the present and emerging requirements.

Academic Programs

The Department offers various programs such as BTech, MTech, MS (Research), and PhD Programs with its additional dual degree programs (BTech+MTech), (MTech+PhD) and (MS-Research+PhD) in Mechanical Engineering. Currently, over 244 UG, 32 PG, and 56 PHD students are on a roll; also, the department hosts several postdoctoral fellows. Currently, the department offers three MTech programs: (i) Advanced Manufacturing (AY 2022 onwards), earlier Production and Industrial Engineering (AY 2013-2021) (ii) Mechanical System Design, and (iii) Thermal and Energy Systems (AY 2022 onwards). The Department has MTech and PhD students from DRDO, armed forces and other government and private organizations related to Mechanical Engineering. It also hosts international MTech students, including those from Nepal and Nigeria.

NUMBER OF FACULTY MEMBERS: 24	
PROFESSOR	8
ASSOCIATE PROFESSOR	5
ASSISTANT PROFESSOR GRADE II	1
ASSISTANT PROFESSOR GRADE I	10
NO. OF POST DOC FELLOWS	06

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	85	56
MTech	18	12
MS Research	04	5
PhD	10	14

R&D Activities

The Department of Mechanical Engineering has carried out several sponsored and consultancy research projects for government and private organizations like DRDO, ISRO, John Deere (India) and Simple Energy Private limited. The department has also established state-of-the-art research facilities and conducted several academic activities like STPs and FDPs for industry and academic people. Some of these are mentioned below:

1. Development of micro-plasma transferred arc (μ -PTA) wire and powder deposition processes for various meso-sized additive manufacturing (AM) of different metallic materials, knee implants from biocompatible materials, development of functionally graded materials (FGM) and shape memory materials (SMM)

2. Development of algorithm for fault detection of wind turbine gearbox.
3. Development of Lead Free Triboelectric Nanogenerators to harvest energy from vibration.
4. Development of SMA integrated jellyfish soft robotic structure for underwater robotic systems.
5. Development of light weight heat sink integrated with phase change material (PCM) for cooling applications.
6. Study of thermally sprayed ceramic coatings applied on steel substrates for tribo-mechanical and biological applications.
7. Development of Thermo-Mechanical Test Bench for Reliability Estimation of Shape Memory Alloy (SMA) Springs.
8. Study of deformation and fracture behavior of nanoglasses and nanoglass-metallic glass nano-composites.
9. Force and vibration analysis in biomechanical preparation of root canals using reciprocating endodontic file system.

Notable Activities in the Department

1. Faculty members of the department have conducted 8 short term courses
2. Research activities resulting in the filing of 6 patents.
3. Started a new M. Tech program in "Thermal and Energy Systems".
4. M. Tech in Production and Industrial Engineering has been restructured to M.Tech in Advanced Manufacturing.
5. Two PhD students have been awarded SERB-OVD fellowship and one PhD student has been awarded the PMR fellowship
6. New research and testing facilities were established.
7. Received 10 grants in the form of consultancy and sponsored projects, worth more than 2 Cr.
8. Two GIAN courses were conducted by the faculty members of the Department
9. Our PhD Students visited University of Gothenburg under an exchange Program (SPARCH scheme)

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	8	2
ONGOING PROJECTS	29	2
COMPLETED	1	4

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	1	20	55	90

Dr. Santosh Kumar Sahu

Professor and Head of Department
sksahu@iiti.ac.in
PhD, IIT Kharagpur

**Previous Employment details before joining IIT Indore:**

NIT Rourkela, Assistant Professor (28.03.2008 to 12.10.2009)

Details of Research Area: Thermal engineering, Nuclear thermal hydraulics, Phase change materials, jet impingement cooling, heat exchanging equipments, pool boiling, nanofluids, thermal management, energy storage and synthetic jets

Details of Research Highlights: Various research work has been made in the area of fundamental aspects of heat transfer and fluid flow problems as applicable for energy conservation, efficiency and storage.

Details of Patents filled/awarded: A method for estimating the gas adsorption capacity of a solid adsorbent (Dr. Shailesh Kundalwal, Nitin Luhadiya, and Prof. Santosh Kumar Sahu)

Details of Projects active:

1. A novel thermal management system for electric vehicle batteries using phase change composite, CSIR, India (PI)
2. Unraveling the potential of graphene quantum dots for hydrogen storage in fuel cells, DST, India (Co-PI)
3. Unraveling the potential of graphene quantum dots for hydrogen storage in fuel cells: computational and experimental study, MOE, India (Co-PI)
4. Thermal performance of novel phase change composite for electric vehicle battery modules, MOE, India (Co-PI)
5. Development of novel shape stabilized and flame redundant phase change composite for thermal management of battery modules, Simple Energy Private Limited, Bangalore (PI)

Total number of Journal Articles published/under process 11

Any other Achievements, Awards and Recognitions:

1. Mr. Vivek Saxsena, PhD scholar (Supervisors: Profs. S K Sahu and S I Kundalwal) has received the Prime minister's fellowship (PMRF) to carry out PhD dissertation at IIT Indore, 2021
2. Mr. Pushpanjay Singh, PhD Scholar (Supervisors: Profs. S. K. Sahu and P K Upadhyay) has received Young Scientist Award in the Discipline of Mechanical Engineering at 37th Madhya Pradesh Young Scientist Congress [MPYSC2022], 2022.

List of UG course(s) taught: Fluid Mechanics (ME203), Fluid Machinery (ME-204)

Total number of PG dissertation(s) guided: 02(01 completed; 01 ongoing)

Dr. Suhas S. Joshi

Professor and Director, IIT Indore
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PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

- Assistant Manager (Engine Development), Engineering Research Center, Tata Motors (India) Ltd., Pune - 411 018 (India) (December 1997 to August 1999).
- Post-doctoral Research Affiliate, G.W. Woodruff School of Mechanical Engineering Georgia Institute of Technology, Atlanta, GA, USA (BOYSCAST Fellowship by D.S.T., Govt. of India for research on Micro-machining) - February 2002 to July 2002.
- Visiting Assistant Professor, Department of Mechanical Science and Engineering, University of Illinois, Urbana-Champaign, IL, USA (August 2005 to August 2006).
- Professor, Department of Mechanical Eng., Indian Institute of Technology Bombay (India) (November

1999 to date). (Asso. Prof. 2005; Full Prof. 2009)

- 'Rahul Bajaj' Chair Professor of IIT Bombay (2014 – 2022)
- Head of Mechanical Engineering Department, IIT Bombay (2014 – 2017)
- Dean of Alumni and Corporate Relations, IIT Bombay (2018 – 2022).
- Director, Indian Institute of Technology Indore (2022 – To date)

Present academic association(s) with other Institution(s):

- Dean of Alumni and Corporate Relations, IIT Bombay (2018 – 2022)
- Head of Mechanical Engineering Department, IIT Bombay (2014 – 2017)
- 'Rahul Bajaj' Chair Professor of IIT Bombay (2014 – 2022)
- Professor, Department of Mechanical Eng., Indian Institute of Technology Bombay (India) (November 1999 to date). (Asso. Prof. 2005; Full Prof. 2009)
- Visiting Assistant Professor, Department of Mechanical Science and Engineering, University of Illinois, Urbana-Champaign, IL, USA (August 2005 to August 2006).
- Post-doctoral Research Affiliate, G.W. Woodruff School of Mechanical Engineering Georgia Institute of Technology, Atlanta, GA, USA (BOYSCAST Fellowship by D.S.T., Govt. of India for research on Micro-machining) - February 2002 to July 2002.
- Assistant Manager (Engine Development), Engineering Research Center, Tata Motors (India) Ltd., Pune - 411 018 (India) (December 1997 to August 1999).

Details of Research Area: Modeling machining of 'difficult-to-machine' materials (MMCs, Inconel, Titanium) Modeling and development of micro-machining processes. Laser micro-machining, LIGA and Nano-polishing.

Details of Patents filled/awarded:

- A Customizable Wire Electric Discharge Machine a. Makarand M. Kane, Kamlesh Joshi, Nitin Tiwari, S. V. Kulkarni, Himanshu Bahirat, Suhas S. Joshi b. Indian Patent Appl. No. 202021032434 c. Date of Filing 29 Jul 2020
- An Electrical Supply Scheme for Multi-wire EDM a. Makarand M. Kane, S. V. Kulkarni, Himanshu Bahirat, Suhas S. Joshi b. Indian Patent, Appl. No. 202021041051 c. Date of Filing 22 Sep 2020
- Electrical Supply Scheme with time interleaving for Multi-wire Electric Discharge Machine a. Makarand M. Kane, S. V. Kulkarni, Himanshu Bahirat, Suhas S. Joshi b. Indian Patent, Appl. No. 202021044094 c. Date of Filing: 09 Oct 2020

Any other Achievements, Awards and Recognitions:

Fellow of National Academy of Science India - 2021

Fellow of American Society of Mechanical Engineering (ASME) – 2022

Dr. Anand Parey

Professor

anand.parey@iiti.ac.in

PhD, Indian Institute of Technology Delhi



Previous Employment details before joining IIT Indore:

Post-Doctoral Fellowship from the University of Alberta, Edmonton, Canada from Dec 2006 to Dec 2007. Manager in Heavy Engineering Division, Larsen and Toubro Ltd. Mumbai, from Sep. 2008 to July 2009, Manager-Technology in Global R&D Centre, Crompton Greaves Ltd. Mumbai from April 2008 to August 2008. Lecturer in Department of Mechanical Engineering, BITS Pilani Goa Campus from Aug 2005 to Nov. 2006.

Details of Research Area: Condition monitoring, noise and vibration isolation, Signal processing of mechanical systems

Details of Research Highlights:

Developed algorithm for fault detection of wind turbine gearbox.

Dr. Ritunesh Kumar

Professor
ritunesh@iiti.ac.in
PhD, IIT Delhi



Previous Employment details before joining

IIT Indore: Senior Engineer, Tata Consulting Engineers Limited, Vikhroli, Mumbai

Details of Research Area: Heat transfer at microscale, Open absorption air conditioning systems and biofuels

Details of Research Highlights: i. Awarded Indo-Austria project for research on solar cooling.

Details of Projects active: i. Sustainable comfort through building optimization and solar cooling in India.

Total number of Journal Articles published/under process	11
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: i. ME-206; ii ME-301	
Total number of PhD student(s) guided	2

Dr. Neelesh Kumar Jain

Professor
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PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:

IIT Roorkee (June 2004 to Jan 2010)

Oklahoma State University, Stillwater, USA (July to Dec 2008)

South Asia International Institute, Hyderabad (July 2003 to May 2004)

Netaji Subhas Institute of Technology, New Delhi (July 2002 to June 2003)

Details of Research Area: Additive Manufacturing of High Melting Point Materials; 3D-Printing of Metallic Biocompatible Materials for Orthopedic Implants; Friction Stir Powder Additive Manufacturing; Development of HEA, FGM, SMM through Additive Manufacturing Route; Advanced and Hybrid Machining and Nano-finishing Processes; Modeling and Optimization of Manufacturing Processes; High Quality Gear Finishing by Advanced Finishing Processes; Green Hobbing of Gears; Near Net-shape Manufacturing of Miniature and Non-Circular Gears; Micro-joining of Thin Sheets

Details of Research Highlights:

1. Development of Pulsed electrolytic dissolution (PED) based machine to impart five types of flank

modifications namely tip relief, root relief, end relief, flank crowning, and profile crowning to spur gears. Theoretical model have been developed also

2. Development of Ti-Nb-Ta-Zr-Mo High Entropy Alloy and Co-Cr-Mo-xTi alloys for orthopedic implant applications;
3. Development of friction stir powder additive manufacturing processes for aerospace grade Al alloys

Details of Patents filled/awarded: A Cathode Tool for Gear Tooth Flank Modification by Electrochemical Machining, Inventors: Vivek Rana, Neelesh Kumar Jain, Sunil Pathak, Indian Patent Application No. 202221016570 [Filed on 24th March 2022; Published on 6th May 2022]

Details of Projects active: DST-FIST Project on Gear Engineering of Rs. 2.8 Crore
 Total number of Books published/under process: One Book and 7 book chapters
 Total number of Journal Articles published/under process

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Any other Achievements, Awards and Recognitions:

1. Included as Member in National Advisory Committee (NAC) of AIMTDR in Dec 2021
2. Education Leadership Award by World Education Congress on 26th Aug 2021
3. Chief Guest, online inauguration of 72 FDP by ATAL Academy of AICTE, 5th July 2021
4. Chief Guest, Valedictory function of International Conference on Advanced Materials and Mechanical Characterization (ICAMMC 2021), jointly held by IIT Indore, IIT Hyderabad, SRM Institute of Science and Technology, 4th Dec 2021
5. Chief Guest, Invocation Ceremony 2021, Prestige Institute of Engineering Management and Research, Indore, 18th Nov. 2021
6. Patron, Workshop on "High Performance Computing in the Agriculture Domain" SERC under NSM, 14-16 July 2021

List of UG course(s) taught: None (because I was Officiating Director till 30 Jan 2022)

List of PG course(s) taught: None (because I was Officiating Director till 30 Jan 2022)

Total number of PG dissertation(s) guided: No student was allotted to me

Total number of PhD student(s) guided: Two [Vishal Kharka completed his PhD on 8th March 2022 and Pravin Kumar completed his PhD on 29th March 2022]

Dr. Satyajit Chatterjee

Associate Professor
 satyajit@iiti.ac.in
 PhD, IIT Kharagpur



Previous Employment details before joining IIT Indore:

Joined IIT Indore as Assistant Professor on December 21, 2010 immediately after completion of PhD.

Details of Research Area: Surface Technology, Coatings Tribology, Solid Lubrication

Details of Research Highlights: Our research endeavors include Surface Technologies, Coatings' Tribology and Solid Lubrication. We primarily focus on the development of protective coatings with a suitable combination of hardness, thermal stability, wear and corrosion resistance and low friction characteristics following different methods and procedures. Hard coatings can be manufactured in-situ or ex-situ through laser surface alloying (LSA) or powder metallurgical routes. Manufacturing such hard metal matrix or ceramic matrix composite coatings can increase the potential of a metal surface in tribological applications. We are also involved in the development of electroless Ni plating, which is also one effective route to manufacture metal alloy or composite coatings with considerable superiority in terms of hardness and tribological properties and has relevance to aerospace, automotive, chemical and electrical industries. Presently, we are trying to find a way to incorporate lubricious phases into the electroless coating matrix with a view to improve its frictional properties.

Details of Patents filled/awarded: One filed (under process)

Details of Projects active: Title: Imparting solid lubrication and hardness in multi-component electroless composite coatings for tribological applications. Funding agency: CSIR.

Total number of Journal Articles published/under process: 3 published, 2 under review.

List of UG course(s) taught: Theory of Manufacturing Processes (ME208), ME355

List of PG course(s) taught: Micro and Precision Manufacturing (ME659), Materials Characterization Techniques (ME650)

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided 2

Dr. Bhupesh K. Lad

Professor
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PhD, IIT Delhi



Previous Employment details before joining IIT Indore:

GE, Global Research Center, Bengaluru (2010-2011)

Details of Research Area: Smart Manufacturing

Details of Research Highlights: Smart manufacturing is where manufacturing machines and systems are self-aware, can communicate with each other, and are able to make decisions that will improve system performance. Smart manufacturing requires machines to have the ability to gather (and share) data about its condition and operation, ability to perform data analytics to understand how its condition and operation affects system performance, and decision-making ability to take actions that will improve/optimize system performance based on the gathered data. In line with this, my research aims to investigate various aspects of smart manufacturing and its application in industries. During last one year, my group was mainly involved in following two specific research projects (1) Design of an agent based distributed production scheduling approach, (2) Evolution of Digital Twin (DT) over the product life cycle.

Details of Projects active: I was involved in following projects during last one year.

(1) Strengthening Collaboration in the area of Smart Manufacturing, Distinguished International Associate (DIA) award, (March 2021-March 2023, £10,000), Royal Academy of Engineering, London, 2021. Under this we conducted one short course. One joint skill course with industry partners is planned in the month of August 2022.

(2) Industry-Academia Consortium for Digitization in Small and Medium Enterprises (SMEs) (April 2019-Feb 2022, £50,000)-Royal Academy of Engineering, London, (PI). Industry-Academia collaboration has tackled the problem of developing pathways for digital engagement that the SMEs can consider transforming themselves into highly efficient digitally-enabled manufacturing businesses. Under this project seven technology solutions are developed for MSMEs. In addition, we developed three laboratory setups and conducted 4 workshops on smart manufacturing.

(3) Digital twin development for torqueing application, (2020-2021, ₹ 330,400)- John Deere, India, (PI). A prototype for Digital Twin for torqueing process is developed. The developed digital twin was able to do basic analytics in addition to the visualization of the process.

(4) IITI DRISHTI CPS Foundation, (2021 onwards, ₹ 100 cr) DST. Under this project a group of faculty members from IIT Indore is working to develop a Technology Innovation Hub (TIH) at IITI Indore. Major activities done during last 10 months are: (1) designing of various programmes/initiatives to implement the scheme, (2) detailing of TIH focus areas, (3) grant of technology development projects, (4) grant of UG/PG/PhD fellowships, (5) securing NVIDIA hardware grant, (6) release of first issue of

outreach bulletin, (7) streamlining various administrative procedures.

Total number of Journal Articles published/under process 3

Total number of courses/conferences/workshops organized 1

List of UG course(s) taught: ME 307

List of PG course(s) taught: ME 672

Dr. Kazi Sabiruddin

Associate Professor

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PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore:

I worked as an assistant professor in the department of mechanical engineering of JUET, Guna for one and half years. Prior to that, I worked as an assistant professor for one year in the department of mechanical engineering of BIT Mesra.

Details of Research Area: I have conducted research works on thermally sprayed ceramic coatings applied on steel substrates for tribo-mechanical and biological applications.

Details of Research Highlights: Bio-waste seashell materials are converted into useful HA powders by hydrothermal reaction method. Further the synthesized HA powders are sprayed on sand blasted Ti-alloy substrates for bio-mechanical applications. The mechanical and biological properties of the coated samples are studied by various characterization methods.

Details of Patents filled/awarded: A swarf-based substrate used for additive manufacturing, and process of preparation of same. By Madhukar Yuvraj K., Khan Anas Ullah, Palani I A, Chatterjee Satyajit, Kazi Sabiruddin, Indian patent appl. No. 202121000441A

Total number of Journal Articles published/under process 2

Any other Achievements, Awards and Recognitions: Joined editorial board of Frontiers in Coatings, Dyes and Interface Engineering as a reviewer editor

List of UG course(s) taught: ME 305, ME 355

List of PG course(s) taught: ME 660

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided: 1 (continuing)

Dr. Shanmugam Dhinakaran

Professor

sdhina@iiti.ac.in

PhD, IIT Kharagpur



Details of Research Area: Computational Fluid Dynamics and Heat Transfer, Biofluid Mechanics and Bioheat Transfer

Details of Research Highlights: We published a review article this year that discussed the various types of Energy storage systems (ESS), their history, benefits, drawbacks, and the technology readiness level of various ESS. Using CFD techniques, we investigated the heat transfer from an array of prisms placed side by side. This research has applications in microchip cooling.

Details of Projects active:

Title: Drug diffusion studies in Skin (Status: ongoing; Role: PI) Duration: 3 Years (2022 - 2025) Funding Agency: Science and Engineering Research Board (SERB), Core Research grant Brief Description: This project deals with the diffusion of drugs in skin layers. Fund amount: 33 Lakhs

Title: Development of kits for testing of milk adulterants (Status: ongoing; Role: PI) Duration: 6 months (May 2022 - Nov 2022) Funding Agency: Unnat Bharat Abhiyan Brief Description: This project deals with design and development of kits for testing adulterants in milk. Fund amount: 1 Lakh

Total number of Journal Articles published/under process	2
Total number of courses/conferences/workshops organized	3
List of UG course(s) taught: ME301 (Heat Transfer), ME407/607 - Biofluid Mechanics, ME418/618 (Computational Fluid Dynamics), ME351-Thermodynamics	
List of PG course(s) taught: ME407/607 - Biofluid Mechanics, ME418/618 (Computational Fluid Dynamics)	
Total number of PhD student(s) guided	1

Dr. Devendra Laxmanrao Deshmukh

Associate Professor
 dldeshmukh@iiti.ac.in
 PhD, IISc Bangalore



Details of Research Area: Sprays, Combustion, Multiphase flows, I.C. Engines, Hybrid Electric Vehicles

Details of Research Highlights: My area of research and interest are renewable fuel and advanced combustion technologies in CI and SI engine for emission reduction. The sprays of various fuels (biodiesel, diesel, gasoline ethanol) and their blends are being studied to understand their suitability for low temperature combustion in diesel engine. I want to extend this to develop an engine with minimum emission and efficiency higher than CI engine. I am also working on to development of an advanced spray and combustion diagnostics in optical engine and spray chamber. I am working on in-house development of an electric vehicle which will run on solar energy with UG student group.

Details of Projects active:

1. Structured Illumination for Turbid and Turbulent Environments (SITTE)
2. Development of a technique for visualization of preformed fragments in detonation gas cloud

Total number of Journal Articles published/under process:

1. Chaudhari V.D.;Deshmukh D. "Fuel flexibility study of various fuels with charge dilution and high compression ratio for medium-load operating RCCI engine" Fuel, Year 2021
2. Chaudhari V.D.;Jagdale V.S.;Chorey D.;Deshmukh D. "Combustion and spray breakup characteristics of biodiesel for cold start application" Cleaner Engineering and Technology, Volume 5, Year 2021
3. Chorey D.;Koegl M.;Boggavarapu P.;Bauer F.J.;Zigan L.;Will S.;Ravikrishna R.V.;Deshmukh D.;Mishra Y.N. "3D mapping of polycyclic aromatic hydrocarbons, hydroxyl radicals, and soot volume fraction in sooting flames using FRAME technique" Applied Physics B: Lasers and Optics, Volume 127, Year 2021

List of UG course(s) taught: ME302- Applied Thermodynamics, ME/EVT 408 Hybrid Electric Vehicles, ME532 Applied Thermodynamics Lab., IC211 - Experimental Engineering

List of PG course(s) taught: ME/EVT 608 Hybrid Electric Vehicles

Total number of PhD student(s) guided	3
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Dr. Shailesh Kundalwal

Associate Professor
kundalwal@iiti.ac.in
PhD, IIT Kharagpur



Previous Employment details before joining IIT Indore:

1. Postdoctoral Fellow, Department of Mechanical and Industrial Engineering, University of Toronto, Canada [1 yr. and 3 mth.]
2. Postdoctoral Researcher, Mechanical & Materials Engineering Dept., Masdar Institute of Science and Technology, UAE [6 mth.]
3. Banting Fellow, Department of Mechanical and Industrial Engineering, University of Toronto, Canada [1 yr. and 4 mth.]
4. Visiting Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Indore [2 mth.]
5. Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Indore [2 yrs. and 7 mth.]
6. Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology Indore [Aug 2019- present]

Details of Research Area: Besides being amongst the first to start research work in flexoelectricity in low-dimensional systems in India, his research areas are contributing to the broad field of composites, smart structures, and hydrogen storage in carbon-based nanostructures. The past year resulted in a significant advance in his scholarly work and promoted high level training of highly qualified personnel at IIT Indore in these areas.

Details of Research Highlights:

1. Modelling of flexoelectric graphene-based structures: beam, plate, wire and shell.
2. Experimental and numerical investigations of multifunctional properties of MWCNT-based hybrid nanocomposites.
3. Atomistic modelling of electromechanical response of pristine and defective boron nitride nanotubes
4. Characterizing the flexoelectric phenomenon in boron nitride nanosheets
5. Active vibration control of smart multiscale composite beams, plates and shells
6. Strain and defect engineering of graphene for hydrogen storage: atomistic modelling
7. Atomistic modelling of garphenes for hydrogen storage
8. Design and development of additively manufactured SS316L stainless steel open pore foam for the acoustical applications.

Details of Patents filled/awarded: A patent filled to the Indian Patent Office pertaining to the invention which relates to a method of estimating the gas adsorption capacity of a solid adsorbent. Particularly, the filled invention estimates the gas adsorption capacity of a solid adsorbent using molecular dynamics techniques in a reliable way accounting the surface and edge effects of nanostructures such as graphene, carbon nanotubes etc.

Details of Projects active:

1. Characterizing the flexoelectric phenomena in monolayer boron nitride nanosheets, sponsored by SERB-ECRA (PI).
2. Modelling and tuning of electromechanical response of boron nitride nanotubes using a novel flexoelectricity phenomenon, sponsored by Shastri Indo-Canadian Institute (National PI).
3. Atomistic modelling of garphenes for hydrogen storage, sponsored by MHRD under PMRF scheme (PI).
4. Functionalized polycrystalline carbon nanotubes and their bundles as potential candidates for hydrogen storage, sponsored by CSIR (PI).
5. Modelling and development of high-strength and lightweight CNT-based composite structures for high performance EMI shielding of space vehicles, sponsored by ISRO (PI).
6. Graphene quantum dots for hydrogen storage in fuel cells, sponsored by DST (PI).
7. Design and development of additively manufactured SS316L stainless steel open pore foam for the acoustical applications, sponsored by SERB-NPDF (Project Mentor).

Total number of Journal Articles published/under process: Total 13 International Journal papers as PI and corresponding author. Two in Thin-Walled Structures [IF: 4.442]; Two in Acta Mechanica [IF: 2.698]. Diamond and Related Materials [IF: 3.806]; Journal of Composite Materials [IF: 2.591]; Journal of Intelligent Material Systems and Structures [IF: 2.588]; International Journal of Mechanics and Materials in Design [IF: 4.011]; Applied Physics A [IF: 2.584]; Journal of Micromanufacturing; The Proceedings of the Institution of Mechanical Engineers, Part L: Journal of Materials: Design and Applications [IF: 2.311]; International Journal of Hydrogen Energy [IF: 5.816]; Carbon Letters [IF: 2.129]; Physica E: Low-Dimensional Systems and Nanostructures [IF: 3.382].

Any other Achievements, Awards and Recognitions: RECOGNITION: Dr. Kundalwal's name featured in the list of top 2% global scientists published in PLOS Biology by Stanford University in 2021. His worldwide rank in Mechanical Engineering is 600 as per Elsevier BV August 2021 data-update for "Updated science-wide author databases of standardized citation indicators".

List of UG course(s) taught: 1. Kinematic and Dynamics of Machines (ME 303) – Sole 2. Kinematic and Dynamics of Machines Lab (ME 353) – Sole

List of PG course(s) taught: 1. Composite Materials (ME738) – Jointly 2. Vehicle Dynamics (EV401/601) – with others

Total number of PG dissertation(s) guided:

1. Deepak Kag, MS (Research), "Strain and defect engineering of graphene for hydrogen storage: atomistic modelling" [sole supervised]

Total number of PhD student(s) guided:

1. Kishor Shingare, PhD Awarded, "Modelling of flexoelectric graphene-based structures: beam, plate, wire and shell" [sole supervised].
2. Ankit Rathi, PhD Awarded, "Experimental and numerical investigations of multifunctional properties of MWCNT-based hybrid nanocomposites" [sole supervised].
3. Vijay Choyal, PhD Awarded, "Atomistic modelling of electromechanical response of pristine and defective boron nitride nanotubes" [sole supervised].
4. VK Choyal, PhD Awarded, "Characterizing the flexoelectric phenomenon in boron nitride nanosheets" [sole supervised].
5. Madhur Gupta, PhD Thesis Submitted, "Active vibration control of smart multiscale composite beams, plates and shells" [PI].

Dr. Indrasen Singh

Associate Professor
indrasen@iiti.ac.in
PhD, IISc Bangalore



Previous Employment details before joining IIT Indore:

I worked with DRDO from 2004-2007. from 2007-2010, worked with PTC Software India Pvt. Ltd. did postdoctoral from NUS from October 2016 to April 2017.

Details of Research Area: Mechanical Behavior of materials; fracture mechanics; Plasticity; Piezoceramics; Glasses

Details of Research Highlights: Investigated the Indentation size effect in Nanoglasses and Piezoceramics.

Details of Projects active:

- 1) Experimental and numerical studies of fracture in Nanoglasses;

- 2) CARS for Failure Analysis of the Rotating Band under rammed condition for 155mm×52 cal Gun System through Numerical methodology;
 3) Experimental & Numerical Investigation of suitability of driving Band made of material other than Gilding metals.

Total number of Journal Articles published/under process	5
List of UG course(s) taught: ME 306; ME 257; ME 436; ME 437	
List of PG course(s) taught: ME 636; ME 637	
Total number of PG dissertation(s) guided	3
Total number of PhD student(s) guided	3

Dr. Yuvraj Kumar Madhukar

Assistant Professor Grade-I
 yuvrajmadhukar@iiti.ac.in
 PhD, IIT Kharagpur



Previous Employment details before joining IIT Indore: Post Doctoral
 Research Associate, Heriot-Watt University, Edinburgh, Scotland, UK, December 2015 to November 2017

Details of Research Area: Additive Manufacturing, Laser Material Processing, Automation and control

Details of Research Highlights: Innovative design solution for additive manufacturing process, Online monitoring and control of additive manufacturing parameters for quality assurance

Details of Patents filled/awarded: 1

Details of Projects active: 01 (Project Title: Development of Coaxial Multi-wire Feed Mechanism for Uniform and High Rate of Metal Deposition for Additive Manufacturing Application)

Total number of Journal Articles published/under process	1
List of UG course(s) taught: ME 208 (Theory of Manufacturing Processes), ME 493:B. Tech. Project (BTP)	
List of PG course(s) taught: ME 655 (Advanced Manufacturing Processes)	
Total number of PG dissertation(s) guided	3

Dr. Pavan Kumar Kankar

Associate Professor
 pkankar@iiti.ac.in
 PhD, Indian Institute of Technology Roorkee



Previous Employment details before joining IIT Indore:

- Associate Professor, Department of Mechanical Engineering, Indian Institute of Technology Indore, December 2018 to till date.
- Assistant Professor, Department of Mechanical Engineering, PDPM Indian Institute of Information Technology, Design and Manufacturing Jabalpur, July 2011 to November 2018.
- Assistant Professor, Department of Mechanical Engineering, College of Technology and Engineering, Udaipur, March 2005 to Dec. 2008.
- Lecturer, Department of Mechanical Engineering, Birla Institute of Technology & Science, Pilani, Oct. 2001 to Dec. 2004.

Details of Research Area: Broad Research Areas –

- Health Monitoring of Mechanical Components
- Machine Design, Vibration, Soft computing

Details of Research Highlights: The research group is focusing on using model based and data driven methods to forecast the functioning behavior of the mechanical systems like bearing, hydraulics etc. In another work, force and vibration analysis in biomechanical preparation of root canals using reciprocating endodontic file system is carried out.

Details of Patents filled/awarded: Patent Filed A Method of Maintenance for High-Performance Machineries Employing Axial Pump and Multiple Cylinders (Inventor: Mr. Rishabh Gupta, Dr. Ankur Miglani and Dr. Pavan Kumar Kankar).

Details of Projects active:

- P.K. Kankar, Principal Investigator, Force and vibration analysis in biomechanical preparation of root canals using endodontic file system: In-vitro study, 2021 (Ongoing), Duration: 36 Months, Co-Principal Investigator: Prof. Anand Parey, Dr. P.K. Jain and Dr. Arpit Jain; Sponsoring Organization: Under Core Research Grant (CRG) of Science & Engineering Research Board (SERB), DST, (Amount: Rs. 34.034 Lakhs).
- P.K. Kankar, Co-Principal Investigator, Weight reduction of Solar PV module mounting structures, 2021, Duration: 4 Months, Principal Investigator: Dr. Ankur Miglani and Co-Principal Investigator: Prof. Sandeep Chaudhary, Sponsoring Organization: Shakti Energy Solutions Pvt Ltd, (Amount: Rs. 5 Lakhs)
- P.K. Kankar, Co-Principal Investigator, Proof checking and design validation of PV solar module mounting structure, 2021, Duration: 2 Months, Principal Investigator: Dr. Ankur Miglani and Co-Principal Investigator: Prof. Sandeep Chaudhary, Sponsoring Organization: Shakti Energy Solutions Pvt Ltd, (Amount: Rs. 4.75 Lakhs)

Total number of Books published/under process: Number of Edited Books: 2

Total number of Journal Articles published/under process 7

List of UG course(s) taught: ME 446/646=Dynamics and Control Systems, ME 434/634=Principle of Product Design

List of PG course(s) taught: ME 446/646=Dynamics and Control Systems, ME 647=Dynamics and Control Systems Lab, ME 434/634=Principle of Product Design

Total number of PG dissertation(s) guided 6

Total number of PhD student(s) guided 4

Dr. Girish Chandra Verma

Assistant Professor Grade-I

girish.verma@iiti.ac.in

PhD, IIT Delhi



Previous Employment details before joining IIT Indore: After graduating

I joined as a postdoc fellow at IIT Delhi and worked there for 6 months. After that, I worked as an assistant professor at KIET for 2 months, and thereafter I joined IIT Indore as Assistant Professor.

Details of Research Area:

1. Biomedical Characterization of additively manufactured composite of Ti6Al4V and bio-ceramic for biomedical implant application.,
2. Effect of laser nitriding on mechanical property of High speed steel., and
3. Simulation based study on high strain rate deformation behavior of Tungsten and Yttrium based composite.

Details of Research Highlights:

1. Biomedical Characterization of additively manufactured composite of Ti6Al4V and bio-ceramic for biomedical implant application.,
2. Effect of laser nitriding on mechanical property of High speed steel., and
3. Simulation based study on high strain rate deformation behavior of Tungsten and Yttrium based

composite.

Total number of Books published/under process	4
Total number of Journal Articles published/under process	2
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: Theory of Manufacturing Process (ME 208), Machine Drawing (ME 257) and Basic Mechanical Engineering (ME 106).	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	1

Dr. Harekrishna Yadav

Assistant Professor Grade-I
krishnpme@iiti.ac.in
PhD, IIT Bombay



Previous Employment details before joining IIT Indore:
Postdoctoral Fellow, Technion- Israel, 1 Year 10 Months

Details of Research Area: Experimental Fluid Dynamics and Heat Transfer, Fluid Structure Interaction, Shear Flow, Flow and Turbulence Measurement using Optical Techniques, Heat Transfer Enhancement, Renewable and Sustainable Energy

Details of Research Highlights: Thermal management of electric motor, Frictional characteristic of pulsating flow, Flow and Heat transfer characteristics of a pulsating /synthetic jet, Heat Transfer characteristics of a vibrating/rotating surfaces.

Details of Projects active: I Sanction of the research project titled Electric Motor's Thermal Management system for Electric Vehicles using Synthetic Jet Impingement, December 2021, from SERB with total cost of Rs. 3018400/-

Total number of Journal Articles published/under process	8
Total number of courses/conferences/workshops organized	1
List of UG course(s) taught: Basic Mechanical Engineering (ME 106), Internal combustion engine (ME 413/ME 613),	
List of PG course(s) taught: Internal Combustion engine (ME 413/ME 613), Vehicle Dynamics (EV 601/EV 401)	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	2

Dr. Satyanarayan Patel

Assistant Professor Grade-I
spatel@iiti.ac.in
PhD, Indian Institute of Technology Mandi



Previous Employment details before joining IIT Indore:

Assistant Professor : Department of Mechanical Engineering, Malaviya National Institute of Technology Jaipur, Rajasthan India-302017, (till Nov. 2019)

Assistant Professor : Department of Mechanical Engineering, National Institute of Technology Warangal, Telangana, India-506004 (July 2018-March 2019)

Post-doctoral Fellow: ~2 Years (Nov. 2016-June 2018 and April 2019) Materials Science Department, Technische Universität Darmstadt, Germany

Senior Project Scientist:-6 months (May 2016-Nov. 2016) Indian Institute of Technology Mandi, Himachal Pradesh.

Details of Research Area: Dr. Patel research work focuses on bulk lead-free ceramics (piezoelectric and ferroelectric) for energy storage, conversion and caloric effects for solid state refrigeration. I first time demonstrated experimentally the elastocaloric and barocaloric effect in bulk ferroelectric ceramics using indirect measurements for solid-state refrigeration. I also explored an unforeseen component of the electric field-driven caloric effect termed as inverse piezocaloric effect. Additionally, I performed work on the effect of compressive pre-stresses (mechanical confinement) for tuning ferroelectric/pyroelectric/piezoelectric properties for energy storage/conversion and other device applications.

Details of Research Highlights: Electrical energy generation (from waste energy) is currently a topic of intense interest because of the growing energy demands of society and as a means to create autonomous and self-powered systems.. The pyroelectric effects are being used for sensing and actuator purposes. However, their applications in energy harvesting are relatively unexplored. In this direction various lead-free ferroelectric (pyroelectric and piezoelectric) materials can be fabricated and tested for energy harvesting view points. Finite element method-based studies were also performed in view of optimizing device parameters.

Details of Projects active: SRG project SRG/2020/000188 on "Development of Porous Lead-Free Ceramics for Temperature-Independent Pyroelectric Performance and Waste Energy Harvesting".

Total number of Journal Articles published/under process 7

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: PHSS Foundation Young Scientist Award (Physical Sciences and Engineering) 2020-21 by Prof. H. S. Srivastava Foundation for Science & Society, Lucknow

List of UG course(s) taught: IC 153 Engineering Graphics and ME 414 Power Plant Engineering

List of PG course(s) taught: ME 640/ME 440 Smart Materials and Structures and ME 650 Materials Characterization Techniques

Total number of PG dissertation(s) guided 1

Dr. Dan Sathiaraj

Assistant Professor Grade-I

dansathiaraj@iiti.ac.in

PhD, IIT Hyderabad



Previous Employment details before joining IIT Indore:

Postdoctoral Researcher at Institute for Solid state and Material Physics,

(Metal Physics Division) TU Dresden, Germany (Alexander Von Humboldt Research award fellow)

Project title: Deformation behavior of High Entropy alloys (HEAs) at low temperatures (May 2017 to November 2019)

Assistant professor, Department of Mechanical engineering SRM University, Chennai, India (July 2016 to April 2017).

Senior Research Fellow, Department of Materials Science and Metallurgical Engineering, IIT

Hyderabad, India (Jan 2016 – June 2016) Project title: Thermomechanical processing (deformation and recrystallization behavior) and optimization of mechanical properties of High entropy alloys and Duplex stainless steel.

Present academic association(s) with other Institution(s): TU Dresden, Germany (Visiting position)

Details of Research Area: High entropy alloys, Additive manufacturing, Thermo mechanical processing of materials, Structure - property relationship, Crystallographic texture, Optimization of strength and ductility in bulk nanostructured alloys

Details of Research Highlights: CoCrNi-based alloys have significant attention in the metallic materials

community due to its superior mechanical properties because of its low stacking fault energy [11,12]. CoCrNi (MEAs) has been considered as the potential high strength and ductile structural materials. Various surface treatments have been used to reduce the defects and improve the mechanical and tribological properties of the AM processed components. LSP is one of the most popular surface severe plastic techniques. Till now, the effect of LSP on the mechanical properties of WAAM processed CoCrNi MEAs have been investigated.

Details of Projects active:

1. SERB's sanction order No. SRG/2021/001217 "Effect of laser shock peening on twin wire arc additive manufactured CoCrNi medium entropy alloy"
2. Collaborative Research Scheme(CRS) Project of UGC-DAE CSR entitle 'Correlation between Crystallographic Texture, Microstructure, Mechanical and Magnetic properties of FCC based High entropy alloys.'

Total number of Books published/under process: 4 (book chapters)

Total number of Journal Articles published/under process: 2 Journals

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: Humboldt Revisit Fellowship Award for visiting TU Dresden, Germany (Nov 2021-Jan 2022)

List of UG course(s) taught: ME 257: Machine Drawing, ME 493: BTech Project (BTP), IC 156: Basic Manufacturing Techniques

List of PG course(s) taught: ME 738/438: Composite Materials, ME 697: PG Seminar course, ME 437/637: Fracture Mechanics, ME 650: Material Characterization Techniques

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided: 2 (Ongoing)

Dr. Ankur Miglani

Assistant Professor Grade-I

amiglani@iiti.ac.in

PhD, Indian Institute of Science



Previous Employment details before joining IIT Indore:

BK-21 Post doc Fellow (6 months) at KAIST, SERB Indo-US Post doc Fellow (2 Years 9 months) at Purdue University, Junior Engineer (1 Year) at Chevron Shipping LLC

Details of Research Area: Droplet dynamics, Fluid power systems, and Applications of Thermal-fluids engineering for Agriculture 4.0

Details of Research Highlights: RH1: A method to increase the utilization of an axial piston pump under leakage fault conditions (Description: In hydraulic axial piston pumps (APP) that are abundantly used in the fluid power industry, the wear (and hence the internal leakage) may occur not in just one cylinder but multiple cylinders simultaneously, which leads to non-uniform delivery at the pump outlet and the downstream fluid power system. As the worn-out cylinders deliver reduced flow relative to the healthy ones, it may trigger undesirable aperiodic fluctuations in flow and pressure at the pump outlet. This in turn will induce vibrations and potential fatigue in pump components, which may lead to its premature failure, thus, limiting the pump's predictability and reliability. In this work, a methodology is proposed for identifying the best geometrical arrangement of faulty cylinders among all the possible arrangements that would result in minimum peak-to-peak pressure fluctuations at the outlet of an internally leaking APP. For two faulty cylinders, the best arrangement is identified as the one with cylinders located on diametrically opposite ends. For three or more faulty cylinders the best arrangement is the one with the maximum area enclosed by the straight-line curve joining the cylinders. In practice, maintenance personnel can directly adopt this best arrangement to minimize the

detrerring effects of internal leakage without needing the refurbishing of the damaged cylinder. This will reduce maintenance downtime significantly and result in substantial cost savings through reuse of damaged parts, reduced downtime and increased working life or utilization of an otherwise faulty pump)

Details of Patents filled/awarded: 01 (Filed and FER submitted). DETAILS: Rishabh Gupta, Ankur Miglani, Pavan Kankar. A method of maintenance for high-performance machineries employing axial pump and multiple cylinders. Indian Patent Application No. 202121045659. Filed (2022). First Examination Report received and responded

Details of Projects active:

1. Weight reduction of Solar PV structures (Shakti Energy solutions Pvt. Ltd.),
2. Analysis and design verification of solar PV module structure (Shakti Energy solutions Pvt. Ltd),
3. Random verification of Industrial Hazard waste (Central Pollution Control Board),
4. Proof checking of various structure design and hydraulic design of water supply scheme Naigarhi Rewa (ALTC Infraconsultants)

Total number of Books published/under process: 02 (Book chapters)

Total number of Journal Articles published/under process 6

Any other Achievements, Awards and Recognitions: Best Teacher award in Engineering (Batch of 30 - 120 students), Session chair ITherm 2022

List of UG course(s) taught: ME 106

List of PG course(s) taught: ME 698

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided: 02 (on-going)

Dr. Ashish Kumar Rajak

Assistant Professor Grade-I
a.rajak@iiti.ac.in
PhD, IIT Guwahati



Previous Employment details before joining IIT Indore:

- Ohio State University (April 2018- August 2019) (15 Months) Post Doctorate
- NIT Delhi (August 2019 - February 2020) (7 Months) Assistant Prof.
- IIIT Jabalpur (March 2020 - September 2020) (7 Months) Assistant Prof.

Details of Research Area: Working in the area of Metal forming and welding using high strain rate processing

Details of Research Highlights: Working in the area of Metal forming and welding using high strain rate processing

Details of Projects active: Joining of CFRP to Aluminum using EMF Process (SERB)

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 2

List of UG course(s) taught: ME 257: Machine Drawing, ME 308: Quality Management, ME 453: CAM, ME 451: Theory of Advanced Machining

List of PG course(s) taught: ME 653: CAM, ME 751: Theory of Advanced Machining

Dr. Krishna Mohan Kumar

Assistant Professor Grade-I
kmkumar@iiti.ac.in
PhD, Indian Institute of Science

**Previous Employment details before joining IIT Indore:**

Post	Institute	Duration
Assistant Professor	National Institute of Technology Tiruchirappalli	3 Months
Assistant Professor	Maulana Azad National Institute of Technology Bhopal	4 Months
Post Doctoral Fellow	Facility for Research in Technical Acoustics, IISc	9 Months

Details of Research Area: I have worked on the mufflers for automotive applications. A classical problem of interaction of higher order evanescent waves generated at junctions of a rotated-offset extended inlet-outlet muffler was addressed. This work is accepted for publication in the Applied Acoustics (Impact Factor: 3.614)

Details of Research Highlights: Journal Article: Double-tuning and Experimental Validation of Rotated-Offset Inlet-Outlet Circular Chamber Muffler Highlights: · Effect of rotation angle on interaction of evanescent modes verified by experiments · Experimental corroboration of double-tuning of rotated-offset inlet-outlet chamber · Effect of all non-dimensional parameters on end-corrections for offset extensions · Regressed parametric expressions for end-corrections based on physics · First known attempt at double-tuning of rotated-offset inlet-outlet chamber muffler

Total number of Journal Articles published/under process 1

List of UG course(s) taught:

Machine Design II	ME 401
Robotics	ME444/644
Quality Management	ME 308

List of PG course(s) taught:

Robotics	ME444/644
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Total number of PhD student(s) guided 1

Dr. Sandeep Singh

Assistant Professor Grade-I
sandeeps@iiti.ac.in
PhD, IIT Delhi, New Delhi

**Previous Employment details before joining IIT Indore:**

- 05/06/2017–14/12/2020: Assistant Professor, Department of Mechanical Engineering, Birla Institute of Science and Technology Pilani, Goa Campus, Goa, India.
- 18/01/2017–02/06/2017: Visiting Faculty, Department of Mechanical Engineering, Thapar University, Patiala, India.
- 04/07/2011–14/07/2012: Senior Engineer, Division of Compressor Design, LG Electronics Private Limited, Greater Noida, India.
- 04/08/2008–31/05/2009: Lecturer, Department of Mechanical Engineering, Patiala Institute of Engineering and Technology, Patiala, India.

Present academic association(s) with other Institution(s):

- 17/12/2020–Till Date: Assistant Professor, Department of Mechanical Engineering, Indian Institute of Technology Indore, Indore, India.

Details of Research Area: Solid mechanics and design, Structural mechanics, Finite element method, Computational mechanics, Theory of plates and shells, Composite structures, Computational material

science, Multiscale modelling of nanomaterials, Atomistic simulation, Finite element modelling of nanostructures.

Details of Research Highlights: Solid mechanics and design, Structural mechanics, Finite element method, Computational mechanics, Theory of plates and shells, Composite structures, Computational material science, Multiscale modelling of nanomaterials, Atomistic simulation, Finite element modelling of nanostructures.

Details of Projects active:

2. Multiscale modelling of noncarbon nanomaterials and their reinforced polymer composite materials and structures (Rs. 19.5 Lacs). Funded by: Science and Engineering Research Board, Government of India, New Delhi. Duration and Status: In-Progress (2018–2021), Role: PI.

3. Continuum finite element models for the mechanical behaviour of the nanostructures considering surface energy effects (Rs. 17.5 Lacs). Funded by: Council of Scientific and Industrial Research, Government of India, New Delhi. Duration and Status: In-Progress (2021–2024), Role: PI.

Total number of Journal Articles published/under process 5

List of UG course(s) taught: IC 153 Engineering Graphics

List of PG course(s) taught: Theory of Elasticity

Total number of PG dissertation(s) guided

Total number of PhD student(s) guided

Dr. Janakiraman S.

Assistant Professor Grade-II

janakiramans@iiti.ac.in

PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore:

Worked as a research associate in the materials research center at the Indian Institute of Science Bangalore, India from January to November 2021. Research is focused on a variety of polymer electrolytes and electrode materials for rechargeable batteries.

Details of Research Area: Optimization and testing of energy storage materials for Lithium & Sodium-ion batteries

Details of Research Highlights: In most of the sodium-ion batteries, polypropylene (PP) microporous separators are generally utilized as the separator because of their high mechanical stability. However, due to the hydrophobic nature of PP lead to an increase in cell resistance affecting battery performance. In order to improve these characteristics, PP Celgard membranes can be modified by coating approach. Such a modified membranes outperformed the electrochemical performance of the Gel Polymer Electrolyte.

Details of Projects active: SEED Grant on the title "Vinylidene fluoride-based hybrid solid electrolyte for solid-state Na-ion batteries"

Total number of Books published/under process 1

Total number of Journal Articles published/under process 2

Any other Achievements, Awards and Recognitions: Delivered a talk on "Understanding Electric

Vehicle Batteries: Requirement, Hazards, and Challenges" for Professional Development Programme on "Recent Developments in Renewable Energy" on 23rd June 2022 at the Department of Mechanical Engineering, Amity School of Engineering, NOIDA, Uttar Pradesh.

List of UG course(s) taught: Quality Management (ME 308)

Dr. I. A. Palani

Professor
palaniia@iiti.ac.in
PhD, IIT Madras



Previous Employment details before joining IIT Indore:
Post Doctoral Research Scientist at Kyushu University Fukuoka Japan till Dec 2011

Present academic association(s) with other Institution(s): Visiting Professor, Purdue University, USA

Details of Research Area: Micro-Mechatronics, soft robotics, Laser Based additive manufacturing

Details of Research Highlights: Developed SMA based soft Robotic structure for DRDO application, In the Process of Developign SMA coated optical fiber sensor for Cryogenic applications, In the process of Developing Tribo electric generators and smart mirrors

Details of Patents filled/awarded: Implementation of Laser Decal Transfer towards μ -3D Printing Indian Patent Application No.: 202221022267 dated April 14, 2022 In laser micro-3D printing, a sacrificial layer is applied to the substrate and the material is deposited in the form of thin films by physical vapor deposition. The deposited substrate is ablated by a pulsed laser with back irradiation. Laser energy is absorbed in the sacrificial layer and material is removed from the irradiated area. The ablated material generates high pressure, inducing a compressive force across the thin film and ejecting the pixels. The emitted pixels are collected on another substrate placed nearby. For μ -3D printing, laser decal transfer is continued to deposit multiple pixels to obtain complex 2D and 3D structures.

Details of Projects active:

- 1 Design and Development of NiTi SMA coated optical fiber sensor and its application in cryogenic Environment SERB :SUPRA Scheme 77.9 Lakhs.
- 2 Design and Development of copper based Optical Fiber based Cryo Tempertaure sensing ISRO RESPOND 26.78 lakhs.
- 3 Development of Laser based Triboelectric Nanogenertaors to harvest energy from Shoe Sole DRDO ARMREB 47.36 lakhs.
- 4 Design and Fabrication of Intelligent mirrors for optomechatronics applications 63,00,000 INR SERB Core Research grant.
- 5 Design of SMA based soft actuators for soft robotics. 23,00,000 INR DRDO.
- 6 Development of thick and thin NiTi shape memory alloy porous structures using laser and wire arc additive manufacturing Russian Science Foundation and Department of Science and Technology Russian Science Foundation and Department of Science and Technology (DST:RSF) 87,00,000.
- 7 Design and development of Laser Decal Transfer based Micro 3D Printer for printing micro devices DST and AMT Technology Development board 35,00,000

Total number of Journal Articles published/under process 15

Total number of courses/conferences/workshops organized 3

Any other Achievements, Awards and Recognitions: Received young scientist award 2021 from the Institute of Smart structure and systems IISC Bengaluru. Visiting Scientist to Purdue University for Executing project on Energy harvesting

List of UG course(s) taught: ME 304 Instrumentation and control ME354 Instrumentation and control lab

List of PG course(s) taught: ME 657 Mechatronics and Metrology EV 603 Autotronics systems

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 5

Department of Metallurgy Engineering and Materials Science

Established in 2016, the Department of Metallurgy Engineering and Materials Science (MEMS) focuses on carrying out interdisciplinary research in Material Science, to find solutions for intricate real-world problems that benefit the society. Presently the department has 17 core faculty members along with 4 supporting staff. Our collective goal is to understand the processing and structure of several classes of materials; and then correlate these to the properties, thus enhancing their performance. MEMS faculty members are working in research areas ranging from conventional metallurgy to modern materials science.

ACADEMIC PROGRAMS

The department offers various programs at UG and PG levels. It offers a B.Tech in Metallurgical Engineering and Materials Science, and M.Tech in both (i) Metallurgical Engineering, and (ii) Materials Science and Engineering. The department covers a variety of courses, including basic science and engineering along with advanced level elective courses.

NUMBER OF FACULTY:	17
PROFESSOR	01
ASSOCIATE PROFESSOR	04
ASSITANT PROFESSOR	12
NO. OF POST DOC FELLOWS	Nil

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	167	62
MTech	27	84
MSc	Nil	Nil
PHD	38	36

R&D Activities

The key research areas are spread across structural materials (Steels, Titanium alloys, High entropy alloys, Magnesium alloys, and Composite materials), energy conversion and storage materials (Solar Cells, Supercapacitors, Li-ion batteries, etc.), functional materials (Piezoelectrics, Gels, and Shape memory alloys), and computation materials science.

Notable Activities in the Department

Recently, the department was awarded a FIST project by SERB DST India to establish Universal Testing and Spark Plasma Sintering Facility. The cost of the project was approx. 2.2 crore. The department conducted five short term courses in various fields and the faculty members also delivered several keynote and invited talks. Some of key achievements of our faculty members are mentioned below:

- Listed in World Ranking of Top 2% most Influential Scientist by Stanford University (2020 onwards every year)
- Fellow of Maharashtra Academy of Sciences 2021
- Materials Research Society of India Medal 2020.
- Outstanding Researcher in Materials Science, by Venus International Foundation, India. (July 2022)
- Listed in World Ranking of Top 2% most Influential Scientist by Stanford University (2021)
- DUO-India Professor Fellowship Award, Govt. of India and ASEM-DUO, South Korea (2020-22).

- Keynote Speaker for Plenary Session – V, 5th International Conference on “Advances in Steel, Power and Construction Technology” (ICASPCT), Organized by OP Jindal University, Raigarh (CG), India. (June 17, 2022).
- Invited as one of the honourable jurors for the selection round of Tata InnoVista, which is Tata Group’s flagship annual event for recognizing and celebrating innovations of Tata companies (October 8, 2021)

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	-	-
ONGOING PROJECTS	17	-
COMPLETED	12	-

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	1	-	-	57

Dr. Vinod Kumar

Associate Professor
vkt@iiti.ac.in
PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:

Worked as Assistant Professor in the Department of Metallurgical and Materials Engineering at MNIT Jaipur from July 6, 2012 to March 29, 2017

Details of Research Area: Our group uses experiments and analytical theory to explore the materials-processing-structure-property relationships in structural metallic materials and energy materials and their development for required engineering application, with particular emphasis on the role of structural disorder and its effect on environmental degradation and mechanical properties. Our research also involves in non-equilibrium processing for development of energy materials and high entropy alloys of industrial relevance using variety of tools as well as in developing new metal-matrix composites.

Details of Research Highlights: One PhD student graduated and one project has been granted by IKS, AICTE.

Total number of Projects active: 3

Total number of Books published/under process: One book writing under process.

Total number of Journal Articles published/under process 5

Any other Achievements, Awards and Recognitions: Convener, FIST committee in the department of MEMS.

List of UG course(s) taught: 2

List of PG course(s) taught: 1

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 1

Dr. Parasharam M. Shirage

Professor
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PhD, Shivaji University Kolhapur



Previous Employment details before joining IIT Indore:

02/2022-till date Professor Indian Institute of Technology (IIT) Indore, India.

02/2017- 02/2022 Associate Professor Indian Institute of Technology (IIT) Indore, India.

07/2013- 02/2017 Ramanujan Fellow (Govt. of India) Indian Institute of Technology (IIT) Indore, India.

08/2012- 06/2013 Visiting Postdoctoral Scientist Tata Institute of Fundamental Research(TIFR), Mumbai, India.

11/2008- 08/2012 Senior Scientist National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan.

11/2006 -11/2008 JSPS Fellow National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan.

08/2004- 07/2006 Invited Scientist Korea Electrotechnology Research Institute(KERI),Changwon, South Korea.

09/2003- 07/2004 Assistant Professor (Lecturer) Rajaram College, Govt. of Maharashtra, Kolhapur, India

Details of Research Area: Dr. Shirage has made multifold contribution in the field of basic science (understanding the mechanism of superconductivity by studying isotope effects, large single crystal growth for physical properties studies) and applied science (solar cells, batteries and supercapacitors, gas and bio-sensors, piezoelectric materials). He has incubated the “Sustainable, Engineered Sodium-ion Batteries for Renewable Energy Storage” start-up company at IIT Indore and first company to work on Sodium Ion Batteries in India. He has targeted to develop 18650 battery cell through this incubation center. He has made the prototype device of the supercapacitors and batteries. In his field of expertise, he has produced fourteen PhD students, more than twenty-two master and graduate students, published more than 90 research papers of high impacts in last 5 years, and was instrumental in designing the R&D and Teaching Labs of new Department of Materials Science and Metallurgy at IIT as a center of excellence.

Details of Research Highlights: Dr. Shirage has made an outstanding contribution in the field of energy storage materials for supercapacitor and batteries. He has incubated the “Sustainable, Engineered Sodium-ion Batteries for Renewable Energy Storage”. Also developed nanomaterials for energy generation (solar cells, Piezoelectric); Bio- and gas sensors; beside inventing numerous new superconductors and understating the mechanism behind.

(S. No. Author(s) Title of the paper Name of the Journal Year, Vol., Issue, Page Numbers Impact Factor)

- 1 Subhash C. Yadav, Vishesh Manjunath, Abhishek Srivastava, Rupesh S. Devan, Parasharam M. Shirage Stable lead-free Cs₄CuSb₂Cl₁₂ layered double perovskite solar cells yielding theoretical efficiency close to 30% *Optical Materials* 2022, 112676. <https://doi.org/10.1016/j.optmat.2022.112676> 3.754
- 2 Archana Kanwade, Sheetal Gupta, Akash Kankane, Manish Kumar Tiwari, Abhishek Srivastava, Subhash Chand Yadav, Parasharam M. Shirage* Phosphate-based Cathode Materials to boost the electrochemical performance of Sodium-ion Battery *Sustainable Energy & Fuels* 2022, 6, 3114-3147 6.967
- 3 Subhash Chand Yadav, Abhishek Srivastava, V. Manjunath, Rupesh S. Devan, Parasharam M. Shirage* Recent advances in Cs₂AgBiBr₆ Double Perovskite based Lead-free Photovoltaics and its immense applications *Materials Physics Today* 26, 2022, 100731 11.00
- 4 Manojit Pusty, Parasharam Shirage Insights and Perspectives on Graphene-PVDF Based Nanocomposite Materials for Harvesting Mechanical Energy *Journal of Alloys and Compounds* 2022, 904, 164060 6.371
- 5 Subhash Chand Yadav, Alfa Sharma, Rupesh S. Devan, Parasharam M. Shirage Role of different counter electrodes on performance of TiO₂ based dye-sensitized solar cell (DSSC) fabricated with dye extracted from Hibiscus Sabdariffa as sensitizer *Optical Materials* 2022, 124, 112066 3.754
- 6 Soumyadeep Ghosh, Rukshana Pervin, Haranath Ghosh, MK Tiwari, Parasharam M Shirage Near edge absorption studies of pure and impure NbSe₂; theory and experiment *Journal of Materials Science* 2021, 56(30), 17062-17079 4.22
- 7 Vishesh Manjunath, Prashant Kumar Mishra, Rachit Dobhal, Santosh Bimli, Parasharam M Shirage, Somaditya Sen, Parvez A Shaikh, Rupesh S Devan Perovskite-Based Facile NiO/CH₃NH₃PbI₃ Heterojunction Self-Powered Broadband Photodetector *ACS Applied Electronic Materials* 2021, 3(10), 4548-4557 3.314
- 8 Kushal Mazumder, Parasharam M. Shirage A Brief Review of Bi₂Se₃ based Topological Insulator: From Fundamentals to Applications *Journal of Alloys and Compounds* 2021, 888, 161492 5.316
- 9 Mrinal Kashyap, Kanchan Samadhiya, Atreyee Ghosh, Vishal Anand, Hyunju Lee, Naomi Sawamoto, Atsushi Ogura, Yoshio Ohshita, Parasharam M Shirage, Kiran Bala Synthesis, characterization, and application of intracellular Ag/AgCl nanohybrids biosynthesized in *Scenedesmus sp.* as neutral lipid inducer and antibacterial agent *Environmental Research* 2021, 201, 111499 6.498
- 10 Dibya Yadav, Rahul Kumar Singh, Suryabhan Singh, Parasharam M Shirage, Amrendra K Singh Cationic ruthenium (II)-NHC pincer complexes with hemilabile COD: Solid-state structural characterization and theoretical study of an η²-(E, Z)-COD ligand *Journal of Organometallic Chemistry* 2021, 953, 122061 2.369
- 11 A Panghal, Y Kumar, PK Kulriya, PM Shirage, NL Singh Atomic order-disorder engineering in the La₂Zr₂O₇ pyrochlore under low energy ion irradiation *Ceramics International* 47 (14), 20248-20259 4.527

12 VENKATA RAMI REDDY BODDU, Manikandan Palanisamy, Lichchavi Sinha, Subhash Chand Yadav, Vilas Pol and Parasharam M. Shirage Hysteresis Abated P2-type NaCoO₂ Cathode Reveals Highly Reversible Multiple Phase Transitions for High-Rate Sodium-ion Batteries Sustainable Energy & Fuels 2021 5(12):3219-28 6.367

13 Manikandan Palanisamy, Boddu Reddy, Rami Venkata, Parasharam Shirage, Vilas Pol Discharge State of Layered P2-Type Cathode Reveals Unsafe than Charge Condition in Thermal Runaway Event for Sodium-ion Batteries ACS Applied Materials and Interfaces 2021 13(27):31594-604 9.229

14 Mahesh Verma, Lichchavi, Parasharam M. Shirage* "Electrodeposited Nanostructured Flakes of Cobalt, Manganese and Nickel based Sulfide (CoMnNiS) for Electrocatalytic Alkaline Oxygen Evolution Reaction (OER) Journal of Materials Science: Materials in Electronics 2021 32(9):12292-307 2.478

15 Asha Panghal, Yogendra Kumar, PK Kulriya, Parasharam M Shirage, NL Singh Structural assessment and irradiation response of La₂Zr₂O₇ pyrochlore: Impact of irradiation temperature and ion fluence Journal of Alloys and Compounds 2021, 862, (158556) 5.316

16 Lichchavi, Hyunju Lee, Yoshio Ohshita, Amrendra K Singh, Parasharam M Shirage Transformation of Battery to High Performance Pseudocapacitor by the Hybridization of W₁₈O₄₉ with RuO₂ Nanostructures Langmuir 2021, 37(3), 1141-1151 3.882

17 Parameshwar R Chikate, Alfa Sharma, Sachin R Rondiya, Russell W Cross, Nelson Y Dzade, Parasharam M Shirage, Rupesh S Devan Hierarchically interconnected ZnO nanowires for low-temperature-operated reducing gas sensors: experimental and DFT studies New Journal of Chemistry 2021, 45(3),1404-1414 3.591

Total number of Projects active	1
Total number of Journal Articles published/under process	17
Total number of courses/conferences/workshops organized	5
Any other Achievements, Awards and Recognitions:	1 Fellow of Maharashtra Academy of Sciences
List of UG course(s) taught:	308 Thin Films and Nanostructures
List of PG course(s) taught:	MSE 607 Materials for Devices, MSE 724 Thin Film and Devices
Total number of PG dissertation(s) guided	3
Total number of PhD student(s) guided	2

Dr. Rupesh Shivaji Devan

Associate Professor
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PhD, Shivaji University Kolhapur



Previous Employment details before joining IIT Indore:

1. Assistant Professor, 28th Mar. 2017-10th Dec. 2018, Metallurgy Engineering & Materials Science, Indian Institute of Technology Indore
2. Associate Professor, 28th Jan. 2016-27th Mar. 2017, Centre for Physical Sciences, Central University of Punjab, Bathinda, India
3. INSPIRE Faculty, 28th Jan. 2014-27th Jan. 2016, Dept. of Physics, University of Pune, Pune, India
4. Post-Doctoral Fellow, 1st Aug. 2007-31st Dec. 2013, Department of Physics, National Dong Hwa University, Taiwan

Present academic association(s) with other Institution(s): Adjunct Faculty, April 2021-Till date, Centre for Electric Vehicles and Intelligent Vehicle Technology, IIT Indore.

Details of Research Area: Nanostructures for engineering applications, Materials for energy storage and conversion, Photoactive materials

Details of Research Highlights: Our group has explored metal oxides for applications in water remediations, energy storage, and conversion. The major research highlights of our group are, Perovskite material (i.e., Ba(Sb/Ta)₂O₆) and metal oxide (i.e., NiO) have been introduced as excellent

photoactive materials for the removal of organic pollutants. The supercapacitor consisting of mesoporous ABO₃ material had delivered excellent stability and power density.

Details of Patents filled/awarded:

1. Outstanding Researcher in Materials Science, by Venus International Foundation, India. (July 2022)
2. Listed in World Ranking of Top 2% most Influential Scientist by Stanford University (2021)
3. DUO-India Professor Fellowship Award, Govt. of India and ASEM-DUO, South Korea (2020-22).

Details of Projects active:

1. Solar thermal steam generation for water desalination utilizing hybrid perovskite solar cells SERB, DST 3 years (2019-2022) PI 18,30,000 /-
2. Nano-hetero-architectures of mesoporous ABO₃ compounds for photocatalytic applications MST, DST 5 years (2018-2023) PI 24,24,640 /-
3. Development of conducting polymer scaffolded ABO₃ nanofibers for solar supercapacitor application MoE 4 years (2022-2025 PI 43,40,000 /-
4. Polymer-Ceramic Electrolytes for Rechargeable Lithium Metal Batteries SERB, DST 3 years (2022-2025) Co-PI 52,51,400 /-

Total number of Journal Articles published/under process	15
Total number of courses/conferences/workshops organized	1

Any other Achievements, Awards and Recognitions: Outstanding Researcher in Materials Science, by Venus International Foundation, India. (July 2022)

List of UG course(s) taught:

1. Springs Sem. 2022 • MM 308: Thin Film and Nanostructures *
2. Autumn Sem. 2021 • MM 351: Polymer Technology Lab*
3. Springs Sem. 2021 • MM 308: Thin Film and Nanostructures *

List of PG course(s) taught:

1. Springs Sem. 2022 • MSE 724: Thin Films & Devices Fabrications
2. Autumn Sem. 2021
 - EV 407/607 Energy Storage in Electric Vehicles *
 - MM 457/657: Advances in Energy Storage Materials *
 - MSE 799: M. Tech. Research Project (Stage I)

Total number of PG dissertation(s) guided	5
Total number of PhD student(s) guided	1

Dr. Sumanta Samal

Assistant Professor Grade-I
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PhD, Indian Institute of Technology Kanpur



Previous Employment details before joining IIT Indore:
Institute Post doctoral fellow at IIT Madras (April 09, 2014 - April 08, 2017)

Details of Research Area: Research interests include solidification, physical metallurgy, phase transformations and phase equilibria in materials, hot deformation behaviour in multicomponent/high entropy alloys, Phase selection kinetics in deeply undercooled metallic melts, phase field simulation for microstructural evolution.

Details of Research Highlights:

- (i) Solidification: Experiments and Simulation,
- (ii) Processing-Structure-Property Correlations in Multicomponent/High Entropy Alloys,
- (iii) Material design for high temperature applications,
- (iv) Phase equilibria: Materials for future,

(v) Thermo-mechanical Processing of structural materials

Details of Projects active:

(i) Development of novel eutectic high entropy alloys for high-temperature applications, BRNS, GOI & 2020-21 to 2022-23 (3 years), Amount: Rs. 22,46,450 /- ,

(ii) Microstructure property processing correlation in Ni-based superalloys, ISRO-RESPOND, GOI, India & 2022 - 2024 (2 years), Amount: Rs. 28,35,960 /-

Total number of Journal Articles published/under process 6

List of UG course(s) taught: MM 309: Computational Methods for Materials, MM 357: Composites Development Laboratory, MM 352: Foundry and Welding Engineering Laboratory

List of PG course(s) taught: MSE 605: Computational Techniques in Materials Engineering, MM 447/647: Metallurgical thermodynamics and phase transformation, MM 644: Integrated Computational Materials Engineering, MM 604: Transport Phenomena, MSE 800: M. Tech. Research Project (Stage-II)

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 1

Dr. Santosh Sattappa Hosmani

Associate Professor

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PhD, Max-Planck Institute for Metals Research, Stuttgart, and University of Stuttgart, Germany



Previous Employment details before joining IIT Indore:

Associate Professor, Metallurgy Engineering and Materials Science, Indian Institute of Technology Indore, India (11 December 2018 – till date)

Assistant Professor, Metallurgy Engineering and Materials Science, Indian Institute of Technology Indore, India (17 April 2017 – 10 December 2018).

Senior Manager (R&D), Kalyani Centre for Technology and Innovation (KCTI), Bharat Forge Ltd., Pune, India (04 April 2015 – 15 April 2017)

Assistant Professor, Department of Metallurgy & Material Science, College of Engineering, Pune (COEP – An Autonomous Institute of the Government of Maharashtra), India (20 June 2011 – 31 March 2015).

Assistant Professor, Department of Applied Mechanics, Indian Institute of Technology Delhi (IITD), India (08 June 2010 – 15 June 2011).

Assistant Professor, Department of Metallurgical and Materials Engineering, National Institute of Technology – Karnataka, Surathkal, India (19 January 2009 - 25 May 2010).

Postdoctoral Research Scientist, Department of Materials Science and Engineering, Case Western Reserve University, U.S.A. (19 March 2008 – 15 November 2008).

Postdoctoral Research Scientist, Max-Planck-Institute for Metals Research, Stuttgart, Germany (19 May 2006 – 17 March 2008).

Details of Research Area: Dr. Hosmani is leading the 'Surface Engineering and Heat Treatment (SEHt)' research group in the Department of MEMS at IITI. The research interests of his group are surface engineering, tribology, physical metallurgy, and microstructure-properties correlation.

Details of Research Highlights: There are various engineering applications where the surface must perform a job different from the bulk of a component. On many occasions, just by altering 1–2 % of the total thickness of the components, the properties enhance their performance considerably. The list of applications requiring the manipulation of surface properties is unlimited, especially in automobiles, petrochemical, food processing, nuclear, etc. Dr. Hosmani's SEHt group is currently working on the

novel and promising approach of severe plastic deformation (SPD) of surfaces to manipulate the microstructure and the properties of ferrous and non-ferrous alloys. The group also focuses on the scientific aspects of surface-alloying and coatings.

Details of Projects active: "Development of Fe-based Composite Materials Mimicking Delhi Iron Pillar's Structure", IKS Research Projects Scheme, Sponsoring Agency: Indian Knowledge Systems Division of MoE @ AICTE, New Delhi, Sanctioned amount: Rs. 17.56 Lakhs (02nd April 2022 – ongoing). [Co-PI of project: Dr. R.S. Devan] "Wear Behavior and Microstructural Studies of Surface Mechanical Attrition Treated (SMAT) and Post-Treated Stainless Steels," Sponsoring Agency: DST-SERB (EMR Project Grant), Sanctioned amount: Rs. 50,85,520/- (March 2018 – September 2021).

Total number of Journal Articles published/under process 4

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

Keynote Speaker for Plenary Session – V, 5th International Conference on "Advances in Steel, Power and Construction Technology" (ICASPCT), Organized by OP Jindal University, Raigarh (CG), India. (June 17, 2022).

Invited as one of the honourable jurors for the selection round of Tata InnoVista, which is Tata Group's flagship annual event for recognizing and celebrating innovations of Tata companies (October 8, 2021).

List of UG course(s) taught: MM 305, MM 258

List of PG course(s) taught: MM 646

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 2

Dr. Mrigendra Dubey

Associate Professor

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PhD, Indian Institute of Technology Guwahati



Previous Employment details before joining IIT Indore:

Associate Professor Indian Institute of Technology Indore, India (Feb 2022- Continue)

Assistant Professor Indian Institute of Technology Indore, India (May 2017- Feb 2022)

DST- INSPIRE Faculty Indian Institute of Technology (BHU), Varanasi, India (Jan 2015- April 2017)

UGC-DSK Post Doctoral Fellow (Dec 2012- Dec 2014) Banaras Hindu University, Varanasi, India

Post Doctoral Fellow Institute of Chemistry, Academia Sinica, Taipei, Taiwan (Aug 2011- Jul 2012)

Details of Research Area: Dr. Mrigendra Dubey's research group is dedicated for the development of the multifunctional Soft Materials particularly Metallogels with an objective to achieve conductance, catalysis, superabsorbent, morphology, rheological and optical (luminescent) properties for various kind of applications. Recently, our group explored the conductive metallogels can be utilized as soft diodes and battery electrolytes. Also, research interest includes synthesis for luminescent carbon dots for anti-counterfeit, hydrophobic materials for corrosion prevention applications.

Details of Research Highlights: Recently, our group explored the conductive metallogels can be utilized as soft diodes and battery electrolytes. Also developed tunable fluorescent carbon dots for anti-counterfeit and electronic torch applications.

Details of Projects active: Development of economic superabsorbent reversible Agri gel materials for on-demand water and fertilizer discharge, PI- Manish Kumar Dixit and Mrigendra Dubey (19 lacs, NPDF, SERB New Delhi)

Total number of Books published/under process: Book Chapter: Synthesis of MXenes (Submitted to editor for publication)

Total number of Journal Articles published/under process:

1. Li⁺ - integrated metallohydrogel based mixed conductive electrochemical semiconductor, Yeeshu Kumar and Mrigendra Dubey* Chemical Communications., 2022, 58, 549-552, DOI: 10.1039/D1CC05796K; Impact factor: 6.222.
2. Cd²⁺-induced Fluorescent Metallogel: A case of CHEF and ACQ phenomenon, Manish K. Dixit C. Mahendar and Mrigendra Dubey* Chemistry – An Asian Journal, 2022, <https://doi.org/10.1002/asia.201900559>; Impact Factor: 4.056.
3. Bis(Acylhydrazone)-Based Bolaamphiphiles: Effect of Spacer Length on Metalloorganogel Formation, Fluorescence and Conductance Properties Manish K. Dixit, Yeeshu Kumar, Jay Shukla, C. Mahendar and Mrigendra Dubey* ChemPlusChem, 2022, 6, <https://doi.org/10.1002/cplu.201900589>; Impact Factor: 3.44.
4. Analysis of pitting corrosion of pipelines in a marine corrosive environment using COMSOL Multiphysics Vishal Prajapati, Yeeshu Kumar, Divyanshu Gupta, A Kalam and Mrigendra Dubey* Journal of Bio- and Tribo-Corrosion, 2022, 8, 21, 1-11, DOI: 10.1007/s40735-021-00620-6, Impact factor: 3.11.
5. Long-term Elasto-Visco-Plastic behavior of fly ash blended Indian Montmorillonitic clay in odometer condition M. J. Singh, F. Weiqiang, X. D. Sheng, Mrigendra Dubey and L. Borana International Journal of Geomechanics, 2022, DOI: 10.1061/(ASCE)GM.1943-5622.0002290; Impact factor: 3.819.
6. Year 2021 27. Conductive Zn(II)-metallohydrogels: Role of alkali metal cations size over gelation, rheology and conductance Chinthakuntla Mahendar, Yeeshu Kumar, Manish K. Dixit, Moupia Mukherjee, A Kalam and Mrigendra Dubey* Mol. Syst. Des. Eng., 2021, 6, 654-661 DOI: 10.1039/x0xx00000x; Impact factor: 4.935.
7. Li⁺-Zn²⁺ tailored nanostructured metallohydrogel based mixed ionic-electronic conductor Yeeshu Kumar, Chinthakuntla Mahendar, A Kalam and Mrigendra Dubey* Sustainable Energy Fuels, 2021, 5, 1708-1713, DOI: 10.1039/D0SE01821J; Impact factor: 6.367.

Total number of courses/conferences/workshops organized: Lecture series (60) Rastriya Aawiskar Abhiyan, EBSB January 2021- July 2022.; QIP STC (Advanced Technology in Materials Engineering) at IIT Indore- 2021

Any other Achievements, Awards and Recognitions: Research Conclave at IIT Guwahati, my student Moupia Mukherjee received first prize (Nano materials)

List of UG course(s) taught: 1. MM 304: Corrosion Engineering - Spring Semester; 2. MM 354: Corrosion Engineering Lab - Spring Semester; 3. MM 301: Polymer Technology- Autumn Semester

List of PG course(s) taught: 1. MM 661: Materials Science and Engineering - Autumn Semester

Total number of PG dissertation(s) guided: 1.. Mr. Vishal Prajapati, 2.. Mr. Divyanshu Gupta, 3.. Mr. Neelesh Singh 4. Ms. Neha Shakya, 5. Mr. Piyush Meena

Total number of PhD student(s) guided: 1. Dr. C. Mahendar (Awarded); 2. Mr. Siddhartha Suman (Submitted)

Dr. Jayaprakash Murugesan

Assistant Professor Grade-I

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PhD, Nagaoka University of Technology, Japan



Previous Employment details before joining IIT Indore:

1 Nagaoka University of Technology, Japan Post Doc Researcher Apr 2010 to Dec 2010 Research and teaching (strength of materials)

2 Japan Nuclear Energy Safety Organization (JNES), Japan Chief researcher Jan 2011 to Sep 2011 Research on nuclear materials and quality checking. Mechanical property evaluation

3 Niigata Industrial Creation Organization (NICO), Japan Researcher Oct 2011 to Sep 2012 Research on Development of material for ultra super critical power plant

4 National Institute for Materials Science (NIMS), Japan Researcher Oct 2012 to Jan 2015 Research on development of new high temperature Ti alloys

5 Nagaoka University of Technology, Japan Associate Professor Feb 2015 to June 2017 Teaching and Research. Teaching subject: Mechanical metallurgy, advanced materials, fracture mechanics, surface engineering, Materials science)

6 IIT Indore Assistant Professor June 2017 Till date (March 2022, continuing) Welding and foundry engineering, mechanics of materials, metal forming, thermodynamics and phase transformation, Failure analysis, fatigue and fracture of engineering materials, engineering drawing

Details of Research Area: Welding engineering, mechanics of materials, Mechanical metallurgy. Materials science, Surface Engineering, Additive manufacturing , Fatigue and fracture mechanics.

Details of Research Highlights: Completed SERB-SRG Title: Study of fatigue behavior of FSW Al-Stainless joint under hydrogen environment. Published 5 Journal papers.

Details of Projects active: 1. SERB-SRG Title: Study of fatigue behavior of FSW Al-Stainless joint under hydrogen environment (Completed on March 2022)

Total number of Journal Articles published/under process 5

Total number of courses/conferences/workshops organized 5

List of UG course(s) taught: MM 302 Welding and foundry Engineering , MM 201 Mechanics of Materials, MM 352 Welding and foundry Engineering Lab, IC 156 Lab.

List of PG course(s) taught: MM 664 Advanced fracture mechanics

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Eswara Prasad Korimilli

Assistant Professor Grade-I
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PhD, IISc Bangalore



Previous Employment details before joining IIT Indore:

Prior to joining IIT Indore, Eswar worked as an Assistant Professor at the School of Engineering Mahindra Ecole Centrale, Hyderabad, India from 2014 - 2017, and as a postdoc in the Department of Mechanical Engineering and Hopkins Extreme Materials Institute, the Johns Hopkins University, Baltimore, USA from 2011 to 2014.

Present academic association(s) with other Institution(s): Visiting Scientist, Department Mechanical and Aerospace Engineering, NTU Singapore

Details of Research Area: The research interests of Eswar's group is in the area of Mechanical Behavior of Materials, particularly in investigating the role of microstructural length scales and experimental time scales on the deformation behavior of materials. The current focus of materials include piezoelectric materials, additively manufactured structural metals, Light weight metals (e.g Magnesium and Titanium alloys), Advanced ceramics for armor applications, Amorphous alloys.

Details of Research Highlights: Designed a miniature Kolsky bar to characterize the ultra high strain rate deformation of materials; Investigation of relaxation and strain rate effects on the deformation response of Nanoglasses; Developed a mathematical formulation to understand the deformation under Berkovich and Spherical indenters; Developed a computational methodology to optimize the parameter for high strain rate experiments using Kolsky bar

Details of Projects active: Title of the project: "Investigation of traditional iron monuments in the central India and understanding their metallurgical origins" : The project aimed to investigate the ancient and medieval age metallurgical heritage of India, with reference to Iron and steel. Specially, we would like to unearth the science and technological aspect of the metallurgical heritage structures found in central India, of Madhya Pradesh (MP). We believe that limited attention was paid on the metallic structures in the state of MP and there is a significant contribution of artisans from MP to the iron structures and monuments since centuries among which the notable ones are the rustless pillars, cannons, pottery etc. In addition to conducting a detailed metallurgical analysis (such a composition, quantification of the phase fractions, microstructure analysis, crystallographic texture etc.) of the samples and non-destructive evaluation of the pillars (understanding the defect structure and compositional heterogeneities), an attempt will be made to find out the processing route by which the alloys are made.

Total number of Journal Articles published/under process 10

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: Visiting Scientist - NTU Singapore

List of UG course(s) taught: MM 201 - Mechanical Behavior of Materials; MM 208 - Theory of Metal forming; MM 251 - Mechanics of Materials Lab; MM 258 - Theory of Metal forming lab

List of PG course(s) taught: MM 645 - Multiphysics Modeling

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Dharendra Kumar Rai

Assistant Professor Grade-I

dkrai@iiti.ac.in

PhD, Indian Institute of Technology Bombay



Details of Research Area: Dr. Rai's research group works on Environmental Remediation and Sustainable energy conversion and storage. The different subareas of research under investigation in his lab are detailed below:

- Energy Storage: developing new materials for supercapacitors, batteries, Hydrogen evolving reactions (HER), Reverse fuel cell (CO₂ electroreduction)
- CO₂ Capture and Utilization: designing and developing new heterogeneous materials which can adsorb CO₂ under ambient conditions and at the same time can convert the CO₂ into value-added feedstock.
- Water Desalination: Development of new composite materials for their applications as electrode materials in the Capacitive Deionisation (CDI) process to efficiently remove salt ions from brackish and seawater.
- Sensing and Removal of Toxic Industrial Effluents: Development of electrochemical and optical sensors for toxic dyes and heavy metals, and their removal and degradation.
- Computational Modeling: Use of density functional theory (DFT) to bring additional insights to establish the structure-property relationship of different materials developed in our lab.

Details of Research Highlights:

- The authors of one of our papers (Sarath, Anoop, Mayank, Nikita and Dharendra Chemical Engineering Journal, 435 (2022), 135042) received ISSN International Research Awards 2022.
- Mr. Mayank Kumar Singh received International Travel Grant from SERB to attend a conference in Drexel, USA.

- Mr. Mayank Kumar Singh received the Best Poster Presentations Award at International Conference on Batteries and Supercapacitors 2022 conducted by IIT KGP.
- Ms. Nikita Guha received the AWSAR Award 2021 from DST for the Best Popular Science Stories under the Ph.D. category.
- Mr. Sarathkumar K received the Overseas Visiting Doctoral Fellowship from SERB for twelve months of research internship in Canada.
- Ms. Nikita Guha received the InSc Young Researcher Award 2021 from the Institute of Scholars, India.
- Mr. Mayank Kumar Singh received the 36th M.P. Young Scientist Award from the MP Council of Science and Technology.
- Mr. Mayank Kumar Singh received the ACS Nano Letters Best Oral Presentations Award at World Nano Congress on Advanced Science and Technology 2021
- Dr. Senthilkumaran M received the RSC Nanoscale Best Oral Presentations Award at World Nano Congress on Advanced Science and Technology 2021
- Mr. Sarathkumar K received the Mitacs-Globalink Research Award, Canada, from Indo-Shastri Research Programme for six months research internship.

Total number of Journal Articles published/under process 3

Any other Achievements, Awards and Recognitions: ISSN International Research Awards 2022

List of UG course(s) taught: Thermodynamics (MM 207), Introduction to Electrochemistry (MM 303), Ceramic Technology (MM 310)

List of PG course(s) taught: Experimental Techniques in Materials (MM 656)

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 1

Dr. Ajay Kumar Kushwaha

Assistant Professor Grade-I

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PhD, IIT Bombay



Previous Employment details before joining IIT Indore:

Scientist-I, Institute of Materials Engineering and Research, ASTAR, Singapore

Details of Research Area: Nano & Energy Materials Laboratory : § Nanomaterials & Thin Films: Metal oxides, Metals, Chalcogenides and 2-D Materials (Graphene & Mxenes) § Materials Properties: Defects, Surface Modification, Electrochemical & Opto-electronic Properties § Clean Energy: Hydrogen Generation from Water Splitting (Electrochemical and Photo-electrochemical) & Next Generation Photovoltaics (Quantum Dots, CZTS, Perovskite) § Electrochemical Sensors: Soil & Water Pollutants § Resistive memory: Metal oxide based Resistive Memory/Memristors § Functional Coatings: Self-cleaning, Photocatalytic & Super-hydrophobic/hydrophilic, UV- IR reflective, Electrochromic.

Details of Research Highlights: GaeO₃ nanostructured film for memristor application. Earth abundant nanomaterials for photocatalytic and electrocatalytic water splitting for hydrogen generation, Electrochemical sensors

Details of Projects active:

Project-4: Indo-South Korea Joint Network Center for Environmental Cyber Physical Systems;

Sponsoring Agency: DST Government of India Role: Co- Principal Investigator Amount: INR 117.84720 Lakhs Duration: 2021-2024, (Ongoing)

Project-5: Development of All Earth Abundant Elements based Nano-heterostructures for Solar Driven

Water Splitting Sponsoring Agency: CSIR, India Role: Principal Investigator Amount: INR 13.5 Lakhs
Duration: 2022-2025, (Ongoing)

Total number of Journal Articles published/under process	12
Total number of courses/conferences/workshops organized	4
List of UG course(s) taught: MM 205: Materials Science and MM 303: Introduction to Electrochemistry	
List of PG course(s) taught: MM 606: Energy Materials	
Total number of PG dissertation(s) guided	3
Total number of PhD student(s) guided	5

Dr. Abhijit Ghosh

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 PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore:
 Worked as post-doctoral fellow at Department of Materials Engineering, Indian Institute of Science, Bangalore from March 2016 to October 2017 (total duration: 1 year and 7 months).

Details of Research Area: (a) Crystallographic texture and grain boundary; (b) Physical Metallurgy of Steel; (c) Fracture mechanics and Micro-mechanism

Details of Research Highlights: (a) Developing of Cold Rolled Grain Oriented (CRGO) electrical steel. (b) Understanding the cleavage crack deviation at grain boundaries.

Details of Patents filled/awarded:

Details of Projects active: One project; Title: Development of Cold Rolled Grain Oriented Electrical steel with high Si Content

Total number of Journal Articles published/under process	7
List of UG course(s) taught: Ceramics Technology (MM 310); Physical metallurgy-II (MM204)	
List of PG course(s) taught: Advanced Physical Metallurgy (MM 641); Computational Techniques in Materials Engineering (MSE605)	
Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided: Completed:0; Ongoing: 3	

Dr. Hemant Borkar

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 h.borkar@iiti.ac.in
 PhD, McGill University, Canada



Previous Employment details before joining IIT Indore:
 Senior Teaching Fellow , University of Warwick 2016-2017
 Postdoctoral Researcher, Jonkoping University 2013-2015

Details of Research Area: Lightweight alloys for automotive applications, Mg alloys, Al alloys, processing-microstructure-properties relationships in materials

Details of Research Highlights: The research focuses on development of novel Mg alloys with improved mechanical properties and creep performance and also Al alloys with improved performance

Total number of Journal Articles published/under process 4

List of PG course(s) taught: MM 643 - Advanced Mechanical Metallurgy, MM 661 - Materials Science and Engineering, MM 442/642 - Quality Assurance in Metallurgy

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 1.5

Dr. Sunil Kumar

Associate Professor

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PhD, Indian Institute of Science



Previous Employment details before joining IIT Indore:

Research Fellow, Alternative Energy Sources Laboratory, Department of Mechanical Engineering, National University of Singapore (Singapore), From December 2012 to 2014

Assistant Professor (ad-hoc), Kirori Mal College & DDU College, University of Delhi (India) from July 2012 to December 2012 and from January 2015 to May 2015

Details of Research Area: Dr. Kumar's research focuses on the experimental investigations of structure–property–processing relationship in functional materials as a mean to develop technologically important novel materials with tailored properties. Of particular interest are materials for energy storage applications and lead-free piezoceramics. The research group led by Dr. Sunil Kumar is currently on the development of ceramic-polymer composite solid electrolytes as a mean to have safer, cheaper, and better performing electrochemical energy storage systems. More details about his research interest and research group can be found at: Solid State Ionics Lab

Details of Research Highlights:

- Development of a new air & moisture stable P2- type cathode material for Na-ion batteries which exhibited a specific capacity of 126 mAh/g at a discharge rate of 0.1C in the 2.00 - 4.25 V window and nominal voltage of 3.6 V versus Na/Na⁺.
- Fabrication of textured perovskite KBT ceramics with phenomenal improvement in piezoelectric voltage coefficient.
- Elucidation of role of salts on phase formation and electrical properties of piezoelectric ceramics fabricated via molten-salt synthesis method.

Details of Projects active:

1. Title: Integrated Clean Energy Material Acceleration Platform (IC-MAP): DST-Storage MAP (PI), Funding Agency: Department of Science and Technology (DST), Duration: 2022 – 2025,
2. Title: Polymer-Ceramic Composite Electrolytes for Rechargeable Lithium Metal Batteries, Funding Agency: Science and Engineering Research Board (SERB), Duration: 2022 – 2025.

Total number of Journal Articles published/under process 10

Total number of courses/conferences/workshops organized 2

Any other Achievements, Awards and Recognitions:

1. Core Research Grant from SERB
2. Part of DST Storage consortium on Clean Energy Materials Acceleration Platform

List of UG course(s) taught: Transport Phenomenon (MM 206), Polymer Technology Lab (MM 351)

List of PG course(s) taught: Applied Surface Science (MM 603), Electroceramics (MM 488/688)

Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	2

Dr Ram Sajeevan Maurya

Assistant Professor Grade-I

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PhD, Indian Institute of Technology (IIT) Kharagpur



Previous Employment details before joining IIT Indore:

1. Worked as a National Post-Doctoral Fellow in IIT Madras from Sept 2017 to Feb 2018,
2. Worked as an Assistant Professor in NIT Rourkela from Feb 2018 to Sept 2019

Present academic association(s) with other Institution(s): Research Collaborations with IIT Hyderabad, IIT Kharagpur, NIT Rourkela & DMRL DRDO

Details of Research Area: Eutectic Multicomponent High Entropy Alloys, Oxide Dispersion Strengthened Alloys, Tungsten Heavy Alloys, Al-based Bulk Metallic Glasses

Details of Research Highlights:

1. Design and Development of Light Weight Eutectic Multicomponent Alloys,
2. Development of Tungsten Heavy Alloys for the kinetic Energy Penetrator,
3. Oxide Dispersion Strengthened Alloys for the high temperature applications

Details of Projects active:

1. Development of Light Weight Eutectic High Entropy Alloys (LWEHEAs)(SERB-DST, Early Career Research Award, June 2019 to Dec 2022, Approx. 18 lacs): The idea of this proposal originated from the existing concept of Light Weight High Entropy Alloys (LWHEAs) and Eutectic High Entropy Alloys (EHEAs). LWHEAs have shown a good combination of hardness and strength, however, exhibited poor ductility due to the formation of laves or intermetallic phases or phase separation. Whereas, EHEAs developed so for exhibiting an excellent combination of strength and ductility (in some cases $YS > 2000$ MPa, elongation $> 30\%$) but the density was > 7 g cm⁻³, leading to poor specific strength. Thus, to solve the problem of ductility in LWHEAs and lowering the density of EHEAs to improve specific strength, the author proposes to design and develop Light Weight Eutectic High Entropy Alloy (LWEHEAs) with soft and hard phase using best combination of lighter (Al, Ti, V, Zr, Si, Y) and heavier (Cr, Fe, Ni, Cu) elements.
2. Development of oxide dispersion strengthened-tungsten heavy alloys (ODS-WHAs) for defense application (CSIR, March 2021 - March 2024, Approx. 14 Lacs): In this proposed research work, elemental WHAs powders with and without Si (0 wt%Si, 0.5 wt%Si and 1.0 wt%Si), would be mechanically alloyed and consecutive consolidation would be performed via SPS. Investigation of effect of Si on the consolidation behaviour, nanocluster formation, grain contiguity, growth phenomena, mechanical and oxidation properties of WHAs would be extensively explored. The deformation studies will be carried out to identify the safe deformation zone of WHAs.

Total number of Journal Articles published/under process: Published: 2, Under processing/documentation stage: 2

Total number of courses/conferences/workshops organized: Conducted a Quality Improvement Programme (QIP) short term course during 15th to 20th March 2021 on "Fundamentals and Advances in Powder Metallurgy"

Any other Achievements, Awards and Recognitions:

- Delivered a talk on 'Bulk Metallic Glasses: An Advanced Futuristic Materials' in Advances in

Mechanical testing of Materials and Failure Analysis of Materials Workshop conducted by MEMS Department, IIT Indore during 18th – 24th April 2022

- Delivered a talk on ‘Synthesis and Characterization of Bulk Metallic Glasses’ in Advances in materials processing and characterization Short Term Course conducted by MEMS Department, IIT Indore during May 16 to May 22, 2022

List of UG course(s) taught:

Extractive Metallurgy (MM 202), B. Tech 4th Semester (Course Coordinator, Course Instructor)

Physical Metallurgy Lab (MM 254) - B. Tech 4th Semester (Course Instructor)

Composites (MM 307), B. Tech - 5th Semester (Course Coordinator, Course Instructor)

Materials Science (MM 205) B.Tech – 3rd Semester (Course Instructor)

Composite Development Lab (MM 305)- B. Tech-5th Semester (Course Coordinator, Course Instructor)

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 1

Dr. Dudekula Althaf Basha

Assistant Professor Grade-I

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PhD, Indian Institute of Science, Bangalore.



Previous Employment details before joining IIT Indore:

Post Doctoral Researcher at National Institute for Materials Science, Tsukuba, Japan. (18-(Time period: 01-12-2017 to 30-09-2019)

Details of Research Area:

- 1) Deformation behaviour of magnesium alloys.
- 2) Phase transformation behaviour of alloy nanoparticles.
- 3) Crack propagation behaviour study through in-situ microscopy techniques.

Details of Research Highlights:

- 1) Change in damping capacity due to twin boundary segregation
- 2) Segregation of Zn element to various boundaries in ultrafine grain sized magnesium alloys
- 3) Y segregation at grain boundaries leads to the change in crack propagation in Mg-Y alloys

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: Received “Outstanding Reviewer” appreciation award from “Transactions of Indian Institute of Metals”, March 2022

List of UG course(s) taught: Metallurgical Thermodynamics and Phase Transformations, Design and Selection of Materials, Powder Metallurgy

List of PG course(s) taught: Metallurgical Thermodynamics and Phase Transformations, Design and Selection of Materials, Transport Phenomenon

Total number of PG dissertation(s) guided 1

Dr. Chandan Halder

Assistant Professor Grade-I

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PhD, Indian Institute of Technology Kharagpur



Previous Employment details before joining IIT Indore: Joined M/s Mishra Dhatu Nigam Limited (MIDHANI), Hyderabad on 27th June 2016. Total duration of service is 6 years in the R&D Department of M/s Mishra Dhatu Nigam Limited, Hyderabad.

Details of Research Area: Computational Materials Science, Microstructure Modeling and Simulation, Alloy design

Details of Research Highlights: Multi-scale microstructural evolution based modeling by Cellular Automata and finite difference method, Alloy design using Machine Learning, Data driven modeling and Optimization, Process Metallurgy of Steels

Total number of Journal Articles published/under process

1

Department of Physics

The department currently has 16 faculty members with diverse specializations covering a wide spectrum of modern research topics. Being part of an institute of national importance, the Physics faculty of IIT Indore offers a unique interactive platform for the students to explore the arena of fundamental and applied research. Our curriculum is designed to give the students a taste of modern-day research in various fields of physics.

Academic Programs

The department is offering MSc and PhD programs in Physics and more than 200 students have already graduated and have been consistently placed at reputed institutes across the globe. The department is in the process of establishing new academic programs such as a 2-year MS and a 4-year BS program in Physics. The department is working in close collaboration with various industries to develop the technologies to support the research and academic sectors of the country and aims to establish the center of scientific instrumentation in the near future which will be the first of its kind in India.

NUMBER OF FACULTY MEMBERS:	16
PROFESSOR	7
ASSOCIATE PROFESSOR	4
ASSISTANT PROFESSOR GRADE II	1
ASSISTANT PROFESSOR GRADE I	4
NO. OF POST DOC FELLOWS	2

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	0	0
MTech	0	0
MSc	25	25
PHD	23	10

R&D Activities

Our faculty members conduct advanced research in condensed matter physics, high energy physics, statistical mechanics, complex systems, artificial intelligence, etc. Our state-of-the-art facilities provide unique research opportunities for students across all levels of educational programs such as undergraduate, graduate, postgraduate, and PhD. We consider research experience as a vital part of the education and nurturing the students to take up advanced courses and providing practical experience across the various fields of Physics. The department of Physics has already established more than 10 advanced research laboratories working on the various branches of Physics. The Department is highly collaborative and has close interaction between the different research groups within the department, within IIT Indore, and with various national and international institutions, including DAE, ISRO, DRDO, CERN, and many more.

Notable Activities in the Department

Our department is constantly achieving new heights every year. Some highlights of the achievements of our department during the last academic year are listed below:

- Prof. Sarika Jalan has been awarded the SERB POWER grant. She also became an associate editor for the journal 'Chaos'.
- Prof. Raghunath Sahoo became the Deputy Spokesperson for the ALICE-India collaboration. He was also awarded the CERN scientific associateship.
- Prof. Rajesh Kumar received "Best Research paper Award" from IIT Indore, September 2021. One of the research papers from his group was highlighted by DST.
- Prof. Sudeshna Chattopadhyay gave six invited lectures/talks/seminars at both International and National level including two invited talks at the Leibniz Universität Hannover (LUH), Germany.
- Prof. Pankaj Sagdeo was selected as a fellow of the Maharashtra academy of sciences. He was also recognized by the Wiley Journal of Raman Spectroscopy as having the highest citations for papers published in Journal of Raman spectroscopy.

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	4	0
ONGOING PROJECTS	6	0
COMPLETED	8	0

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	3		21	115

Dr. Pankaj Ramesh Rao Sagdeo

Associate Professor and Head of Department
 prs@iiti.ac.in
 PhD, UGC-DAE-CSR, DAVV INDORE



Previous Employment details before joining IIT Indore:

Before joining IIT Indore, Dr. P R Sagdeo was associated with Bhabha Atomic Research Centre (BARC) in Visakhapatnam since Sept. 2008 till May 2012 as a Scientific Officer-D. Dr. Sagdeo was the first officer of BARC Visakhapatnam from basic sciences and he was involved in highly specified projects of DAE and set up the state of the art coating facilities for optical and neutron mirror applications at BARC Vizag and proudly published first research publication from BARC Visakhapatnam.

Present academic association(s) with other Institution(s): Member Board of Studies in IPS Indore, Expert committee member for Faculty requirement in technical university of Uttarakhand, Expert committee member for Avishkar Yojana 2021 of University of Mumbai

Details of Research Area: Dr. Sagdeo is investigating the physics of highly correlated electron system such as Multiferroic, Spintronics Materials, and investigating the structure property correlation. Dr. Sagdeo is also investigating the physics of solar cell materials for enhancing the efficiency by tailoring the material through doping, disorder etc. by carefully characterizing the materials through various scattering techniques.

Details of Research Highlights: During 2021-2022 the research group headed by Dr. Sagdeo investigated the physics of electron phonon systems for highly correlated electron systems and highly applied semiconductor materials using combination of optical absorption and Raman spectroscopy. For the first time the group established the mathematical correlation between the electronic-disorder and electron-phonon coupling, which is published in one of the most prestigious journals in Physical Review B which is one of the most prestigious journals in condensed matter physics (Phys. Rev. B 104, 245205, 2021). Furthermore the group headed by Dr. Sagdeo has resolved the controversy of ferroelectricity in centrosymmetric perovskite oxides through Raman and Neutron scattering experiments and shown that the small displacement associated with A site ion in ABO₃ type of oxides lead to the ferroelectricity, this result is also got published in one of the most prestigious journals in Condensed Matter Physics i.e. Physical Review B (Phys. Rev. B 104, 035101, 2021)

Details of Projects active: DST SERB PROJECT ON "Exploring new methodology to estimate the values of onsite coulombic repulsive energy (U) and charge transfer energy (Δ) in transition metal oxides through combined optical and structural studies". In this project work we have provided a methodology to critically characterize the Mott insulators and Charge transfer insulators using combination of optical absorption and x-ray absorption studies.

Total number of Journal Articles published/under process: 28 till 13th July 2022.

Total number of courses/conferences/workshops organized: 1 QIP

Any other Achievements, Awards and Recognitions: Received highest citation award for paper published in Journal of Raman spectroscopy entitled "Orbital facilitated charge transfer originated phonon mode in Cr-substituted PrFeO₃: A brief Raman study" given by Wiley internationals and Journal of Raman Spectroscopy and reviewer recognition award by Elsevier publishers internationals.

List of UG course(s) taught: PH156 B.TECH LAB

List of PG course(s) taught: PH-721 Advance Materials, PH-692 Physics lab

Total number of PhD student(s) guided

5

Dr. Subhendu Rakshit

Professor
rakshit@iiti.ac.in
PhD, Subhendu Rakshit



Previous Employment details before joining IIT Indore:
Visiting Scientist, TIFR, India (October 2008 - June 2009)

Details of Research Area: High energy physics

Details of Research Highlights: Interested in the physics studies related to the IceCube experiment located at the Antarctica measuring high-energy neutrinos coming from extra-galactic sources and explorations of physics beyond the standard model of particle physics.

Details of Projects active:

1. Additional scalars, neutrinos and the origin of the Universe: The dark connection (2020-2023) A SERB-DST funded project under MATRICS scheme.
2. Exploring New Physics with Dark Matter and Neutrinos (2020-2023) A SERB-DST funded project under Core Research Grant scheme.

Total number of Books published/under process: One with Springer International Publishing

Total number of Journal Articles published/under process: 4 from the group.

Any other Achievements, Awards and Recognitions: Thesis examinations of various institutes.

List of PG course(s) taught: PH611 Quantum Mechanics, PH671 Theoretical Particle Physics, PH614 Neutrino and flavor physics, PH620 Statistical Mechanics

Total number of PG dissertation(s) guided

1

Total number of PhD student(s) guided

3

Dr. Ankhi Roy

Associate Professor
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PhD, Indian Institute of Technology Bombay



Details of Research Area: My research area is Experimental High Energy Physics. My current focus is in heavy flavour to understand properties of deconfined Quark Gluon Plasma and QCD phase diagram at high temperature and at high baryon density. Presently, my group is involved in the study of heavy flavour electron hadron correlation, study of D-meson production as a function of event shape and event multiplicities with the ALICE experiment at CERN, Geneva. I am involved in phenomenological study of different experimental observations in heavy ion collision experiments using different Monte Carlo event generators. Presently, I am also trying to implement quantum computing in high energy physics data analysis.

Details of Research Highlights:

1. Designed the cooling system for the MuCH detector of CBM experiments at GSI, Germany, in collaboration with the Bose Institute, Kolkata.
2. Dynamics of the particle production in Pb-Pb collisions at the center of mass energy 2.76 TeV was studied using the PYTHIA8 Angantyr model.
3. Studied dependence on beam energy and nuclear equation of state of anisotropic flow and particle production in low-energy heavy-ion collisions.

Details of Projects active: Active member of ALICE India Mega Science project at IIT Indore

Total number of Journal Articles published/under process 43

List of PG course(s) taught:

PH 650- Numerical Methods, PH-651- Mathematical Methods, PH 660- Nuclear and Particle Physics, (Part of PH-799 - M.Sc project) Computational Technique (2 credit) course

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided 5

Dr. Raghunath Sahoo

Professor

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PhD, Institute of Physics, Bhubaneswar



Previous Employment details before joining IIT Indore:

1. Professor, Indian Institute of Technology Indore, India (From April. 2022).
2. CERN Scientific Associate, CERN, Geneva, Switzerland (March 2021-March 2022)
3. Associate Professor, Indian Institute of Technology Indore, India (From 27th September 2013- Feb. 2022).
4. Assistant Professor, Indian Institute of Technology Indore, India (From 30th November 2010- 26th September 2013).
5. Postdoctoral Research Associate –II INFN Fellow, INFN Padova, Italy (From July 2009- Nov. 2010), with ALICE Experiment at CERN, Geneva, Switzerland.
6. Postdoctoral Research Associate -I (Ingenieur de Recherche) CNRS Postdoctoral Research Associate, SUBATECH, Ecole des Mines de Nantes, Nantes, France (November 2007 - June 2009), with STAR Experiment at Brookhaven National Laboratory(BNL), USA.
7. Visiting Scientist, Institute of Physics, Bhubaneswar, India (During July 2007 - October 2007 and December 2008- Feb. 2009).
8. Visiting Scientist, UCT-CERN Research Center, University of Cape Town, South Africa, May 04-31, 2007.

Present academic association(s) with other Institution(s): CERN Scientific Associate, CERN, Geneva, Switzerland (March 2021-March 2022)

Details of Research Area: Professor Raghunath Sahoo has earned his Ph.D from Institute of Physics, Bhubaneswar and has worked as a Postdoctoral fellow in Subatech, France and INFN fellow in INFN Padova, Italy in the STAR Experiment at the Brookhaven National Laboratory, USA and European Center for Nuclear Research (CERN), Geneva, Switzerland, respectively. Dr. Sahoo was a visiting scientist at the University of Cape Town, South Africa and Institute of Physics, Bhubaneswar. He is a Fellow of Institute of Physics, United Kingdom and has worked as a CERN scientific associate at CERN, Geneva, Switzerland during March 2021-March 2022. He is shouldering the responsibility of Deputy Spokesperson of ALICE-India Collaboration, a high-energy physics collaboration of 14-Indian universities and intuitions comprising of almost 100 scientists and engineers. Prof. Sahoo is the Associate Dean of International Relations and convener, Seminars and Outreach, IIT Indore.

Details of Research Highlights: Prof. Sahoo heads the experimental high-energy physics group at IIT Indore while working in the ALICE experiment at CERN and CBM experiment at GSI, Germany, as the team leader and principal investigator. He is an active researcher at the Ooty Cosmic Ray Physics laboratory, a TIFR-founded laboratory for the study of hadronic shower compositions in cosmic rays. Prof. Sahoo's research interest focuses on the search for the primordial matter of Quark-Gluon Plasma, a section of high-energy nuclear physics at the energy and luminosity frontiers. He is an expert on applications of statistical mechanics and machine learning in high-energy nuclear physics, event topology studies in particle production including the light and heavy-flavor sectors.

Details of Projects active:

- Indian participation in the ALICE experiment at CERN [Funding Agency: DST, Govt. of India: Rs. 5.325 Crores (2021-2026)]
- Study of High-multiplicity Proton+Proton Collisions at the LHC Energies using Event Shape Method. [Funding Agency: DAE-BRNS, Govt. of India: Rs. 25.03 Lakhs (2019-22)].

Total number of Journal Articles published/under process 78

Total number of courses/conferences/workshops organized 5

Any other Achievements, Awards and Recognitions:

- Prof. Raghunath Sahoo has been elected as a Fellow of Institute of Physics, United Kingdom (FInstP)-2020.
- Awarded CERN Scientific Associateship at CERN, Geneva, Switzerland- March 2021-March 2022
- Member of Editorial board, Physics, MDPI, Switzerland (2020-present)
- Deputy Spokesperson, ALICE-India Collaboration (Since January 2021-continuing)
- Associate Dean, International Relations, IIT Indore (Since Nov. 2020)
- Guest Editor, Advances in High Energy Physics, Hindawi (UK)
- Human resources training (78): 13 Postdocs, 9 Ph.Ds, 10 PhD (continuing), 46 BTech/MSc projects
- Lead Editor: Special Issue Volume of MDPI-Physics: "Jean Cleymans: A Life for Physics")

Total number of PG dissertation(s) guided 3

Total number of PhD student(s) guided 10

Dr. Sarika Jalan

Professor
sarika@iiti.ac.in
PhD, Physical Research Laboratory Ahmedabad



Previous Employment details before joining IIT Indore:

- Postdoc fellow at MPI-MiS Leipzig 2004-2006.
- Guest scientist at MPI-PKS Dresden 2006-2008.
- Senior Scientist at NUS Singapore 2008-2010

Present academic association(s) with other Institution(s): Visiting scientist at MPI-PKS Dresden June 2022.

Details of Research Area: Complex systems and nonlinear Dynamics. Higher-order interactions. Computational Biology.

Details of Research Highlights: We have shown that how higher order interactions can lead to rich dynamical behaviour which were not possible by consideration of pair-wise interactions only.

Details of Projects active: Adaptative evolution in coupled dynamics on networks

Total number of Journal Articles published/under process 11

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions:

Invited planary speaker in Asia Dynamics Days held in Singapore 2021.

Invited key note speaker at NetSci 2022 (June 2022) an annual flagship conference of network science society.

Serb Power Fellowship (2021-2024).

Associate Editor for Chaos: An interdisciplinary Journal of nonlinear dynamics.

Editor Special Issue for Journal of Computational Science.

List of UG course(s) taught: PH 105 Modern Physics

List of PG course(s) taught: Theory of Complex Systems PH708

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 6

Dr. Preeti A. Bhobe

Professor

pbhobe@iiti.ac.in

PhD, Goa University, Goa, India



Previous Employment details before joining IIT Indore:

1. [2009-2011] JSPS postdoctoral fellow at Institute for Solid state physics (ISSP), University of Tokyo and RIKEN, Spring8 synchrotron source, Japan

2. [2007-2009] Visiting postdoctoral fellow at Tata Institute of Fundamental Research (TIFR), Mumbai

Details of Research Area: Dr Preeti A. Bhobe is an experimental condensed matter physicist. She specializes in X-ray Absorption Fine Structure, Photoemission Spectroscopy, and Magnetism. Her research work involves investigating the local crystal structural correlation to physical properties of materials that are of technological interests. This comprises materials such as Magnetic Shape Memory alloys, Half-metals and Topological states in Heuslers, Spin-glasses, transparent conducting oxides, Halide perovskites, and Thermoelectric Chalcogenides. She specializes in X-ray Absorption Fine Structure spectroscopy (XAFS), Photoemission Spectroscopy (PES), and Magnetism and employs advanced experimental facilities like the national and international synchrotron and neutron sources for her research work.

Details of Research Highlights: Over the past one year, Dr. Bhobe has been involved in a study aimed at understanding certain Organic Polymers that have gained attention as highly active and durable catalysts for electrochemical water oxidation. Water oxidation is a crucial half-cell reaction that has wide application ranging from water splitting, metal-air batteries, to CO₂ reduction in the environment. Through her expertise in EXAFS, Dr. Bhobe contributed to understanding the mechanism of a unique composite of the nanocrystals of cobalt- and vanadium-containing mixed oxides with a covalent polymer – that shows a significant increase in the activity and stability in comparison to its independent oxide counterparts. This work led to the publication of a research article in an international journal titled, Applied Energy Materials.

Details of Projects active: Co-P.I. in the DST-DAAD funded project titled 'LUH - IIT Indore partnership for scientific research'.

Total number of Journal Articles published/under process: 02 (published) and 02 (under review).

Total number of courses/conferences/workshops organized: Nil organised. Delivered lectures at two TEQIP programmes.

List of UG course(s) taught: PPH102 Preparatory Physics – II

List of PG course(s) taught: PH 722 X-ray Spectroscopy, PH 799 M.Sc. project stage 1 (Atomic and Molecular Physics embedded within the project credits)

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 6

Dr. Srimanta Pakhira

Assistant Professor Grade-I

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PhD, Indian Association for the Cultivation of Science (IACS) and Jadavpur University



Previous Employment details before joining IIT Indore:

Dr. Srimanta Pakhira is working as an Assistant Professor in The Department of Physics Since August 2019 and a Ramanujan Faculty Fellow in the Discipline of Metallurgy Engineering and Materials Science (MEMS) since January 2018. Dr Pakhira has done his PhD. from the Indian Association for the Cultivation of Science (IACS) and Jadavpur University, Calcutta, West Bengal, India and he was Postdoctoral fellow in University of California at Berkeley and Lawrence Berkeley National Laboratory (LBNL), Berkeley, CA, USA; Nagoya University, Nagoya, Aichi, Japan; Florida State University, National High Magnetic Field Laboratory, Florida State University (FSU), Tallahassee, Florida, USA. He was a highly prestigious Japan Society for the Promotion of Science (JSPS) International Post-doctoral Fellow for outstanding Foreign Researcher in Japan, and he was awarded highly prestigious Alexander von Humboldt Fellowship (AvH) International Post-doctoral Fellowship for Foreign Researcher in Germany. Dr Pakhira was conferred highly prestigious Ramanujan Fellow and Early Career Research Award (ECRA) from the Science and Engineering Research Board (SERB), Department of Science and Technology (DST), Govt. of India.

Present academic association(s) with other Institution(s):

1. Chandrabhan Patel, Ruchi Singh, Mayank Dubey, Sushil Kumar Pandey, Shrish Nath Upadhyay, Vikash Kumar, Sharath Sriram, Myo Than Htay, Srimanta Pakhira, Victor V. Atuchin and Shaibal Mukherjee** 2022 A synergistic recipe to produce uniform, large-sized single crystal of MoS₂ monolayer via CVD for ppb-level NO₂ sensing, ACS Applied Nano Materials, (Just Accepted), Impact Factor: 5.097,
2. Nilima Sinha and Srimanta Pakhira** 2022 H₂ Physisorption on Covalent Organic Framework Linkers and Metalated Linkers: A Strategy to Enhance Binding Strength, Molecular Systems Design & Engineering (MSDE), (Just Accepted), Impact Factor: 4.935, DOI <https://doi.org/10.1039/D1ME00166C>
3. Srimanta Pakhira** and Shrish Nath Upadhyay 2022 Efficient Electrocatalytic H₂ Evolution Mediated by 2D Janus MoSSe Transition Metal Dichalcogenide Sustainable Energy & Fuels, 6, pp 1733-1752, Impact Factor: 6.367, DOI <https://doi.org/10.1039/D1SE02040D>
4. Nilima Sinha and Srimanta Pakhira** 2022 Hydrogen: A Future Chemical Fuel, Photoelectrochemical Hydrogen Generation. Materials Horizons: From Nature to Nanomaterials, Springer, pp 1-30, Book Chapter, https://doi.org/10.1007/978-981-16-7285-9_1
5. Upadhyay S. N., Pakhira, S.** 2022 Electrochemical Water Splitting: H₂ Evolution Reaction, Photoelectrochemical Hydrogen Generation. Materials Horizons: From Nature to Nanomaterials, Springer, pp 59-89, Book chapter, https://doi.org/10.1007/978-981-16-7285-9_1
6. Pragti, Bidyut Kumar Kundu, Shrish Nath Upadhyay, Nilima Sinha, Rakesh Ganguly, Ivo Grabchev, Srimanta Pakhira**, Suman Mukhopadhyay** 2022 Pyrene based fluorescent Ru(II)-arene complexes towards significant biological applications: catalytic potential, DNA/protein binding, two photon cell imaging and in vitro cytotoxicity, Dalton Transactions, 51, pp 3937-3953, Impact Factor: 4.39, <https://doi.org/10.1039/D1DT04093F>

7. Joy Ekka, Shrish Nath Upadhyay, Frerich J. Keil and Srimanta Pakhira** 2022 Unveiling the Role of 2D Monolayer Mn-doped MoS₂ Material: Toward an Efficient Electrocatalyst for H₂ Evolution Reaction, *Physical Chemistry Chemical Physics*, 24, pp 265-280, Impact Factor: 3.56.
<https://doi.org/10.1039/D1CP04344G>
8. Srimanta Pakhira,† Yu Leit, Kazunori Fujisawa, He Liu, Cynthia Guerrero-Bermea, Tianyi Zhang, Archi Dasgupta, Luis M. Martinez, Srinivasa Rao Singamaneni, Ke Wang, Jeff Shallenberger, Ana Laura Elías, Rodolfo Cruz-Silva, Morinobu Endo, Jose L. Mendoza-Cortes, Mauricio Terrones, 2021 Low temperature activation of inert hexagonal boron nitride for metal deposition and single atom catalysis, *Materials Today*, 51, pp 108-116, Impact Factor: 31.04.
<https://doi.org/10.1016/j.mattod.2021.09.017>
 †Equal Contribution: First Authorship.
9. Pakhira, Srimanta,† Dharmarwardana, M.,† Welch, R. P., Narvaez, C. C., Luzuriaga, M. A., Arimilli, B. S., McCandless, G. T., Fahimi, B., Mendoza-Cortes, J. L., Gassensmith, J. J. 2021 Rapidly Reversibly Organic Crystalline Switch for Conversion of Heat into Mechanical Energy. *Journal of The American Chemical Society (JACS)*. 143, pp 5951–5957, Impact Factor: 15.419.
<https://doi.org/10.1021/jacs.1c01549>
 †Equal Contribution: First Authorship.
10. Shrish Nath Upadhyay, Srimanta Pakhira* 2021 Mechanism of Electrochemical Oxygen Reduction Reaction at Two-Dimensional Pt-doped MoSe₂ Material: An Efficient Electrocatalyst, *Journal of Materials Chemistry C*, 9, pp 11331-11342, Impact Factor: 7.393. DOI: 10.1039/D1TC02193A.
<https://doi.org/10.1039/D1TC02193A>
11. Nilima Sinha, Srimanta Pakhira** 2021 A Theoretical and Computational Study of H₂ Physisorption on Covalent Organic Framework Linkers and Metalated Linkers: A Strategy to Enhance Binding Strength, ArXiv preprint, Cornell Library, <https://arxiv.org/abs/2111.02720>
12. Joy Ekka, Shrish Nath Upadhyay, Verma Bunty Sardar, Srimanta Pakhira** 2021 2D Mn Doped MoS₂: An Efficient Electrocatalyst for Hydrogen Evolution Reaction, ArXiv preprint, Cornell Library, arXiv:2106.14682 <https://arxiv.org/abs/2106.14682>
13. Shrish Nath Upadhyay, Jena Akash Kumar Satrughna and Srimanta Pakhira** 2021 Recent Advancements of Two-Dimensional Transition Metal Dichalcogenides and Their Applications in Electrocatalysis and Energy Storage. *Emergent Materials*, 4, pp 951–970, DOI: 10.1007/s42247-021-00241-2. <http://link.springer.com/article/10.1007/s42247-021-00241-2>
14. Chanchal Sonkar, Novina Malviya, Nilima Sinha, Attreyee Mukherjee, Srimanta Pakhira** and Suman Mukhopadhyay** 2021 Selective Anticancer Activities of Ruthenium(II)-Tetrazole Complexes and their Mechanistic Insights. Erratum/Correction, *Biometal (BIOM)*, 34, pp. 795–812, Impact Factor: 2.949. <https://doi.org/10.1007/s10534-021-00321-0>
15. Chanchal Sonkar, Novina Malviya, Nilima Sinha, Attreyee Mukherjee, Srimanta Pakhira* and Suman Mukhopadhyay** 2021 Selective Anticancer Activities of Ruthenium(II)-Tetrazole Complexes and their Mechanistic Insights. *Biometal (BIOM)*, 34, pp. 795–812, Impact Factor: 2.949.
<https://doi.org/10.1007/s10534-021-00308-x>
16. Susmita Roy, Nilima Sinha, Srimanta Pakhira, Chanchal Chakraborty 2021 Generation of Emissive Nanosphere from Micro-Aggregates in Anionic Perylene Diimide: Co-relation of Self-Assembly, Emission, and Electrical Properties. *Dyes and Pigments*, 192, pp. 109461, Impact Factor: 4.889.
<https://doi.org/10.1016/j.dyepig.2021.109461>
17. Rangaswamy Puttaswamy, Radha Nagaraj, Pranav Kulkarni, Hemanth Kumar Beere, Shrish Nath Upadhyay, R. Geetha Balakrishna, Nataraj Sanna Kotrappanavar, Srimanta Pakhira,** Debasis Ghosh** 2021 Constructing a High-Performance Aqueous Rechargeable Zinc Ion Battery Cathode with Self-assembled Mat-like Packing of Intertwined Ag(I) Pre-inserted V₃O₇.H₂O Microbelts with Reduced Graphene Oxide Core. *ACS Sustainable Chemistry & Engineering*. 9, pp 3985-3995, Impact Factor: 8.198. <http://dx.doi.org/10.1021/acssuschemeng.0c06147>
18. Sinha, N., Pakhira, S. ** 2021 Tunability of the Electronic Properties of Covalent Organic Frameworks. *ACS Applied Electronic Materials*, 3, pp. 720-732. Impact Factor: 3.314.
<https://doi.org/10.1021/acsaelm.0c00867>

Details of Research Area: I am working as an Assistant Professor and a Ramanujan Faculty Fellow in the Discipline of Physics and Metallurgy Engineering and Materials Science, IIT Indore. Currently, I am pursuing my present research in areas related to condensed matter nanoscience and materials science. My research area is focused on crystal structure calculations, material properties, defects of

various bulk structures porous materials and 2D layer materials (e.g. Transition Metal-Dichalcogenides (TMDs), Graphene, hexagonal boron nitride (h-BN), Maxine, Carbon Nanotube (CNT), N-doped CNT (NCNT), hybrid TMDs alloys, black phosphorus etc.) as applicable to semiconductor materials and also their application as catalysis or photo-catalysts such as water splitting, H₂ evolution reactions (HER), O₂ reduction reactions (ORR), CO₂ reduction and O₂ evolution reactions (OER) on the surfaces of 2D layer materials. My current research is also concentrated on the collaborative potential between Physical and Chemical Sciences, Materials Science and Engineering with Theoretical and Computational Science to investigate the new type of materials designs such as porous structure materials (i.e. metal-organic frameworks (MOFs), covalent organic frameworks (COFs) etc.) nanoporous materials, their structure, electronic properties and their potential applications in nanotechnology, and alkali-ion battery, renewable energy and various chemical reactions. I am interested in studying the detailed mechanism of the gas storage, gas separation, water purification and adsorption in MOFs, COFs, porous coordination polymers (PCPs), alkane cracking for oil refining technology, novel material design for energy application such as alkali-ion battery, super capacitors, solar cell, thermoelectric materials, renewable energy materials etc. using hybrid DFT, DFT-D methods, QM/MM and grand canonical Monte Carlo (GCMC) simulations, molecular dynamics (MD) simulations. At present, I am investigating on novel 2D materials design (including 2D COFs) which can act as catalysts for HER, OER, ORR, and CO₂ reduction.

Details of Research Highlights: Dr. Pakhira's research group is active in Condensed Matter Theory, Electronic Structure Theory, Quantum Theory, Computational Materials Science and Engineering, Materials Physics and Materials Engineering, Semi-conductor Physics, Magnetism, Physics of Novel Solar Cells, Renewable Energy Technology, Perovskite, 2D TMDs, H₂ evolution, Electrocatalysis, O₂ Reduction, Porous Materials and Their Applications, CNT, Alkali-ion Battery, H₂-Storage, CO₂ capture, Computational Physics and Condensed Matter Nanoscience. He has also contributed to the understanding of Density Functional Theory (DFT) and applications in various areas of science.

Details of Projects active: Development of Porous Metal-Organic Frameworks and Covalent Organic Frameworks and Their Potential Applications in Hydrogen Storage, DST-SERB, Govt. of India. (Project Value: 36 Lakhs INR), PI-Dr. Srimanta Pakhira (Duration: 2022 - 2025). Construction of Porous Metal-Organic Frameworks (MOFs) and Covalent-Organic Frameworks (COFs) and Its Applications, DST-SERB, Govt. of India. (Project Value: 125 Lakhs INR), PI-Dr. Srimanta Pakhira (Duration: 2018 - 2023). Development of New Two Dimensional Layer Structure Materials and Technique for Water Splitting: Applications in Hydrogen and Oxygen Evolution Reactions, Early Career Research Award (ECRA), SERB-DST, Govt. of India. (Project Value: 55 Lakhs INR), PI-Dr. Srimanta Pakhira (Duration: 2019 - 2022).

Total number of Journal Articles published/under process: 18

1. Chandrabhan Patel, Ruchi Singh, Mayank Dubey, Sushil Kumar Pandey, Shrish Nath Upadhyay, Vikash Kumar, Sharath Sriram, Myo Than Htay, Srimanta Pakhira, Victor V. Atuchin and Shaibal Mukherjee** 2022 A synergistic recipe to produce uniform, large-sized single crystal of MoS₂ monolayer via CVD for ppb-level NO₂ sensing, ACS Applied Nano Materials, (Just Accepted), Impact Factor: 5.097,
2. Nilima Sinha and Srimanta Pakhira** 2022 H₂ Physisorption on Covalent Organic Framework Linkers and Metalated Linkers: A Strategy to Enhance Binding Strength, Molecular Systems Design & Engineering (MSDE), (Just Accepted), Impact Factor: 4.935, DOI <https://doi.org/10.1039/D1ME00166C> ** Corresponding Author
3. Srimanta Pakhira** and Shrish Nath Upadhyay 2022 Efficient Electrocatalytic H₂ Evolution Mediated by 2D Janus MoSSe Transition Metal Dichalcogenide Sustainable Energy & Fuels, 6, pp 1733-1752, Impact Factor: 6.367, DOI <https://doi.org/10.1039/D1SE02040D> ** Corresponding Author
4. Nilima Sinha and Srimanta Pakhira** 2022 Hydrogen: A Future Chemical Fuel, Photoelectrochemical Hydrogen Generation. Materials Horizons: From Nature to Nanomaterials, Springer, pp 1-30, Book Chapter, https://doi.org/10.1007/978-981-16-7285-9_1 ** Corresponding Author
5. Upadhyay S. N., Pakhira, S.** 2022 Electrochemical Water Splitting: H₂ Evolution Reaction, Photoelectrochemical Hydrogen Generation. Materials Horizons: From Nature to Nanomaterials, Springer, pp 59-89, Book chapter, https://doi.org/10.1007/978-981-16-7285-9_1 ** Corresponding Author
6. Pragti, Bidyut Kumar Kundu, Shrish Nath Upadhyay, Nilima Sinha, Rakesh Ganguly, Ivo

- Grabchev, Srimanta Pakhira**, Suman Mukhopadhyay** 2022 Pyrene based fluorescent Ru(II)-arene complexes towards significant biological applications: catalytic potential, DNA/protein binding, two photon cell imaging and in vitro cytotoxicity, Dalton Transactions, 51, pp 3937-3953, Impact Factor: 4.39, <https://doi.org/10.1039/D1DT04093F> ** Corresponding Author
7. Joy Ekka, Shrish Nath Upadhyay, Frerich J. Keil and Srimanta Pakhira** 2022 Unveiling the Role of 2D Monolayer Mn-doped MoS₂ Material: Toward an Efficient Electrocatalyst for H₂ Evolution Reaction, Physical Chemistry Chemical Physics, 24, pp 265-280, Impact Factor: 3.56. <https://doi.org/10.1039/D1CP04344G> ** Corresponding Author
8. Srimanta Pakhira,† Yu Leit, Kazunori Fujisawa, He Liu, Cynthia Guerrero-Bermea, Tianyi Zhang, Archi Dasgupta, Luis M. Martinez, Srinivasa Rao Singamaneni, Ke Wang, Jeff Shallenberger, Ana Laura Elías, Rodolfo Cruz-Silva, Morinobu Endo, Jose L. Mendoza-Cortes, Mauricio Terrones, 2021 Low temperature activation of inert hexagonal boron nitride for metal deposition and single atom catalysis, MaterialsToday, 51, pp 108-116, Impact Factor: 31.04. <https://doi.org/10.1016/j.mattod.2021.09.017> †Equal Contribution: First Authorship.
9. Pakhira, Srimanta,† Dharmarwardana, M.,† Welch, R. P., Narvaez, C. C., Luzuriaga, M. A., Arimilli, B. S., McCandless, G. T., Fahimi, B., Mendoza-Cortes, J. L., Gassensmith, J. J. 2021 Rapidly Reversibly Organic Crystalline Switch for Conversion of Heat into Mechanical Energy. Journal of The American Chemical Society (JACS). 143, pp 5951–5957, Impact Factor: 15.419. <https://doi.org/10.1021/jacs.1c01549> †Equal Contribution: First Authorship.
10. Shrish Nath Upadhyay, Srimanta Pakhira* 2021 Mechanism of Electrochemical Oxygen Reduction Reaction at Two-Dimensional Pt-doped MoSe₂ Material: An Efficient Electrocatalyst, Journal of Materials Chemistry C, 9, pp 11331-11342, Impact Factor: 7.393. DOI: 10.1039/D1TC02193A. <https://doi.org/10.1039/D1TC02193A>
11. Nilima Sinha, Srimanta Pakhira** 2021 A Theoretical and Computational Study of H₂ Physisorption on Covalent Organic Framework Linkers and Metalated Linkers: A Strategy to Enhance Binding Strength, ArXiv preprint, Cornell Library, <https://arxiv.org/abs/2111.02720> ** Corresponding Author
12. Joy Ekka, Shrish Nath Upadhyay, Verma Bunty Sardar, Srimanta Pakhira** 2021 2D Mn Doped MoS₂: An Efficient Electrocatalyst for Hydrogen Evolution Reaction, ArXiv preprint, Cornell Library, arXiv:2106.14682 <https://arxiv.org/abs/2106.14682> ** Corresponding Author
13. Shrish Nath Upadhyay, Jena Akash Kumar Satrughna and Srimanta Pakhira** 2021 Recent Advancements of Two-Dimensional Transition Metal Dichalcogenides and Their Applications in Electrocatalysis and Energy Storage. Emergent Materials, 4, pp 951–970, DOI: 10.1007/s42247-021-00241-2. <http://link.springer.com/article/10.1007/s42247-021-00241-2> ** Corresponding Author
14. Chanchal Sonkar, Novina Malviya, Nilima Sinha, Attreyee Mukherjee, Srimanta Pakhira** and Suman Mukhopadhyay** 2021 Selective Anticancer Activities of Ruthenium(II)-Tetrazole Complexes and their Mechanistic Insights. Erratum/Correction, Biometal (BIOM), 34, pp. 795–812, Impact Factor: 2.949. <https://doi.org/10.1007/s10534-021-00321-0> ** Corresponding Author
15. Chanchal Sonkar, Novina Malviya, Nilima Sinha, Attreyee Mukherjee, Srimanta Pakhira* and Suman Mukhopadhyay** 2021 Selective Anticancer Activities of Ruthenium(II)-Tetrazole Complexes and their Mechanistic Insights. Biometal (BIOM), 34, pp. 795–812, Impact Factor: 2.949. <https://doi.org/10.1007/s10534-021-00308-x> * Corresponding Author
16. Susmita Roy, Nilima Sinha, Srimanta Pakhira, Chanchal Chakraborty 2021 Generation of Emissive Nanosphere from Micro-Aggregates in Anionic Perylene Diimide: Co-relation of Self-Assembly, Emission, and Electrical Properties. □Dyes and Pigments, 192, pp. 109461, Impact Factor: 4.889. <https://doi.org/10.1016/j.dyepig.2021.109461>
17. Rangaswamy Puttaswamy, Radha Nagaraj, Pranav Kulkarni, Hemanth Kumar Beere, Shrish Nath Upadhyay, R. Geetha Balakrishna, Nataraj Sanna Kotrappanavar, Srimanta Pakhira,** Debasis Ghosh** 2021 Constructing a High-Performance Aqueous Rechargeable Zincion Battery Cathode with Self-assembled Mat-like Packing of Intertwined Ag(I) Pre-inserted V₃O₇.H₂O Microbelts with Reduced Graphene Oxide Core. ACS Sustainable Chemistry & Engineering. 9, pp 3985-3995, Impact Factor: 8.198. <http://dx.doi.org/10.1021/acssuschemeng.0c06147> ** Corresponding Author
18. Sinha, N., Pakhira, S. ** 2021 Tunability of the Electronic Properties of Covalent Organic Frameworks. ACS Applied Electronic Materials, 3, pp. 720-732. Impact Factor: 3.314. <https://doi.org/10.1021/acsaelm.0c00867> ** Corresponding Author

Total number of courses/conferences/workshops organized

4

List of UG course(s) taught: 1. PH-105; Modern Physics; 2. PH 156: B.Tech. Physics Lab.

List of PG course(s) taught: 1. PH 622: Solid State Physics; 2. PH 603: Classical Mechanics; 3. PH 698: PG Seminar Course; 4. PH 699: M.Sc. Research Project Stage-I; 5. PH 800: M.Sc. Research Project Stage-II; 6. PH 692: Physics Laboratory-II

Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided	8

Dr. Dipankar Das

Assistant Professor Grade-I

d.das@iiti.ac.in

PhD, Saha Institute of Nuclear Physics, University of Calcutta



Previous Employment details before joining IIT Indore:

Assistant Professor (February, 2017 - August, 2018), Department of Physics, University of Calcutta

Details of Research Area: Keywords: Higgs Physics, Flavor Physics, Neutrino Physics, Models of fermion masses and mixings, Grand Unified Theories, Dark Matter. Well motivated scalar extensions of the Standard Model (SM) constitute my primary research theme. The SM predicts only one fundamental scalar. But for what it's worth, the Higgs scalar observed at the LHC might be only the first one in a series of many others to follow. This is an intriguing possibility that should be explored in greater detail. I am particularly interested in finding distinctive features in the LHC Higgs data, which can distinguish the SM Higgs from an SM-like Higgs arising from a more complicated scalar sector. I have also worked in the flavor-Higgs interface, namely, impact of charged scalars on different flavor observables and thereby constraining different BSM scenarios.

Details of Research Highlights: Diluting quark flavor hierarchies using dihedral symmetry; Ayushi Srivastava, Miguel Levy, Dipankar Das (Jul 8, 2021) Published in: Eur.Phys.J.C 82 (2022) 3, 205 e-Print: 2107.03756 [hep-ph]

Details of Projects active: Title: Exploring flavor models in the light of the Higgs precision data, SRG/2020/000006, funded by DST-SERB

Total number of Journal Articles published/under process	2
List of UG course(s) taught: PH 106 (Electrodynamics)	
List of PG course(s) taught: PH 603 (Classical Mechanics), PH 790 (Statistical Methods for Physical Sciences)	
Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided: 1 (Continuing)	

Dr. Debajyoti Sarkar

Assistant Professor Grade-I

dsarkar@iiti.ac.in

PhD, City University of New York, USA



Previous Employment details before joining IIT Indore:

Research Associate- City University of New York, USA (5 months)

Postdoctoral fellow- Ludwig Maximilians University (Arnold Sommerfeld Center) & Max Planck Institute (Heisenberg Institute), Munich, Germany (3 years)

Postdoctoral fellow- University of Bern, Switzerland (2 years 3 months)

Postdoctoral fellow- Tsinghua University, Beijing, China (1 month)

Present academic association(s) with other Institution(s): Visitor at Indian Institute of Science, Bengaluru

Details of Research Area: I am interested on both sides of AdS/CFT duality, in particular understanding various aspects of quantum gravity such as emergent spacetime, black hole information problem etc. On the other hand, I am investigating the properties and structures of CFTs and their various limits and applications. I have also worked on and currently invested in the interdisciplinary applications of holography towards Quantum Information Theory, strongly coupled condensed matter systems, CFTs at large global charge etc. Finally, some of my recent works involve studies of certain aspects of general relativity and quantum field theories.

Details of Research Highlights: During the above time-period, I have worked on algebraic structures of field theory entanglement, AdS dual of boundary Fisher information, bulk reconstruction in terms of CFT OPE blocks and others.

Details of Projects active: Ongoing MATRICS grant on the project "Thermodynamics and Entanglement in Field Theory and Gravity" from Science and Engineering Research Board (SERB) in India. February '22 - February '25.

Total number of Journal Articles published/under process: 1 published, 2 under process.

Total number of courses/conferences/workshops organized: Organized 1 course and 2 workshops

Any other Achievements, Awards and Recognitions:

1. Referee services for research grant evaluation from Israel Science Foundation (ISF) and Czech Science Foundation (GACR).
2. Invited talk at IIT Madras
3. Invited talk at IIT Kanpur
4. Invited talk at IISc. Bengaluru
5. Invited talk at Indian Strings Meeting (ISM)
6. Invited as a "Member of the Reviewer board" for the peer reviewed MDPI journals "Entropy" (joined), "Particles" and "Applied Physics"
7. Invited to join the "Editorial Board/ Reviewer Panel" for the journal "Nuclear Science"

List of UG course(s) taught: 1. Electricity and Magnetism (PH106) and 2. first year B.Tech laboratories (PH156)

List of PG course(s) taught: 1. Mathematical methods in Physics (PH651), 2. Nuclear and Particle Physics (PH660), 3. Dualities in Field Theory and Gravity (PH612)

Total number of PhD student(s) guided

2

Dr. Onkar Sharad Game

Assistant Professor Grade-I

ogame@iiti.ac.in

PhD, National Chemical Laboratory, Pune and
Savitribai Phule Pune University, Pune



Previous Employment details before joining IIT Indore:

I completed my PhD in the field of nanostructure metal oxides for optoelectronics and energy generation applications from NCL-Pune and Savitribai Phule Pune University in 2014. This work was carried under the guidance of Prof Satishchandra B. Ogale (NCL, Pune) and Prof. Arun Banpurkar. In 2015, I moved to Brown University, USA which is one of the Ivy League Universities to work on Hybrid Halide Perovskite solar cells with Prof. Nitin Padture. During my stay at Brown University from 2015-17, I investigated the mixed electronic-ionic conduction within these new class of solution processed semiconductors called lead halide perovskites. In 2017 I joined University of Sheffield, UK as postdoctoral fellow to work on improving device efficiency and stability of hybrid halide perovskites solar cells. I worked at Sheffield on range of problems pertaining to solar cells including solar cell integration on carbon fibre substrates for solar powered unmanned aerial vehicles.

I joined IIT - Indore, in April 2015 as Assistant Professor in Physics and currently establishing a research group in novel solution processed semiconductors for optoelectronics and energy applications.

Details of Research Area: I am currently working on aspects of solution processed semiconductors for optoelectronic and energy applications. We use range of material and spectroscopic characterization tools such as X-ray crystallography, electron microscopy, steady state/time-resolved photoluminescence, scanning probe spectroscopy to investigate the material and optoelectronic properties of solution processed halide perovskite semiconducting films. We use the insights gained from the fundamental studies of halide perovskite films to fabricate and characterize highly efficient solar cells, sensors (X-Ray/photo-sensors) and optoelectronic devices such as LEDs. In future we would move from the lab scale processing of solar cells to large area integrated solar powered cars or unmanned aerial vehicles.

Total number of Journal Articles published/under process:

1. Dominic Blackburn, Thomas J Routledge, Mary O'Kane, Onkar Game, Thomas E Catley, Christopher J Wood, Trevor McArdle, David G Lidzey "Low-temperature, scalable, reactive deposition of tin oxide for perovskite solar cells" *Solar RRL*, 2022, 2200263.
2. William R. Fisher, Philip Calado, Jason A. Röhr, Joel A. Smith, Xingyuan Shi, Onkar Game, Jenny Nelson, Piers R.F. Barnes "The Validity Window of Space-Charge-Limited Current Measurements of Metal Halide Perovskite Devices" 2022 arXiv:2204.00459v1
3. Elena J Cassella, Emma LK Spooner, Timothy Thornber, Mary E O'Kane, Thomas E Catley, James E Bishop, Joel A Smith, Onkar Game, David G Lidzey "Gas-Assisted Spray Coating of Perovskite Solar Cells Incorporating Sprayed Self-Assembled Monolayers" *Advanced Science*, 9, 2022, 2104848.
4. T Jesper Jacobsson, Adam Hultqvist, et al. "An open-access database and analysis tool for perovskite solar cells based on the FAIR data principles" *Nature Energy*, 7, 2022, 107 – 115.
5. Mary E. O'Kane, Joel A. Smith, Tarek I. Alanazi, Elena J. Cassella, Onkar Game, Sandra van Meurs, David G. Lidzey "Perovskites on Ice: An Additive-Free Approach to Increase the Shelf-Life of Triple-Cation Perovskite Precursor Solutions" *ChemSusChem.*, 14, 2021, 2537 –2546.

List of UG course(s) taught: PPH 102

Dr. Alestin Mawrie

Assistant Professor Grade-I

amawrie@iiti.ac.in

PhD, IIT Kanpur

Previous Employment details before joining IIT Indore:

Assistant Professor, Mizoram University



Details of Research Area: Our research group here in IIT Indore (which I named it, "Quantum Transport Group") works in the different phenomena of quantum transport theory. We are interested in the physics and simulation of equilibrium and non-equilibrium phenomena in 1D and 2D systems ranging from graphene to topological insulators and topological superconductors. Our works emphasis into the technological application to help designing of emerging electronic, spintronic and valleytronic devices. For our publications:

<https://scholar.google.co.in/citations?user=x5QLIFgAAAAJ&hl=en>

Details of Research Highlights: Our group focuses on the phenomena of quantum transport in low-dimensional meso/nano-scale systems. These low-dimensional systems involve graphene and its derivatives, silicene, mesoscopic hybrid junctions, and Weyl semi-metal, to name a few. We are also giving our attention to systems that exhibit band inversion to form topological band structures.

Ongoing Research Projects: Quantum Transport in Low Dimensional Systems, (P. I. Funded by DST, India) Selected Publications: Effect of electron-hole asymmetry on optical conductivity in 8-Pmmn borophene, S. Verma, A. Mawrie, T. K. Ghosh, *Physical Review B*, 96, 155418 (2017) Direction-

dependent giant optical conductivity in two-dimensional semi-Dirac materials, A. Mawrie, B. Muralidharan, Physical Review B, 99, 075415 (2019) Quantum thermoelectrics based on two-dimensional semi-Dirac materials, A. Mawrie, B. Muralidharan, Physical Review B, 100, 081403 (R) (2019)

Details of Projects active: Ongoing Research Projects: Quantum Transport in Low Dimensional Systems, (P. I. Funded by DST, India) DST/INSPIRE/04/2019/000642

Total number of Journal Articles published/under process	1
Total number of courses/conferences/workshops organized	1
Any other Achievements, Awards and Recognitions: PH 105, PH 106, PH 156	
Total number of PhD student(s) guided	1

Dr. Rajesh Kumar

Professor

rajeshkumar@iiti.ac.in

PhD, Indian Institute of Technology Delhi

Previous Employment details before joining IIT Indore: National Institute for Nanotechnology, University of Alberta, Canada: 2 years, 9 months



Details of Research Area: His area of interest includes Nanoscience & Nanotechnology, Raman Spectroscopy, Electrochromic Devices, Silicon nanostructures, synthesis and applications of functional nanomaterials, organic and inorganic semiconductors, Sensors.

Details of Research Highlights: His approach towards research is two fold where he not only investigates the basic physical phenomena taking place at microscopic level but also designs materials for real applications like field emission and electrochromic displays, sensors and energy storage. Inspired by nature, recently his group has synthesized different organic, inorganic, hybrid as well as Herbal nanomaterials for such applications. His group has discovered a new method for quantification of short-range order in amorphous materials by simply utilizing Raman spectroscopy. His recent interest includes addressing science and technological problems through Indian Knowledge System. As a part of this he devotes research towards identifying natural components in herbs for fabricating electronic and optical devices.

Details of Projects active: 1. Fabrication and Investigation of Electrochromic Electrodes for Improving Device Performance: to develop solid state electrochromic devices.

Total number of Journal Articles published/under process	20
Total number of courses/conferences/workshops organized	1

Any other Achievements, Awards and Recognitions:

a. Received "Best Research paper Award" from IIT Indore, September 2021.

b. One of the research work carried out by our group (in collaboration) was highlighted by DST as it used the Facility given by DST-FIST, June 2021 entitled "Cancer causing virus affects the glial cells in central nervous system: Study by DST supported FIST facility"

URL: <https://dst.gov.in/cancer-causing-virus-affects-glial-cells-central-nervous-system-study-dst-supported-fist-facility>

List of UG course(s) taught: PH105: Modern Physics

List of PG course(s) taught: PH745: Laser Physics

Total number of PG dissertation(s) guided	2
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Total number of PhD student(s) guided: 02 (graduated) 06 (ongoing)

Dr. Krushna Mavani

Professor
krushna@iiti.ac.in
PhD, Saurashtra University



Previous Employment details before joining IIT Indore:

Dec. 2017 onward IIT Indore Professor, Sept. 2013-Dec. 2017 IIT Indore Associate Professor, July 2009-Sept. 2013 IIT Indore Assistant Professor, Jan. 2007-June 2009 Kyoto University Postdoctoral researcher, Dec. 2005-Dec.2006 Osaka University Postdoctoral researcher, Oct. 2003-Nov. 2005 TIFR, Mumbai Postdoctoral researcher

Details of Research Area: Prof. Mavani works stProf. Mavani's group works on pulsed laser deposited thin films and nanostructures. The materials are investigated using a variety of advanced tools including highly advanced terahertz spectroscopy.

Details of Research Highlights: This year, they developed fastest hydrogenation method for VO₂ nanostructures known so far (taking just tens of seconds, compared to several hours reported in literature). This development is of importance because of electronic device applications of hydrogen doped VO₂. This rapid hydrogenation method is easy, takes place at room temperature in presence of very mild electric fields (few millivolts/cm), reversible and may be extendable to other such materials too. Apart from this, they have synthesized and studied double perovskite thin films and explored new correlations in this materials.

Details of Projects active: 1. "Exploring Structure-Property Correlations and Low-Energy Charge dynamics of Doped RNiO₃ (R = Rare earth ion) Thin Films by Terahertz Time-Domain Spectroscopy" as Principal investigator (no Co-PI), Sanctioned by DST. 2. "Influence of Strain and Carrier Injection on Electrical and Magnetic Properties of RNi_{1-x}DxO₃ (R=Rare earth metal, D = Dopant) Thin Films and Multilayers" in collaboration with Dr. S. Prabhu, TIFR, Mumbai.

Total number of Journal Articles published/under process 8

Any other Achievements, Awards and Recognitions: Editorial Board Member of 'PRAMANA: Journal of Physics' published by Indian Academy of Science, since Jan. 2022. Member, Expert committee for selection 'Woman Scientist Scheme-A' of Department of Science and Technology, New Delhi, Since Jan. 2022. Member, Expert committee for Startup Research Grants (SRG) and National Postdoctoral Fellowship (NPDF) under SERB, India, Since Aug.

2021: Editorial Board Member of 'Heliyon'-An international science journal by Elsevier, Since 2016.

List of PG course(s) taught: Advanced Materials (PH-721), Electronics (PH-624), Atomic and Molecular Physics as a part of M.Sc. project courses.

Total number of PG dissertation(s) guided 2

Dr. Sudeshna Chattopadhyay (Bandyopadhyay)

Professor
sudeshna@iiti.ac.in
PhD, Saha Institute of Nuclear Physics (SINP), Kolkata, India



Previous Employment details before joining IIT Indore:

-> Research Associate: Department of Materials Science and Engineering, Northwestern University, USA., (March 2010 – June 2012) for 2 yrs 4 months.

-> Postdoctoral Researcher: Department of Physics, Northwestern University, USA., (January 2008 to February 2010) for 2 yrs 2 months.

-> During the Research Associateship, Dr. Sudeshna Chattopadhyay was also associated as:

-- Postdoctoral appointee: Center for Electrical Energy Storage (CEES), Energy Frontier Research

Centers (EFRCs), USA. (March 2010 - June 2012) for 2 yrs 4 months.

-- Guest researcher appointment: Chemical Sciences and Engineering Division, Argonne National Laboratory, USA. (Sept 2010 – June 2012) for 1 yr 10 months.

-> PhD: Senior Research Fellow (SRF)/Junior Research Fellow at SINP, Kolkata, India for ~6 yrs

Present academic association(s) with other Institution(s): Academic association with Leibniz University Hannover (LUH), Germany through DAAD funded four-year project "A New Passage to India", (2019-2023).

Details of Research Area: Experimental condensed matter physics (ECMP), Study of Surface and Interfaces: Nanomaterials, Organic/Inorganic hybrid thin-films, 2D-materials -- structure-property relationship- optical properties, photocatalytic activity- energy conversion; Energy Storage- Metal ion batteries (e.g., Li and Al ion batteries) –exploring novel electrodes and electrolytes for thin-film batteries (nano-device), electrolyte-electrode interface. Soft matter physics, Liquid/solid interface, X-ray scattering, Atomic Layer Deposition (ALD), Nanotechnology in Biomedical applications(for disease diagnosis) and Environmental remediation.

Details of Research Highlights: • Study of Surface and Interfaces – nanomaterials, thin-films, structure property relationship - optical properties, photocatalytic activity, application in solar cell. • Electrical Energy Storage- building better batteries and supercapacitors – Li and Al ion batteries. • Soft matter physics. • Biomedical Applications of Nanotechnology: Bio-instrumentation, Wastewater treatment and Environmental Remediation.

Details of Projects active: Four Active Projects:

1. Funding agency: Science and Engineering Research Board (SERB). Title: Solid-state thin-film rechargeable batteries with solid electrolyte to achieve a wider electrochemical/thermal stability, better safety and long cycle lives with good capacity retention, for 3 yrs , (Dec 2020 - Dec 2023). (Sanctioned Funding amount: ~ INR 47 lakhs).

2. Funding agency: Science and Engineering Research Board (SERB). Title: "Structural orientation effects of new low dimensional hybrid perovskites on their physical properties" (as Co-PI, in collaboration with TIFR, India), for 3 yrs, (Jan 2020 – Dec 2022). (Sanctioned Funding amount: ~ INR 39 lakhs).

3. Funding agency: German Academic Exchange Service (DAAD) funded project LUH-IIT Indore Partnership (2019-2023) under the "A New Passage to India program". [Proposal from Leibniz University Hannover (LUH) with IIT Indore]. Title: IIT Indore and LU Hannover Partnership in Physics, Chemistry, BioScience & Computational Science (as one of the Investigators from Indian side among 6 Indian and 10 German academicians, as selected by the German team members on their own accord). Sponsoring Agency: A New Passage to India scheme of DAAD. Period: For 4 yrs; (2019 – 2023) (Approved on 18th Feb 2019); Funding Amount:; USD 450,000 (INR 320 lakhs).

4. Funding agency: DST-FIST. Grant proposal for Raman Spectrophotometer from Physics Department, IIT Indore, SR/FST/PSI-225/2016. For 5yrs (2017-2022) [I am one of the contributors from the Physics Department] Rs. 1.3 crores (total DST-FIST grant was 1.6 crores, including computational part)

Total number of Books published/under process: One book Chapter

Total number of Journal Articles published/under process: Two Journal article (International) published, four journal articles under process, during July 2021-June 2022, Total :6

Total number of courses/conferences/workshops organized: Six (Invited lecture in seminars, International conferences, courses sponsored by SERB/AICTE etc.)

Any other Achievements, Awards and Recognitions: Six invited lecture/talk/seminar in International and National level during, July 2021 to June, 2022.

1. Invited Talk in Department of Physics, Leibniz Universität Hannover (LUH), Germany. June 20, 2022.

2. Invited Talk in LUH – IIT Indore Workshop, Leibniz Universität Hannover (LUH), Germany. June 14, 2022.

3. Lecture in AICTE sponsored Faculty Quality Improvement Program (QIP), course on Synthesis and Characterization of Thin Films, March 10-17, 2022, IIT Indore, India.

4. Invited Lecture on International Women's Day, IIT BHU Varanasi, March 8, 2022.
5. Lecturer/instructor in Karyashala: Accelerate Vigyan Scheme, sponsored by SERB, course on Advanced Technology for Materials Physics and Engineering, IIT Indore, January 20-26, 2022.
6. Invited Talk in the Russian-Indian Network of Institution of Higher Education (RIN) – Online Symposium on Energy Technologies, October 20, 2021.

List of UG course(s) taught: Physics Lab (B. Tech Laboratory Course in Physics), PH 156, IITI: 2021 and 2022

List of PG course(s) taught:

1. "Solid State Physics", PH 622: core M.Sc. Physics curriculum. Course coordinator & co-lecturer (2x). IITI, 2021 (Dec 29) -2022.
- 2 & 3. Teaching this course for both the semesters: "Characterization of Surfaces and Interfaces of Materials", PH 725. Course coordinator & sole instructor. IITI, [2021 (Dec 29) -May 2022], [2022 (July 26) - Dec 2022]

Total number of PG dissertation(s) guided: Two (M.Sc.)

Total number of PhD student(s) guided: Five (PhD)

Dr. Manavendra Mahato

Associate Professor
manav@iiti.ac.in
PhD, University of Michigan, Ann arbor



Previous Employment details before joining IIT Indore:
Visiting fellow in TIFR, Mumbai in 2007-2010 for 37 months.

Details of Research Area: Mr. Mahato works in Theoretical High energy Physics, investigating connections between certain theories of gravity and gauge theories. This correspondence is known as Gauge gravity correspondence and it has shown promising results in solving difficult problems in either theory by translating it to other theory, better and novel understanding of many mechanisms and physical processes. It also sheds lights on properties of Black holes, particularly those close to its horizon. We take certain black holes to study, look at the fluctuations and their properties and try to relate them or understand them in the language of field theories. We also study strongly coupled field theories by interpreting the problem in terms of gravitational concepts.

Details of Research Highlights: We solved for a cosmological model depicting vacuum shift. We then explored the generation of gravitational waves in such process. We focussed on axial (odd parity) gravitational waves and calculated some of their properties. We also explored geometrical concepts related to black hole thermodynamics and presently exploring to generalize certain relations to more general theories of gravity. We are also looking at certain non abelian gauge theories and looking at certain interesting limits. We are exploring degrees of freedom, condensation and its properties and general behaviour of fields in these limits.

Total number of Journal Articles published/under process 1

Total number of courses/conferences/workshops organized 1

List of UG course(s) taught: PH 156 First year Physics Lab

List of PG course(s) taught: PH 611 Quantum Mechanics, PH 761 Theoretical Particle Physics, PH 620 Statistical Mechanics

Total number of PG dissertation(s) guided

2

Department of Chemistry

The Department of Chemistry at IIT Indore established in August 2009 is rapidly growing in terms of size, research diversity, external funding, and number of publications. At present, we have 19 faculty members with research interests ranging from traditional areas (organic, inorganic, physical, and theoretical/computational) to highly interdisciplinary research areas such as nanotechnology, catalysis, energy, machine learning, biochemical, analytical and materials. The faculty of the department is extremely well qualified and motivated with a strong commitment to teaching and research. Our department is well equipped with state-of-art sophisticated instrumentation facilities to facilitate research in almost all areas of chemistry and interdisciplinary research.

Academic Programs

The Department of Chemistry aims to provide exceptional training to students to impart cutting-edge education and research. The Department of Chemistry at IIT Indore offers a two-year master's program in Chemistry wherein a full year, especially 2nd year of the program, is dedicated for laboratory research in the field of student's choice. Since 2013, this unique program devotes a full year to solve real research problems in the laboratory and give an exposure to students if they would like to proceed with a doctoral program in their higher studies. This makes sure only qualified and motivated students pursue doctoral program and contribute to the welfare of the society. Additionally, students decide on their journey for doctoral program or look for a lucrative job after the completion of master's program at IIT Indore. At present we have approximately 60 MSc and 100 PhD students enrolled in the department. The alumni base of the department is slowly increasing, in which, many of them have excelled both academia and industry at national and international levels. Their accomplishments have been outstanding and reflect on the quality training imparted at the graduate and doctorate levels. We suggest all prospective students and other visitors to explore our website to learn more about our department.

NUMBER OF FACULTY MEMBERS:	19
PROFESSOR	06
ASSOCIATE PROFESSOR	08
ASSISTANT PROFESSOR GRADE II	-
ASSISTANT PROFESSOR GRADE I	05
NO. OF POST DOC FELLOWS	03

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	-	-
MTech	-	-
MSc	30	24
PhD	-	12

R&D Activities

Faculty and students are involved in the research activities in several frontier areas of chemical sciences that includes nanotechnology, organic light harvesting materials, organometallic pharmaceuticals, asymmetric synthesis, heterocyclic chemistry, biosensor metal clusters, molecular fluorescence spectroscopy, organic inorganic hybrid polymer, computational aspects of materials and molecular

inhibitors for disease targets, drug discovery, catalysis, clean energy, green and sustainable chemistry and total synthesis of natural products, biomaterials, energy storage and conversions, epitaxial metal oxide heterostructures, and all-solid-state ionic devices. Research in all these areas has been recognized by the scientific community in the form of international peer-reviewed research publications, patents, book chapters and lectures in national and international conferences. Our research is supported by generous funding from private as well as Government agencies, particularly DST-SERB, CSIR, DBT, SPARC, DAE and DAAD. Recently, department has acquired DST FIST 500 MHz NMR and FTIR facilities.

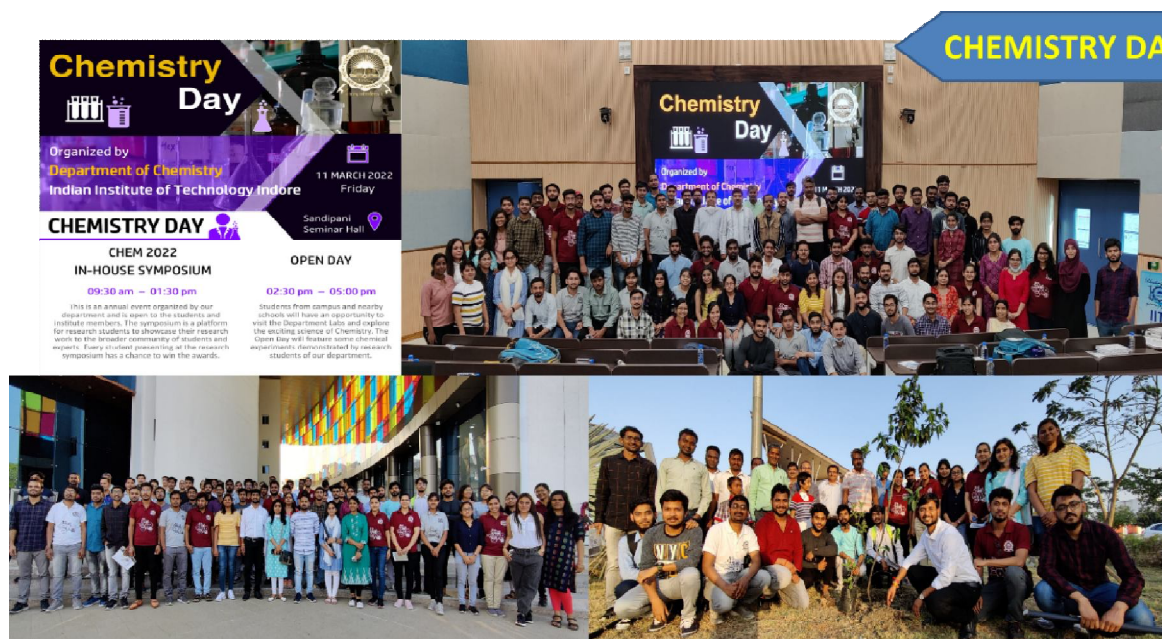
Notable Activities in the Department

Notable Outreach Activity:

- Chemistry Outreach Team (Dr. Dipak K Roy and members) - Organized National Science Day, Department of Chemistry 2022.



- Chemistry Outreach Team (Dr. Dipak K Roy and members) - Organized "Acharya Prafulla Chandra Ray Chemistry Lecture Series" in the Department of Chemistry.
- Chemistry Day & In-House Chemistry Symposium (CHEM 2022).



Notable Achievements

- Prof. Biswarup Pathak - CRSI Bronze medal Award 2023.
- Prof. Rajneesh Misra – CRSI Bronze medal 2022.
- Prof. Biswarup Pathak - Top 5% of highly cited authors in Physical portfolio of Royal Society of Chemistry journals, 2021.
- Prof. Sanjay K Singh - International Advisory Board member, ChemCatChem by Wiley-VCH (2020-22).
- Dr. Shaikh M Mobin - Fellow of Maharashtra Academy of Sciences
- Prof. Biswarup Pathak has been admitted as FRSC by the Royal Society of Chemistry, UK, January 2022 (Invited by RSC).
- Dr. Shaikh M Mobin- Fellow of Royal Society of Chemistry (FRSC) (Under Leaders in the Field Category), Dec 2021
- Prof. Biswarup Pathak among the Indian researchers making ACS journals the most impactful 2021.
- Prof. Biswarup Pathak- 2021 DUO-India Professor Fellowship Award.
- Dr. Shaikh M Mobin - He has been named among the Golden Authors for Dalton Trans on occasion of 50th volumes of Dalton Transactions from Royal Society of Chemistry.
- Dr. Shaikh M Mobin- Recipient of Material Research Society of India (MRSI) Medal 2021.
- Dr. Shaikh M Mobin- Fellow of Indian Chemical Society (FICS) (Invited), Dec 2021.
- Prof. Sanjay K Singh - Involved in the organization of the National Science Day program (through International Affairs and Outreach)
- Dr. Chelvam Venkatesh - Department of Biotechnology sponsored Bio-Ignition Grant (BIG) by BIRAC for a Startup from Aug.2021-Feb. 2022.
- Prof. Suman Mukhopadhyay - conferred the Institute's Best Teacher Award on Teacher's day 2021 (September 5th 2021).
- Chemistry Outreach Team (Dr. Dipak K Roy and members) - Organized "Chemistry Day 2022" in the Department of Chemistry.
- Dr. Dipak K Roy - Start-up Research Grant Award from SERB -2020-2022.
- Dr. Selvakumar Sermadurai - Early Career Research Award from SERB -2019-2022.
- Prof. Apurba K Das (workshop)- Organized AICTE QIP-sponsored Faculty Development Program on "Nanomaterials for Next-Generation Applications at IIT Indore (March 22, 2021 - March 27, 2021).
- Ms. Bhawna a PhD student working under the supervision of Dr. Tushar K Mukherjee for her best oral presentation award in NSRP-2021.
- Mr. Amitabha Das a PhD student working under the supervision of Prof. Biswarup Pathak received the best poster award, TCS, IISER Kolkata, December 2021.
- Mr. Souvik Manna has been awarded Prime Minister's Research Fellowship (PMRF), April 2022.

- Mr. Tanmay Rit has been awarded Prime Minister's Research Fellowship (PMRF), April 2022.

Projects

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	-	-
ONGOING PROJECTS	16	-
COMPLETED	11	-

Publications

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	-	4	-	101

Dr. Biswarup Pathak

Professor and Head of Department
biswarup@iiti.ac.in
PhD, University of Hyderabad



Previous Employment details before joining IIT Indore:

I was in Jackson State University, USA (2008-2009) and Uppsala University, Sweden (2009-2012) for my postdoctoral works on computational modelling of materials for their applications in energy and catalysis

Details of Research Area: I have been engaged in understanding the properties of nanomaterials using computational techniques and machine learning based tools, principally focusing on catalysis and energy generation. My group has investigated the structure-activity relationships of finite size metal clusters/nanomaterials in the size range of 1-2 nm. The team has demonstrated that atomicity, fluxionality, relativistic effects, metal-support interactions, and ligand effects play very important roles in catalytic properties of clusters and in refining computational frameworks for accurate predictions. His group also works on designing nanoelectrodes for dual-ion batteries and DNA sequencing.

Details of Research Highlights: Many high entropy-based catalysts have been screened through machine learning for predicting the activity and product selectivity. The supervising learning-based machine learning techniques (based on previous data from our group) have been used to screen the catalysts. We have shown that machine learning based techniques can not only be used to screen the CO₂ reduction catalysts but can also be used to screen catalysts for product selectivity. In our recent studies we have shown that alloy-based catalysts are more efficient for product selectivity (methanol) compared to the high entropy-based alloy. These works have been just published in ACS Applied Materials and Interfaces (2021) and Journal of Physical Chemistry Letters.

Details of Patents filled/awarded: The patent has been filed entitled "Third Generation Tubulysin Analogues and Process of Preparation Thereof "

Details of Projects active: As of now, I have four active projects worth of 2 crores

Total number of Books published/under process: 1 under process

Total number of Journal Articles published/under process 30

Total number of courses/conferences/workshops organized 2

Any other Achievements, Awards and Recognitions: I have been recognized as most impactful researchers from India by American chemical society. I have also been conferred with Fellow of Royal Society of Chemistry (FRSC) and also received CRSI Bronze medal from Chemical Research Society of India.

List of UG course(s) taught: CH 153: BTech Lab and CH 103: Chemistry

List of PG course(s) taught: CH 606 (Chemical and Statistical Thermodynamics), CH 705 (Materials Chemistry), CH 603 (Quantum and Group Theory)

Total number of PG dissertation(s) guided 18

Total number of PhD student(s) guided 15

Dr. Tridib Kumar Sarma

Associate Professor

tridib@iiti.ac.in

PhD, Indian Institute of Technology Guwahati



Previous Employment details before joining IIT Indore:

Alexander von Humboldt Post-doctoral Fellow at University of Heidelberg, Germany (2005-2006); JSPS

Post-doctoral Fellow at University of Tokyo, Japan (2007-2009)

Details of Research Area: My primary research area is nanochemistry, molecular self-assembly, nanocatalysis including enzyme-mimetic systems

Details of Research Highlights: Hydrogels represent a unique class of hierarchical self-assembled soft materials with wide applications in electronic devices, drug delivery, tissue engineering, catalysis etc. We are developing nucleotide based hydrogels through interaction with other organic molecules or coordination with metals for enzyme mimetics, drug delivery, antibacterial applications etc.

Total number of Journal Articles published/under process 5

Total number of courses/conferences/workshops organized 1

List of PG course(s) taught: CH-705 (Materials Chemistry), CH-606 (Thermodynamics)

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 6

Dr. Rajneesh Misra

Professor

rajneeshmisra@iiti.ac.in

PhD, IITK



Previous Employment details before joining IIT Indore:

Postdoc GATECH and Kyoto Univ

Details of Research Area: Organic/Organometallics/Supramolecular/Organic electronics and Photonics

Details of Research Highlights: Design of smart materials for optoelectronic applications

Details of Projects active: Donor-Acceptor NIR absorbing tetracyanobutadiene and expanded tetracyanobutadiene derivatives of ferrocenyl functionalized BODIPYs

Total number of Journal Articles published/under process 6

Total number of courses/conferences/workshops organized 1

Any other Achievements, Awards and Recognitions: CRSI bronze

List of PG course(s) taught: CH 625=Stereochemistry, Pericyclic and Photochemistry and CH-720 Asymmetric stnthesis

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided**Dr. Anjan Chakraborty**

Associate Professor
 anjanc@iiti.ac.in
 PhD, IIT KHARAGPUR



Details of Research Area: Physical Chemistry

Details of Research Highlights: The formation of corona around nanoparticles has become a great interest because the corona can be used for preparing engineered which is distributed in the biological systems. The existing literature has very limited information on the lipid corona formation. While the protein corona formation is a hard corona, the lipid coronas are soft in nature. The lipid coronas are very important from the point of view that cellular membranes are composed primarily of phospholipid bilayers, forming the frontier between the cell and its environment. The membrane can be considered as one of the initial points of contact between a nanomaterial and a living system. Our group is currently engaged in exploring the lipid corona formation around the nanoparticles. The impact of external influence such as pH, ionic strength etc. on the lipid corona is also under investigation.

Total number of Journal Articles published/under process 3

List of UG course(s) taught: Chemistry, CH 103

List of PG course(s) taught: CH 608 Molecular Spectroscopy, CH 706 Photochemistry, CH 605 Symmetry and Group Theory

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 1

Dr. Apurba Kumar Das

Professor
 apurba.das@iiti.ac.in
 PhD, Indian Association for the Cultivation of Science (Jadavpur University), Kolkata, India



Previous Employment details before joining IIT Indore:

Professor (2022 onwards) in Chemistry, Indian Institute of Technology Indore, India
 Associate Professor (2016-2022) in Chemistry, Indian Institute of Technology Indore, India
 Assistant Professor (2009-2016) in Chemistry, Indian Institute of Technology Indore, Indore, India
 Postdoctoral Research Fellow (2008-2009), University of Strathclyde, Glasgow, UK
 Postdoctoral Research Associate (2006-2008), University of Manchester, Manchester, UK

Details of Research Area: (1) Bio-organic Chemistry; (2) Supramolecular Chemistry

Details of Research Highlights: (1) Biomaterials; (2) Peptide and nucleobase-based nanostructured materials; (3) Systems Chemistry; (4) Organic-Inorganic hybrid materials; (5) Electrocatalytic Organic Reactions

Details of Patents filled/awarded: Self-Healing Hydrogel; UK Patent Application No: 2210605.8

Details of Projects active:

(1) Project Title: Development of Cation-Switchable Functionalized Nucleobase based Metallohydrogels for Drug Delivery (Role: PI); Sponsor: CSIR, New Delhi, India.
 (2) Project title: Peptide Bolaamphiphile Anchored Nickel-based Metallohydrogel as Electrocatalyst for

Hydrogen Production (Role: PI); Sponsor: Kyoto University, Japan.

Total number of Books published/under process 1

Total number of Journal Articles published/under process 12

Any other Achievements, Awards and Recognitions:

(1) Prof. Apurba K. Das - Chemical Communications 2022 Pioneering Investigator, Royal Society of Chemistry, 2022.

(2) Prof. Apurba K Das - Received 2022 International Research Fellowship by Kyoto University, Japan.

List of UG course(s) taught: CH 153: Chemistry Lab

List of PG course(s) taught: (1) CH 614: Total Synthesis and Natural Products Chemistry (2-1-0-3); (2) CH 651: Chemistry Lab-I; (3) CH 711: Bio-organic and Medicinal Chemistry; (4) CH 798: Ph.D. Seminar Course

Total number of PG dissertation(s) guided: Degree awarded: 2; Ongoing: 2

Total number of PhD student(s) guided: Degree awarded: Nil; Ongoing: 10

Dr. Suman Mukhopadhyay

Professor

suman@iiti.ac.in

PhD, Indian Association for the Cultivation of Science



Details of Research Area: Organometallic compounds in therapeutics and mechanism, molecular recognition, nanostructured metallogels, metalloenzyme and catalysis and porous materials

Details of Research Highlights: An ionic multifunctional gelator molecule triethylammonium 5-(3,5-bis((1H-tetrazol-5-yl)carbamoyl)benzamido)tetrazol-1-ide G7 is synthesized and characterized by spectroscopic tools and mass spectrometry. G7 tends to form a stable organogel in a mixture of N,N-dimethylformamide/dimethylsulfoxide (DMF/DMSO) and water. Introduction of different metal perchlorate salts in a DMSO solution of G7 furnished a series of metallogels M1G7, M2G7, M3G7, M4G7, M5G7, M6G7, and M7G7 [M1 = Fe(III), M2 = Co(II), M3 = Cu(II), M4 = Zn(II), M5 = Ag(I), M6 = Ni, and M7 = Fe(II)]. Among them, M1G7, M3G7, M4G7, M6G7, and M7G7 help individually in the synthesis and stabilization of bimetallic nanocomposites containing silver nanoparticles (AgNPs). Iron(III)-containing nanocomposites M1G7AgNPs have been utilized in the form of catalysts in the reduction reaction of nitroaromatic compounds to corresponding amines with a quantitative yield. The organogel G7 has also shown the abilities to absorb different metal ions from aqueous solutions and allow selective transition of M1G7 from the gel state to the crystalline state. Fe(III) formed dual metallogels with Zn(II), which can be used for further applications. Furthermore, the nanocomposite M1G7AgNP powder, in the presence of the organogel G7, gets converted into a nanostructured metallogel, which shows exclusive self-healing properties. This is the first example where a nanocomposite powder contains the dual-metal system (Fe(III) and Ag(0)) and shows a reduction catalytic property, and its nanostructured dual-metallogel form manifests the self-healing property in a fabricated metallogel.

Details of Projects active:

1. Exploring ruthenium based metallodendrimers for improved anticancer activity and mode of action - Indo-Bulgaria Joint Project DST 2019.
2. Ruthenium(ii)-arene scaffold with biologically active ligands as multi-targeted anticancer

metallodrug and their mode of action – CSIR, 2021.

Total number of Journal Articles published/under process 12

Any other Achievements, Awards and Recognitions: Best Teacher Award, IIT Indore

List of PG course(s) taught: CH 709: Advanced Bioinorganic Chemistry, CH 610: Molecular Structure Determination Techniques

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 6

Dr. Sampak Samanta

Professor

sampaks@iiti.ac.in

PhD, Indian Association for the Cultivation of Science, Jadavpur, WB



Previous Employment details before joining IIT Indore: Designation:

Senior Research Scientist;

Ranbaxy Laboratories Limited, NDDR-III, Gurgaon, India; Duration (June, 2009-June 2010: 1 year 1 month);

Daiichi Sankyo India Pvt. Ltd., Gurgaon, India; Duration (July, 2010-October 2010: 4 months)

Details of Research Area: Our group involves in the synthesis of complex heterocyclic molecules with high biological and medicinal activities. Furthermore, efficient way to make new molecules is my primary focus area. In this connection, we are interested to pursue research works on the following topics; (A) Development of organocatalytic, enantioselective organic reactions; (B) Visible-light induced organic transformations using photocatalysts; (C) Metal-free based one-pot techniques for complex heterocycles; (D) Medicinal Chemistry

Details of Research Highlights: We have developed several metal-free based powerful domino techniques for the rapid access to complex fused carbo- and heterocycles under eco-friendly conditions. Interestingly, a few compounds showed promising anticancer and anti-bacterial activities.

Details of Projects active: Enantioselective Organocatalysis: A Valuable Strategy for the Synthesis of Important Class of Spirooxindoles/3,3- Disubstituted Oxindoles and Related Scaffolds; SERB project; Duration 2018-2021; Project number: CRG/2018/0011 11

Total number of Journal Articles published/under process 5

Total number of courses/conferences/workshops organized 3

List of UG course(s) taught: CH-103; General Chemistry

List of PG course(s) taught: CH 625; Stereochemistry, Pericyclic and Photochemistry

Total number of PG dissertation(s) guided 1

Dr. Tushar Kanti Mukherjee

Associate Professor

tusharm@iiti.ac.in

PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

Postdoctoral Scientist (2007-2010): Columbia University Medical Center, New York, USA

Assistant Professor (December, 2010- May, 2016): IIT Indore, Indore, M.P.

Associate Professor (May, 2016-Till Date): IIT Indore, Indore, M.P.

Details of Research Area: Our current research is focused on the optoelectronic and photophysical properties of semiconductor and metal nanoparticles. We combine ensemble average fluorescence techniques with single particle fluorescence microscopy to investigate their photoluminescence properties. The ultimate goal of our group is to address various chemical and biological problems using these nanoparticles as fluorescent probe.

Details of Research Highlights: Our group is presently working on self-assembled luminescent materials for a wide range of applications including bioimaging, catalysis, and sensing. We combine various spectroscopic and microscopic techniques to study these systems. Recently, we have shown a unique blend of nanoscience and chemical catalysis using a metal-free hybrid synthetic protocell as a catalytic nanoreactor for redox and photocatalytic transformations, which are otherwise incompatible in bulk aqueous medium. Moreover, we have also utilized quantum dot (QD)-embedded coacervate nanodroplets (NDs) as photocatalytic nanoreactors for model chemical transformations, which are otherwise inefficient with bare QDs in bulk aqueous solution.

Total number of Journal Articles published/under process 6

List of UG course(s) taught: CH103, Chemistry

List of PG course(s) taught: CH 604, Molecular Spectroscopy

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 3

Dr. Shaikh M. Mobin

Associate Professor

xray@iiti.ac.in

PhD, University of Mumbai



Details of Research Area: <http://people.iiti.ac.in/~xray/research.html>

Details of Research Highlights: Inorganic Materials Chemistry (For Solid-state Structural Reactivity, MOFs / COFs, Energy Storage, Energy Conversion, Sensing, Biomaterials, catalysis)

<http://people.iiti.ac.in/~xray/research.html>

Details of Projects active: Development of biosensors and antibacterial imaging agents for rapid and effective detection of bacteria by employing certain metal complexes and nanomaterials CSIR Ongoing 01 Nov, 2018 - Oct 2021 Facile Methodology for the Synthesis of Nanomaterials Derived from Single Source Molecular Precursors for various Applications BRNS-DAE Ongoing December 2020 onwards MOFs@Graphene hybrid smart textured nanofibers for flexible energy storage devices SERB-Core Res Grant Ongoing December 2020 onwards

Total number of Books published/under process: 2 chapters

Total number of Journal Articles published/under process 12

Any other Achievements, Awards and Recognitions:

Fellow of Royal Society of Chemistry (FRSC) (Under Leaders in the Field Category) , Dec 2021.

- Recipient of Material Research Society of India (MRSI) Medal 2021.

- Fellow of Indian Chemical Society (FICS) (Invited), Dec 2021.

- Dr Shaikh has been named as Golden Author by Dalton Transaction, Royal Society of Chemistry on occasion

of 50th Volumes of Dalton Trans (Interview Published:

https://blogs.rsc.org/dt/2021/07/28/celebrating-our-golden-authors-prof-shaikh-m-mobin/?doing_wp_cron=1628676122.9589099884033203125000).

List of UG course(s) taught: CH 153

List of PG course(s) taught: CH 643, CH709

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 2

Dr. Satya S. Bulusu

Associate Professor

sbulusu@iiti.ac.in

PhD, University of Nebraska Lincoln



Previous Employment details before joining IIT Indore:

2018-Present: Associate Professor, IIT Indore, India

Apr 2012 - 2018 : Assistant Professor, IIT Indore, India

2011 - 2012 : Assistant Professor, Shobhit University, India

2010 - 2011 : Postdoctoral Fellow, University of New Brunswick, Canada

2009 - 2010 : Postdoctoral Fellow, York University, Canada

2007 - 2008 : Postdoctoral Fellow, University of Nebraska, USA

Details of Research Area: 1. Developing machine learning methods(Artificial neural networks) for chemical problems. 2. Modelling of atomic environments 3. Developing sampling algorithms 4. Using hardware technologies to parallelize our programs that will help to extend the above methods to experimentally relevant sizes.

Details of Research Highlights: Development of orbital free DFT methods using ML. Using GPU, FPGA to parallelize interatomic potential of nanoparticles.

Details of Projects active: Title: Hours to Milliseconds: Leveraging machine learning methods to reduce the computation time for crop yield prediction.

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 2

List of UG course(s) taught: Preparatory Course PCH101

List of PG course(s) taught: CH603 Quantum Chemistry

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Sanjay Kumar Singh

Professor
 sksingh@iiti.ac.in
 PhD, A.P.S. University, Rewa



Previous Employment details before joining IIT Indore:

Oct. 15, 2010-Feb. 28, 2011: Alexander von Humboldt (AvH) Postdoctoral Fellow, at Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany (Host Researcher: Prof. Peter W. Roesky)

Oct. 15, 2008-Oct. 14, 2010: AIST Postdoctoral Research Scientist, AIST, Ikeda, Osaka, Japan (Host Researcher: Prof. Qiang Xu)

Oct. 15, 2008-Oct. 14, 2010: JSPS Postdoctoral Fellow, AIST, Ikeda, Osaka, Japan (Host Researcher: Prof. Qiang Xu)

Details of Research Area: The research area of our interest broadly lies in the field of catalysis.

We are interested in the development of catalysts, optimization of catalytic reactions, understanding the reaction mechanism and the application of catalysts for important organic reactions (such as hydrogen production and storage, biofuel, CO₂ capture and utilization, C-H bond activation, small molecule activation, and several organic transformations). The field of catalysis has shown astonishing growth in last several decades. Therefore it is very important to fix our priorities and objectives in this rapidly growing field of catalysis. Since beginning, we have been engaged in the development of catalysts which are cost effective (inexpensive/ low cost), active for water based reactions and room-temperature reactions without any inert atmosphere protection. Moreover, we are exploring both the ways of catalysis, homogeneous (metal complexes) and heterogeneous (metal nanoparticles), for our research.

Details of Research Highlights: In the last one year, we were able to complete several projects and get it published. These projects are on hydrogen production from formic acid, formaldehyde and glycerol. Further, we have published work on biomass transformation. During the last one year, we defended the examination reports of two of our patents on hydrogen production. Out of which, one has been granted, and other one is still under process.

Details of Patents filled/awarded: Our patent on "Catalyst for low temperature hydrogen production (Sanjay Kumar Singh and Mahendra Kumar Awasthi)" India Patent (38668617) has been granted on January 17, 2022. This patent describes the development of a new process for hydrogen gas production from methanol under low temperature.

Details of Projects active:

- 1) Development of catalysts to generate hydrogen gas from methanol and polyols, SERB, New Delhi, CRG/2021/000504, (2021-2024); Rs 39,00,000/- (Ongoing)
- 2) Design and Development of Efficient Catalysts for Hydrogen Generation from Alcohols, CSIR, New Delhi, 01(3045)/21/EMR-II, (2021-2024); Rs 11,00,000/- (Ongoing)
- 3) A synergistic experimental and computational approach to develop novel catalytic processes for upgrading agri-waste biomass/bio-oil to biofuel, SICRG 2020-21, DST-SICI (2021-2022); Rs 10,00,000/- (Ongoing)
- 4) Reversible Alkali Metal Based Hydrides for High Temperature Thermal Energy Storage, Materials for Energy Storage (MES)-2016, DST, New Delhi, (2017-2020); Rs 1,50,00,000/- (as co-PI) (Ongoing)
- 5) Low-Cost Air Purifier cum CO₂ harvester, MSME, Govt. of India, (2020); Rs 18,00,000/- (Ongoing)

Total number of Books published/under process 1

Total number of Journal Articles published/under process 5

List of PG course(s) taught: M.Sc. Chemistry: (CH-645) Organometallic Chemistry, PhD Chemistry: (CH-708) Catalysis: Approaches and Applications	
Total number of PG dissertation(s) guided	2
Total number of PhD student(s) guided	6

Dr. Chelvam Venkatesh

Associate Professor

cvenkat@iiti.ac.in

PhD, Indian Institute of Technology Kanpur



Previous Employment details before joining IIT Indore:

1. Postdoctoral Research Associate, Department of Chemistry, Purdue University, WestLafayette, USA (August 1, 2008 to May 30, 2012).
2. Alexander von Humboldt Research Fellow, Institut für Chemie und Biochemie-Organische Chemie, Freie Universität Berlin, Berlin, Germany (October 1, 2006 to May 31, 2008).
3. Postdoctoral Research Fellow, Institut für Chemie und Biochemie-Organische Chemie, Freie Universität Berlin, Berlin, Germany (May 1, 2006 to September 30, 2006).
4. Research Associate, Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India (August 1, 2005 to April 30, 2006).
5. Senior Research Fellow, Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India (April 1, 2002 to July 30, 2005).
6. Junior Research Fellow, Department of Chemistry, Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India (January 14, 1999 to March 31, 2002).

Present academic association(s) with other Institution(s):

1. Prof. Philip S. Low, Targeted Drug Delivery for Treating Cancer and Inflammatory Diseases/ Department of Chemistry/Purdue University, West Lafayette/USA
2. Prof. Andreas Kirschning and Dr. Gerald Dräger, Ligand Targeted NIR Dye/Fe₃O₄ Nanoconjugates for dual (Optical/MRI) Imaging and Hyperthermia to treat Metastatic Castration Resistant Prostate Cancer /Department of Chemistry/Leibnitz University of Hannover/Germany
3. Prof. Paul Roach, Diagnosis of Prostate cancer by Prostate Specific Membrane Antigen (PSMA) Targeted Quantum Dots / Keele University/UK; Prof. Paul Roach, Diagnosis of Glioblastoma using Zinc Oxide Nanowires / Keele University/UK
4. Prof. Andreas Kirschning and Dr. Gerald Dräger, Synthesis and biological evaluation of ligand targeted MRI contrast agent and nanoparticles as theranostic tool for hypoxic solid tumors /Department of Chemistry/Leibnitz University of Hannover/Germany
5. Prof. Kavita Shah, Targeted Delivery of Small Molecule Inhibitors for PSMA+ Cancers and Neurodegenerative Diseases / Department of Chemistry/Purdue University, West Lafayette/USA
6. Prof. Paul Roach, Design, synthesis and evaluation of small molecule targeted nanocarriers for the diagnosis and treatment of prostate cancer / Loughborough University/UK
7. Prof. Ram Mohan, Targeting HIV by Small Molecule Inhibitors using Green Chemistry /Department of Chemistry/ Illinois Wesleyan University, Bloomington/USA
8. Prof. Malte Brasholz, Synthesis of novel HIV Attachment Inhibitor using Flow Chemistry and Development of Diagnostic Agent for HIV Infected Bio-fluids /Department of Chemistry/University of Rostock /Germany
9. Prof. Svetlana Tsogoeva, Cytotoxicity Evaluation of Potent Anticancer Heterocycles /Department of Chemistry and Pharmacy/ Friedrich Alexander University Erlangen-Nürnberg/Germany

Details of Research Area: Total synthesis of biologically important natural products; Design and synthesis of heterocycles and carbocycles of biological importance; Developing new methodologies for construction of C-C and C-X (X = N, O, S, P) bonds; Design, synthesis and diagnostic applications of new targeting ligands for cancers and inflammatory diseases; Drug delivery systems, near-infra red fluorescence, nuclear Imaging and bio-conjugate chemistry; Synthesis of Inhibitors for drug targets

Details of Research Highlights: Prof. Dr. Chelvam Venkatesh, an Associate Professor in the Department

of Chemistry and Department of Biosciences and Biomedical Engineering at IIT Indore, is an Organic Chemist and a Chemical Biologist. He was an Alexander von Humboldt Fellow during 2006-08 at Freie University Berlin, Institute of Chemistry and Biochemistry with Prof. Hans-Ulrich Reissig and moved to Purdue University, Department of Chemistry in 2012 to work with Prof. Philip S. Low in Chemical Biology. In 2012 he was appointed as Assistant Professor in the Department of Chemistry and promoted to Associate Professor in 2018 at the Indian Institute of Technology, Indore, India. His major areas of interest are synthesis of anticancer natural products, diagnostic and therapeutic applications of new targeting ligands for cancers, inflammatory and neurodegenerative diseases, synthesis of inhibitors for drug targets, drug delivery systems, near-infrared fluorescence and nuclear radioisotopes imaging, and bio-conjugate chemistry. His long-term goal is to establish a Centre of Excellence in the field of chemical biology especially for the detection and treatment of cancer, inflammatory and neurodegenerative diseases at IIT Indore. He has more than 15 years of experience in carrying out in vitro, in vivo mouse, and rat models on various diseases like cancer, arthritis, and inflammatory diseases.

Details of Patents filled/awarded:

- 1) Third-generation tubulysin analogues and process of preparation thereof, Venkatesh, C., Venkatesh, C., Pandit, A., Ramesh B. Reddy, B.R., Yadav, K., Roy, D., Pathak, B. March 2021, USA patent, Application No. 17/198,918.
- 2) Metal-free solvent-free synthesis of fused-pyrido heterocycles and biomedical applications, Venkatesh, C., Dudhe, P., Krishnan, M. A., Sonawane, A., 2020, USA patent, Application no. 16931838.

Details of Projects active:

- 1) Ligand Targeted NIR Dye/Fe₃O₄ Nanoconjugates for dual (Optical/MRI) Imaging and Hyperthermia to treat Metastatic Castration Resistant Prostate Cancer, DAAD, 2019-2023;
- 2) Design, Synthesis and Biological Evaluation of Bcr-Abl Inhibitors Active Against Wild and Mutant Bcr-Abl Tyrosine Kinases, DST-SERB, 2020-2023;
- 3) Indigenous Targeted Radiopharmaceuticals for Detection and Therapy of Prostate Malignancy, DBT-BIRAC, 2020-2022; 4) Development of Novel Benzo fused Heterocycles to Improve the Treatment of Drug Resistant Tuberculosis, DBT, 2021-2022

Total number of Books published/under process: Revolutionising medical diagnosis with SPECT imaging: Clinical applications of a nuclear imaging technology, Krishnan, M.A., Cherukumudi, A., Oommen, S., Suresh Malapure, S., Chelvam, V., Elsevier Science Publishing Company, Inc. 2021

Total number of Journal Articles published/under process:

1. In vitro and in vivo evaluation of targeted fluorescent imaging agents for diagnosis and resection of cancer, *Curr. Protoc. Chem. Biol.* 0, 00, (2022).
2. Multifaceted regulation of UBE2C by LIMK2 drives castration-resistant prostate cancer, Bray, E., Krishnan, M. A., Venkatesh, C., Shah, K., *Cancer*, 0, 00, (2022) (in revision).
3. Optimizing affinity to prostate-specific membrane antigen by spacer modifications in a tumor spheroid model, Krishnan, M.A., Pandit, A., Sharma, R., Venkatesh, C., *J. Biomol. Struct. Dyn.*, June 27, 1–22, (2021).
4. Agarose micro-well platform for rapid generation of homogenous 3D tumor spheroids, Krishnan, M.A., Yadav, K., Venkatesh, C., *Curr. Protoc. Chem. Biol.* 1(7), e199, (2021) (doi: 10.1002/cpz1.199).
5. Synthesis of 1-indolyl-3,5,8-substituted g-Carbolines: One-pot solvent-free protocol and biological evaluation, Dudhe, P., Krishnan, M.A., Yadav, K., Roy, D., Venkatasubhai, K., Pathak, B., Venkatesh, C., *Beilstein J. Org. Chem.*, 17, 1453–1463, (2021).
6. Folate-targeted verrucaric acid reduces the number of activated macrophages in a mouse model of acute peritonitis, Venkatesh, C., Doorneweerd, D.D., Xia, W., Putt, K.S., Low, P.S., *Bioorg. Med. Chem. Lett.*, 42, 128091, (2021).
7. Developing MicroSpherePlatform using a commercial hair brush: An agarose 3D culture platform for deep-tissue imaging of prostate cancer, Krishnan, M.A., Venkatesh, C., *ACS Appl. Bio. Mater.* 5, 4254–4270, (2021).
8. Targeted QDot nanoprobe for early detection and surgical guidance of prostate cancer, Krishnan, M.A., Yadav, K., Roach, P., Venkatesh, C., *Biomater. Sci.* 9, 2295–2312, (2021).
9. Evaluation of the reducing potential of PSMA-containing endosomes by FRET

imaging, Venkatesh, C., Shen, J., Putt, K.S., Low, P.S., Cancer Drug Resist., 4, 223–232, (2021).

Total number of courses/conferences/workshops organized: GIAN Workshop, IIT Indore and Purdue University, USA Title: Principles of Ligand-Targeted Drug Delivery: Design and Development of 'Smart Drugs'

Any other Achievements, Awards and Recognitions: DBT sponsored BIRAC-BIG Startup Grant

List of UG course(s) taught: PCH 102 Preparative Chemistry-II; CH 103 Chemistry

List of PG course(s) taught: CH 649, Synthetic and Mechanistic Aspects of Organic Chemistry; CH 614, Synthesis of Natural Products and Heterocycles

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 5

Dr. Amrendra Kumar Singh

Associate Professor

aks@iiti.ac.in

PhD, IIT Bombay



Details of Research Area: Inorganic Synthesis and Catalysis

Details of Research Highlights: We are developing pincer complexes of Ru(II)-NHC (NHC = N-heterocyclic ligands) and Ru(II)-pNHC (pNHC = Protic N-heterocyclic ligands) complexes with smaller N-alkyl wingtips on carbenes. The robust pincer ligand platform with smaller N-alkyl wingtips allows the preparation of Ru(II)-CNC pincer complexes with a variety of small as well as bulkier co-ligands and comparison of their electronic effects on the reactivity of these complexes. Protic NHCs (pNHCs) are a special class of NHC ligand, where one or both N-substituents are replaced with a hydrogen atom. In contrast to classical NHCs, the protic nature of the NH group allows H-bonding interactions, β -deprotonations, and nucleophilic additions, demonstrating the pNHCs' potential to behave as "mutually supportive" or "non-innocent" ligands. The NH subunit of pNHCs could facilitate different reactivity patterns via H-bonding of the NH function in the secondary coordination sphere and is expected to provide a mechanism for substrate identification.

Total number of Books published/under process: 1 book chapter

Total number of Journal Articles published/under process 4

List of UG course(s) taught: PCH 101 Preparatory Chemistry and CH 103 Chemistry

List of PG course(s) taught: CH 647 Coordination Chemistry, CH 797 PhD Seminar Course, CH 798

PhD Seminar Course, CH 800 MSc Research Project (Stage II)

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 2

Dr. Abhinav Raghuvanshi

Assistant Professor Grade-I

r.abhinav@iiti.ac.in

PhD, IIT Bombay



Details of Research Area: The research involve a combination

of Coordination and organometallic chemistry with various analytical techniques to address following research objectives:

1. Development of low cost emitters for energy efficient visual display based on OLED and LEEC device architectures.
2. Development of sensing materials.

Details of Research Highlights: We have synthesized some Cu(I) based luminescent materials. Some of the synthesized complexes have been found to have narrow band emission (FWHM ~ 20 nm, important for color purity in the devices) and some are blue emitting (good for development of blue OLED). In addition, some synthesized coordination polymers have been found to exhibit thermochromic and mechanochromic properties.

Total number of Journal Articles published/under process	4
List of UG course(s) taught: CH 103, Chemistry	
List of PG course(s) taught: CH 647, Coordination Chemistry, CH799, M.Sc. Research Project (Stage-I), CH 708. Catalysis: Approaches and applications	
Total number of PG dissertation(s) guided	2

Dr. Dipak Kumar Roy

Assistant Professor Grade-I
dipak.roy@iiti.ac.in

PhD, Indian Institute of Technology Madras

Previous Employment details before joining IIT Indore:

SERB Postdoctoral Fellow at Julius-Maximilians-Universität Würzburg, Germany (January 2018-January 2019)

Postdoctoral Fellow at Julius-Maximilians-Universität Würzburg, Germany (February 2016-December 2017)

Postdoctoral Associate at IIT Madras, India (July 2015-December 2015)



Details of Research Area: Low-valent s-and p-block compounds and small molecule activation. Multiply bonded main group compounds. Organic-Inorganic hybrid polymers

Details of Projects active: s-Block Metal Aromatics and Anti-aromatics (SERB)

Total number of courses/conferences/workshops organized 2

List of UG course(s) taught: CH 103: Chemistry Theory; CH 158: Chemistry Practical; PCH 102: Preparatory Chemistry II

List of PG course(s) taught: CH 645: Organometallic Chemistry; CH 612: Main Group Chemistry

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 2

Dr. Selvakumar Sermadurai

Assistant Professor Grade-I
selva@iiti.ac.in

PhD, Indian Institute of Technology Kanpur



Previous Employment details before joining IIT Indore:

Nov 2017-Aug 2019: UGC-Assistant Professor, Central University of Haryana, Mahendergarh, India.

Nov 2013-Sep 2017: Postdoctoral Fellow, Kyoto University, Japan.

July 2009-Sep 2013, Postdoctoral Fellow, North Dakota State University, Fargo, USA.

Details of Research Area: Organic Synthesis and Catalysis

Details of Research Highlights: Visible light Photoredox Catalysis, Development of new methodologies using Hypervalent iodine reagents
Asymmetric Catalysis, Synthesis of biologically active natural products, Continuous-Flow Chemistry & Green Chemistry

Details of Projects active:

(1) Development of Hypervalent Iodine(III) Reagents Mediated Photocatalytic Si-H Functionalization and Exploration of Distal Group Migration, SERB-ECRA project 2019-2022.

(2) Development of new reaction methodologies using transient non-symmetric iodanes under photocatalyst free irradiation, CSIR-EMR project, 2021-24.

Total number of Journal Articles published/under process 1

List of UG course(s) taught: PCH-101: Preparatory Chemistry

List of PG course(s) taught: CH-649: Synthetic and Mechanistic aspects of Organic Chemistry, CH-720: Asymmetric Synthesis

Total number of PG dissertation(s) guided 1

Dr. Umesh Achyut Rao Kshirsagar

Assistant Professor Grade-I

uakshirsagar@iiti.ac.in

PhD, CSIR-National Chemical Laboratory Pune



Previous Employment details before joining IIT Indore:

Assistant Professor: Department of Chemistry, Indian Institute of Technology Indore.

Assistant Professor: Department of Chemistry, Savitribai Phule Pune University, Pune. Jan 2019 to Sep 2019

DST-INSPIRE Faculty: Department of Chemistry, Savitribai Phule Pune University, Pune. May 2014 to Jan 2019

DST-INSPIRE Faculty: CSIR-IICT, Hyderabad, INDIA. June 2013 to May 2014

Postdoctoral Research Fellow: Ben-Gurion University, Beer-Sheva, ISRAEL. Oct. 2011 to June 2013

Project Assistant: National Chemical Laboratory, Pune, INDIA. May 2010 to Jan 2011.

Details of Research Area: Development of Novel Synthetic Methodology “ Synthetic functionalization that creates new Carbon-Carbon and Carbon-Heteroatom bonds are one of the important transformations in organic chemistry, as they enable the design of artificial chemical structures essential to modern life.” [A] Photo-redox Catalysis: A single-electron oxidation of organic substrate is one of the potential concepts to generate versatile radical intermediate. Consequently, visible light photo-redox catalysis is of great attention not only to the alternative for a photochemical and electrochemical reaction but also for classical synthetic methods. We are working on photo-redox catalysis for the development of various bond-forming reactions and their applications in novel molecule synthesis. [B] C-H Activation: We intend to develop chemo- and regio-selective metal-catalyzed C-H bond activation reactions to create new C-C and C-Heteroatom bonds. [C] Oxidative Coupling & Cross Dehydrogenative Coupling: Our research is also focused to develop metal-catalyzed and/or Photo-redox catalyzed Oxidative Coupling and Cross Dehydrogenative Coupling (CDC) reactions that meet most of the demands of an ideal synthesis. Under Oxidative CDC conditions, two weak C-H bonds are coupled in a direct manner (without any pre-adjustment requirements) by a metal catalyst and/or Photo-redox catalyst. [D] Total Synthesis of Natural Products: The efficiency of any novel synthetic reaction is measured by its successful application in the synthesis of structurally attractive and biologically important natural products. We have planned to lead our methodologies to make progress in achieving the development of efficient and reliable routes to construct biologically active natural molecules as well as interesting lead molecules for drug synthesis. [E] Green Chemistry:

Details of Research Highlights: A mild and efficient synergistic approach for decarboxylative arylation of 2-aryl-pyrido[1,2-a]pyrimidin-4-ones having intrinsic directing group has been developed by merging of palladium catalysis and photo-redox catalysis at room temperature. Therapeutically

interesting aryl ketones of pyrido[1,2-a]pyrimidin-4-one have been synthesized in good to excellent yield with good functional group tolerance. Synergistic Approach for Decarboxylative Ortho C-H Aroylation of 2-Aryl-pyrido[1,2-a]pyrimidin-4-ones and Thiazolopyrimidinones by Merging Palladium Catalysis with Photo-catalysis. R. T. Bhawale, D. Sarothiya, and U. A. Kshirsagar* Asian J. Org. Chem. 2022, ASAP.

Total number of Journal Articles published/under process	1
List of UG course(s) taught: CH-153 Laboratory Chemistry	
List of PG course(s) taught: CH-610: Molecular Structure Determination, CH-711: Medicinal Chemistry, CH-799: M.Sc. Research Project (Stage-I), CH-800: M.Sc. Research Project (Stage-II),	
Total number of PG dissertation(s) guided	1

Dr. Debayan Sarkar

Associate Professor

sarkard@iiti.ac.in

PhD, Indian Association For The Cultivation of Science (IACS),

Degree awarded from Jadavpur University



Previous Employment details before joining IIT Indore:

Associate Professor of Chemistry, Department of Chemistry, National Institute of Technology, Rourkela, Odisha, India, Pin- 769 008, from 02nd Feb 2018 – 17th May 2022.

Assistant Professor of Organic Chemistry, Department of Chemistry, National Institute of Technology, Rourkela, Odisha, India, Pin- 769 008, from 17th October 2011 to 01st Feb 2018.

ICMR International Fellow, Prof. Burkhard Koenig Group, University of Regensburg, Germany, Jan 2020- June 2020, DAAD Associate Professor (Academics)- Dec 2018-Jan 2019 With Prof. Christoph Schneider, University of Leipzig, Germany, Visiting Senior Assistant Professor: Dec. 2015 – March 2016, With Prof. Masahiko Yamaguchi, Graduate School Of Pharmaceutical Sciences, Tohoku University, Japan, INDO-US Postdoctoral Research Fellow) with Prof. B M Trost, Department of chemistry, Stanford University, California,

Details of Research Area: Visible Light Catalysed Reactions Electrocatalytic Organic Transformations Total Synthesis of Natural Products and important biomolecules Atom economic synthetic transformations Asymmetric Dearomatisation Reactions

Details of Research Highlights: In last few decades dearomative transformations has grasped immense attention of chemists and in this context, we found major reports highlighting on hypervalent iodines. Dearomatization of arenols is considered to be the shortest and most powerful approach towards the construction of a range of molecular architectures from simple planar starting materials. We are working on tribromide mediated dearomative intra- or inter- molecular transformations since long. This process is robust, scalable and simple. It has been a long time challenge which was now successfully been accomplished J. Org. Chem 2021, 86, 23, 16369-16395; Asian Journal of Organic Chemistry 2021, 10, 1786-1794; Organic and Biomolecular Chemistry 2020, 18, 4619-4627; European Journal of Organic Chemistry 2020, 11, 1727-1731; Tetrahedron Letters ,2020 (cover page Article), 61, 151646; European Journal of Organic Chemistry 2020, 397-401; European Journal of Organic Chemistry 2020, 7, 891-896 ; Organic Letters 2019 21, 11, 4132-4136

Details of Projects active:

1. Title: Chemical Innovations For Sustainable Future 2020- 2024 (Principal Investigator), 1.92 Crores Funding Agency: UGC-DAAD, Under Indo-German Higher Education Partnerships, PI (Just sanctioned)
2. Title: Developing Enantioselective Carbon-heteroatom Bond Formations Employing Visible Light, 44 Lakhs, 2021-2024 Funding Agency: SERB, Department of Science and Technology, PI

3. Title: Developing of Efficient Tribromides as Versatile Fine Oxidative Dearomatisation Reagents, 30 Lakhs, 2021-2023 Funding Agency: SERB, Department of Science and Technology, SERB TETRA AWARD, PI

4. Title: Developing Sustainable Enantioselective Carbonheteroatom Bond Formations Employing Dearomatisation reactions (EDRs), 30 Lakhs, 2021-2024 Funding Agency: CSIR, PI

Total number of Journal Articles published/under process	11
Total number of courses/conferences/workshops organized	3

Any other Achievements, Awards and Recognitions:

1. Prof. R C Tripathy Memorial Award for Excellence in Research, Orissa Chemical Society 2021
2. SERB TETRA AWARD 2021 by Department of Science and Technology (DST), Govt. Of India

Total number of PG dissertation(s) guided	1
Total number of PhD student(s) guided	1

Dr. Pravathana Dhanpal

Assistant Professor Grade-I

dpravarthana@iiti.ac.in

PhD, CRISMAT Laboratory, CNRS, Caen, France



Previous Employment details before joining IIT Indore:

1. Designation : Postdoctorate; Institute: Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences; Duration: 3 Years
2. Designation : Assistant Professor; Institute: Ningbo Institute of Materials Technology and Engineering, Chinese Academy of Sciences; Duration: 3 Years.

Details of Research Area: My current research focuses on two research areas. The first one is ionic based control of functional properties of transition metal oxide thin films. The second one is to utilize high throughput synthesis and characterization of metal oxide based battery cathode thin films.

Details of Research Highlights: Utilized high-throughput synthesis and characterization of ferroelectric Pb_{0.2}Ti_{0.8}ZrO₃ for multi-level data storage applications [D. Pravarthana* et.al Advanced Materials Interfaces 2100871 (2021)]. In addition we developed highly sensitive and selective H₂S gas sensing systems based on TiO₂ thin films [Appl. Surf. Sci. 549, 149281 (2021)].

Total number of Journal Articles published/under process	2
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Department of Mathematics

The department of Mathematics at IIT Indore has been a major center for academic and research programs in various branches of Mathematics. The department has constantly been engaging in frontier research areas and been encouraging collaborative research with the other Science and Engineering Departments.



Number of Faculty:	
PROFESSOR	02
ASSOCIATE PROFESSOR	04
ASSISTANT PROFESSOR GRADE II	0
ASSISTANT PROFESSOR GRADE I	10
NO. OF POST DOC FELLOWS	02

Academic Programs

The department currently offers PHD and MSc programs in Mathematics and envisages other master programs in allied fields, such as, statistics and applied computing. The department is also working on a proposal for a core BTech program in the department.

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
MSc (Mathematics)	20	12
PhD	10	05

R&D Activities

The faculty members of the department are well qualified and motivated with a strong commitment to teaching and research. This is reflected through

1. various academic events of national and international importance conducted in the department,
2. ongoing research projects sponsored by several funding agencies such as NBHM, SERB, DST, CSIR, MHRD, ICMR and
3. research publications in reputed journals.

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	03	01
ONGOING PROJECTS	11	00
COMPLETED	14	00

DST-FIST support:

Bhaskaracharya Mathematics Laboratory
Brahmagupta Mathematics Library

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	04	02	05	74

Further, the department is also engaged in promoting Mathematics among college teachers, postgraduate & undergraduate students in India through various outreach activities, like short-term courses, Webinars, Student seminar Series, etc. The department regularly organizes lectures by eminent mathematicians from reputed institutes around the world.

For more details please visit <http://math.iiti.ac.in>.

Dr. Niraj Kumar Shukla

Associate Professor and Head of Department
nirajshukla@iiti.ac.in
PhD, University of Allahabad



Previous Employment details before joining IIT Indore:

Assistant Professor at Indian Institute of Technology Indore from April 02, 2012 to December 10, 2018.

Assistant Professor in the Department of Mathematics, Central University of Bihar, Patna from Jan. 16, 2012 to March, 2012.

Assistant Professor in the Department of Mathematics, UCER, Naini, Allahabad from Aug. 20, 2011 to Jan. 15, 2012.

Assistant Professor in the Department of Mathematics, Galgotias University, Greater Noida from July 01, 2011 to Aug. 19, 2011.

Assistant Professor in the Department of Mathematics, Raj Kumar Goal Institute of Technology, Ghaziabad from Feb. 23, 2011 to June, 2011.

Guest faculty at the Department of Mathematics, University of Allahabad, Allahabad from July, 2010 to Feb. 22, 2011.

Details of Research Area: Wavelet, Frame and Harmonic Analysis

Details of Research Highlights: Due to the redundancy property of frames, the stable decomposition of a vector in the separable Hilbert space H allows the flexibility of choosing different types of duals for a frame. For a second countable locally compact group G (not necessarily abelian) and a closed abelian subgroup Γ , we study the properties of oblique Γ -translation generated (Γ -TG) duals for a continuous frame in $L_2(G)$. Two types of oblique Γ -TG duals viz., type-I and type-II are characterized in terms of Zak transform for the pair (G, Γ) . Outside the group setup, first, we discuss such duals for the multiplication generated systems on the measure-theoretic abstraction in $L_2(X; H)$ using the range function corresponding to the point-wise conditions in H , where X is a σ -finite measure space. Our results present a unified theory connecting the discrete problems with a continuous setup. Besides we characterize these duals' uniqueness using Gramian/dual Gramian operators, which become a discrete frame/Riesz basis for the associated range space. As an application, we illustrate our results for \mathbb{R}^n , p -adic numbers \mathbb{Q}_p and locally compact abelian groups using fiberization map.

Details of Projects active: Title: Study of generalized TI system and wave-packet systems over LCA groups, Sponsoring Agency: NBHM, DAE

Total number of Journal Articles published/under process 1

Total number of courses/conferences/workshops organized 2

List of UG course(s) taught: Preparatory course PMA 102

List of PG course(s) taught: MA 736: Wavelet Analysis, MA 611: Analysis-I

Total number of PhD student(s) guided 3

Dr. Sk. Safique Ahmad

Professor
safique@iiti.ac.in
PhD, IIT Guwahati



Previous Employment details before joining IIT Indore:

Post-doctoral Fellow, The Institute of Mathematics, Technical University Berlin from Feb 2009 to Dec 2009

Post-doctoral Fellow, Indian Institute of Science Bangalore (IISc) from Jan 2008 to Feb 2009

Present academic association(s) with other Institution(s): Nominated as a UGC nominee by the Hon'ble Chairman UGC for Academic Advisory Committee in HRD Center-Laxmibai National Institute of Physical Education (MP).

Details of Research Area: We develop a general framework for computing the backward error of λ , which is considered as an approximate eigenvalue for an unstructured and a class of structured homogeneous multiparameter eigenvalue problems such as T-symmetric, per-symmetric, Toeplitz, Hankel, Hermitian, skew-Hermitian, H-even and H-odd. We also compare the structured and unstructured eigenvalue backward errors. Later we discuss pseudospectra for the unstructured and structured multiparameter eigenvalue problems with the help of eigenvalue backward error analysis

Details of Research Highlights: We develop a general framework for computing the backward error of λ , which is considered as an approximate eigenvalue for an unstructured and a class of structured homogeneous multiparameter eigenvalue problems such as T-symmetric, per-symmetric, Toeplitz, Hankel, Hermitian, skew-Hermitian, H-even and H-odd. We also compare the structured and unstructured eigenvalue backward errors. Later we discuss pseudospectra for the unstructured and structured multiparameter eigenvalue problems with the help of eigenvalue backward error analysis. We work on perturbation analysis of Matrices, Matrix Pencils and nonlinear matrix equations. Also, work on the condition number of eigenvalues.

Details of Projects active: On inverse eigenvalue problems for structured matrix pencils Funding

Agency: DST, New Delhi, SERC, Under the scheme MATRICS

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 2

Any other Achievements, Awards and Recognitions:

1. Nominated as a member of the Editorial Board of the Journal Of The Indian Academy Of Mathematics for a period of four years – 2022 - 2025.

2. Member of the Editorial Board of The Mathematics Student.

3. Nominated as a UGC nominee by the Hon'ble Chairman UGC for Academic Advisory Committee in HRD Center-Laxmibai National Institute of Physical Education (MP).

Total number of UG course(s) taught: 1

Total number of PG course(s) taught: 1

Total number of PhD student(s) guided 1

Dr. Swadesh Kumar Sahoo

Professor

swadesh.sahoo@iiti.ac.in

PhD, Indian Institute of Technology Madras



Previous Employment details before joining IIT Indore: Associate Professor at the Indian Institute of Technology Indore, India, from February 21, 2017 - February 20, 2022. Assistant Professor at the Indian Institute of Technology Indore, India, from September 23, 2010 to February 20, 2017.

Details of Research Area: Complex Analysis and Hyperbolic geometry

Details of Research Highlights: We aim to analyse geometrical and topological aspects of hyperbolic-type metric balls. Secondly, we study certain necessary and sufficient conditions for harmonic univalent mappings using shear construction.

Details of Projects active: The Hurwitz metric and univalent functions (funded by Mathematical

Research Impact Centric Support (MATRICS), Science and Engineering Research Board (SERB)
Duration: February 19, 2020 - February 18, 2023).

Total number of Books published/under process 1

Total number of Journal Articles published/under process 4

List of UG course(s) taught: MA 204 Numerical Methods

List of PG course(s) taught: MA 603 Topology I, MA 714 Advanced Complex Analysis

Total number of PhD student(s) guided 1

Dr. V. Antony Vijesh

Associate Professor

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PhD, Indian Institute of Technology Madras



Previous Employment details before joining IIT Indore:

Assistant Professor - Centre For Mathematical Sciences, Pala- 14/01/2008- 30/11/2008;

Reader-Indian Institute of Space Sciences and Technology - 03/12/2008 - 03/11/2010

Details of Research Area: Dr. V Antony Vijesh's broad area of research is iterative methods for solving various types of nonlinear equations such as operator equations, differential equations, etc. Currently, he is studying the monotone iterative method for nonlinear integro-differential equations. He also developed efficient finite difference methods based on monotone iteration to solve nonlinear partial differential equations. His work provides sufficient conditions to theoretically ensure the monotone iterative scheme's convergence to the unique solution. Recently, he also studied various properties of generalized Marcum Q-function of the second kind jointly with his collaborators. The outcome of this joint work was published as a research article in well-known mathematics journals.

Details of Research Highlights: One of our recent work presents a study on accelerated monotone iterative methods for two systems of non-linear partial differential equations arising from the catalytic converter models. Two mathematical models were considered in this study. The first mathematical model consists of a semilinear parabolic partial differential equation and two integral equations. In contrast, the second mathematical model for the catalytic converter model consists of a semilinear parabolic partial differential equation and an integral equation. The proposed modified monotone iteration methods converge to the unique solution of these mathematical models faster than the existing monotone iteration schemes available in the literature. Interesting theoretical justification has been provided for the accelerated convergence and the monotone behaviour of the proposed iterative methods. Numerical simulation results support the theoretical claims.

Details of Projects active: Higher Order Compact Finite Difference Methods and Monotone Iterative Algorithms For Nonlinear Partial Differential Equations- DST-SERB -Principal Investigator-660000
Mathematical modeling of certain physical situations naturally ensures the appearance of nonlocal integral terms either in the governing equation or in the boundary condition of the differential equations. The main aim of this project is to develop a higher order compact finite difference method and monotone iterative algorithm for solving nonlinear integro partial / partial differential equations with various types of boundary conditions. In the first step, an accelerated monotone iterative method was developed to approximate the solution of the integro partial / partial differential equation scheme. In the second step, a suitable compact finite difference method is proposed that will preserve the monotonicity after combining it with the proposed monotone iterative method. Finally, theoretical and computational results related to the error estimate, monotone property, and the convergence of the iterative scheme to the unique solution of the nonlinear problems will be performed.

Total number of Journal Articles published/under process 2

List of PG course(s) taught: MA 621 Ordinary Differential Equations, MA 620-Partial Differential Equations

Total number of PhD student(s) guided: 3 students ongoing

Dr. Anand Parkash

Assistant Professor Grade-I
anandparkash@iiti.ac.in
PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:

I joined LNMIIT Jaipur as a lecturer for three months and then IISER Bhopal as a visiting faculty for about one year.

Details of Research Area: I am working on multiplication modules and prime submodules. Prime submodules are generalizations of prime ideals. I am working on generalizing results of prime ideals to prime submodules.

Details of Research Highlights: Cohen's theorem is a well-known result in commutative algebra. I am working on Cohen's theorem for modules.

List of UG course(s) taught: PMA 102: Preparatory Mathematics-II

List of PG course(s) taught: MA 640: Algebra-I, MA 643: Algebra-II

Dr. Mohammad Aquil Khan

Associate Professor
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PhD, Indian Institute of Technology Kanpur



Previous Employment details before joining IIT Indore:

- 1) Marie-Curie Fellow, Fraunhofer SIT, Darmstadt, Germany (1 Year)
- 2) Post Doctoral Fellow, IMSc Chennai (1 Year)
- 3) Visiting Researcher, University of Amsterdam (1 Year)

Details of Research Area: Mathematical Logic, Rough Set Theory

Details of Research Highlights: We studied temporal information systems (TISs) that add the dimension of time to complete or incomplete information systems. Through TISs, one can accommodate the possibility of domains or attribute-values for objects changing with time or the availability of currently missing information with time. Different patterns of flow of information give different temporal information systems. The corresponding logics with sound and complete axiomatization are obtained.

Total number of Journal Articles published/under process: 2 Published

List of UG course(s) taught: MA 106-Linear Algebra and Ordinary Differential Equations-I, MA 203-Complex Analysis and Differential Equations-II

List of PG course(s) taught: MA 673-Fundamentals of Discrete Mathematics

Total number of PhD student(s) guided

1

Dr. Ashisha Kumar

Assistant Professor Grade-I
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PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:
Research Associate (Aug 2010 - Jan 2011) at IISc Bangalore and
Dr DS Kothari Post Doc Fellow (Feb 2011 - Nov 2013) at IISc Bangalore

Details of Research Area: Radon Transform (Harmonic Analysis)

Details of Research Highlights: Rigidity of Inner product spaces

Total number of Journal Articles published/under process: An article titled "Roe-Strichartz theorem on two step nilpotent Lie groups" (With Sayan Bagchi and Suparna Sen) is accepted for publication in the journal "Mathematische Nachrichten".

Any other Achievements, Awards and Recognitions: Co-organised (with Rashtriya Avishkar Team as a Team Coordinator under Ek Bharat Shrestha Bharat Program of IIT Indore) "more than 60 Youtube weekly live Lectures under series on "Vigyan Par Charcha" by different Experts from India and Abroad in communicating language Hindi specially broadcasted for students of class 6 to 8 and their teachers in M.P. and funded with a generous amount of more than 10 lakhs by Raja Shiksha Kendra Bhopal (M.P.).

List of UG course(s) taught: MA 106 (Calculus)

List of PG course(s) taught: MA 734 (Fourier Analysis on Euclidean spaces)

Total number of PhD student(s) guided 1

Dr. Vijay Kumar Sohani

Assistant Professor Grade-I
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PhD, Harish-Chandra Research Institute Allahabad



Previous Employment details before joining IIT Indore:
I was NBHM Post Doctoral Fellow at Department of Mathematics, IISc Bangalore.

Details of Research Area: Harmonic Analysis

Details of Research Highlights: We obtain the l^1 estimate of the kernel $a_{n,m}(t)$ for $m=0,1$, $m=n$ and $t \in [1, \infty)$ for the propagator e^{-itH_d} of one dimensional difference operator associated with the Hermite functions. We conjecture that this estimate holds true for any positive integer m and in that case, we obtain better decay for $\|e^{-itH_d}\|_{l^1 \rightarrow l^1}$ and $\|e^{-itH_d}\|_{l^{\sigma} \rightarrow l^{\sigma}} \rightarrow l^{\sigma}$ for large $|t|$ compare to the Euclidean case, (see I. Egorova, E. Kopylova, and G. Teschl, Dispersion estimates for one-dimensional discrete Schrödinger and wave equations, J. Spectr. Theory 5, 663-696 (2015)). These estimates are useful in the analysis of one-dimensional discrete Schrödinger equation associated with operator H_d .

Details of Projects active: In this project, I am investigating various properties including scattering and global existence of the Schrodinger equation associated with the Twisted Laplacian. Fundamental solution for the ρ -sub-Laplacian on the Heisenberg group play an important role in proving Hardy-Sobolev inequality for general ρ on the Heisenberg group, see Adimurthi and A. Sekar (Proc. Roy. Soc. Edinburgh Sect. A, 2006). I am investigating the properties of fundamental solution for the twisted ρ -Laplacian and to prove Hardy-Sobolev inequality for general ρ .

Total number of Journal Articles published/under process 1

List of UG course(s) taught: MA 203, MA 204

List of PG course(s) taught: MA 612

Dr. M. Tanveer

Associate Professor
mtanveer@iiti.ac.in
PhD, JNU New Delhi



Previous Employment details before joining IIT Indore:
Postdoctoral Research Fellow, NTU Singapore (2015-2016)

Details of Research Area: Machine learning, deep learning, applications to healthcare

Details of Research Highlights: Development of novel deep learning algorithms for the diagnosis of Alzheimer's disease

Details of Projects active: 05 sponsored projects are active

Total number of Books published/under process 2

Total number of Journal Articles published/under process 30

Total number of courses/conferences/workshops organized:

Organizing two SS @ICONIP 2021, Bali, Indonesia Founding Chair - MISP 2021. Organizing SS - IJCNN 2021 (Core Rank A).

Publicity Chair - ICONIP 2021 (Core Rank A). General Chair - 2022 IEEE CIS Summer School on DL & CI. General Chair - ICONIP 2022 (Core Rank A).

Any other Achievements, Awards and Recognitions:

Associate Editor: IEEE Transactions on Neural Networks and Learning Systems (Feb. 2022 onwards) (IF: 14.25).

Associate Editor: Pattern Recognition, Elsevier (Nov 2021 onwards) (IF: 8.52).

Action Editor: Neural Networks, Elsevier (01/ 2022 -) (IF: 9.65).

Board of Editors: Engineering Applications of AI, Elsevier (01/ 2022 -) (IF: 7.80).

Associate Editor: Neurocomputing, Elsevier (Nov 2021 onwards) (01/ 2022 -) (IF: 5.78).

Editorial Board: Applied Soft Computing, Elsevier (01/ 2022 -) (IF: 8.26).

Associate Editor: Cognitive Computation, Springer (01/ 2022 -) (IF: 4.89).

Associate Editor: International Journal of Machine Learning & Cybernetics (IF: 4.37).

General Chair - 2022 IEEE CIS Summer School on DL & CI.

General Chair - ICONIP 2022 (Core Rank A).

Keynote Speaker at IEEE CIS Summer School 2021.

Delivered a talk at Shell, Houston.

List of UG course(s) taught: Linear Algebra and ODE 1 (MA 106)

List of PG course(s) taught: Operations Research (MA 671/ME 671/ME 471), Computational Techniques (MA 680)

Total number of PG dissertation(s) guided 1

Total number of PhD student(s) guided 2

Dr. Sanjeev Singh

Assistant Professor Grade-I

snjvsngh@iiti.ac.in

PhD, IIT Madras



Previous Employment details before joining IIT Indore:

1. SERB- National Post-Doctoral Fellow, Indian Institute of Technology Indore, June 23, 2017 to September 29, 2017
2. Post-Doctoral Fellow, Stat Math Unit, Indian Statistical Institute Chennai Centre, December 08, 2016 to June 22, 2017.
3. Pre-Doctoral Fellow, Department of Mathematics, Indian Institute of Technology Madras, June 04, 2016 to December 03, 2016

Details of Research Area: Special Functions

Details of Research Highlights: We study a detailed analysis (monotonicity, convexity, recurrence relation, closed form expression and tight bounds) of a new special function which we call as the generalized Marcum function of the second kind, which is an analogous survival (or reliability) function to the so-called generalized Marcum -function or the generalized Marcum function of the first kind (the survival function of the non-central chi distribution). The main difference between these two generalized Marcum functions is that they involve the modified Bessel functions of the first and second kind.

Details of Projects active:

Project Title: Study of Marcum function of the second kind Project Ref. No.: CRG/2020/002875

Funding Agency: Science & Engineering Research Board (SERB)

Funding Amount: ₹ 2046264

Duration: 2021 – 2024

Total number of Journal Articles published/under process:

1. A. Baricz, N. Bisht, S. Singh, V. A. Vijesh, Asymptotic and numerical aspects of the generalized Marcum function of the second kind, *Applicable Analysis and Discrete Mathematics*, 16 (2022) 202-217.
2. A. Baricz, N. Bisht, S. Singh, V. A. Vijesh, Bounds for the generalized Marcum function of the second kind, *Ramanujan Journal*, 58(2022).
3. V. Arora, S. K. Sahoo, S. Singh, Approximation of Certain Non-vanishing Analytic Functions in a Parabolic Region, *Results in Mathematics*, 76 (2021), Art. 163.

List of UG course(s) taught: MA 105, Calculus

List of PG course(s) taught: MA 452/MA 652, Theory of Transforms

Total number of PhD student(s) guided 2.5

Dr. Bapan Ghosh

Assistant Professor Grade-I
keshab.bapan@iiti.ac.in
PhD, IEST, Shibpur, West Bengal



Previous Employment details before joining IIT Indore:
Assistant Professor (AGP-6000/- & 7000/-) at the Dept. of Mathematics,
NIT Meghalaya from 28th January 2015 to 11th September 2019

Details of Research Area: We focus on three subfields as follows:

1. Delay differential equations applied to population dynamics models
2. Discrete dynamical system and chaos
3. Hydra effect on continuous-time predator-prey systems

Details of Research Highlights: In one of our research articles, we investigated a population model developed by delay differential equations involving delayed carrying capacity. A detailed bifurcation analysis has been performed with respect to time delay as the bifurcation parameter. In the region I of the figure, the equilibrium solution does not change its stability, but the system experiences stability switching in the region II. A stable equilibrium also becomes unstable for increasing delay (see region III). Interestingly, we have detected subcritical and supercritical Hopf-bifurcations in the model. In another work we propose a two-patch model of prey and predator where prey disperses between patches with time delay. We have shown delay may induce stability switching and even instability switching.

Details of Projects active: Core Research Grant project entitled "Delay Differential Equation Models in Population Dynamics: Theory, Methods and Computations", sponsored by SERB, Govt. of India (2021-24)

Total number of Journal Articles published/under process 4

List of UG course(s) taught: MA 203 Complex Analysis and Ordinary Differential Equations-II (B. Tech) Autumn 2021

List of PG course(s) taught: 1. MA 407/607 Nonlinear Dynamics and Computations (BTech/MSc/PhD) Spring 2022 (Lab using MATLAB & MATHEMATICA); 2. MA 680 Computational Techniques (MSc) Spring 2022 (MATLAB, MATHEMATICA); 3. MA 673 Fundamentals of Discrete Mathematics (MSc) Autumn 2021

Dr Santanu Manna

Assistant Professor Grade-I
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PhD, IIT (ISM) Dhanbad



Previous Employment details before joining IIT Indore:

1. Royal Society-SERB Newton International Fellow, School of Computing and Mathematics, Keele University, Staffordshire, United Kingdom
2. IIT Indore as Visiting Assistant Professor
3. IISER Kolkata as Post-Doctoral Fellow

Details of Research Area: Partial Differential Equations, Elastic Wave Propagation, Geomechanics, Seismic Data Science Analysis

Details of Research Highlights: Dr. Manna's Lab (AMG lab) is devoted as a research facility to work on Applied Partial Differential Equations and Mathematical Modeling of Geomechanics including asymptotic analysis, modeling of physical systems, wavelets transfer, wave propagation, continuum mechanics, theoretical seismology and earthquake statistics. Our team is working on the development, numerical and analytical study for solving large-scale scientific and engineering problems on advanced methods. Moreover, our team is working on earthquake source parameters and earthquake statistical analysis of the extensive earthquakes data in order to get the most efficient earthquake forecasting analysis.

Details of Projects active: Love-type wave and its limitation in a nonlocal elastic model of non-homogeneous layer upon an orthotropic extended medium (Project Ref. No. TURSP-2020/305) from Taif University

Total number of Journal Articles published/under process	5
Total number of courses/conferences/workshops organized	1
Total number of UG course(s) taught:	2
Total number of PG course(s) taught:	3
Total number of PG dissertation(s) guided	1

Dr Vinay Kumar Gupta

Assistant Professor Grade-I
vkg@iiti.ac.in
PhD, RWTH Aachen University, Germany



Previous Employment details before joining IIT Indore:

- Postdoc on Commonwealth Rutherford Fellowship at the Mathematics Institute, University of Warwick, UK (26 March 2018–28 September 2019)
- Assistant Professor at Department of Mathematics, SRM Institute of Science and Technology, Chennai, India (01 September 2016–19 March 2018).
- Postdoc at Max Planck Institute for Dynamics and Self-Organization, Goettingen, Germany (14 January 2016–31 August 2016).
- Visiting research student at Department of Mechanical Engineering, University of Victoria, Victoria, B.C., Canada (05 May 2014–04 June 2014).
- Research assistant at Center for Computational Engineering Science, Department of Mathematics, RWTH Aachen University, Germany (06 June 2011–31 December 2015).
- Research student at Engineering Mechanics Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India (August 2008–March 2011).

Details of Research Area: Mathematical modelling of gases

Details of Research Highlights: Rana, A. S., Gupta, V. K., Sprittles, J. E. and Torrilhon M. (2021), H-theorem and boundary conditions for the linear R26 equations: application to flow past an evaporating droplet, Journal of Fluid Mechanics, 924, A16, (Pages A16-1 – A16-42).

Total number of Journal Articles published/under process	1
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Any other Achievements, Awards and Recognitions:

Invited Talks:

- "Introduction to Mathematica", an "Online Refresher Course in Computer and Mathematics (IDC)" during December 07-20, 2021 at Devi Ahilya Vishwavidyalaya, Indore, India, December 08, 2021.
- "Modelling dilute granular gases via Grad's moment method", Workshop on "Modelling and Numerical Simulation of Non-Equilibrium Processes - Part One" during September 27– October 01, 2021 at Institute for Mathematical Sciences, National University of Singapore, Singapore, September 29, 2021.

List of UG course(s) taught:

- MA 106 Linear Algebra and Ordinary Differential Equations-I, Spring Semester 2022 (March - June 2022).
- PMA101 Preparatory Mathematics-I, Autumn Semester 2021 (November - March 2021).
- MA 203 Complex Analysis and Differential Equations-II, Autumn Semester 2021 (August - November 2021).

Dr. Bibekananda Maji

Assistant Professor Grade-I
bibekanandamaji@gmail.com
PhD, Harish-Chandra Research Institute, Allahabad



Details of Research Area: My research interests mainly lie in number theory, one of the beautiful branches of pure mathematics. However, my primary works are at the interface of the analytic number theory, modular forms, partition theory, and particular values of L-functions. I also enjoy roaming around in the garden of Ramanujan's mathematics.

Details of Research Highlights: The Riemann Hypothesis (RH) is one of the most important unsolved problems in Mathematics. In 1916, Hardy and Littlewood gave an equivalent criterion for RH while correcting an identity of Ramanujan. Recently, in joint work with my Ph.D. students, Archit Agarwal and Meghali Garg, we generalized the work of Hardy and Littlewood. Moreover, we established an infinite family of equivalent criteria for RH. This work got accepted for publication in Proc. Amer. Math. Soc.

Details of Projects active: Project Title: An investigation on asymptotic expansion of Lambert series and Ramanujan's formula for odd zeta values. Funding Agency: Start-up Research Grant (SRG), SERB. Duration: 2020-2022.

Total number of Journal Articles published/under process	4
List of UG course(s) taught: MA 105: Calculus	
List of PG course(s) taught: MA 610: Complex Analysis	
Total number of PG dissertation(s) guided	3

Dr. Charitha Cherugondi

Assistant Professor Grade-I
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PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:
Visiting assistant professor (2016-2019), IIT Indore, Indore.
Post Doctoral researcher (2011-2015), University of Goettingen, Germany
Assistant Professor (2009-2011), NIT Calicut, Kerala, India.

Details of Research Area: Variational analysis and continuous optimization: Deals with the extension of methods from convex optimization and calculus of variations to a more general theory, for example, to more general problems of optimization theory, including variational inequalities, equilibrium problems, set valued analysis and generalized derivatives.

Details of Research Highlights: Have worked on optimization reformulations of vector equilibrium problems through devising a gap function, also on solution methods for vector variational inequalities and strongly monotone set valued problems. A book on Gap functions for variational inequalities is

currently under preparation.

Total number of Books published/under process: 1 (under preparation)

Total number of Journal Articles published/under process: 1 (under revision)

List of UG course(s) taught: MA 105 Calculus, MA 106 Linear Algebra and ODE-I

List of PG course(s) taught: MA 673 Computational Techniques

Dr. Mohd. Arshad

Assistant Professor Grade-I

arshad@iiti.ac.in

PhD, IIT Kanpur



Previous Employment details before joining IIT Indore:

Assistant Professor at the Department of Statistics and O.R., Aligarh Muslim University, Aligarh, India.

Duration: March 2014 to July 2020

Present academic association(s) with other Institution(s): Aligarh Muslim University

Details of Research Area: Ranking and Selection; Estimation Theory; Statistical Decision Theory; Records and Generalized Order Statistics

Details of Research Highlights: In many practical situations, it is often desired to select a population (treatment, product, technology, etc.) from a choice of several populations based on a particular characteristic that associated with each population, and then estimate the characteristic associated with the selected population. The present work is focused on estimating a characteristic of the selected bivariate normal population, using a LINEX loss function. A natural selection rule is used for achieving the aim of selecting the best bivariate normal population. Some natural-type estimators and Bayes estimator (using a conjugate prior) of a parameter of the selected population are presented. An admissible subclass of equivariant estimators, using the LINEX loss function, is obtained. Further, a sufficient condition for improving the competing estimators is derived. Using this sufficient condition, several estimators improving upon the proposed natural estimators are obtained. An application of the derived results is provided by considering the poultry feeds data.

Details of Projects active: Project Title: Improved Estimation Based on Records; Funding Agency: Science and Engineering Research Board, DST, Govt. of India; Project Scheme: Mathematical Research Impact-Centric Support (MATRICS)

Total number of Books published/under process 1

Total number of Journal Articles published/under process 7

Any other Achievements, Awards and Recognitions: Associate Editor, The Aligarh Journal of Statistics

Total number of UG course(s) taught: 1

Total number of PG course(s) taught: 2

Total number of PhD student(s) guided: 2 (currently guiding at IIT Indore) +1 (currently guiding at AMU)

School of Humanities and Social Sciences

The School of Humanities and Social Sciences at IIT Indore is an exciting and vibrant place of Research and pedagogy. We have 15 faculty members, and 1 visiting faculty, along with more than 40 PhD research students working on exciting projects and problems. The faculty members of the School are an eclectic mix of researchers from varied disciplines of Economics, English, History, Philosophy, Psychology and Sociology. Apart from their disciplinary affiliations each of the faculty members are engaged in their specialized areas of research and write, publish and speak about their work.

Academic Programs

The School of Humanities and Social Sciences has two main academic Programs: First, a PhD Program that comprises course work and a rigorous dissertation and project work. Our students have won prestigious national and international scholarships, fellowships and awards and we are very proud of their achievements when they are part of the school and all of our graduating students have gone on to excel themselves in their chosen careers too. Second, an MS (Research) Program. The first batch of this Program commenced from Autumn 2021.

NUMBER OF FACULTY MEMBERS:	
PROFESSOR	3
ASSOCIATE PROFESSOR	2
ASSISTANT PROFESSOR GRADE II	5
ASSISTANT PROFESSOR GRADE I	5
NO. OF POST DOC FELLOWS	0

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	0	0
MTech	0	0
MSc	0	0
PhD	18	3
MS (Research)	4	0

R&D Activities

Discipline of Economics: Prof. Pritee Sharma conducted Disaster Risks Assessments due to climate change in urban areas, conducted a study on rural infrastructure and its impact of economic development, an assessment of vulnerability of the rural and urban poor to climatic and non-climatic stressors for Madhya Pradesh and an assessment of Economic Loss and Damages of NTFPs due to Forest Fires. Dr. Mohanasundari T. was awarded the RBI scholarship scheme for Faculty Members and began project work on Evaluation of Financial Performance of Farmer Producer Companies in Tamil Nadu. She also presented her project proposal on “Estimating Economic Losses and Damages of NTFPs Caused by Forest Fire in Hoshangabad Forest Division, Madhya Pradesh, India” in the 42nd RNT workshop conducted by SANDEE_ICIMOD In December 2021.

Discipline of English: Prof. Nirmala Menon has a SPARC project and an Electronic literature Anthology project. Dr. Ananya Ghoshal mentored four undergraduate and two postgraduate English Literature interns in IIT Indore in six short online courses. Dr. Sanchita Verma was invited to deliver lectures on the various dimensions of emerging research methodologies in humanities and social sciences by NIEPA, New Delhi and IIT Roorkee.

Discipline of Sociology: Dr. Neeraj Mishra conducted research on tribal development issues in India. Dr. Ashok Kumar M presented research papers at two international conferences in National University of Singapore (NUS), Singapore and the Coventry University, UK.

Discipline of Psychology:Dr. Sanjram Premjit Khanganba executed extensive work related to ‘connecting the unconnected’ emphasizing bridging digital divide. The output led to publication of a book by Springer nature on issues concerning 6G and Sustainable Development for non-urban settings. The work promotes ICT and digital transformation within the framework of community systems. Dr. Kedarmal Verma submitted project proposals to YFRSG IIT Indore, IKS 2021-2022, IBRO (International Brain Research Organization) for Young Career Award and delivered the Ek Bharat Shrestha Bharat Lecture titled “Psychology: An Introduction”.

Notable Activities in the Department

Discipline of Economics:Prof. Pritee Sharma authored four research publications in reputed international journals including with Elsevier and Springer. Dr. Kalandi C. Pradhan delivered an Invited Lecture on “Importance of Crosstabulations in Social Science Research” in the Maulana Azad National Urdu University, Hyderabad. He was also invited to attend a knowledge sharing workshop in IIT Bombay, “Transforming India and Green Revolution by Research and Empowerment for Sustainable Food Supplies”, Global Challenges Research Fund project, Research Council UK. Dr. Mohanasundari T was an invited speaker in “Agricultural Development-Challenges and Responses in the Post-Pandemic Era”, a webinar organized by the Rural Economic Society of Taiwan. She also served as a panelist in the International Virtual Conference “Transforming Agricultural Advisory Services to Mitigate the Effects of the Pandemic or Farmers Welfare” held at the Vellore Institute of Technology.

Discipline of English:Prof. Nirmala Menon is Editor, Digital Humanities Quarterly (DHO). Dr. Ananya Ghoshal represented South Asia and IIT Indore in the Humanities Pedagogy Conference at Stanford University. Dr. Sanchita Verma organized an SHSS seminar on: “Why During Constitution Framing was Education Deleted from Fundamental Rights” with Prof. Nalini Juneja. Dr. Aratrika Das started working on a project entitled “Ghosts, Goddesses, and Medicine from Nineteenth Century Bengal”, funded by IIT Indore Young Faculty Research Seed Grant (YFRSG) Scheme.

Discipline of Sociology:Dr. Ashok Kumar M submitted a collaborative research grant application to the British Academy (BA). Dr. Akshaya Kumar delivered several Invited Lectures at: University of California, Los Angeles (UCLA) and University of Oregon in the US; Jawaharlal Nehru University, New Delhi, and IIT Tirupati in India.

Discipline of History:Dr. Shomik Dasgupta was awarded Best Teacher by IIT Indore in September 2021.

Discipline of Psychology:Dr. Sanjram Premjit Khanganba’s lab developed a testing paradigm for tyre health monitoring which is related to safety critical system. This work is important for conceptualizing interface for drivers and fleet control team and has progressed into collaborative research with an industry player in India in the field.

Projects:

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	7	0
ONGOING PROJECTS	11	1
COMPLETED	5	1

Publications:

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total	4	22	13	30

Dr. Nirmala Menon(<https://dhlabiitindore.com/>)

Professor

nmenon@iiti.ac.in

PhD, The George Washington University USA



Previous Employment details before joining IIT Indore:

Professor Menon worked as Assistant Professor at Saint Anselm College, NH, Assistant Professor at IIT Indore, Associate Professor IIT Indore from 2016-2022 and Professor since February 2022.

Present academic association(s) with other Institution(s): Board member of Academic/Research organisations, UGC- STRIDE mentor, Board member of Digital University, Kerala, Project Director for KSHIP, an OA Publishing platform from IIT Indore.

Details of Research Area: She leads the Digital Humanities and Publishing Research Group at the Indian Institute of Technology (IIT), Indore, India. . Menon is the author of Migrant Identities of Creole Cosmopolitans: Transcultural Narratives of Contemporary Postcoloniality (Peter Lang Publishing, Germany, 2014) and Remapping the Postcolonial Canon: Remap, Reimagine, Retranslate (Palgrave Macmillan, UK 2017). She is the Co-Editor of the first multilingual Volume of E-literature to be published from India. Apart from the books, she has published more than 50 research papers in numerous international journals (Oxford University Press, Taylor and Francis, Sage among others) and speaks, writes and publishes about postcolonial studies, digital Humanities and scholarly publishing. She mentors research scholars and runs DH projects from the research lab at IIT Indore. Her research group works on Digital Projects relating to Cultural Heritage through both creation and curation of Archives and Databases. She is the Project Director for KSHIP (Knowledge Sharing in Publishing), an Open Access Publishing platform.

Details of Research Highlights: During the period July 2021-June 2022, Prof Menon gave keynote addresses at the Japanese Association of Digital Humanities (JADH) annual conference, the Keynote at the CESTA, Stanford University Longview lecture and four other keynotes. The research group has submitted four grant proposals and have received one successful grant and awaiting results on the others. Apart from this, the group has published six journal publications and reviews and book chapters that we are working on. Prof Menon also has a contract with Routledge, Taylor and Francis for a book on DH in India and a monograph contract on Digital Infrastructures. She has also taken the mantle of an Editor for DHQ, the most sought after journal in the field. Prof Menon is also currently Head of the School of Humanities and Social Sciences and lead the effort for initiating and launching the MS (Reserach)programme in Liberal Arts.

Details of Projects active: Digital Humanities Project with University of Lancaster, UK A Digital Narratology of Technology as Literary Actors and Artefacts of Settings in Indian English Novels SPARC, MoE, 2019-2022 55 lacs and 2. Digitisation and Archiving of Cultural History of Bihar: A Case Study of Madhubani Art:, Technology Innovation Hub, IIT Patna, 30 lacs

Total number of Books published/under process: One published and two under contract

Total number of Journal Articles published/under process 6

Total number of courses/conferences/workshops organized: 2 DH Workshops, 1 international conference

Any other Achievements, Awards and Recognitions: Shortlisted for Red Dot Foundation of top Female Academics in STEAM; Editor of Digital Humanities Quarterly (DHQ)

List of UG course(s) taught: HS443 Sustainability Studies (Autumn and Spring)

List of PG course(s) taught: HS 601 (Research Methods), HS 747 (Postcolonial Theory), HS799 HSS Seminar course, HS 605 Foundations in Digital Humanities

Total number of PhD student(s) guided

12

Dr. Pritee Sharma

Professor

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PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

Dr. Pritee Sharma is Professor in the Discipline of Economics of the School of Humanities and Social Sciences (HSS). She obtained her PhD. from IIT Bombay on, 'Implications of Input Subsidies on Agricultural Productivity and Rural Poverty in India'. She previously worked at Indian Institute of Management Ahmedabad (IIMA) and Gujarat Institute of Development Research (GIDR). She was also a team member for research assignments undertaken for the Ministry of Agriculture (MoA), Ministry of Statistics, Planning and Implementation (MoSPI), Ministry of Environment and Forests (MoEF), Government of India. She has also done research assignments for the Rockefeller Foundation and the World Bank.

Present academic association(s) with other Institution(s): Dr Pritee is a Research Fellow of Earth System Governance International Association based at Utrecht, The Netherlands.

Details of Research Area: Professor Pritee's research is concerned with food security, agricultural productivity, rural poverty, and international trade in agriculture sector. Her main research interests are in the areas of Environmental Economics and Development Economics. Her research assignments and the supervision of doctoral research work mainly consist of understanding and analysing food security, agricultural productivity, rural poverty and international trade concerns for India. Her research group includes PhD. students and external honorary members working on Sustainability Issues from various perspectives. She also teaches undergraduate and post graduate level courses in environmental economics, sustainability studies and institutional economics. Dr. Pritee also researches on stakeholder issues in climate change governance, resilience building, adaptive capacity aspects of climate change, and land and forest degradation from urban and rural poor's perspectives. All her work has been till date pertaining to governance, efficiency and policy in Indian context.

Details of Research Highlights: Her research work focused on the Disaster Risks Assessments due to climate change in Urban Areas. She is also undertaking research on rural infrastructure and its impact of economic development. The assessment of vulnerability of the rural and urban poor to climatic and non-climatic stressors for Madhya Pradesh was also undertaken. The select publications in this regard are as follows: 1. Patri, P; Sharma, P. and SK Patra (2022) Does Economic Development Reduce Disaster damage Risk from Floods in India? Empirical evidence using ZINB Model. International Journal of Disaster Risk Reduction, Vol 79, (Elsevier's Publication). 2. George, A. & Sharma, P. Socioeconomic and Infrastructural Vulnerability to Climate Variability and Extremes in India: A Subnational Study, Geo Journal, Springer.

Details of Projects active:

1. Impact of Rural Roads Infrastructure on Inclusive Development and Growth in Madhya Pradesh.
2. Economic Assessment of Loss and Damages to NTFPs due to Forest Fires in Hoshangabad Forest Division.

Total number of Books published/under process: Book Chapter :1

Total number of Journal Articles published/under process: 4 Journal Publications

Total number of courses/conferences/workshops organized

1

Any other Achievements, Awards and Recognitions: Invited as Keynote speaker, Workshop Presentation, Resource Person for the following events:

1. Journey towards Food and Nutrition Security in India: Challenges for Post Pandemic Situation, 2021 Annual International Webinar on Agricultural and Resources Economics, Taiwan, August 20, 2021
2. Estimating Economic Losses and Damages Caused by Forest Fire in Hoshangabad Forest Division, Madhya Pradesh; SANDEE- ICIMOD workshop. September 9, 2021
3. Research Methods and Design for Social Sciences, ICSSR Workshop at MPISSR Ujjain, and Resource Person for Madhya Pradesh PhD Colloquium.

List of UG course(s) taught: Fundamentals of Economics (HS 108) Sustainability Studies (HS 418)

List of PG course(s) taught: Environmental and Natural resource Economics (HS 626) and Research methods in Social Sciences (HS 601) Sustainability Studies (HS 618)

Total number of PhD student(s) guided:
2 PhD Students Graduated during July 2021 to June 2022.
PhD Supervision Completed: 8 Students;
PhD Students Thesis Submitted: 1;
PhD Supervision On-Going: 8 Students

Dr. C. Upendra

Associate Professor
cupendra@iiti.ac.in
PhD, IIT Bombay



Previous Employment details before joining IIT Indore:
Academic Fellow, Forum on Contemporary Theory, Baroda

Details of Research Area: My broad research area are Moral-Political Philosophy, History of Ideas, Radical Philosophy, Philosophy of Film & Music. The central theme that runs through these domains is the enigmatic nature of freedom-equality-justice.

Details of Research Highlights: Currently, I am engaged in four research problems:

- [1] Radical political violence in the wake of anti-foundationalism, post-metaphysics, and post-politics.
- [2] The work here handles the everyday violence from the point of political aesthetics - the intrusion of political art and its aesthetic manifestations.
- [3] This work is more of formal treatment of theories of social justice and retribution with particular interest in the idea of fair society.
- [4] Here, I deal with the Nietzschean rhetoric of nihilism pitted against the humanistic philosophy. One of the greatest contestations is life-affirming vs. life-negating values of moral philosophy.

List of UG course(s) taught: HS-206 Paradigms & Turning Points; HS-313 History of Early Cinema; IHS-402 Twentieth Century World History

List of PG course(s) taught: HS 605 Social-Political Philosophy; HS 606 Moral Philosophy

Total number of PhD student(s) guided

3

Dr. Ruchi Sharma

Professor
ruchi@iiti.ac.in
PhD, IIT Kanpur

**Previous Employment details before joining IIT Indore:**

Assistant Professor at IIT Delhi from 5 December 2012 to 30 January 2014
Economist with Department of Economics and Statistics of Tata Services Limited from 15 July 2008 to 28 October 2009

Details of Research Area: Economics of Innovation

Details of Research Highlights: In March 2022, have received funding from ICSSR for a project titled “exploring the patenting behaviour of the firms” using Form 27. This project involves collaboration with the Computer Science Department as we plan to use text-mining tools.

Total number of Projects active 2

Total number of Journal Articles published/under process 5

List of UG course(s) taught: HS 323 International Economics; HS 210 Indian Economy; HS 426 N Economics of Innovation

List of PG course(s) taught: HS 624 Econometrics; HS 626 N Economics of Innovation

Total number of PhD student(s) guided: 3 ongoing

Dr. Sanjram Premjit Khanganba

Associate Professor
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PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

Prior to full-time engagement in academic research, Dr. Sanjram Premjit Khanganba worked at PPC Worldwide, headquarter based in Oxford, (UK) for 5 months. The company provides private professional EAPs (Employee Assistance Programs) service across 140 countries.

Present academic association(s) with other Institution(s): Visiting Faculty, MIT Art Design and Technology University, Pune, Department of User Experience, Institute of Design (May 2022).

Details of Research Area: Dr. Sanjram Premjit Khanganba's scientific research revolves around investigating aspects of applied cognition in system development, design, and evaluation. He has strong dedication towards addressing issues related to human-system interaction in the pursuit of technological innovation, improvement, and optimal utilization of human capabilities. He emphasizes community level intervention in addressing real-world problems. He engages local community members in conducting user testing and conceptualizing services. His research contexts range from road safety and complex technological environments to social design. His research at 'Human Factors & Applied Cognition Lab concentrates on applied cognition domains of— Automotive & Transport UX, Community Systems, Interactive Systems, Smart Environments & Automated Systems, Medical & Healthcare UI, Assistive Systems for Rehabilitation, and Human Performance.

Details of Research Highlights: Recently, Dr. Sanjram Premjit Khanganba's research group has been actively involved in constantly promoting research activities related to ICT and digital transformation within the framework of community systems primarily connected with rural and remote areas of India. Major research outputs are related to 6G and its directions towards United Nation's Sustainable Development Goals. He has also published research papers addressing issues concerning — Interpersonal Space in Public Transport and COVID-19 Pandemic, Motor Variability Within Supra-

Second Auditory Cueing, Experience of Cognitive Workload During In-Vehicle Distractions, Dorsal-ventral visual pathways and object characteristics, and Isomorphic 2D/3D objects and saccadic characteristics in mental rotation.

Details of Projects active: Dr. Sanjram Premjit Khangnaba is currently working on an Industry-Sponsored Project titled, "Human-Centric Design Mapping: Investigating Effects of Vehicle and Wheel Dynamics on Tire Health for TireIQ- Tire Performance Sensing Solution". Automobile sector has been in the forefront of bringing massive transformation. Driving is a common everyday activity that people perform. With respect to the issues concerning the safety and driver-vehicle interaction, overall vehicle dynamics and wheel dynamics in particular are very important. At the physical level, these aspects are interactive concerning tire dynamics and its health and, in turn, the implications on overall human and system safety.

Total number of Books published/under process	1
Total number of Journal Articles published/under process	3
Total number of courses/conferences/workshops organized	1

Any other Achievements, Awards and Recognitions: Dr. Sanjram Premjit Khangnaba has become a member of the newly established 'International Ergonomics Association (IEA) Technical Committee on Resilience Engineering'. IEA is a global federation of country specific human factors/ergonomics societies, based in Geneva. Also, he has been appointed as an International Affiliate by the American Psychological Association, USA.

List of UG course(s) taught: HS 203 Psychology	
Total number of PhD student(s) guided	3

Dr. Neeraj Mishra

Assistant Professor Grade-I
nmishra@iiti.ac.in
PhD, Univ. of Bonn, Germany



Previous Employment details before joining IIT Indore:
Postdoc Researcher, Univ. of Amsterdam (from 1 April 2010 to 31 Dec. 2012)

Details of Research Area: Development Studies, Urban and Rural Water Governance; Tribal Development; Sociological Approach to Environment

Total number of Journal Articles published/under process	1
Total number of courses/conferences/workshops organized	1

List of UG course(s) taught: HS-302 Environmental Studies: Sociological Aspects, IHS-482: International development and Area studies, HS205: Sociology
List of PG course(s) taught: IHS-482 International development and Area studies, HS-616 Advanced Sociological Theories

Dr. Akshaya Kumar

Assistant Professor Grade-I
akshaya.kumar@iiti.ac.in
PhD, University of Glasgow



Previous Employment details before joining IIT Indore:
Assistant Professor, School of Cultural and Creative Expressions, Ambedkar University (July, 2016- June, 2017)

Details of Research Area: Film, Media & Cultural Studies, with a particular interest in Indian Cinemas

and Platform Economy

Details of Research Highlights: The year's research highlight has been my participation in two large collaborative exercises. First, the Global Screen Worlds workshop towards a forthcoming book, edited by Professor Lindiwe Dovey (SOAS, Univ of London) and Professor Kate E Taylor-Jones (Univ of Sheffield). Second, for an article to be published in a Journal Special Issue (Media, Culture & Society), edited by Professor Marc Steinberg (Concordia University) and Dr. Rahul Mukherjee (Univ of Pennsylvania). Both the publications are under review at the moment.

Details of Projects active: "The Musical Mediation: Competitive and Collaborative Lives of Popular Music in North India", sponsored by an ICSSR-IMPRESS grant of INR 15 Lakhs

Total number of Books published/under process: Provincializing Bollywood: Bhojpuri Cinema in the Comparative Media Crucible, Oxford University Press, 2021.

Total number of Journal Articles published/under process: 3 Journal Articles, 4 Book Chapters

Any other Achievements, Awards and Recognitions: Delivered Invited Public Lectures at University of California, Los Angeles (UCLA); University of Oregon; Jawaharlal Nehru University (JNU); OP Jindal Global University and IIT Tirupati.

List of UG course(s) taught: HS 205, Sociology; HS 410, Media Studies

List of PG course(s) taught: HS 601, Research Methods in Social Sciences; HS 616, Advanced Sociological Theory; HS 610, Media Studies

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Shomik Dasgupta

Assistant Professor Grade-I

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PhD, King's College London, University of London



Details of Research Area: My work pertains to the study of South Asian History. My research interests include the intellectual history of the 18th and 19th century, 18th-century social history and the everyday histories of work in early-colonial government and administration. At a broader level, I am interested in Indian responses to colonialism from the point of view of the role of language in the creation of social fact: intentionalities, collectivities, and institutions.

Details of Research Highlights: In November 2021, my book titled Ethics, Distance and Accountability: The Political Thought and Intellectual Context of Rammohun Roy, c.1772-1833 was published by Oxford University Press India. In December 2021 and June 2022, I published two articles on the moral philosophy of B.R. Ambedkar with my PhD. student.

Total number of Books published/under process 1

Total number of Journal Articles published/under process 3

Any other Achievements, Awards and Recognitions: Best Teacher Award for the large class, IIT Indore, September 2021

List of UG course(s) taught: HS 214: History of Indian Culture & Civilisation, HS 311: Life & Thought of Gandhi

List of PG course(s) taught: HS 612/412: Contemporary Indian Thought, HS 608: Nations & Nationalism

Total number of PhD student(s) guided

2

Dr. Ananya Ghoshal

Assistant Professor Grade-I

agghoshal@iiti.ac.in

PhD,

I received my Ph.D. on the influence of music in literature from The English and Foreign Languages University, Hyderabad (July 2016). My pre-doctoral research was conducted in the Department of English at the University of California, Berkeley on a Fulbright-Nehru Fellowship.



Previous Employment details before joining IIT Indore: Before joining IIT Indore (on January 12, 2018), I was an Academic Fellow and Program Officer at the Forum on Contemporary Theory and Balvant Parekh Centre for General Semantics and Other Human Sciences in Baroda (March 31, 2015 - January 11, 2018). I have two years and seven months of work experience before joining IITI as an Assistant Professor.

Details of Research Area: My primary areas of interest include Word and Music Studies, Narratives of the Anthropocene, Performance Studies, Disability and Literature, Digital Humanities, and Visual Culture. The members of my research group at IIT Indore, 'Literature, Performance, and Other Arts,' study the distinct yet deeply interconnected ways of understanding literature and the other arts. Working at the intersections of texts and the social, historical, and cultural contexts that produced them, the group examines the meaning, form, and style of literary and artistic works while exploring their imaginative and creative potential on a performance stage/screen.

Details of Research Highlights: I represented South Asia and IIT Indore at "Exploring Humanities Pedagogies: Conversations, Commonalities, and Connections," - an online conference organized by Humanities Pedagogy Collective and the Center for Teaching and Learning at Stanford University on July 15, 2021. Along with Stanford University, more than 25 major universities, schools, and colleges participated, including Princeton University, National Humanities Alliance (NHA, Washington), University of California Berkeley, Uppsala University, and the University of Toronto. I participated in the opening and closing plenaries and delivered a talk based on my research, "Integrating Eco Cinema and the Digital Anthropocene in Education: New Temporalities and Creative Responses." My objective was to meaningfully translate human-environmental issues into active interventions for change through education, outreach, classroom participation, and organization in a post-pandemic world. The research paper is currently under editorial consideration for a themed volume.

Details of Projects active: 'Only Connect! Empowering schools for the disabled to engage in a participatory and inclusive online public sphere', a US Alumni Micro Grants Project (April 2022-present)

Total number of Books published/under process: Two books are under process- one on teaching pedagogy and another on Indian performative traditions.

Total number of Journal Articles published/under process: One book chapter has been accepted for publication (University of California Press), and three journal articles are presently under review.

Total number of courses/conferences/workshops organized: I have designed the syllabus and offered a short-term training course on: "Reskilling for Professional Development: Communication, Leadership and Problem-Solving" for graduates, postgraduates, and professionals to be held this month (July 2022). This course is being organized as part of IIT Indore's Skill Development Training Program (SDTP) initiative.

Any other Achievements, Awards and Recognitions: My project, 'Only Connect! Empowering schools for the disabled to engage in a participatory and inclusive online public sphere' has been selected as a part of the prestigious US Alumni Micro Grants Competition, 2022. Spearheaded by the US Embassy, the Alumni Micro Grants aims to promote positive change in Indian society through micro - and

macro-scale social impact projects in the fields of environment, education, women and youth empowerment, and entrepreneurship. During this year, I was invited to speak at many national and international forums, including a Humanities Pedagogy Conference held at Stanford University (July 2011) and a Fulbright Mentoring Workshop organized by the United States-India Educational Foundation (USIEF) in Indore (April 2022). Under the aegis of IIT Indore's Ek Bharat Shreshtha Bharat "Vigyan par Charcha" initiative, I have delivered an outreach talk on Indian Science Fiction. I have been selected (national level) as a mentor for the second edition of the Indian Knowledge System (IKS) internships.

List of PG course(s) taught: HS 641: English Communication Skills (a compulsory course for the postgraduate students of IIT Indore). As coordinator and sole instructor, I taught the course during Autumn 2021 (135 students) and Spring 2022 (42 students).

Total number of PhD student(s) guided: Three SRF students are currently working under my supervision.

Dr. Ashok Kumar Mocherla

Assistant Professor Grade-I
ashokmocherla@iiti.ac.in
PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:
Assistant Professor, School of Humanities and Social Sciences at the Indian Institute of Technology Mandi since 2012 to 2018.

Present academic association(s) with other Institution(s): Visiting Scholar at Harvard University, USA

Details of Research Area: Sociology of Religion, caste, and structures of inequalities; Sociology of faith healing and public health; Sociology of education, gender and minorities

Details of Projects active:

1. Minorities on Campus - AHRC GCRF Research Project in collaboration with University of Coventy, UK;
2. INSA funded project on 'Gender and Medicine in Colonial Andhra'.

Total number of Books published/under process:

1. Democratization of Indian Christianity: Perspectives of Hegemony, Accessibility and Resistance. London: Routledge (Forthcoming).
2. Minorities on Campus: Narratives of Inclusion, Dissent and Discrimination. New Delhi: Oxford University Press. (Edited volume)(Under review process)

Total number of Journal Articles published/under process

4

List of UG course(s) taught: HS 205 – Sociology, HS 482 - International Development and Area Studies

List of PG course(s) taught: HS 680 - Sociology of Religion, HS 616 - Advanced Sociological Theories

Dr. Kalandi Charan Pradhan

Assistant Professor Grade-II
kcpradhan@iiti.ac.in
PhD, Indian Institute of Technology Bombay



Previous Employment details before joining IIT Indore:

I was working as a research associate in the Department of Humanities and Social Sciences, IIT Bombay for the period August 2020 to June 2020.

Details of Research Area: Presently, I am working on research papers that encompass various development issues such as Livelihood Vulnerability to Climate Change and Labour Migration; Relative Deprivation and Labour Migration; Contract Farming and its Dynamic Impact on farmers ill/welfare; Remittances and Economic Growth; Role of Digital Payment in Financial Inclusion for Indian states; Technology Adaptation in Agriculture, Role of FDI in Agriculture for Indian case, Human Capital and Livelihood Strategies. I am also delving in exploring the tragic impacts/ consequences of the very recent Covid 19 Pandemic on various dimensions such as; rural economy, employment opportunities, and migration among others. My current ongoing tasks involve collaborating with faculties and researchers from various eminent Indian institutes such as IIT Bombay, NIT Rourkela, Institute of Rural Management Anand (IRMA), Maulana Azad National Urdu University (MANUU), Banaras Hindu University (BHU), National Institute of Agricultural Economic and Policy Research (ICAR-NIAP), etc.

Details of Research Highlights: Presently, I am working on research papers that encompass various development issues such as Livelihood Vulnerability to Climate Change and Labour Migration; Relative Deprivation and Labour Migration; Contract Farming and its Dynamic Impact on farmers ill/welfare; Remittances and Economic Growth; Role of Digital Payment in Financial Inclusion for Indian states; Technology Adaptation in Agriculture, Role of FDI in Agriculture for Indian case, Human Capital and Livelihood Strategies. I am also delving in exploring the tragic impacts/ consequences of the very recent Covid 19 Pandemic on various dimensions such as; rural economy, employment opportunities, and migration among others. My current ongoing tasks involve collaborating with faculties and researchers from various eminent Indian institutes such as IIT Bombay, NIT Rourkela, Institute of Rural Management Anand (IRMA), Maulana Azad National Urdu University (MANUU), Banaras Hindu University (BHU), National Institute of Agricultural Economic and Policy Research (ICAR-NIAP), etc.

Details of Projects active: Working as a Co-PI for a ICSSR project entitled, "Covid 19, Reverse Migration and Employment Potential: A Regional and Sectoral Level Analysis for Odisha", (File no: 02/13593/OBC/ 2021-22/ ICSSR/RP/MG), approved budget. Rs. 800,000.00. (with PI: Dr. Priyabrata Sahoo, Assistant Professor of Economics, BHU)

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 3

List of UG course(s) taught: Fundamentals of Economics (HS 108)

List of PG course(s) taught: Development Economics (IHS 422/ 622) , and Econometrics (HS 624)

Total number of PhD student(s) guided 3

Dr. Mohanasundari Thangavel

Assistant Professor Grade-I

mohana@iiti.ac.in

PhD, Tamil Nadu Agricultural University



Previous Employment details before joining IIT Indore: Before joining IIT,

I was working as the CEO of Karur Velaan Farmer Producer Company in Tamil Nadu. In addition, I had worked on international projects such as AVRDC-World Vegetable Centre and IWMI-TATA Tank Irrigation Projects. Worked as an Assistant Professor at PGP College of Agriculture Science, Tamil Nadu where I taught various undergraduate courses in the Department of Agricultural Economics.

Present academic association(s) with other Institution(s): Affiliated with CRDT

Details of Research Area: completed her Ph.D. in Agricultural Economics with a Specialization in Natural Resource and Environmental Economics from Tamil Nadu Agricultural University, Coimbatore. My research interests include Agricultural Economics, Resource Economics: Energy, Water and Agroforestry, Environmental Economics, Climate Change Adaption and Impact Studies, Consumption Pattern, Farmer Producer Organizations

Details of Research Highlights: Completed a project on "Assessing the Performance of Farmer Producer Organizations in Tamil Nadu Funded by Reserve Bank of India under RBI Scholarship scheme for Faculty Members in Academic Institutions 2021.

Details of Projects active: Estimating Economic Losses and Damages of NTFPs Caused by Forest Fire in Hoshangabad Forest Division, Madhya Pradesh, India' Funded by the South Asian Network for Development and Environmental Economics (SANDEE), an initiative of the International Center for Integrated Mountain Development (ICIMOD)

Total number of Journal Articles published/under process 5

Total number of courses/conferences/workshops organized 2

Any other Achievements, Awards and Recognitions: Won RBI Scholarship for Faculty Members in Academic Institutions

List of UG course(s) taught:

- HS 108 Fundamentals of Economics
- HS 622/422 Development Economics

List of PG course(s) taught: HS 626 Natural Resource and Environmental Economics

Total number of PG dissertation(s) guided 2

Total number of PhD student(s) guided 2

Dr. Thapasya J.

Assistant Professor Grade-II
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PhD, Indian Institute of Technology Madras



Previous Employment details before joining IIT Indore:

Guest Faculty at the Department of Linguistics, Central University of Kerala- 10 months

Post Doctoral Fellow at the Department of Humanities and Social Sciences, IIT Madras- 6 months

Details of Research Area: My area of research is cognitive sociolinguistics and sociocultural aspects of language, especially in the context of language variations. Cognitive sociolinguistics is an emerging field in linguistics that seeks to account for linguistic variation in social contexts with a cognitive explanatory framework. My ongoing research explores the variations in Indian English and develops an Indian English(es) digital database.

Details of Research Highlights: Awarded YFRSG by IIT Indore

Details of Projects active: The project titled Language Variation and Cognition: A Study on Indian Englishes under the YFRSG Scheme of IIT Indore started in May 2022.

Dr. Kedarmal Verma

Assistant Professor Grade-II
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PhD, IIT Guwahati



Previous Employment details before joining IIT Indore:

Before Joining IIT Indore, I was Assistant Professor and Course Coordinator in the Department of Psychology and Behavioral Sciences, Mody University of Science and Technology Lakshmanagarh, Sikar, Rajasthan for 9 months [From February 2021 to October 2021].

Details of Research Area: My broad research area is "Cognitive Psychology," "Experimental Psychology," and "Sleep and Cognition." Primarily I am interested in human memory mechanism within which I am more interested in reconstruction of memories. Also, my research lab investigating various cognitive processes using a variety of experimental approaches in which the brain represents information and knowledge about external stimuli.

Details of Research Highlights: During July 2021 – June 2022, I have done research that, how does false memories influenced by different learning styles (field dependent, field independent). Along with these ideas, I also investigated the effect of sleep experimental conditions (sleep and sleep deprivation) in the formation of false memories induced by category associates with different factors including retrieval mode, retrieval intervals, etc. 1. Kedarmal Verma, & Naveen Kashyap (2022). Role of Sleep in the Formation of False Memory Using Category Associates. *Sleep and Vigilance*. 6 (1), 213-212. DOI: 10.1007/S41782-022-00201-8 ; 2. Pallavi Ojha, Kedarmal Verma, & Naveen Kashyap (2021). Does Learning Styles Influence False Memory Generation? *Psychological Thought*. 14 (2), 363-377.

Details of Projects active: Under the YFRSG (Young Faculty Research Seed Grant) Sponsored by IIT Indore, I am investigating the difference between true and false memories using evidences from behavioural and electrophysiological approaches.

Total number of Journal Articles published/under process: Total 6 research articles from 2016 to 2022. From July 2021 – June 2022 total research articles published are "2."

Dr. Aratrika Das

Assistant Professor Grade-I
aratrika@iiti.ac.in
PhD, University of Delhi



Previous Employment details before joining IIT Indore:

5 years Assistant Professor at University of Delhi;
2 years Visiting Faculty at Shiv Nadar University, Delhi

Details of Research Area: Nineteenth Century British Gothic; Medical Humanities; Writing Pedagogy

Details of Research Highlights: My present work at IIT Indore attempts to make sense of 19th-20th century oral narratives and medicine from Bengal, India. With 'Young Faculty Research Seed Grant 2022' I hope to create one of the pioneering archival work in Indian medical humanities.

Details of Projects active: My present work at IIT Indore attempts to make sense of 19th-20th century oral narratives and medicine from Bengal, India. With 'Young Faculty Research Seed Grant 2022' I

hope to create one of the pioneering archival work in Indian medical humanities.

Total number of Books published/under process 3

Total number of Journal Articles published/under process 2

Total number of courses/conferences/workshops organized 4

Any other Achievements, Awards and Recognitions: Jury Member for Sahitya Akademi Award 2022 for English

List of UG course(s) taught:

UG: Contemporary Short Fiction HS 443 (Exchange Programme with Thailand)

UG: English Language and Communication HS 159

List of PG course(s) taught: 02 Online Research Training Students

Total number of PhD student(s) guided 2

Gurjit Singh

Designation Ambassador

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Previous Employment details before joining IIT Indore:

Indian Foreign Service 1980-2017

Present academic association(s) with other Institution(s): Lectures at Indian Council of World Affairs, IDSA, Shiv Nadar U, Naval War College, National Defence College

Details of Research Area: International relations, trade and investments. SDGs, Africa, Indo-Pacific, ASEAN, Europe

Details of Research Highlights:

Published 5 books .Most recent is The Harambee Factor: India Africa Eco and Dev coop ICWA 2022

Publish on average 8 articles a month over 2021-22. TV commentator. All are on website

www.gurjitsingh.com

Details of Projects active: Commissioned to write two books. Projects under discussion

Total number of Books published/under process: 5+2 under discussion

Total number of Journal Articles published/under process: Difficult to enumerate. About 20 over last three years in journals.

Total number of courses/conferences/workshops organized: I am mainly a participant and less of an organiser About 2 or 3 a week.

Any other Achievements, Awards and Recognitions: Sought after speaker; leading commentator on Africa Germany and ASEAN

Dr. Sanchita Verma

Visiting Assistant Professor
sanchitaverma@iiti.ac.in
PhD, IIT DELHI



Previous Employment details before joining IIT Indore:
National Institute of Educational Planning and Administration (NIEPA) , New Delhi (01.11.2017-31.03.2020)

Details of Research Area: My current research interest is to work further on my Ph.D. topic- 'The Discourse of Silence in the Multilingual and Multicultural Classrooms' and develop a robust typology and spectrum of silence in Indian classrooms. I am planning to further my data collection work to understand the underlying dynamicity of silence as a discourse marker in the Indian classrooms in the next 2-3 years. My ambitious long term research plan is to create a repository of diverse classroom interactions between different interlocutors like student(s)-student(s), student(s)-teacher(s), student(s)-peer groups, parents-student(s)-teacher(s) in different languages and thereby creating a large corpus of open-source primary data for facilitating further research. It's a well-known fact that a meticulous collection of data in schools require immense time and patience. More often than not, only a minuscule part of the huge corpus of the collected data is used and the rest of it is rendered useless or becomes irrelevant with time. This is the point where an intervention is required, therefore I am planning to build a platform where these data can be contributed and a corpus can be built. The idea is to have an open-source platform where anyone can contribute their unused data or use them for further research. Thus, a huge corpus of ethnological primary source data can be created which can be used as secondary source data by the young researchers.

Details of Research Highlights: I have prepared a preliminary project proposal on my current research area and have shared it with different stakeholders for their comment and feedback before starting for the pilot work. List of Invited Lectures from July 2021 to June 2022- 'Writing a term Paper: Untangling the threads' on 26th of March 2022. (IIT Roorkee) AND 'Introduction to MAXQDA: Decomplicating the labyrinthine Qualitative Data' on 27th of April 2022. (NIEPA, New Delhi).

Total number of Journal Articles published/under process: 02 Communicated, response awaited

Total number of courses/conferences/workshops organized: Organized a talk on 'Why During Constitution Framing was Education Deleted from Fundamental Rights' with Prof. Nalini Juneja (NIEPA) on 1st of October 2021 as part of the SHSS seminar series.

List of UG course(s) taught:

HS159- English Language and Communication (Coordinator and sole Instructor) (UG) (184 students)

PHS101- Preparatory English Language-I (Coordinator) (UG) (120 students)

HS159- English Language and Communication (Coordinator) (UG) (164 students)

List of PG course(s) taught: HS656 Applied Linguistics (PG) Offered

Centers

Center of Innovation, Incubation, Entrepreneurship, & Industry Relations (CIIEIR)

Center of Innovation, Incubation, Entrepreneurship, and Industry Relations (CIIEIR) administers a business incubator which provides 'Start to scale' support for technology-based entrepreneurship and facilitates the conversion of research activity into entrepreneurial ventures.

Vision and Mission

Our main vision is to transform knowledge and innovation into the creation of successful entrepreneurs for society and contribute to nation building. Our mission is to develop innovation and entrepreneurship skills among students, staffs, and faculties as well as to mentor incubated startups and assist them to progress from one stage of business development to other.

CIIEIR team reports to Prof. Anand Parey, Dean, Alumni and Corporate Relations. Dr. Swaminathan R. (Head CIIEIR), CIIEIR Committee, Dr. Kumar Gaurav (Assistant Registrar) and Ms. Kavita Enamdar (Junior Assistant), are managing incubation and entrepreneurship activities with the joint efforts of students of Entrepreneurship Cell (E-Cell).

Incubation Support and Facilities

1. Fully furnished air-conditioned offices, Board Room, Conference Room.
2. Wi-Fi and IT support.
3. Mentorship for innovation, research, testing, prototyping.
4. Timely guidance for seeking financial aids through various funding schemes.

Collaborations

The following MoUs/collaborations with various organizations are currently active

- Design Expertise to Manufacturing MSME Sector (Design scheme of Ministry of MSME).
- Support for Entrepreneurial and Managerial Development of MSMEs through Incubators (Incubation scheme of Ministry of MSME).
- FICCI FLO to promote Women Entrepreneurship.
- Digital Futuristic Angels Network Private Limited.
- NNM Next Gen (CoKaCo) Angels Investor.
- Inocorn Angels Network Private Limited.
- Bank of Baroda for providing Loans and funds to our incubatees.
- Procured YNOS technology platform for innovation, entrepreneurship, intellectual property, industry linkages and start-ups.

Major Achievements:

- 24 start-ups have been Incubated at CIIEIR, IIT Indore.
- 2 ideas were approved by Ministry of MSME for funding of Rs. 30 Lakhs under MSME Innovative Scheme.
- Mr. Kunal Choudhary, Alumni & Incubatee, has been appointed as Core Group member for Drone regulations by the DGCA.
- Spark Green Ventures, a startup incubated at CIIEIR developing Krishak Kalyan App, secured a grant of Rs. 10 Lakhs through CIIEIR from Yukti Portal - Innovation cell, Ministry of Education.
- Spark Green Ventures also secured a funding support of Rs. 15 Lakhs from ICAR, Ministry of Agriculture.
- Scas Technology, a startup developing Semi-autonomous AI-enabled UAVs, was shortlisted as one of the 30 finalist teams in Swadeshi Microprocessor Challenge 2020 organized by MeitY, Govt. of India amongst 6169 Teams (with over 10,000 participants).
- Padmapriya Technovat Pvt. Ltd., a startup incubated at CIIEIR, is selected for receiving funding support from NewGen IEDC Center at IIIT Allahabad.

- IITI Advanced Center for Entrepreneurship (ACE) Foundation, which is a separate Section 8 company focusing on startups and incubation related activities, was successfully incorporated.

Webinars/Major events organized or participated

- Mr. Austin Davis from NID Ahmedabad delivered a webinar on Not just a Toy! Not just a Game! A story or Design + Play.
- Professor D.L. Sunder from IIM Indore delivered a webinar on Mitigating Risk in Entrepreneurship.
- Ms. Sinjini Sengupta delivered a webinar on Personal Branding for Entrepreneurs.
- Dr. Amit Kumar Dwivedi and Dr. Satya Ranjan Acharya from EDII delivered a webinar on “Entrepreneurship Opportunities and Ecosystem During and Post COVID Pandemic”.
- Professor N. S. Dinesh from IISc Bangalore delivered a webinar on Challenges in developing automated puppetry under the theme Rebranding of Indian Toys.
- One-day Workshop on Creating Lab-to-Land Ecosystem: Challenges & Opportunities was jointly organized by IIT Indore and RRCAT Indore
- Under Skill Development Training Program, two training programs were conducted on “Entrepreneurship Development” and “Leadership Practices for Entrepreneurs”
- Marketing Fiesta event was conducted by E-cell
- i5 Summit, which is the largest entrepreneurship summit of central India, was jointly organized by E-cell, IIT Indore and IIM Indore.
- “The IITM Nexus” book launch event was organized by E-Cell and this book covers the story of 16 IITM Entrepreneur alumni, which is coauthored by Ms. Shibani Shashin, UG student of IIT Indore.
- MP Start up 2022 Conclave to launch MP Startup policy was organized by Government of Madhya Pradesh at Indore. IIT Indore participated in the conclave and the startups associated with IIT Indore showcased their innovative products to more than 2000 students who attended the event.



MP Start up 2022

Startups associated with CIIEIR IIT Indore

1. InterviewPrep
2. MiBi Services Private Limited
3. Scas Technology
4. FoodKamp
5. Otomotor Technologies Private Limited
6. Smart I Fab Technology Private Limited
7. Freebird Aerospace India Private Limited
8. THINK -VLSI
9. Spark Green Ventures & Innovation
10. Funds4SMEs
11. Xohani Solutions Private Limited
12. DOCMEP
13. Padmapriya Technovat Private Limited
14. Cymbient Technologies Private Limited
15. Advanced Lightning System
16. DASA (Driver Anti Sleep Alarm)
17. Diagnostic kit for early detection of malignant transformation of oral submucous brosis
18. Pancham Infinity Private Limited
19. Bhusatyam Technologies Private Limited
20. Efficacy Nex Private Limited
21. Anantshree Vehicles Private Limited
22. Bull Bikes
23. Hyginiee
24. Happiness Candytoys Private Limited

List of Entrepreneurs of IIT Indore

1. Sandeep Bommireddi, Co-founder of Adonmo.
2. Jwalant Shah, Co-Founder of SWAAHA Resource Management Pvt. Ltd.
3. Ankit Goyal, Director of Unacademy Brands-GATE
4. Rohit Nitin Joshi, Co-Founder at Kreatryx
5. Gaurav Parchani, Co-Founder at Turtle Shell Technologies Private Limited.
6. Rohit Agarwal, Co-Founder of SWAAHA Resource Management Pvt. Ltd.
7. Ravi Shankar, Founder & Director of Esmartify Private Limited & Boosters Edutech
8. Shikhar Bansal, Founder & Director at Boosters Edutech.
9. Anmol Arora, CEO- DocVita
10. Vikram Patel, Co-Founder & CTO at DocVita.
11. Venkata Sai Vamsi Penupothu, Co-Founder @ Runo.
12. Tushar Rokade, Co-Founder at Artpillz.
13. Ravi Shankar, Owner of Juicilicious CAFÉ

Sophisticated Instrumentation Center (SIC)

Sophisticated instrumentation centre (SIC) was established in September 2011 with institute funding to expedite the research program at IIT Indore. The mission of SIC is to support and foster the research initiatives, at the Indian Institute of Technology Indore, by providing state-of-the-art instrumentation and ancillary equipment and expertise in its use and application. The SIC at IIT Indore houses a plethora of sophisticated analytical facilities. These instruments are housed under one roof to provide the highest quality of data analysis to stakeholders of both research and teaching. With our excellent facilities and high level of expertise, we are offering our analytical services across the Institute's departments and external commercial organizations. SIC is constantly working on its mission to support and foster the research enterprise in all branches of science and engineering at the Indian Institute of Technology Indore.



SIC has now emerged as one of the first such centers in central India, providing extensive support to users across the country. It is working towards being a self-sustained center by generating funds from services provided to external users from academia and industry.

A significant advantage of SIC is its accessibility to the students within the institute; a very healthy ratio of students to the time availability on instruments is maintained by allotment of specific slots to the users.

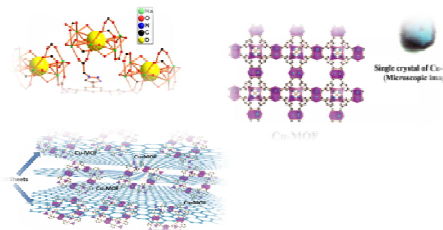
The SIC instruments strengthen the following research areas: Fundamental Research in Inorganic Chemistry, Organic Chemistry, Organometallic Chemistry, Various aspects of Material Science, Bioscience and Engineering, including work on biosensors, Metallurgy Engineering and Materials Science, Electrical Engineering, Mechanical Engineering, and Condensed Matter Physics.

Instrumentation facilities with SIC

Current Testing Stretches of SIC include state-of-the-art instruments under various categories such as:

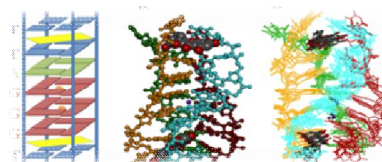
X-RAY Diffractometers

- Single Crystal XRD (SCXRD)
- Powder XRD (PXRD)
- X-ray Absorption Fine Structure (XAFS)
- Energy Dispersive X-Ray Spectroscopy (EDS/EDX)
- Wavelength Dispersive Spectroscopy (WDS/WDX)

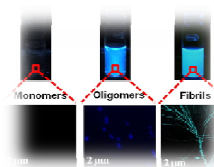


Spectrometers

- NMR 400 MHz
- Fourier Transform Infrared Spectrometer (FT-IR)
- Time Correlated Single Photon Counting (TCSPC)
- Circular Dichromism (CD)

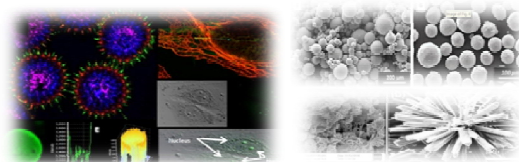


- Photo-Luminescence (PL)
- UV-Visible Spectrometer
- UV-VIS-NIR Spectrometer
- Spectrofluorometer
- Polarimeter



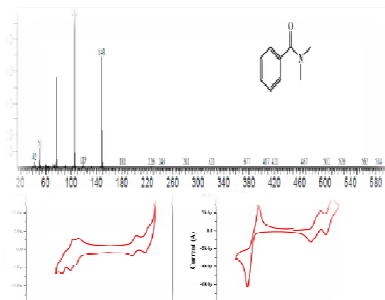
MICROSCOPY

- Field-Emission Scanning Electron Microscopy (FE-SEM)
- Atomic Force Microscopy (AFM)
- Single Molecule Microscopy (TIRFM)
- Confocal Microscopy (CLSM)



CHROMATOGRAPHY

- Liquid Chromatography Mass Spectrometry (LC-MS)
- High Performance Liquid Chromatography (HPLC) (Reversed Phase)
- High Performance Liquid Chromatography (HPLC) (Chiral)
- Gas Chromatography – Mass Spectrometer (GC-MS)

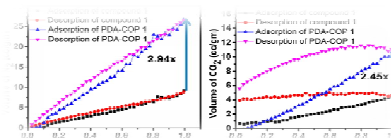


ELECTRO-ANALYTICAL

- Cyclic Voltammetry (CV)
- Spectroelectro Chemical Cell (SEC)

THERMAL ANALYSIS

- Thermogravimetric Analyzer (TGA)
- Differential Scanning Calorimetry (DSC)

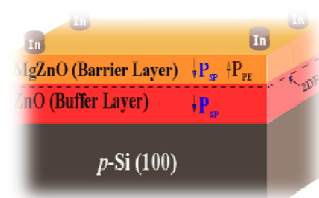


ANALYZER

- CHNS - O Analyzer
- Surface Area Analyzer (BET)
- Rheometer

Sample preparation

- Lyophilizer
- Langmuir-Blodgett Film Deposition System
- Dual Ion Beam Sputtering Deposition System (DIBSD)

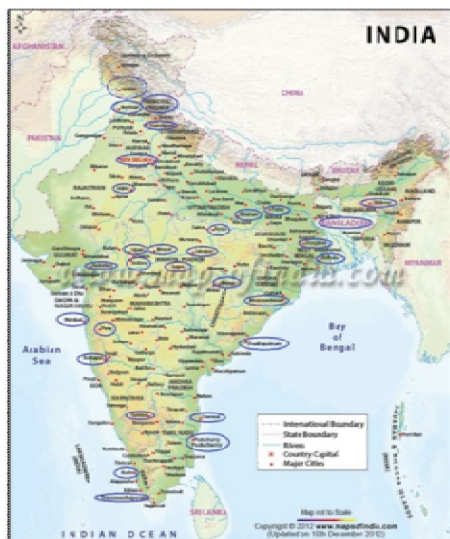


Visit us @ <http://people.iiti.ac.in/~sic/>
Our Collaborators since its inception

Academic Institutions:

- BARC, Mumbai
- Banarus Hindu University
- Delhi University
- Guru Ramak Dev University, Punjab
- IIT Bombay, IIT Madras, IIT Mandi
- IIT Patna, IIT Gandhinagar
- GATEM University, Visakhapatnam
- Jamna University
- MS University Baroda
- NIPER Mohali
- NIT Rourkela and others
- Institute of Himalayan Bioscience Technology (IHBT)
- Pune University
- Panshet Biomedical Research Institute (PBRI), Bhopal
- Devi Ahilya Vishwavidyalaya, Indore
- Sri Govindran Seksarial Institute of Technology and Science
- NNU Jaipur
- RP University Jabalpur
- Central University Sagar
- Guru Chaudhary Vishwavidyalaya Central University, Bilaspur
- SBM University
- University College Tirunelveli
- Tumkur University, Karnataka
- Thapar University, Patiala
- Pimpri University
- TIFR Hyderabad
- Avadash Pratap Singh University, Rewa
- University of Hyderabad, Telangana
- Pandhary University, Pudukkottai
- Vikram University, Ujjain
- Mewar University, Rajsthan
- Raja Ramanna Centre for Advanced Technology (RRCAT), Indore

32 Academia



Industries:

- Gharda Chemicals
- Glenmark Pharmaceuticals
- Piramal Healthcare Mumbai
- Jubilant Biosys Ltd.
- Lugin Pharmaceutical Pvt. Ltd.
- MisonWines Pvt. Ltd.
- Chokli Labs Ltd.
- UV Resin Pvt. Ltd.
- Impresso Chemicals Pvt. Ltd.
- Spatochem Pvt. Ltd.
- Synbiotech/Pharma Lab, Indore
- Medixim Pharma, Indore
- Kincare, Pune
- Bellance Industries Ltd.
- BasicoPharm International Ltd, Dewas
- SRF Ltd., Indore
- M.P. Dye Chem., Indore
- Supac Enterprises, Indore
- Sprin Testing Solutions, Mumbai
- Rajveer Chemicals, Indore
- Shree Pavetron Ltd, Indore
- Siva, Mumbai
- PMC Alkaram
- ATUL Ltd., Valsad

24 Industries

International Academic Institutes:

- Universität Stuttgart, Germany
- Jahangirnagar University, Bangladesh
- Osaka University, Bangladesh

3 int'l users

Role of SIC in Institute Research Activity

With providing support to more than **2000 publications** SIC has been catering the research needs of institutional faculties & research scholars.



23 patents are registered using SIC data



SIC so far supported various **projects** funded by external agencies total valued above **INR 48.0 crores**.

Highlights: Samples analyzed on key instruments in 2021-22

Instrument	No. of samples
LC-MS	10155
NMR	11828
CSLM	1834
GC-MS	1772
BET	350

PEOPLE @ SIC



PROF. SUMAN MUKHOPADHAYAY

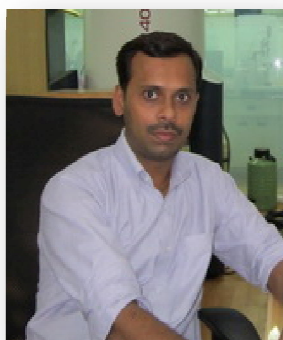
Head Sophisticated Instrumentation Centre (SIC)

Email: head-sic@iiti.ac.in, Tel: +731 660 3328



**ER. SAROJ KUMAR
MALLICK**

Executive Engg (I)



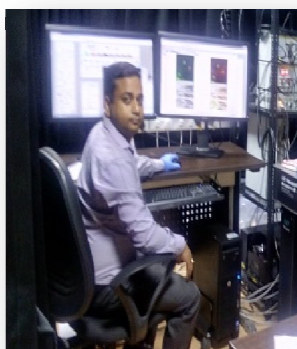
KINNY PANDEY

Instruments: NMR, AFM, SCXRD,
PXRD, FESEM/EDAX/WDX, FT-IF
TCSPC, UV- Vis, Polarimeter,
Fluorimeter, LB-Film, CD



**GHANASHYAM
BHAVSAR**

Instrument: LC-MS, GC-
MS, HPLC, CHNS-O, TG/
DSC



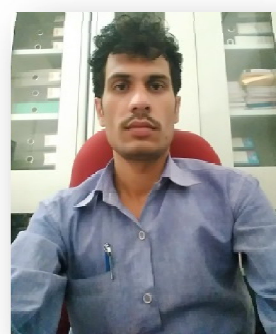
DR. RAVINDER

Instrument CSLM



MRS. MITALI DAVE

Instrument BET & FESEM



MR. RANJEET

RAGHUVANSHI

(SIC Office management)

Revenue Generation

Inhouse Users

Department	2011	2013	2014	2015	2016	2017	2018	2019	2020	2021
Chemistry	3000	6911	6787	7805	13480	16240	15740	18640	16040	11580
Physics	1900	13000	5543	5364	9440	1094	4886	6135	4382	1300
BSBE	NA	4850	2810	3534	1951	2109	2621	2106	1208	9712
ME	650	5400	4471	4927	8859	1455	1331	1353	8145	4420
EE	500	1225	4450	6265	4147	5759	2105	3658	1898	1246
MEMS	NA	NA	NA	NA	NA	1740	3067	4586	3584	4059
CE	NA	NA	NA	NA	NA	NA	7300	8640	1800	560
TOTAL	3700	14530	17030	19620	35370	21640	20700	23620	19070	13150
<i>Service rendered of Rs. 1.86 Crore</i>										

Users from Industries & Academia

Financial Year	Amount (Lakhs)
2011 -2012	4.32
2012 -2013	10.46
2013- 2014	11.31
2014-2015	5.73
2015-2016	6.3
2016-2017	10.98
2017-2018	10.85
2018-2019	11.3
2019 -2020	13.24
2020 -2021	8.14
2021-2022	3.4
TOTAL	96.03

Center for Advanced Electronics (CAE)

Center for Advanced Electronics (CAE) has been established in June 2020 at IIT Indore as an interdisciplinary research Center that aims to develop materials, devices & technologies for multidisciplinary applications including computing, communication, medicine, and energy. The Center is headed by Prof. Mukesh Kumar with a prominent team of other faculty members from across the institute and administrative staff.

The CAE is honoured to have on board some of the renowned academicians, working in electronics and its allied areas, under one technical roof to enable high-quality applied research for the benefit of mankind. We focus on building a platform for applied research, device development, and skill & manpower development in the nationally important area of electronics.

ACADEMIC PROGRAMS

Center for Advanced Electronics (CAE) has launched a Ph.D. program exclusively in Advanced Electronics, which comprises research areas such as Nanoelectronics/Microelectronics, Integrated photonics/Optoelectronics, Advanced Materials and Devices, Advanced Porous Organic Electronics, Computational Electronics and Materials, and 2D Electronic Materials.

The Center is also in process of proposing a PG program, MS Research in Advanced Electronics with a vision to cater to national semiconductor needs, specifically to generate manpower and to technically contribute towards India Semiconductor Mission.

NUMBER OF FACULTY MEMBERS: 10	
PROFESSOR	07
ASSOCIATE PROFESSOR	01
ASSISTANT PROFESSOR GRADE	02
PhD	02
NO. OF POST DOC FELLOWS	01 (expected to join)

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
BTech	NA	-
MTech	NA	-
MSc	NA	-
PhD	02	-

R&D ACTIVITIES

The Center is focused on applied research in multidisciplinary fields. There are some state-of-the-art facilities for research and development in advanced semiconductor technology and material science.

Research laboratories under CAE

1. Optoelectronic Nanodevice Research Lab
2. Non-equilibrium Advanced Engineering Lab
3. Hybrid Nanodevice Research Group (HNRG)
Nanoscale Devices
4. VLSI Circuit & System Design Research and Development Lab
5. Supramolecular Chemical Nanoscience Group
6. Materials & Device Research Group
7. Signals & Software Group (Sasg)
8. Theoretical Condensed Matter Physics & Advanced Computational Materials Science Lab
9. Signal Processing Research Group
10. Nano and Energy Materials Laboratory
11. Optoelectronic and functional oxides lab

Research Outcomes

- a. Development of Optical modulator based on Si-ITO
- b. Technology Development for 2DEG based Photonic Devices
- c. Development of Biochemical sensor for detection of foodborne pathogens
- d. Portable real-time sensor system for soil and water quality monitoring for agriculture and environment
- e. NeuroSynaptic chips for biomedical image processing for crop early disease detection and homeland security

The Center has conducted and organized various short courses/webinars/FDPs covering various advanced technologies as a part of outreach activities. CAE has contributed notably with its high-quality research publications and patents and provided training to a good number of external UG students.

Notable activities in the department

In CAE we have signed a Non-disclosure agreement with Bharat Electronics Ltd. for joint research work in the area of Radar Technology and Photonics. We are pushing our outreach activities very strongly by conducting FDPs and other courses to benefit internal and external students and faculty members. We are proud to file and publish the following three patents with CAE affiliation:

1. A biochemical sensor with engineered nanophotonic structure, the process of preparation and use thereof.
Investors: Mukesh Kumar, Sulabh, L. Singh, S. Jain, S. Rajput, V. Kaushik, H. C. Jha
2. Ultrasensitive NO₂ sensor based on S and N doped carbon dot functionalized tungsten oxide.
Inventors: Shaibal Mukherjee, Apurba K Das, Chandrabhan Patel, Biswajit Mandal, Rohit Gajanan Jadhav
3. Silicon Compatible yttria-based memristive crossbar array and a method of fabrication thereof.
Inventors: Shaibal Mukherjee, Sanjay Kumar, Mangal Das, Kumari Jyoti

Outreach Activities

1. AICTE QIP-sponsored Faculty Development Program (FDP) on “AI and IoT in Nanoelectronics, Agriculture and Communication in the Unravelling of Aatmanirbhar Bharat”, March 7-12, 2022, Organized by Prof. Shaibal Mukherjee.
2. ATAL FDP on “Artificial Intelligence and Internet of Things in Nanotechnology, Sensors, and Communication in the making of Aatmanirbhar Bharat”, December 6-10, 2021, organized by Prof. Shaibal Mukherjee.
3. 5th IEEE Electron Devices Technology and Manufacturing (EDTM) Conference, China, April 8-11, 2021, organized in the capacity of Education/Short-Course Committee Member by Prof. Shaibal Mukherjee
4. 2021 IEEE Day through IEEE Nanotechnology Council (NTC) Student Chapter (Organized by Prof. Shaibal Mukherjee)
5. Distinguished Lecture by Prof. Yogesh S. Chauhan through IEEE MP Section Electron Devices Society (EDS) Chapter (Organized by Prof. Shaibal Mukherjee)

PROJECTS

PROJECT	SPONSORED	CONSULTANCY
NEW PROJECTS	01	-
ONGOING PROJECTS	01	-
COMPLETED	-	-

PUBLICATIONS

DETAILS	BOOKS PUBLISHED	CHAPTERS IN BOOKS	PAPERS IN CONFERENCE	PAPERS IN JOURNALS
Total		02		52

Computer and Information Technology Center (CITC)

This center provides various services to the members of the IIT community. Our center services include

Network Connectivity: CITC provides 2 Gbps network connectivity to the entire campus. All the buildings, departments, hostels, learning resource center, administrative department, lecture hall complex, health center and faculty residence are connected with 10 Gbps 144 core fiber backbone. IIT Indore is also a part of EDUROAM network.

High Performance Computing (HPC): CITC is hosting servers, storage, and a high-performance computing facility. The data center developed at the CITC building is equipped with redundant UPS and 320 KV DG facility. There are 5 InfiniBand Linux clusters hosted in CITC, a total of more than 1600 CPU cores and 100 TB of storage.

Essential IT services: CITC is running all the essential services in-house like maintenance and development of the Institute Website, internal/external DNS servers, web-based automation, centralized authentication using LDAP/Radius, DHCP-based dynamic IP allocation services for each building, campus Wi-Fi, storage, campus telephone services, online automation services, virtual resource allotment, internal cloud storage for a different level of users, personal homepage hosting services and open-VPN for each user. CITC has a ticket-based online service request system; the user can file online service requests and complaints and subsequently track their status.

Technical Support: CITC provides support for the installation and maintenance of IT equipment and application software in all the departments, LHC, hostels, residential areas, and administrative sections. We also provide technical support for the establishment and maintenance of smart classes, conference rooms and board rooms.

Our Team Members

1. Dr. Neminath Hubballi, Head CITC
2. Yogendra Singh, Deputy System Manager
3. Jitendra Gupta, Technical Superintend
4. Dhiraj Vijayavargia, Junior Technical Superintend
5. Vijay Kumar Rai, System Engineer
6. Pralhad Singh Panwar, System Analyst
7. Shailesh Kaushal, Superintend
8. Subha Jana, Superintend



Pic: CITC Building



Pic: Server Room

Center for Electric Vehicle and Intelligent Transport Systems (CEVITS)

CEVITS was started in April 2021. It has three key objectives: i) Developing skills and talent in the field of electric vehicle technology; ii) Creating a world class ecosystem for Research and Innovation in Transformative Mobility; and iii) To produce entrepreneurs in the field of EV technologies. CEVITS started academic programs related to Electric Mobility with the objective of providing comprehensive knowledge of electric mobility to students and professionals across the country. It has started MTech programs in Electric Vehicle Technology (EVT) since the academic year 2021-22. The courses in these programs cover all the essential aspects of EV. Further, MTech+PhD dual degree program has also been kickstarted. The center will focus on three types of research and development projects: a) Research, Development & Engineering (R,D&E) leading to production capability (needs Industry Support); b) Application oriented Research, Design and Development (R,D&D) having production potential; and c) Basic R&D.

ACADEMIC PROGRAMS

CEVITS started academic programs related to Electric Mobility with the objective of providing comprehensive knowledge of electric mobility to students and professionals across the country. CEVITS has started an MTech program in Electric Vehicle Technology (EVT) from the academic year 2021-22. A MTech+ PhD dual degree program has also been started in the center.

NUMBER OF FACULTY MEMBERS ASSOCIATED WITH THE CENTER: 25

PROGRAMS	STUDENT INTAKE	DEGREE AWARDED
MTech in ELECTRIC VEHICLE TECHNOLOGY	5 -10	MTECH

R&D ACTIVITIES

Current Research Areas in CEVITS are:

Energy Storage, Power Electronics and Drives, Vehicular Communication Systems, Vehicle Dynamics, Traffic Engineering, Advanced Materials for EV

NOTABLE ACTIVITIES IN THE DEPARTMENT

- 1) DST SERB Karyashala on 'Vehicular Communications for Next Generation Intelligent Transportation Systems' Conducted between 12-19 July 2022.
- 2) Courses planned for Professionals in VECV Pithampur: Thermal Management, Networking and Security Aspects of Connected Vehicles, Battery Cell and Battery Chemistry, Radar and Lidar Technology

Name of Faculty or Fellow	Area of contribution to CEVITS
Dr. Gourinath Banda (CSE)	(a) Autonomous Vehicular (AV) Systems: Fundamentals, I2, LoA, V & V (b) RAES for AV and Electric Vehicles (EV); (c) SSE plus FS in AV; (d) AV/EV Testing: (Non-mechanical) Scenarios and Languages (e) E/S-based industry qualification of AV/Ev; (f) Trust frameworks for AV in frames (S/NS)
Dr. Gourab Sil (CE)	Traffic Engineering, Traffic Flow Theory
Dr. Amod C. Umarikar (EE)	Power Electronics for Electric Vehicles
Dr. Abhinoy Kumar Singh (EE) (DST-INSPIRE Faculty)	Speed Control of Electric Vehicles
Prof. Anand Parey (ME)	Noise and Vibrations of Electric Vehicles
Dr. Devendra Deshmukh (ME)	Hybrid Vehicles, Dynamics and Simulation of Electric Vehicles
Dr. I.A. Palani (ME)	Autotronics System Design
Dr. S. Dhinakaran (ME)	Fuel Cells; CFD
Dr. S.I. Kundalwal (ME)	Vehicle Dynamics, Composite Materials for Electric Vehicle Applications
Dr. Harekrishna Yadav (ME)	Thermal Management of Electric Vehicle
K. Eswara Prasad (MEMS)	Materials and Crashworthiness for Electric Vehicles
Dr. J.P. Murugesan (MEMS)	Light-weight Materials for Electric Vehicles, Mechanical Testing, Design of Materials for Electric Vehicles
Dr. Rupesh S. Devan (MEMS)	Electrochemical Energy Storage for Electric Vehicles
Dr. Sunil Kumar (MEMS)	Electrochemical Energy Storage for Electric Vehicles
Dr. Sumanta Samal (MEMS)	Advanced Materials and Processes for Electric Vehicles
Dr. Somaditya Sen (Physics)	Energy related Materials and Futuristic Battery Materials
Dr. Pankaj R. Sagdeo (Physics)	Triboelectric and Nano-generator
Dr. P.K. Sanjram (HSS)	Human Factors in Automobiles

Center for Indian Scientific Knowledge Systems (CISKS)

The Center will focus on understanding, preserving, teaching and adapting the science and technology heritage of India. The center will focus exclusively on the scientific and technology heritage of India and its relevance to modern world. The focus is on hard sciences such as mathematics, astronomy, metallurgy, biology, agriculture, engineering and medicine among others. This center will not focus on the language studies or humanities or social science aspects of Indian knowledge systems.

In this resource constrained world, it is essential to balance the needs of development, sustainability and equitable development. For example, the nuanced view of Intellectual properties in Indian civilization could be a model for the world that balances the common societal good with the need for providing incentives to individuals for knowledge creation.

A few specific examples are provided as illustration

1. Understanding some of the techniques in metallurgy could help us in developing new materials with unique properties (metal mirrors, rust proof iron, high strength steel alloys).
2. Knowledge from agricultural treatises such as vrikshayurveda, Krishi Parashara, viswa vallabha, kashyapiya krushi sukta among others would help us in developing sustainable technologies for watershed management, sustainable agriculture and pest management.
3. Textile Industry could benefit from some of the techniques used for animalizing cotton and it could have commercial implications. For example, please see a patent for Animalizing Cotton that was filed by a US company that found uses for such techniques in textile dyeing (<https://patents.google.com/patent/US2947594A/en>)

Vision

The grand vision of the Center for Indian Scientific Knowledge Systems is to train generations of scholars who will show the 'Indian way' to the world.

Mission: This center will focus exclusively on the research and education of the Indian scientific heritage by studying original texts in all Indian languages and understanding their relevance to address current technological challenges to sustainable societal development. This center will focus on developing specific courses for various engineering disciplines in Sanskrit aimed at undergraduate/graduate students, research into texts and identifying their relevance in modern context and serve as a center for dissemination of knowledge and training the teachers and students in the engineering colleges of India.

Objectives

1. research classic scientific texts of India
2. educate students about the scientific texts of India
3. nurture scholarship in Indian scientific Knowledge Systems
4. preserve classic scientific texts of India
5. collaborate with other HEIs of India in the field of Indian Scientific Knowledge Systems

Focus Areas

1. Knowledge Paradigms;
2. Sustainable Agriculture;
3. Novel Materials;
4. Holistic Medicine;
5. Preserving Traditional knowledge

Ongoing Projects

S. No.	Project Title
1	Positional Astronomy with the Ancient Ved-shala in Ujjain
2	Traditional liquid fertilizer as a substituent to conventional inorganic chemical fertilizers and solid manure
3	Investigating 'Panchgavya' (cow dung, urine, milk, ghee, curd) for synthesizing graphene and carbon quantum dots
4	Identification and purification of Phytochemicals derived from Indian medicinal plants as Cancer therapeutics

Center of Futuristic Defence and Space Technology (CFDST)

This center is committed to provide a platform to the students and researchers for their contribution in “Nation-Building” through developing various forefront and futuristic technologies for Defense and Space Sectors towards “Aatmanirbhar Bharat”. The center is contributing in providing technological solutions to some of the research problems of the premier laboratories of defense institutions of country such as the Defense Research and Development Organization (DRDO). The center is also planning to offer specialized and dedicated M. Tech/MS (research) and Ph.D. programs in the broad area of defence and space in near future.

Dr. Indrasen Singh (Head CFDST), Ms. Kavita Enamdar, are heading Center of futuristic defense and space technology.

Members in CFDST:

- | | |
|----------------------------|-------------------------------|
| • Prof. Neelesh Kumar Jain | • Dr. Chandresh Kumar Maurya |
| • Prof. Rajneesh Misra | • Prof. Sanjay Kumar Singh |
| • Prof. Ram Bilas Pachori | • Dr. Saurabh Das |
| • Prof. Vimal Bhatia | • Prof. Shaibal Mukherjee |
| • Dr. Abhinoy Kumar Singh | • Dr. Vinod Kumar |
| • Prof. Abhirup Datta | • Dr. Vivek Kanhangad |
| • Dr. Abhishek Rajput | • Dr. Hem Chandra Jha |
| • Prof. Avinash Sonawane | • Dr. Jayaprakash Murugesan |
| • Dr. Ajay Kumar Kushwaha | • Dr. Mukesh Kumar |
| • Prof. I A Palani | • Prof. Nirmala Menon |
| • Dr. Lalit Borana | • Prof. Ruchi Sharma |
| • Dr. Mrigendra Dubey | • Dr. Somaditya Sen |
| • Prof. Neelima Satyam | • Dr. Sumanta Samal |
| • Dr. Pankaj Sagdeo | • Dr. Surya Prakash |
| • Dr. Puneet Gupta | • Dr. Swaminathan Ramabadrana |

Notable Achievements: Webinar Organized During COVID 19 Pandemic

- Expert Talk Dr. Ajay Kumar IAS Defence Secretary Ministry of Defence, Govt. of India webinar on Indian Defence Industry The Sunrise Sector.
- Expert Talk Maj Gen A K. Channan, PVSM, SM Additional Director General Army Design Bureau webinar on Technology as a disruptive influence on military warfare.
- Expert Talk Lt. Gen VG Khandare PVSM, AVSM, SM (Retd.) Military Adviser, National Security Council Secretariat webinar on Role of technology in national security and comprehensive national power.
- One day Workshop on Opportunities in Research and Developments in Armament Establishments (ARMREB-2020)" on 26th August 2020.

Center for Rural Development (CRDT)

The institute has established the Center for Rural Development (CRDT) as a nodal hub for researchers, volunteers, practitioners, educators, and others to collaborate and facilitate rural empowerment and progress solutions. CRDT shall strive to facilitate empowering and enabling the Rural population to improve their living conditions by development and application of appropriate and people-friendly technologies adopting participatory, sustainable, democratic, transparent and gender-sensitive processes. We aim to work into the following broad areas:

- Skill development and training programs for various trades
- Small scale entrepreneurship, sustainable cottage industries, development of value-added products
- Access and Opportunities for Gender justice
- Developing user-friendly interfaces for launching e-platforms for various rural activities that require outreach to larger communities
- Evaluation and policy recommendations for government welfare schemes.
- Harnessing Forest products and helping rural entrepreneurs to develop and sell their products with easy access to technology
- Identifying gaps between skills and outreach and facilitating in filling that gap
- Outreach to NGOs, Govt organizations, International bodies such as UNICEF to have a broad-based approach
- Right to Education (RTE) Act- Efficacy and Outcomes
- Technology Development in Food Processing, Food Packaging and Food Storage

Team Members

- | | |
|--|--|
| 1. Prof. Sandeep Chaudhary (Head) | 8. HOD, Mechanical Engineering |
| 2. Dr. Pritee Sharma | 9. Associate Dean-II, Infrastructure Development |
| 3. Dr. Neeraj Mishra | 10. Associate Dean-III, Infrastructure Development |
| 4. Dr. Neelima Satyam D. | 11. Dr. Shaibal Mukherjee |
| 5. Dr. Santosh Kumar Vishvakarma | |
| 6. HOD, Computer Science and Engineering | |
| 7. HOD, Electrical Engineering | |

R&D ACTIVITIES

Worked on developing appropriate technologies for the rural community.

Developed bilayer-coloured bricks and low-cost devices for the ready use by the rural community. The technology of bilayered coloured brick was transferred to a local industry for MP state.

NOTABLE ACTIVITIES

- Gandhi Jayanti Celebration on October 02, 2021
- Exhibition by local Artisans on October 02, 2021
- Visit to ICAR-Indian Institute of Soyabean Research for exploring collaboration
- Visit to Jhabua district and NGO working there.
- Organised a short-term course on Low Cost Housing for Rural Development.
- Organised a one day workshop on Local Waste Utilization in Rural Construction Activities.

IITI DRISHTI CPS FOUNDATION

(Section 8 company)

The IITI DRISHTI CPS Foundation (henceforth Foundation) is a Technology Innovation Hub (TIH) within the National Mission on Interdisciplinary Cyber Physical Systems (NM-ICPS), which is coordinated by the Department of Science and Technology, Government of India. The Foundation is a section 8 company of IIT Indore with the technological vertical of System Simulation, Modelling, and Visualization. The Foundation aims to become self-sufficient and generate revenue to maintain its operations beyond the initial five-year period through an emphasis on return on investment. In light of this, seven interconnected programmes (Affiliate, Technology Development, Fellowship, Intellectual Property Rights, Skill Development, Outreach and End-Users Connect, and Startup) have been implemented. The ethos of these programmes is based on product life cycle. The following are the most significant results of these programmes throughout the past year.

Programme Updates

Affiliate Programme	Total Affiliate Members: 95 (Undergraduate: 7, Postgraduate: 1, PhD: 14, Faculty members: 68, Industry Personnel: 5)
Fellowships Programme	Undergraduate Fellowships: 9 Postgraduate Fellowships: 1 PhD Fellowships: 2 Total Fellowships Amount Approved/Sanctioned: INR 39.25 Lakh
Technology Development Programme	Short Term Technology Development Scheme: Number of projects Approved: 9 Total grant approved: approx. INR 90 Lakh Technology Development for End User Problem Statements (TD-EUP) Scheme: Number of projects started with joint support of end users: 1 Number of projects under review by end users: 3 Lab to Market (L2M) Scheme: Number of proposals under review: 7 Increase in CPS Base: 36
Start-up Programme	Scheme announced: CPS-Seed Support, CPS-EIR Number of Projects Approved: 1 Tie-up with Indore Smart City Incubator for various startup and incubation schemes was done on June 1, 2022
Skill Development Programme	Course(s) announced: 01 Course Name: Skill enhancement for Building Blocks of Industry 4.0 Skill Center of IITI DRISHTI CPS Foundation was selected for an NVIDIA academic hardware grant.
Outreach and End Users Connect Programme	Total Problem Statements Received: 10 MoU with media partner was signed on November 23, 2021 First Outreach Bulletin viz. DRISHTIKON was released on April 26, 2022

Research Highlights:

IITI DRISHTI CPS Foundation collaborates with researchers from around the nation to develop technology for industrial and societal needs pertaining to digital twin development. Many of the projects funded by the Foundation are being executed in partnership with end users to ensure commercial viability and deployment. A brief overview of some of the Foundation's supported projects is provided below.

- A PhD fellowship awardee (Mr. Jaideep Singh) is working on the development of digital twin based real time shop-floor decision support system for Industry 4.0. Smart manufacturing laboratory setups, useful for testing and hands-on training of industrial personnel for technologies related to Industry 4.0, are developed at IIT Bombay (figure 1) and IIT Indore under this endeavour.

- In another project, a 3D holography based digital twin technology for an induction motor for predictive maintenance is being jointly developed by Dr. Anand Kumar S and his team at IIT Jammu, and Mr. Hari Krishna from CMTI, Bengaluru. Using plugins for animation software, engineers and scientists can interact with digital twin in real-time, and facilitate viewing of 3D representation of the mechanical system without VR/AR headgear friction. The holographic images will show the dynamically changing key parameters (figure 2) of the system as a pop in 3D image representation scheme. As a consequence, health monitoring can be mapped with appropriate AI algorithms.



Fig 1: Smart manufacturing setup

Digital twin development for smart cities is another important focus area of the Foundation. Various technology development projects have been initiated in this theme.

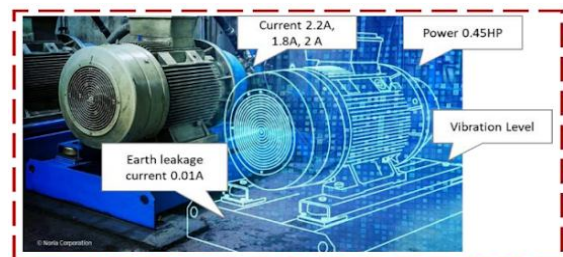


Fig 2: 3D Holography based digital twin

- Prof. Guru Prakash and his team at IIT Indore are developing approaches for road condition assessment and repair cost estimation using a cyber physical system.
- A group of researchers from IIT Indore (Dr. Siddharth S. Malu, Prof. Abhishek Srivastava and Prof. Abhirup Datta, Dr. Saurabh Das) along with Mr. Rohit Sharma from Tata Digital, are developing a Car Collision Avoidance and Recording Systems (CCARS) (Figure 3). Undergraduate students have been at the forefront of the initiatives of the Foundation.
- A team of UG students from IIT Indore (Mr. Kshitij M Bhat, Mr. Bhavya Dalal, Mr. Raghuvamsi Bokka, Mr Yeeshukant Singh, Mr. K Vishnu Vardhan, Mr. Jitendra Kumar Choudhary) are developing smart phone based autonomous driving module.

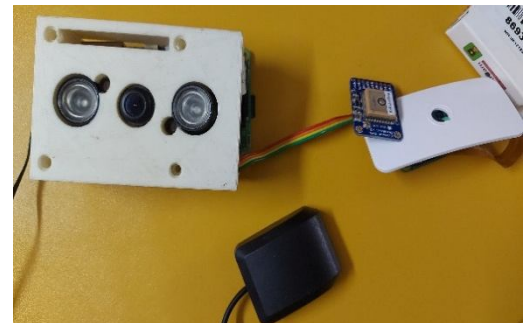


Fig 3: Prototype of proposed CCARS

- An undergraduate student (Mr. Sumer Thakur) at IIT Indore is developing a CPS for low energy HVAC solutions based on natural thermal cycles and adaptive thermal comfort for smart cities.
- A PhD fellowship awardee (Ms. Oshin Rawlley) at BITS Pilani is working on the development of a digital twin for AI empowered vision-based driver support system to resolve the complexity and uncertainty issues involved during perception and decision making in volatile environment of Internet of Vehicles (IoV).

In addition, various allied technologies are also being developed.

- Reconfigurable Intelligent Surfaces (RIS) structure which exhibits a wide tunability of reflection phase angle (-160° to $+160^\circ$) by varying the voltage across a varactor diode is being developed by Dr. Saptarshi Ghosh and his team.
- In another project supported by the Foundation, Prof. Abhishek Shrivastava from IIT Indore is developing means for provision of data security in restricted IoT environments through Machine Learning techniques.

Academic Affairs

Academic Affairs of the institute oversees with strategic plans to conduct all academic activities of the students enrolled under each academic program. This office is functioning according to a planned Academic Calendar prepared every semester to cover up the academic curriculum of BTech, MTech, MSc, MS (Research) and PhD including dual degree programs as per the guidelines, rules and policies framed and approved by the Institute Senate.

Main highlights of Academic Affairs

- Dedicated well equipped newly constructed Takshashila Lecture Hall Complex, Vikarmshila Seminar Hall (consisting of 4 Seminar halls) and Nalanda Auditorium with State-of-the-Art Audio Video facilities.
- In-spite of COVID pandemic, all the academic activities continued online starting from registration, online classes, examinations, convocation and issuance of all academic documents to the students without compromising the quality and standard of education.
- Classes were conducted using online platform of CANVAS and NKN facility. Online course material at a single place for all students through MyCloud, which is an in-house cloud platform.
- Successfully conducted Orientation Program and Convocation during the year 2019, 2020 and 2021.
- The institute have 21 students who have awarded with this prestigious Prime Minister Research Fellowship (PMRF) scholarship award.
- The institute Senate approved and offered 8 new academic programs under various Departments of PG and PhD programs during academic year from 2019-20 to 2021-22
- The JEE Advanced opening Rank for BTech admissions was 505 which improved from last year's rank of 585.
- The Preparatory program for Central Zone of IITs consisting of IIT Kanpur, IIT BHU and IIT Indore with 120 students was conducted in the AY 2021-22.
- With the moto of "Gyanam Sarvjan Hitaay" IIT Indore signed MOU with many national and international institutions to foster student exchange programs, research and developments, joint degree programs, quality improvement programs and workshops.
- IIT Indore with IIM Indore started a joint MS Degree Program in Data Science and Management
- With a moto to promote inter-disciplinary research work, the following academic centers have been set-up:
 - Center for Electric Vehicles Intelligent Transport Systems (CEVITS)
 - Center for Advanced Electronics ()
 - Center for Indian Scientific Knowledge Systems (CISKS)
 - Center of Innovation, Incubation, Entrepreneurship, and Industry Relations (CIIEIR)
 - Center of Futuristic Defense and Space Technology (CFDST)
 - Center for Rural Development and Technology (CRDT)

Student Enrolment in last 10 years

Academic Programs	Academic Year								
	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
PhD (Including Dual Degree)	93	120	83	116	89	189	106	159	139
MTech	24	30	31	34	62	41	78	74	60
MSc	20	24	47	56	69	80	102	116	100
MS (Research)	-	-	-	-	7	21	24	32	28
BTech	117	111	258	249	265	283	351	355	Admission awaited
Preparatory Course	-	-	-	-	-	4	-	10	
MS – Data Science Management (With IIM Indore)	-	-	-	-	-	-	-	39	
TOTAL	254	285	419	455	492	618	670	785	

Degree Awarded in last 10 years

Academic Programs	Awarding Year									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
PhD (Including Dual Degree)	-	6	23	24	38	67	83	58	109	61
MTech	-	-	5	22	25	26	29	57	41	65
MSc	-	-	14	20	22	41	55	58	83	88
MS (Research)	-	-	-	-	-	-	-	6	19	7
BTech	101	117	114	108	118	112	108	233	246	269
TOTAL	101	123	156	174	203	246	275	412	498	490

Indian Institute of Technology Indore

10th Convocation 2022: Recipients of Medals and Awards

THE PRESIDENT OF INDIA GOLD MEDAL






For the best academic performance among all the UG graduating students



Mr. Danyal Shahid Shamsi
BTech (EE)
Roll No. 180002012

INSTITUTE SILVER MEDAL

For the best academic performance among all the graduating UG students of particular epartment

				
Mr. Shah Miten Haresh BTech (CSE) Roll No. 180001049	Ms. Sumedha Srivastava BTech (EE) Roll No.180004032	Mr. Arnav Suhas Joshi BTech (ME) Roll No. 180005006	Mr. Arvind Mehta BTech (CE) Roll No. 180004005	Ms. Sonakshi Gupta BTech (MEMS) Roll No. 180005030

INSTITUTE SILVER MEDAL

For the best overall performance among all the graduating PG students (MTech. and MSc. Programs)




Mr. Hari Narayanan Vasavan
M.Tech (MEMS)
Roll No. 2002105009



Mr. Jibin V Sunny
MSc (Astronomy)
Roll No. 2003121004

BEST B.TECH. PROJECT (BTP) AWARD

Amongst all the graduating UG students

	
<p>Mr. Akshay Prakash BTech (CSE) Roll No. 180001004</p>	<p>Mr. Gaurav BTech (CSE) Roll No. 180001015</p>

Project Title: "Designing a robust mechanism for finding out accurate body measurements using 2D images taken on any mobile phone"

BUTI FOUNDATION GOLD MEDAL

For the best academic performance among all the graduating female PG students



Ms. Ankita Mondal
MSc (Chemistry)
Roll No. 2003131002

INSTITUTE SILVER MEDAL

For the best all round performance among all the graduating students



Mr. Mukala Jogesh Kumar
B.Tech (EE)
Roll No. 180002037

VPP MENON GOLD MEDAL

For the best PhD Dissertation work by a female student



Ms. Preeti Jha
PhD (Computer Science and Engineering)
Roll No. 1801201006

Thesis Title: "Design of Scalable Fuzzy Clustering Algorithms and its Application to Huge Genomics Data"

Number of Students Graduated for 10th Convocation

Sr.	Program	Department/Specialiation	Number of graduating students
A	B.Tech.	Computer Science and Engineering	68
		Electrical Engineering	70
		Mechanical Engineering	63
		Civil Engineering	35
		Metallurgy Engineering and Materials Science	33
Total A			269
B	M.Tech.	Communication and Signal Processing	13
		Material Science and Engineering	11
		Mechanical Systems Design	13
		Metallurgy Engineering	10
		Production and Industrial Engineering	8
		VLSI Design and Nanoelectronics	10
Total B			65
C	MS (Research)	Computer Science and Engineering	3
		Mechanical Engineering	4
Total C			7
D	M.Sc.	Astronomy	9
		Biotechnology	9
		Chemistry	24
		Mathematics	20
		Physics	26
Total D			88
E	Ph.D.	Astronomy, Astrophysics and Space Engineering	3
		Biosciences and Biomedical Engineering	13
		Civil Engineering	4
		Chemistry	10
		Computer Science and Engineering	3
		Electrical Engineering	7
		Humanities and Social Sciences	3
		Mathematics	1
		Mechanical Engineering	6
		Metallurgy Engineering and Materials Science	5
		Physics	6
Total E			61
Grand Total			490

**List of BTech students completed the prescribed requirements
for the award of degree in the 10th Convocation-2022**

S. No.	Roll No.	Student's Name	Department
1	160004040	SWAMI SHIRISHA VIKAS	Civil Engineering
2	170004022	PILLI LALVINNU	Civil Engineering
3	170004026	PRATIK RAJENDRA MIRGANE	Civil Engineering
4	180004001	ABHIJEET GUPTA	Civil Engineering
5	180004002	ADITYA SINGH YADAV	Civil Engineering
6	180004003	AMAN GOYAL	Civil Engineering
7	180004005	ARVIND MEHTA	Civil Engineering
8	180004007	CHAITALI KISHOR PATIL	Civil Engineering
9	180004009	DHEERAJ BANSAL	Civil Engineering
10	180004010	DURGESH BAJAJ	Civil Engineering
11	180004012	HARSH GUPTA	Civil Engineering
12	180004013	KRISHNA KUMAR	Civil Engineering
13	180004014	LAKSHYA SHARMA	Civil Engineering
14	180004015	MADHVENDRA CHOUHAN	Civil Engineering
15	180004016	MANJUNATH VADDAPALLY	Civil Engineering
16	180004017	NAKSHATRAM SHREYAS	Civil Engineering
17	180004018	PRANJAL SHARMA	Civil Engineering
18	180004019	PRINCE JAISWAL	Civil Engineering
19	180004020	RAGHAV RAMANI	Civil Engineering
20	180004021	RAMAN KUMAR MEENA	Civil Engineering
21	180004022	RANGESH SONI	Civil Engineering
22	180004023	RANI KUMARI	Civil Engineering
23	180004024	ROHIT MEENA	Civil Engineering
24	180004025	ROSHAN PATIDAR	Civil Engineering
25	180004026	SAUMYA BHARTI	Civil Engineering
26	180004027	SAURABH BALKISAN BHUREWAR	Civil Engineering
27	180004028	SHASHIKANT GUPTA	Civil Engineering
28	180004029	SHUBHAM KUMAR	Civil Engineering
29	180004030	SUBRATO SINGH	Civil Engineering

30	180004031	SUDEEP KUMAR PATRA	Civil Engineering
31	180004033	SUYASH JAIN	Civil Engineering
32	180004035	VEMULA SARAYU	Civil Engineering
33	180004036	VIKAS MEENA	Civil Engineering
34	180004037	YASH RAHUL ZINZADE	Civil Engineering
35	180004038	YASH RANJAN MISHRA	Civil Engineering
36	150001004	BELLAM KONDA ROHITH	Computer Science & Engineering
37	160001002	AKASH KUMAR AHIRWAR	Computer Science & Engineering
38	160001024	GUGULOTH PAVAN NAIK	Computer Science & Engineering
39	160001041	NEERUDI SAI VIKAS	Computer Science & Engineering
40	180001001	ADARSH BAGHEL	Computer Science & Engineering
41	180001002	ADITI	Computer Science & Engineering
42	180001003	ADITI CHAUHAN	Computer Science & Engineering
43	180001004	AKSHAY PRAKASH	Computer Science & Engineering
44	180001005	ANIKET SANGWAN	Computer Science & Engineering
45	180001006	ANISH AVINASH SHENDE	Computer Science & Engineering
46	180001007	ANMOL GOMRA	Computer Science & Engineering
47	180001008	ARYAN VERMA	Computer Science & Engineering
48	180001010	ASHUTOSH PATEL	Computer Science & Engineering
49	180001011	AYUSH AGRAWAL	Computer Science & Engineering
50	180001012	BHASKAR	Computer Science & Engineering
51	180001013	BHUKYA SNEHASHRIIE	Computer Science & Engineering
52	180001014	BOPPANI DURGA MAHESH	Computer Science & Engineering
53	180001015	GAURAV	Computer Science & Engineering
54	180001016	HANUPRIYA	Computer Science & Engineering
55	180001017	HARITH VASUDEVAN	Computer Science & Engineering
56	180001018	HARSH CHAURASIA	Computer Science & Engineering
57	180001019	HARSHIL BHAVSAR	Computer Science & Engineering
58	180001020	HEMANT THARAD	Computer Science & Engineering
59	180001021	JAGRUTHI PATIBANDLA	Computer Science & Engineering
60	180001022	JAY BANGAR	Computer Science & Engineering
61	180001023	JEMIN VAGADIA	Computer Science & Engineering
62	180001024	KANDULA CHANDRA KANTH	Computer Science & Engineering
63	180001025	KANISHK PATEL	Computer Science & Engineering

64	180001026	KOLLA KRISHNA TEJA	Computer Science & Engineering
65	180001027	KUMPATLA VIJAY BABU	Computer Science & Engineering
66	180001028	KUNAL KUMAR SAGAR	Computer Science & Engineering
67	180001029	MAMILLAPALLI SRIKRISHNA	Computer Science & Engineering
68	180001030	METTUKURU UDAYKUMAR REDDY	Computer Science & Engineering
69	180001031	NAMAN JAIN	Computer Science & Engineering
70	180001032	NAMANI SREEHARSH	Computer Science & Engineering
71	180001033	PIYUSH GAURAV	Computer Science & Engineering
72	180001034	PRADEEP PATIDAR	Computer Science & Engineering
73	180001035	PRAKHAR RAI	Computer Science & Engineering
74	180001036	PRANJAL JANARDHAN SOMKUWAR	Computer Science & Engineering
75	180001037	PRASHANT KUMAR RAJAK	Computer Science & Engineering
76	180001038	PRITESH DINESH PALOD	Computer Science & Engineering
77	180001039	PUCHAKAYALA JEEVAN REDDY	Computer Science & Engineering
78	180001040	PULIVARTHI KARTHIK CHAKRAVARTHI	Computer Science & Engineering
79	180001041	RAPOLU PULAKITHA	Computer Science & Engineering
80	180001042	ROHIT SHALIGRAM NIKAM	Computer Science & Engineering
81	180001043	ROOP RAJ BS	Computer Science & Engineering
82	180001044	RUCHIR MEHTA	Computer Science & Engineering
83	180001046	SAMARTH ANAND	Computer Science & Engineering
84	180001047	SARTHAK JAIN	Computer Science & Engineering
85	180001048	SAWARKAR SALONI RAVINDRA	Computer Science & Engineering
86	180001049	SHAH MITEN HARESH	Computer Science & Engineering
87	180001050	SHAIKH MOHD UBAID MOHD JAWED	Computer Science & Engineering
88	180001051	SHIVA SHUKLA	Computer Science & Engineering
89	180001052	SHRAVYA RAMASAHAYAM	Computer Science & Engineering
90	180001053	SHREYANSH JAIN	Computer Science & Engineering
91	180001054	SHUBHAM NIMESH	Computer Science & Engineering
92	180001055	SIMPLE MALIK	Computer Science & Engineering
93	180001056	SRIJAN	Computer Science & Engineering
94	180001057	SUNDESH GUPTA	Computer Science & Engineering
95	180001058	SURYAPOGU AKSHAY RAJ	Computer Science & Engineering

96	180001059	TARUN GUPTA	Computer Science & Engineering
97	180001060	TUMOJU SATHVIK	Computer Science & Engineering
98	180001061	VINESH KATEWA	Computer Science & Engineering
99	180001062	VISHAL PRALHAD THAKRE	Computer Science & Engineering
100	180001063	YANAMADALA SAI ARAVIND	Computer Science & Engineering
101	180001064	YASH VARDHAN GUTGUTIA	Computer Science & Engineering
102	180002027	KARTIK GARG	Computer Science & Engineering
103	180003044	RISHABH KUMAR YADAV	Computer Science & Engineering
104	160002012	D ROHITH KUMAR	Electrical Engineering
105	160002017	HARSH KUMAR MOROLIYA	Electrical Engineering
106	160002038	PAWAN MEENA	Electrical Engineering
107	170002016	HIMANSHU MEEL	Electrical Engineering
108	170002037	RITESH KUMAR	Electrical Engineering
109	180002001	AAHAN TYAGI	Electrical Engineering
110	180002002	ABHISHEK MEENA	Electrical Engineering
111	180002004	AKHIL ATRI	Electrical Engineering
112	180002005	ANAND AMRIT	Electrical Engineering
113	180002006	ASHEE KANUNGO	Electrical Engineering
114	180002007	BADUGU SHIVA KUMAR	Electrical Engineering
115	180002008	BOGA SHIVA PAVAN	Electrical Engineering
116	180002009	CHEGURI SAI SRIKAR REDDY	Electrical Engineering
117	180002010	CHINMAY GHARU	Electrical Engineering
118	180002011	CHINTA SHRAVYA	Electrical Engineering
119	180002012	DANYAL SHAHID SHAMSI	Electrical Engineering
120	180002013	DIBYANSHU PRANJAL	Electrical Engineering
121	180002014	DIGVIJAY SURESH NIKAM	Electrical Engineering
122	180002015	DIPESH KUMAR	Electrical Engineering
123	180002016	DIVYANSH	Electrical Engineering
124	180002017	ERRABELLI SIRI CHANDANA	Electrical Engineering
125	180002018	GOPI SATYA NISHANTH	Electrical Engineering
126	180002019	HANS RAJ	Electrical Engineering
127	180002020	HARSHITHA KOLUKULURU	Electrical Engineering
128	180002021	ISHIKA RAJESH BHOSALE	Electrical Engineering
129	180002022	JATIN OMPRAKASH JANGIR	Electrical Engineering

130	180002023	JETTI SAI DATTA	Electrical Engineering
131	180002024	KACHIREDDY SUDHEER REDDY	Electrical Engineering
132	180002025	KALPESH RAJESH WADEKAR	Electrical Engineering
133	180002026	KANCHI SAI ANVESH	Electrical Engineering
134	180002028	KHUSH BACHARA	Electrical Engineering
135	180002029	KRISHNA RAMESH BHANUSHALI	Electrical Engineering
136	180002031	KULDEEP NAGARWAL	Electrical Engineering
137	180002032	MAJETI CHAITANYANAND	Electrical Engineering
138	180002033	MANISH TIRKEY	Electrical Engineering
139	180002034	MEGHA MEENA	Electrical Engineering
140	180002035	MITHILA NANDKISHOR SONAR	Electrical Engineering
141	180002036	MOHIT MEHTA	Electrical Engineering
142	180002037	MUKALA JOGESH KUMAR	Electrical Engineering
143	180002038	MUSKAN PARDASANI	Electrical Engineering
144	180002039	MUTHOJU SAKETH	Electrical Engineering
145	180002040	NIKUNJ CHHABRA	Electrical Engineering
146	180002041	NISHIT VERMA	Electrical Engineering
147	180002042	NITISH KUMAR	Electrical Engineering
148	180002043	PRASHANT PAREEK	Electrical Engineering
149	180002044	PRIYAM BAJPAI	Electrical Engineering
150	180002045	RAHUL AGRAWAL	Electrical Engineering
151	180002046	RAHUL KUMAR	Electrical Engineering
152	180002047	RAHUL VILAS SAKHARKAR	Electrical Engineering
153	180002048	RIBHU DAS PURKAYASTHA	Electrical Engineering
154	180002049	RISHIKESH MUKATI	Electrical Engineering
155	180002050	RITIK GUPTA	Electrical Engineering
156	180002052	S MAURYA REDDY	Electrical Engineering
157	180002053	SAKSHI MANDLOI	Electrical Engineering
158	180002054	SATYAM RAJPUT	Electrical Engineering
159	180002055	SHIV KUMAR	Electrical Engineering
160	180002056	SHIVAM	Electrical Engineering
161	180002057	SMIT DHARMESH PATEL	Electrical Engineering
162	180002058	TALARI VAGDA SAMEERA	Electrical Engineering

163	180002059	THATHIREDDY SANDEEP REDDY	Electrical Engineering
164	180002060	UDAY KIRAN VANKDAVAT	Electrical Engineering
165	180002061	UTKARSH DHIRAJKUMAR CHUDIWAL	Electrical Engineering
166	180002062	VIJAY SINGH MEENA	Electrical Engineering
167	180002063	VIKASH KUMAR CHOUDHARY	Electrical Engineering
168	180002064	VISHU GARG	Electrical Engineering
169	180002065	YUVNISH MALHOTRA	Electrical Engineering
170	180003026	HIMANSHU MISHRA	Electrical Engineering
171	180003030	KUNIKA NARESH BIYANI	Electrical Engineering
172	180004032	SUMEDHA SRIVASTAVA	Electrical Engineering
173	180005032	V LOGASHREE	Electrical Engineering
174	150003024	PRAJWAL MAHAJAN	Mechanical Engineering
175	160003019	HEMANT DISODIA	Mechanical Engineering
176	170003012	BHUKYA SIVA CHANDRA SEKHAR NAIK	Mechanical Engineering
177	170003030	NAJRUL ISLAM	Mechanical Engineering
178	170003036	PRASHANT KUMAR	Mechanical Engineering
179	180003001	AASTHA LUTHRA	Mechanical Engineering
180	180003003	ADITI THAKUR	Mechanical Engineering
181	180003004	ADITYA JAGDISH BEROJYA	Mechanical Engineering
182	180003005	ADITYA SONI	Mechanical Engineering
183	180003006	AGRAWAL GOVIND BANWARILAL	Mechanical Engineering
184	180003007	ALLAM DHANUSH	Mechanical Engineering
185	180003008	ANANT SARAF	Mechanical Engineering
186	180003010	APARNA NARAYANAN	Mechanical Engineering
187	180003011	ARPIT SAHU	Mechanical Engineering
188	180003012	BIPIN KUMAR	Mechanical Engineering
189	180003014	CHEBROLU C S SAI HARSHA	Mechanical Engineering
190	180003015	CHOWDARAPU SAI KIRAN	Mechanical Engineering
191	180003016	DIL KUMAR PARMAR	Mechanical Engineering
192	180003017	DUDIPALA SATHVIKREDDY	Mechanical Engineering
193	180003018	DURBHA ADITYA	Mechanical Engineering
194	180003019	G R SAI PAVAN THEJ	Mechanical Engineering
195	180003020	GANJI NIHARIKA	Mechanical Engineering

196	180003021	GATTU NITHISHA	Mechanical Engineering
197	180003022	GAURAV NAGAR	Mechanical Engineering
198	180003023	GUDIVADA AKASH	Mechanical Engineering
199	180003024	HARSHIT ZINIWAL	Mechanical Engineering
200	180003025	HIMANSHU KULDEEP	Mechanical Engineering
201	180003027	JAGANDEEP SINGH	Mechanical Engineering
202	180003028	KRIZ DERYLL MOSES	Mechanical Engineering
203	180003029	KUNAL SINGH	Mechanical Engineering
204	180003031	MADHUSUDAN TRIPATHI	Mechanical Engineering
205	180003033	MOHIT SINGHAL	Mechanical Engineering
206	180003034	MOKASHI NACHIKET AJAY	Mechanical Engineering
207	180003035	MUKUL BAHEDIA	Mechanical Engineering
208	180003036	NEERAJ CHOUDHARY	Mechanical Engineering
209	180003037	NIKHIL ATTRI	Mechanical Engineering
210	180003038	NISHIT AGRAWAL	Mechanical Engineering
211	180003039	POTNURU NIRANJAN	Mechanical Engineering
212	180003040	PRACHI KURIL	Mechanical Engineering
213	180003041	PRATEEK KUMAR	Mechanical Engineering
214	180003042	PRINCE KUMAR MEENA	Mechanical Engineering
215	180003043	PRIYANSHU PRASHANT DHARKAR	Mechanical Engineering
216	180003045	ROHIT BALASAHEB BANKAR	Mechanical Engineering
217	180003047	SAKSHEE SHALIN PATIL	Mechanical Engineering
218	180003048	SAKSHI GANGADHAR LIMBORE	Mechanical Engineering
219	180003050	SAURAV RANJIT KAMBIL	Mechanical Engineering
220	180003051	SHIVAM SARLE	Mechanical Engineering
221	180003052	SHIVPRASAD PANDITRAO KADAM	Mechanical Engineering
222	180003053	SHRUTI SINGH	Mechanical Engineering
223	180003055	SOHAM SHIRISH KAPILESHWAR	Mechanical Engineering
224	180003056	SURYAWANSHI YASH SANJEEV	Mechanical Engineering
225	180003057	SUYOG SANJAY SHEMALE	Mechanical Engineering
226	180003058	TAHA MOHAMMED KHAN	Mechanical Engineering
227	180003059	THAMARA MANOHAR	Mechanical Engineering

228	180003060	VALLAPU REDDY SAKETH REDDY	Mechanical Engineering
229	180003061	VARINDERPAL SINGH	Mechanical Engineering
230	180003062	VENKATESH PATTABIRAMAN	Mechanical Engineering
231	180003063	VINEET OSTWAL	Mechanical Engineering
232	180003064	VISHNU KUMAR MEENA	Mechanical Engineering
233	180003066	YASH GHANSHAM SARDA	Mechanical Engineering
234	180003067	YOGESH	Mechanical Engineering
235	180005006	ARNAV SUHAS JOSHI	Mechanical Engineering
236	180005019	PRATHAMESH UMESH TAWADE	Mechanical Engineering
237	160005038	TEJAVATH VASU	Metallurgical Engineering and Materials Science
238	170005019	NANDI KANDI BHANU PRASAD	Metallurgical Engineering and Materials Science
239	170005022	PARMESHWAR	Metallurgical Engineering and Materials Science
240	170005025	RITESH KUMAR PRASAD	Metallurgical Engineering and Materials Science
241	170005038	VIPIN KUMAR	Metallurgical Engineering and Materials Science
242	180005001	AADISH GODHA	Metallurgical Engineering and Materials Science
243	180005003	ABHISHEK KASAUDHAN	Metallurgical Engineering and Materials Science
244	180005004	AMAN VAISHNAV	Metallurgical Engineering and Materials Science
245	180005005	ARCHIT OJHA	Metallurgical Engineering and Materials Science
246	180005007	ARVIND SINGH	Metallurgical Engineering and Materials Science
247	180005008	ARYAMAN SHARAN	Metallurgical Engineering and Materials Science
248	180005009	AVIJEET GUPTA	Metallurgical Engineering and Materials Science
249	180005010	DEVASHISH KAUSHIK	Metallurgical Engineering and Materials Science
250	180005011	GAURAV CHOUDHARY	Metallurgical Engineering and Materials Science
251	180005012	HARSH RAJIV	Metallurgical Engineering and Materials Science
252	180005013	KANTHARAJU B T	Metallurgical Engineering and Materials Science
253	180005015	MO.ISMAIL MO.SALIM MALEKJI	Metallurgical Engineering and Materials Science

254	180005017	MOHIT RAJ MUNOT	Metallurgical Engineering and Materials Science
255	180005018	PAARTH THADANI	Metallurgical Engineering and Materials Science
256	180005020	PRINCEE DARSHIT SANGHAVI	Metallurgical Engineering and Materials Science
257	180005021	PRIYANKA SATYENDRA UMRE	Metallurgical Engineering and Materials Science
258	180005022	PUSHPALATA PRIYADARSHI	Metallurgical Engineering and Materials Science
259	180005023	RASHTRA DAMAHE	Metallurgical Engineering and Materials Science
260	180005024	RHISAV RAJ	Metallurgical Engineering and Materials Science
261	180005025	SAKSHAM	Metallurgical Engineering and Materials Science
262	180005026	SANU PRAJAPATI	Metallurgical Engineering and Materials Science
263	180005027	SANYAM JAIN	Metallurgical Engineering and Materials Science
264	180005028	SHEETAL	Metallurgical Engineering and Materials Science
265	180005029	SHIVANSH SINGH	Metallurgical Engineering and Materials Science
266	180005030	SONAKSHI GUPTA	Metallurgical Engineering and Materials Science
267	180005033	VANJARI VENKAT HARSHITH	Metallurgical Engineering and Materials Science
268	180005034	VIJEET REEL	Metallurgical Engineering and Materials Science
269	180005036	YASH SHASHIKANT KOTHEKAR	Metallurgical Engineering and Materials Science

List of MTech students completed the prescribed requirements for the award of degree in the 10th Convocation-2022

S. NO.	Roll No	Name	Department	Specialization
1	2002102001	BHAGYASHREE GOUR	Electrical Engineering	Communication and Signal Processing
2	2002102002	GODUGU RAJESH	Electrical Engineering	Communication and Signal Processing
3	2002102003	JONNALAGADDA SHARANYA	Electrical Engineering	Communication and Signal Processing
4	2002102004	KAJAL YADAV	Electrical Engineering	Communication and Signal Processing
5	2002102006	MARRAPU ARAVIND	Electrical Engineering	Communication and Signal Processing
6	2002102007	MOHNISH NARAYAN	Electrical	Communication and Signal Processing

		BELANI	Engineering	
7	2002102009	RAHUL KRISHNA	Electrical Engineering	Communication and Signal Processing
8	2002102010	SANDESH SHARMA	Electrical Engineering	Communication and Signal Processing
9	2002102011	SARIKONDA HEMANTH CHANDRA	Electrical Engineering	Communication and Signal Processing
10	2002102012	SHUBHAM GUPTA	Electrical Engineering	Communication and Signal Processing
11	2002102013	SIDDHESH RAJENDRA GAWALI	Electrical Engineering	Communication and Signal Processing
12	2002102014	SUNILKUMAR SAMHAJI AINWAD	Electrical Engineering	Communication and Signal Processing
13	2002102015	UTKARSHA VERMA	Electrical Engineering	Communication and Signal Processing
14	2002102016	ARGHYA SINGHA ROY	Electrical Engineering	VLSI Design and Nanoelectronics
15	2002102017	C SANDEEP	Electrical Engineering	VLSI Design and Nanoelectronics
16	2002102018	DIGAMBER ANIL GAITONDE	Electrical Engineering	VLSI Design and Nanoelectronics
17	2002102019	HARSHIT VERMA	Electrical Engineering	VLSI Design and Nanoelectronics
18	2002102020	JARPLA SAI KIRAN	Electrical Engineering	VLSI Design and Nanoelectronics
19	2002102021	JOGI SRI NAGESWARA SATYA ADITYA	Electrical Engineering	VLSI Design and Nanoelectronics
20	2002102023	MOHIT KUMAR GAUTAM	Electrical Engineering	VLSI Design and Nanoelectronics
21	2002102024	MRADUL MAURYA	Electrical Engineering	VLSI Design and Nanoelectronics
22	2002102026	SARVISETTI SAI SUSHMA	Electrical Engineering	VLSI Design and Nanoelectronics
23	2002102029	VARUN BHATNAGAR	Electrical Engineering	VLSI Design and Nanoelectronics
24	2002103001	ABHINAV KATIYAR	Mechanical Engineering	Production and Industrial Engineering
25	2002103002	ANSHUMAN DADHICH	Mechanical Engineering	Production and Industrial Engineering
26	2002103003	ARPIT KUMAR SINGH	Mechanical Engineering	Production and Industrial Engineering
27	2002103008	PATEL VIPUL VIJAYKUMAR	Mechanical Engineering	Production and Industrial Engineering
28	2002103009	PRABHAT MISHRA	Mechanical Engineering	Production and Industrial Engineering
29	2002103011	SATYAPRAKASH MAHALIK	Mechanical Engineering	Production and Industrial Engineering
30	2002103012	SONALI BRAHMANE	Mechanical	Production and Industrial Engineering

			Engineering	
31	2002103013	ZUBER ALI SHAH	Mechanical Engineering	Production and Industrial Engineering
32	2002103016	ANOOP K R	Mechanical Engineering	Mechanical Systems Design
33	2002103017	ANSHUL CHAUDHARY	Mechanical Engineering	Mechanical Systems Design
34	2002103018	CHATRA RAMCHANDRA REDDY	Mechanical Engineering	Mechanical Systems Design
35	2002103019	ELI PRADEEP	Mechanical Engineering	Mechanical Systems Design
36	2002103020	GARDAS AKSHAY ANJAYYA	Mechanical Engineering	Mechanical Systems Design
37	2002103023	PANKAJ CHAURASIA	Mechanical Engineering	Mechanical Systems Design
38	2002103024	SATYARTH SONI	Mechanical Engineering	Mechanical Systems Design
39	2002103025	SHRISH TIWARI	Mechanical Engineering	Mechanical Systems Design
40	2002103027	BAGLE SUSHIL SUKALAL	Mechanical Engineering	Mechanical Systems Design
41	2002103028	DESAI UMESH DHANAJI	Mechanical Engineering	Mechanical Systems Design
42	2002103029	UTKARSH SAXENA	Mechanical Engineering	Mechanical Systems Design
43	2002103030	IGAVE SAYALI DINESH	Mechanical Engineering	Mechanical Systems Design
44	2002103032	GAIKWAD AKSHAY JAGANNATH	Mechanical Engineering	Mechanical Systems Design
45	2002105001	ABHINAV MAURYA	Metallurgy Engineering and Materials Science	Material Science and Engineering
46	2002105002	AKASH KANKANE	Metallurgy Engineering and Materials Science	Material Science and Engineering
47	2002105003	BHASKAR SINGH CHAUHAN	Metallurgy Engineering and Materials Science	Material Science and Engineering
48	2002105005	CHHAVI SHIVHARE	Metallurgy Engineering and Materials Science	Material Science and Engineering
49	2002105006	D YASHWANTH KUMAR REDDY	Metallurgy Engineering and Materials Science	Material Science and Engineering
50	2002105008	DIWAKAR SINGH	Metallurgy Engineering and Materials Science	Material Science and Engineering
51	2002105009	HARI NARAYANAN VASAVAN	Metallurgy Engineering and	Material Science and Engineering

			Materials Science	
52	2002105010	JHANTU DHAWRIA	Metallurgy Engineering and Materials Science	Material Science and Engineering
53	2002105011	NEHA SHAKYA	Metallurgy Engineering and Materials Science	Material Science and Engineering
54	2002105012	OMKAR MISHRI SINGH	Metallurgy Engineering and Materials Science	Material Science and Engineering
55	2002105013	PIYUSH MEENA	Metallurgy Engineering and Materials Science	Material Science and Engineering
56	2002105016	ABHISHEK KUMAR SAHU	Metallurgy Engineering and Materials Science	Metallurgy Engineering
57	2002105017	GADDAM SHIVA KUMAR	Metallurgy Engineering and Materials Science	Metallurgy Engineering
58	2002105018	JANI RAJ JAYESHKUMAR	Metallurgy Engineering and Materials Science	Metallurgy Engineering
59	2002105019	LEKHANA CHANDRAN	Metallurgy Engineering and Materials Science	Metallurgy Engineering
60	2002105020	NAVEEN L	Metallurgy Engineering and Materials Science	Metallurgy Engineering
61	2002105021	NISMATH V H	Metallurgy Engineering and Materials Science	Metallurgy Engineering
62	2002105022	SATYAM SINGH	Metallurgy Engineering and Materials Science	Metallurgy Engineering
63	2002105024	SHUBHAM GARG	Metallurgy Engineering and Materials Science	Metallurgy Engineering
64	2002105026	SUMAN DUTTA	Metallurgy Engineering and Materials Science	Metallurgy Engineering
65	2002105027	VENKATA SANDEEP KUMAR DEVADULA	Metallurgy Engineering and Materials Science	Metallurgy Engineering

List of MS (Research) students completed the prescribed requirements for the award of degree in the 2022-Convocation

S. NO.	Roll No	Name	Department	Specialization
1	2004101001	AFFEEZA MOHAMMED ALI	Computer Science & Engineering	MS (Research)
2	2004101004	MANEPALLI RATNA SRI	Computer Science & Engineering	MS (Research)
3	2004101008	RUPESH KUMAR	Computer Science & Engineering	MS (Research)
4	2004103002	BHUPENDRA	Mechanical Engineering	MS (Research)
5	2004103004	KAUSHIK PRINCE ATTAR	Mechanical Engineering	MS (Research)
6	2004103007	RAHUL SURYAWANSHI	Mechanical Engineering	MS (Research)
7	2004103008	RISHABH GUPTA	Mechanical Engineering	MS (Research)

List of MSc students completed the prescribed requirements for the award of degree in the 10th Convocation-2022

S. No.	Roll No	Name	Department	Specialization
1	2003121002	ANKIT MEENA	Astronomy, Astrophysics and Space Engineering	Astronomy
2	2003121003	GURSHARANJIT KAUR	Astronomy, Astrophysics and Space Engineering	Astronomy
3	2003121004	JIBIN V SUNNY	Astronomy, Astrophysics and Space Engineering	Astronomy
4	2003121005	KISHLAY SINGH	Astronomy, Astrophysics and Space Engineering	Astronomy
5	2003121006	KUNAL MANOHARRAO MOTGHARE	Astronomy, Astrophysics and Space Engineering	Astronomy
6	2003121007	MANISH KUMAR SINGH	Astronomy, Astrophysics and Space Engineering	Astronomy
7	2003121008	PAWAN TIWARI	Astronomy, Astrophysics and	Astronomy

			Space Engineering	
8	2003121010	SIRSHA NANDY	Astronomy, Astrophysics and Space Engineering	Astronomy
9	2003121011	SOHINI DUTTA	Astronomy, Astrophysics and Space Engineering	Astronomy
10	2003131001	ABHINAV PRASAD	Chemistry	Chemistry
11	2003131002	ANKITA MONDAL	Chemistry	Chemistry
12	2003131003	ANTIM RANI	Chemistry	Chemistry
13	2003131004	ASHWINI MISHRA	Chemistry	Chemistry
14	2003131006	BANTI	Chemistry	Chemistry
15	2003131007	DULEE CHAND SAINI	Chemistry	Chemistry
16	2003131008	GOPAL SINGH	Chemistry	Chemistry
17	2003131009	KESHAV SHARMA	Chemistry	Chemistry
18	2003131010	MANAN SOHANWAL	Chemistry	Chemistry
19	2003131011	MANOJ KUMAR JOSHI	Chemistry	Chemistry
20	2003131012	NEERAJ KUMAR PANDIT	Chemistry	Chemistry
21	2003131013	PANKAJ JANGIR	Chemistry	Chemistry
22	2003131014	PRATIKSHA RAMNIVAS DAD	Chemistry	Chemistry
23	2003131015	PRIYANSHU NAUTIYAL	Chemistry	Chemistry
24	2003131017	SAJAL HALDER	Chemistry	Chemistry
25	2003131018	SAROJ ALI	Chemistry	Chemistry
26	2003131019	SHALINI GUPTA	Chemistry	Chemistry
27	2003131020	SHARMA PUNIT BIJENDRA	Chemistry	Chemistry
28	2003131022	SHRUTI GHOSH	Chemistry	Chemistry
29	2003131024	SOUMYA SHRIVASTAVA	Chemistry	Chemistry
30	2003131025	SRESHTHA NAYEK	Chemistry	Chemistry
31	2003131026	SUDARSHAN MAJEE	Chemistry	Chemistry
32	2003131027	SUJITABEN DEVSINGBHAI GAMIT	Chemistry	Chemistry
33	2003131028	SUPRIYA SAHA	Chemistry	Chemistry
34	2003141001	ABDUL QUADIR	Mathematics	Mathematics
35	2003141002	ANJALI KUMARI	Mathematics	Mathematics
36	2003141003	ANUVRAT DINESHCHANDRA JAINDUNGARWAL	Mathematics	Mathematics
37	2003141004	AYUSHI TRIVEDI	Mathematics	Mathematics
38	2003141005	CIEKROVOTO THELUO	Mathematics	Mathematics
39	2003141006	DIKSHA RANI	Mathematics	Mathematics
40	2003141007	HARISINGH VERMA	Mathematics	Mathematics
41	2003141008	LAKSHMI NARAYAN	Mathematics	Mathematics

42	2003141009	LOVELY KUMARI	Mathematics	Mathematics
43	2003141010	MAUSUMI MEHER	Mathematics	Mathematics
44	2003141011	MEHAK	Mathematics	Mathematics
45	2003141012	NAVEEN KUMAR	Mathematics	Mathematics
46	2003141014	NILMONI KARAK	Mathematics	Mathematics
47	2003141015	PRINCI SINGLA	Mathematics	Mathematics
48	2003141016	PRITAM NASKAR	Mathematics	Mathematics
49	2003141017	RISHABH KUMAR	Mathematics	Mathematics
50	2003141018	SHOBHIT SRIVASTAVA	Mathematics	Mathematics
51	2003141019	TANISHA KUMARI	Mathematics	Mathematics
52	2003141020	TWINKLE MEENA	Mathematics	Mathematics
53	2003141021	VAISHALI NEGI	Mathematics	Mathematics
54	2003151001	ADHYAYAN BOORA	Physics	Physics
55	2003151002	AKASH DATTATRYA ATKAL	Physics	Physics
56	2003151003	AMARENDRA KUMAR VERMA	Physics	Physics
57	2003151004	ANKUR SHIVHARE	Physics	Physics
58	2003151005	ANKUSH SEMWAL	Physics	Physics
59	2003151006	ANURAG PRIYADARSHI	Physics	Physics
60	2003151007	BENDANGKOKBA R JAMIR	Physics	Physics
61	2003151008	BHAVIN ANILBHAJ JOGI	Physics	Physics
62	2003151009	BHUMIKA SAHU	Physics	Physics
63	2003151010	CHETAN SHAKTI PANDEY	Physics	Physics
64	2003151011	DEBANJAN KARAN	Physics	Physics
65	2003151012	DIKSHA SHARMA	Physics	Physics
66	2003151013	DIPTANSHU BASAK	Physics	Physics
67	2003151014	DIYA BANSAL	Physics	Physics
68	2003151015	GARVIT SHRIVASTAVA	Physics	Physics
69	2003151016	KAILASH DUKIYA	Physics	Physics
70	2003151017	KANIKA	Physics	Physics
71	2003151020	NIKHIL EASAW	Physics	Physics
72	2003151021	NILAY KUSHAWAHA	Physics	Physics
73	2003151022	POONAM SINGH	Physics	Physics
74	2003151023	PRASHANT SINGH LOHIYA	Physics	Physics
75	2003151024	RAMAVATAR DEVANDA	Physics	Physics
76	2003151026	SANDEEP SINGH	Physics	Physics
77	2003151027	SATYA BRATA SAHOO	Physics	Physics
78	2003151028	SAYAK DATTA	Physics	Physics

79	2003151030	UDIT KUMAR	Physics	Physics
80	2003171001	AKSHAY MEHTA	Biosciences and Biomedical Engineering	Biotechnology
81	2003171002	ANIRUDDHA DAN	Biosciences and Biomedical Engineering	Biotechnology
82	2003171004	HARSHITA	Biosciences and Biomedical Engineering	Biotechnology
83	2003171006	NAVEEN KUMAR	Biosciences and Biomedical Engineering	Biotechnology
84	2003171007	PIYUSH GOEL	Biosciences and Biomedical Engineering	Biotechnology
85	2003171009	SHALINI SHUKLA	Biosciences and Biomedical Engineering	Biotechnology
86	2003171010	SMRITY SONBHADRA	Biosciences and Biomedical Engineering	Biotechnology
87	2003171011	SUNANDA SAMANTA	Biosciences and Biomedical Engineering	Biotechnology
88	2003171013	VEDANT DUSHANT SALVE	Biosciences and Biomedical Engineering	Biotechnology

**List of PhD students completed the prescribed requirements for the
award of degree in the 10th Convocation-2022**

S.No.	Roll No.	Department	Name	PhD Thesis Title [Thesis supervisor(s)]
1	1701151006	Physics	Komal Mulchandani	Incorporating Hydrogen and Tungsten in Structurally Oriented Vo ₂ Thin Films, and The Resultant Effects on Physical Properties (Prof. Krushna Mavani)
2	1501151006	Physics	Anil Kumar	Synchronization and phase transition on multiplex networks (Prof. Sarika Jalan)
3	1501151007	Physics	Sujata	Exploring New Physics with Astrophysical Neutrinos at IceCube (Prof. Subhendu Rakshit)
4	1701151009	Physics	Rutuparna Rath	Event topology and multiplicity dependence of K*(892) ⁰ production in proton+proton collisions with ALICE at the LHC and probing TeV collisions through particle production and transport properties (Dr. Raghunath Sahoo)
5	1601102014	EE	Gunjan Rajput	Hardware Implementation of an Efficient Deep Neural Network for Biomedical Applications (Dr. S.K. Vishvakarma)
6	1601202001	EE	Swati Rajput	Integrated Photonic Devices based on Silicon-ITO Heterojunction for Optical Modulation and Detection (Dr. Mukesh Kumar)
7	1501271008	BSBE	Gaurav Pandey	Alginate based ratio-metric biosensors for environmental monitoring (Dr. Abhijeet Joshi)
8	1801204005	CE	Saket Dubey	Assessment of hazard associated with mass movements in the Himalayan region (Dr. Manish Kumar Goyal and Dr. Nitin Joshi (IIT Jammu))
9	1801201006	CSE	Preeti Jha	Design of Scalable Fuzzy Clustering Algorithms and its Application to Huge Genomics Data (Dr. Aruna Tiwari)
10	1701205008	MEMS	Chinthakuntla Mahendar	Molecular engineering to fabricate Li ⁺ -enriched multi-stimuli responsive conducting Metallogels (Dr. Mrigendra Dubey)
11	1701105005	MEMS	Digvijay Singh	Study on Microstructure and Properties of Surface Mechanical Attrition Treated Gradient Nanostructured Alloys (Dr. Santosh Hosmani)
12	1501171001	BSBE	Ritudhwaj Tiwari	Host factors associated with RNA virus pathogenesis: investigating the role of Tetherin in viral replication (Dr. Debassi Nayak)
13	1501231001	Chemistry	Soumya Kanti De	Reevaluating the membrane organization, phase behaviour, aggregation, and fusion of the model lipid membranes under different external influences (Dr. Anjan Chakraborty)
14	1701102003	EE	Vipin Gupta	FOURIER-BESSEL DOMAIN BASED NEW METHODS FOR AUTOMATED CLASSIFICATION OF EEG SIGNALS (Prof. Ram Bilas Pachori)
15	1801204003	CE	Vikas Poonia	Droughts: Occurrence, evolution and impacts over India (Dr. Manish Kumar Goyal)
16	1801121009	AASE	Sanmoy Bandyopadhyay	Fuzzy Based Approach For Detection Of Object In Space-Based Observation (Dr. Abhirup Datta and Dr. Saurabh Das)

17	1501131017	Chemistry	Abhiram Panigrahi	Fluorescent Organic Nanoaggregates with Aggregation Induced Emission for Sensing and Antibacterial Applications (Dr. Tridib Kumar Sarma)
18	1601102003	EE	Arijit Datta	Design of Low Complexity Detection Algorithms for Uplink Massive MIMO Systems (Prof. Vimal Bhatia)
19	1701205003	MEMS	Kulkarni Achyuth Rao	Enhancing the Mechanical and Tribological Properties of Aluminum (3XX.X) Alloys Through Alloying Addition and Laser-Assisted Surface Modification
20	1501271004	BSBE	Nirali Pandya	Therapeutic approach to target Cancer via interaction of small molecules with G-quadruplex structure (Dr. Amit Kumar)
21	1601231007	Chemistry	Mahendra Kumar Awasthi	Design and Development of Efficient Catalysts for Hydrogen Production (Dr. Sanjay Kumar Singh)
22	1501171006	BSBE	Akanksha Tiwari	Angular Disparity and Dimensionality in Mental Rotation: Characteristics of Saccadic Eye Movement and Electroencephalogram (Prof. Ram Bilas Pachori and Dr. Sanjaram PK)
23	1601151003	Physics	Ruhul Amin	Enhancement of multiferroic and piezoelectric properties in A and B site modified BaTiO ₃ (Dr. Somaditya Sen)
24	1701202001	EE	Nidhi Yadav	Investigations on Conducting Polymer Coating Strategy Towards Development of High Sensitivity Organic Phototransistors (Dr. Vipul Singh)
25	1701105007	MEMS	Sushmita Dwivedi	Perovskite Structured Lead-free Materials for Dielectric and Piezoelectric Applications (Dr. Sunil Kumar)
26	1601202004	EE	Sandesh Jain	RKHS BASED ADAPTIVE SIGNAL PROCESSING ALGORITHMS FOR VISIBLE LIGHT COMMUNICATION (Prof. Vimal Bhatia)
27	1701105004	MEMS	Tanvi Pareek	Investigations into the NASICON-based Materials for Solid Electrolyte Applications (Dr. Sunil Kumar)
28	1701203003	ME	S. Jayachandran	Development of NiTi Shape Memory Alloy bimorph towards energy harvesting and micro-mechatronics applications (Prof. I. A. Palani)
29	1701131007	Chemistry	Shyama Charan Mandal	Mechanistic Investigations of CO ₂ Hydrogenation Reactions Using Homogeneous/Heterogeneous Catalysts (Prof. Biswarup Pathak)
30	1801103004	ME	Anuj Kumar	Phase Change Material Based Heat Sink for Thermal Management of Electronic Devices (Dr. Santosh Kumar Sahu)
31	1801201004	CSE	Mahendra Rathor	Hardware (IP) Security of DSP and Multimedia Applications (Dr. Anirban Sengupta)
32	1701103007	ME	Vishal Kharka	Investigations on Effects of Lubrication Environments on Performance of Spur Gear Hobbing (Prof. Neelesh K. Jain and Prof. Kapil Gupta)
33	1701131005	Chemistry	Akhil S. Nair	Developing Computational Strategies for Platinum Nanocatalyst (Prof. Biswarup Pathak)
34	1601203001	ME	Pravin Kumar	Modelling of Dimensional Accuracy and Surface Roughness in Micro-Plasma Transferred Arc Additive Manufacturing of Metallic Materials (Prof. Neelesh Kumar Jain)

35	1701203004	ME	Hirmukhe Sidram Sayabanna	Finite Element and Experimental Studies on Deformation Behavior of Nanoglass and Metallic Glass Structures (Dr. Indrasen Singh)
36	1601271004	BSBE	Shweta Jakhmola	Unveiling the mysterious contribution of Epstein-Barr virus and severe acute respiratory syndrome coronavirus-2 in neurological manifestations (Dr. Hemchand Jha)
37	1601231002	Chemistry	Soumyadip Patra	Development of Efficient Molecular Catalysts for Hydrogen Production from C-1 Based Liquid Organic Hydrogen Carriers (Dr. Sanjay Kumar Singh)
38	1701171012	BSBE	Sandeep Choudhary	Optical Instrumentation for fluorescent biosensors (Dr. Abhijeet Joshi)
39	1901204006	CE	Smriti Srivastava	Glaciohydrology of Himalaya-Karakoram: Functioning of glacierized catchments in Monsoon and Alpine climatic regimes (Dr. Mohd. Farooq Azam)
40	1501231003	Chemistry	Bijesh S	Design and Synthesis of β -Pyrrole Functionalized Push-Pull Porphyrins (Prof. Rajneesh Misra)
41	1601131002	Chemistry	Ekbote Anupama Vivek	Design and Synthesis of Donor-Acceptor Functionalized Stimuli-Responsive Materials (Prof. Rajneesh Misra)
42	1601131006	Chemistry	Richa Rajak	Investigation of Structural and Topological Analysis of Mixed-Metal Metal-Organic Frameworks (M-MOFs) and Their Potential Applications (Dr. Shaikh M. Mobin)
43	1601121012	AASE	Althaf A	Position and Velocity Accuracy of a Stationary Receiver using NavIC Observables (Prof. Abhirup Datta and Prof. Hari Hablani)
44	1601121002	AASE	Madhurima Choudhury	Inference and signal extraction techniques using Artificial Neural Networks (Prof. Abhirul Datta)
45	1501261001	HSS	Juhee Singh Verma	Differential Impact of Food Price Changes on the Welfare of Farm Households in India (Prof. Pritee Sharma)
46	1901141006	Maths	Mudasir Ahmad Ganaie	Ensembles of decision tree and random vector functional link network for classification problems (Dr. M. Tanveer)
47	1807151001	Physics	Manushree Tanwar	Raman Spectromicroscopic study to understand microscopic level Physics in low dimensional semiconductor (Dr. Rajesh Kumar)
48	1501171015	BSBE	Suman Bishnoi	Bioinspired Nanoparticles for Near-Infrared Biomedical Imaging (Dr. Sharad Gupta and Dr. Debasis Nayak)
49	1501271012	BSBE	Anurag Ramsuman Mishra	RNA virus reverse genetics approach for vaccine design and understanding viral pathogenesis (Dr. Debasis Nayak)
50	150117100	BSBE	Shruti Pyasi	Seroepidemiology of Bovine Ephemeral Virus in India (Dr. Debasis Nayak)
51	1601261001	HSS	Bushra Praveen	Prediction of Impact of Climate Change on Agricultural Production through Land Suitability Analysis (Dr. Pritee Sharma)
52	1601231001	Chemistry	Dibya Yadav	Ruthenium(II)-NHC Pincer Complexes: Tuning Ancillary Ligand Effects Towards Selective Catalysts (Dr. Amrendra K. Singh)
53	1601271005	BSBE	Chanchal Sonkar	Studies on anticancer activities and anion sensing of Ruthenium-arene complexes (Prof. Suman Mukhopadhyay)
54	1701171011	BSBE	Rajarshi Roy	Glycans in Silico: Investigating Conformational Dynamics

				and Interactions with Proteins (Dr. Parimal Kar)
55	1601271001	BSBE	Navpreet Kaur	Multifaceted Carbon Dots: The Next Generation Nano-Platform for Optical and Biomedical Applications (Dr. Shaikh M. Mobin)
56	1501271007	BSBE	Anubhav Tamrakar	Structural and functional studies of HomA and HomB, outer membrane proteins of H. pylori (Prof. Prashant Kodgire)
57	1901204011	CE	MinuTreesa Abraham	Rainfall induced landslides in the Western Ghats, India: Spatio-temporal forecasting and debris flow modeling (Prof. Neelima Satyam and Prof. Biswajeet Pradhan (UTS Sydney))
58	1501201004	CSE	Rohit Agrawal	Novel Optimization Algorithms for Steganography and Chip Routing (Prof. Kapil Ahuja)
59	1601102007	EE	Vishal Kaushik	Active Photonic Devices Based on Two-Dimensional Electron Gas in Engineered Semiconductor Heterojunction (Prof. Mukesh Kumar and Dr. Suchandan Pal)
60	1601161004	HSS	Vivek Kumar Yadav	The Ethics of B.R. Ambedkar (1861-1956): Three Essays on His Philosophy of Practice (Dr. Shomik Dasgupta and Dr. C. Bharath Kumar)
61	1901103007	ME	Jatin Prakash	Intelligent Methods of Supervised and Semi-Supervised Learning for Health Monitoring of Hydraulic Systems (Dr. Pavan Kumar Kankar)

Student Affairs

Student Affairs Office operates as an administrative interface to the students at IIT Indore for conduction of various events through Student Gymkhana through a team headed by the Dr. S. Vasudevan, Dean of Student Affairs (DoSA) assisted by Dr. Sanjeev Singh, Associate Dean of Student Affairs (ADoSA), Cdr. Sunil Kumar (Retd.), Joint Registrar Student Affairs, Mr. Tanmay H. Vaishnav, Section Officer and Mr. Neeraj Soni (presently Mr. Digant Karve), PA to DoSA.

Student life at IIT Indore comprises a judicious balance between different academic and extra-curricular activities, including BTech project work, projects as part of other courses, industrial visits, etc., that go a long way in bolstering the students' knowledge, experience and personality. Students' extra-curricular activities are driven by a systematic structure of clubs within the institute that channel the activities. Some worth-mentioning clubs include the Programming Club, Drama Club, Gaming Club, etc. Various student-run cells, such as the Entrepreneurship Cell and Students International Activity Cell, help expose the students to the industry and academia and help develop their skills. This, coupled with the fact that IIT Indore has a very healthy student-to-faculty ratio, plays a definitive role in providing the students with the best environment possible for learning and overall development.

Science & Technical Council

IIT Indore has a fast-developing technical network. The IIT Indore contingent stood at overall 11th position and two teams won bronze and gold medals respectively at the Inter-IIT Tech Meet. The eBAJA was conducted where IIT Indore bagged 20th rank in the CAE and SALES events. IITISoC and Winter of CP were also conducted by the Programming Club. Other Tech Clubs conducted various workshops and events throughout the year.

Cultural Council

Various events were organised by the Cultural Clubs that engaged people both offline and online. Throughout the year, various clubs including The Debating Society, The Literary Club, Srijan, Aaina, Dance Club, Prakriti and Avana conducted multiple workshops.

The IBCC 3.0 was conducted under the Cultural Council this year, which saw huge online and offline participation. The Cultural Clubs ran various events such as the Solo Quiz and Improvizard. Offline treasure hunts and cooking competitions were the highlights of the event.

Sports Council

The Sports Council at IIT Indore organised various sports events, which include the Athletics meet, Kho Kho tournament, Futsal Tournament, Volleyball Tournament, etc. Further, the Sports Council organised the first ever Annual Sports Fest, LAKSHYA - 1.0, which received the participation of 1242 students for the online events from all over India and 300 students for the offline events.

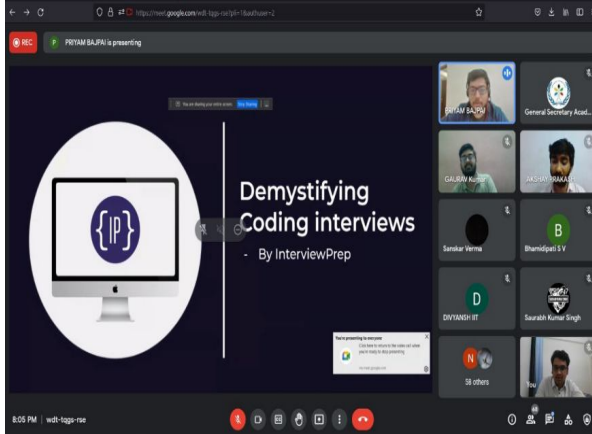
Academic Council

The Academic Council, under the Students' Gymkhana of Indian Institute of Technology Indore, conducted the Research Conclave to nurture young minds towards research, innovation and entrepreneurship. Further, the Career Guidance Series 2.0 was organised to reflect students' passions, interests and abilities. Later, the "Industry connects talks" was introduced as an initiative to enlighten the ideas and establish a deeper understanding of the industrial world. To set the stage high for the new students of batch 2021-25, Departmental Orientations for all the branches were held. On the occasion of International Women's Day 2022, an event was conducted in collaboration with the Women Cell IIT Indore to celebrate the role of women in our society and to spread awareness about the same.

TEDx

The highlight of the year was the reintroduction of TEDx, IIT Indore. It was the third edition of TEDx with the theme 'Phoenix in the Making' representing how humans can rebuild themselves and reach jubilant heights. It featured inspirational speeches from Ms. Rachana Ranade, Mr. Amit Borkar, Dr. Sarita Ahlawat, Mr. Nirmal NR, Mr. Soumesh Pandey and Mr. Yagnesh Sanghrajka. The event was a grand success and added another feather to our cap.





Hostel

A.P.J. Abdul Kalam Hostel is the first Hostel at IIT Indore permanent campus and was inaugurated in 2016. Subsequently, Homi Jehangir Bhabha (HJB) Hostel was inaugurated in 2019 and Devi Ahilya, Vikram Sarabhai (VSB), & C.V. Raman (CVR) Hostels in 2020. Each Hostel is having 98 units with capacity of accommodating total 490 students. Each unit has five bedrooms with single occupancy for each room. It also has a furnished living area, common kitchen, two toilets and two washrooms. IIT Indore ensures that students from different states, languages and different departments are allotted in a unit to promote inter-disciplinary approach in study and research and national bonding among them. All the hostels are also equipped with solar hot water facility and APJ Hostel is centrally air conditioned.

The Hostel Department is headed by Dr. Lalit Borana, Chief Warden who is assisted by Mr. Digant Karve, Senior Assistant, Chief Warden Office. Each Hostel is Headed by a Warden with assistance of Supervisor and Attendant. The details of Hostels and are as follows: -

Hostel No.	Hostel Name	Hostel Type (Girls/Boys)	Warden/Warden In-charge	Associate Warden
01	APJ Hostel (Avul PakirJainulabdeen Abdul Kalam)	Boys	Dr. Harekrishna Yadav	--
02	CVR Hostel (Chandrasekhara Venkata Raman)	Boys	Dr. Saptarshi Ghosh	--
03	HJB Homi Jehangir Bhabha	Boys	Dr. Jayaprakash Murugesan	--
04	Devi Ahilya Hostel	Girls	Dr. Charitha Cherugondi	Dr. Ananya Ghoshal
05	Vikram Sarabhai Hostel	Boys	Dr. Ram Sanjeevan Maurya	--

Guest Rooms/Units in Hostel: -

The Hostel also has guest house facilities to cater for 100 guests. The guest rooms provide facilities which include like smart LED TV, Sofa Set, Center Table, Cooler, Microwave, Electric Cattle, Mattress, Blanket, Bedsheet, Pillow, Bath Wears Cloth Stand etc.

Hostel Photos

Hostel No. 01 – A.P.J. Abdul Kalam



Hostel No. 02 – C. V. Raman



Hostel No. 03 – Homi J. Bhabha



Hostel No. 03 -Devi Ahilya



Hostel No. 05 - Vikram Sarabhai Hostel

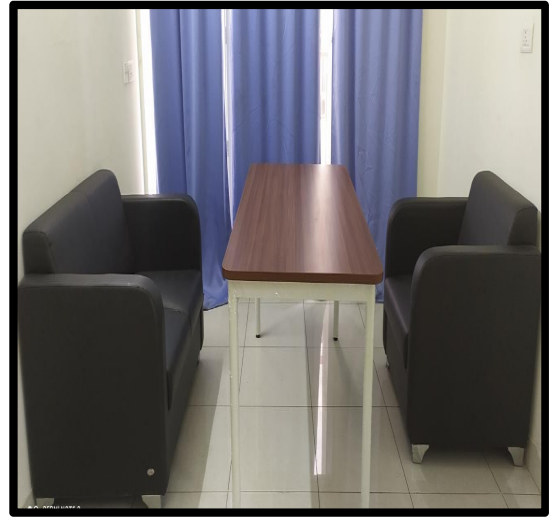


Basic Facilities in Hostel

Basic Room



Common Hall



Kitchen with RO Water



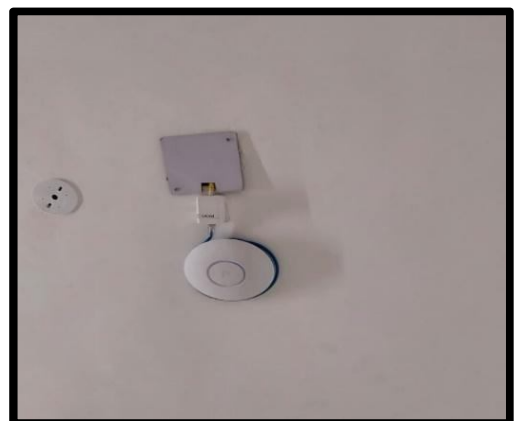
Washroom



Water Chiller



Wi-Fi



Sports Facilities in Hostel

Badminton Court

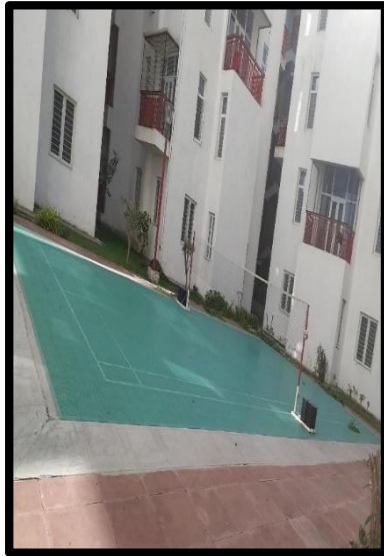


Table Tennis



Soccer Table

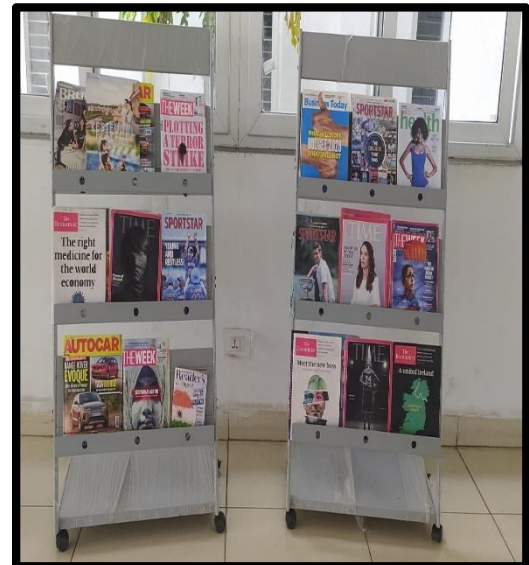


Other Facilities in Hostel

News Paper Stand



Magazine Stand



Central Dining Facility

The institute has a Central Dining Facility (Carbon building) wherein around 5000 people can have their meals at one point. Students of different hostels can have meals together in dining hall. Separate sections have been developed for dining of students, institute staff or any guests. The dining hall comprises of 02 big sized and 04 small sized kitchens, 02 common washrooms and lift facility as well. An Executive Dining Hall has also been equipped in Central Dining Facility for Hospitality & Dining services to the institute's invited/VIP guests.

Students are served healthy and nutritious meals wherein the student body decides the menu on a weekly basis and a dining committee monitors the overall functions. Quality of food is maintained by taking frequent feedbacks and immediate addressal of complaints. The payments are made to the caterer on the monthly meal plan basis. The payment is done through Smart Card Facility and is cashless only. The entire central dining facility follows COVID appropriate behaviour. Other than regular dining services, the carbon building also houses several kiosks which serve delicacies and other services round the clock.

The functioning of central dining section is supervised by a team of dining staff, student body, student volunteers, and administered by a dining committee headed by Dr. Abhijeet Joshi, Dining Warden.

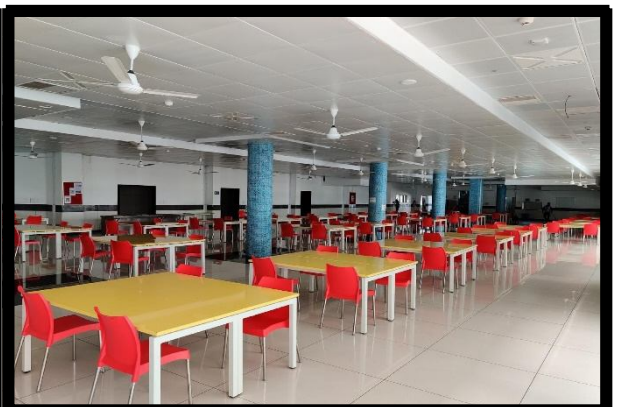
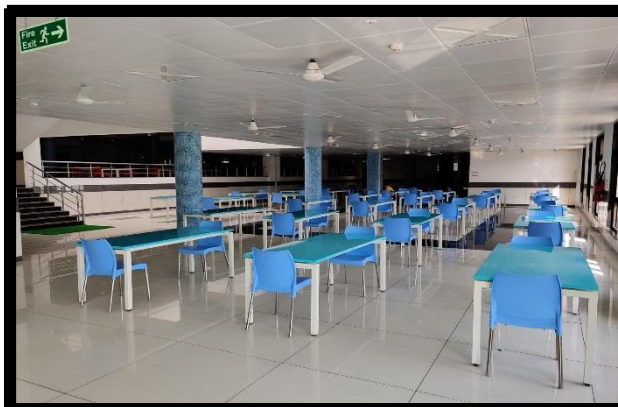
Dining Hall Building Photo



Cleaning in Dining Hall during worldwide pandemic time



Cooking activities with safety gears during worldwide pandemic time



Secured and cleaned seating arrangements

Counselling Cell

Counselling Cell has been an integral part of IIT Indore since its inception in December 2011. The function of this cell is to offer a supportive and conducive environment for students wherein they can discuss personal issues or academic challenges and seek help from counselling committee members. With primary focus on prevention of mental health issues - prevention of suicide and chronic mental health problems, Counselling Cell works for early identification and intervention for various mental health issues in students.

Counselling Cell Team comprises of Professor Aruna Tiwari, Head Counselling Services, Department of Computer Science Engineering, Ms. Monika Gupta, Senior Counselor, Dr. Ashutosh Singh (MBBS, DNB Psychiatry), Visiting Consultant Psychiatrist, Counselling Committee having one faculty member from each discipline as Faculty Counselling Coordinators and student representatives from PhD, PG and UG as Student Counselling Coordinators. The committee members provide guidance and advice on counselling related matters to the students of the respective discipline.

Counselling Cell undertakes the following activities

Individual counselling sessions are carried out by the cell to assist the students in dealing with a wide range of concerns; be it academic, personal, emotional, family or peer related as well as wide range of psychological concerns including clinical depression, anxiety spectrum difficulties, suicidal tendencies, difficult personality traits.

- (a) In view of COVID 19 pandemic, an online counselling facility and tele-counselling, was made available to the students and their parents.
- (b) In person-counselling sessions are also conducted for those students who are residing inside the campus by following the COVID -19 protocols.

Parents counselling sessions-Meeting with parents of students having concerns with academics or psychological concerns are also held.

Regular follow up- Follow-up counselling sessions are also held.

Student mentorship Programs- With the aim to foster a healthy stress-free environment for the student community, the Counselling Cell with the support of gymkhana general secretary counselling and outreach, oversees student mentorship Programs. The student mentors help freshers by extending their helping hand both for academic and non-academic concerns.

Faculty Advisor List Preparation -The counselling cell prepares the list of faculty advisors for the new students of BTech and Masters Programs. The faculty advisors regularly interact with the delegated students and guide them for academic concerns. The students are further referred to the student counselor in case the student shows any signs of distress.

Orientation to Counselling Cell- To provide information regarding counselling services at IIT Indore to all the new UG, PG and Ph.D students and parents during the orientation and registration program and subsequently another session for introduction to counselling cell is organised for the fresher students.

Webinars and expert talks are organized to create awareness on mental health issues and enhance positive well-being.

Crises intervention-Counselor also sees the students at the health Center or hall of residence for urgent and immediate concerns.

To create a strong referral system as a basis for enhancing mental health services, where students are being referred by academic office, health Center, faculty advisors, sports and security officers, wardens and hostel office, parents and friends, apart from walk- in students who approach the counselling cell on their own.

Counselling during COVID-19 pandemic

Students were approached for follow-up counselling sessions by the counselor.

Tele-counselling is done for students having COVID- 19 infection as per the list received from the health Center.

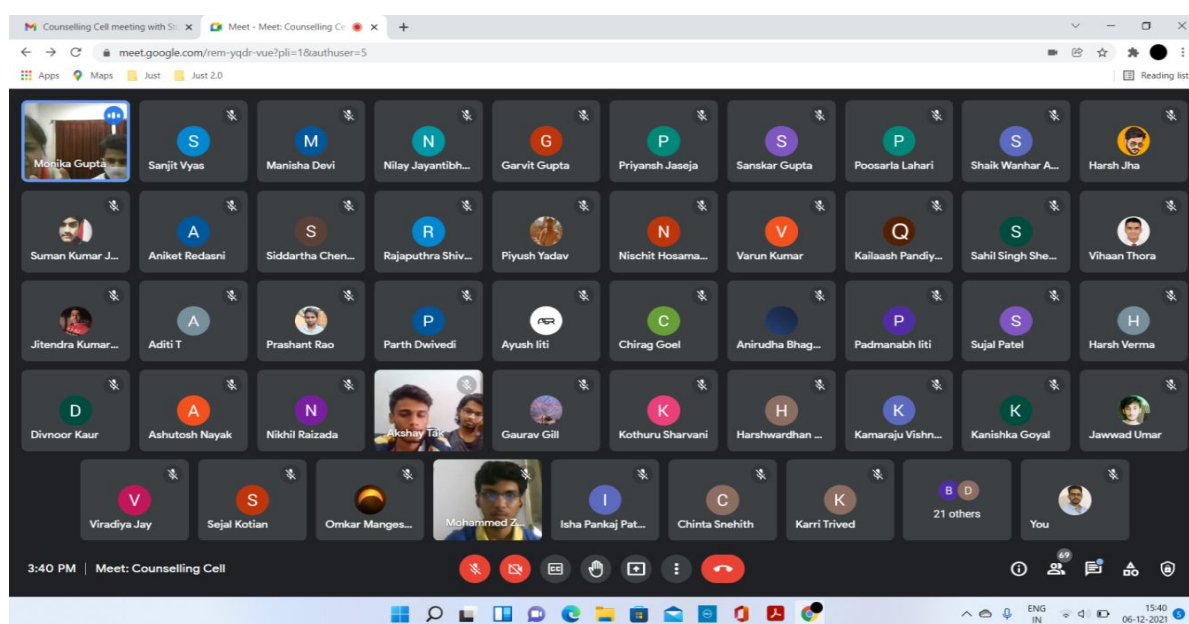
During the re-entry of the students in campus post lockdown, the psychological concerns of the students are assessed by **administering an online questionnaire**. This has helped in prevention and early identification and intervention of emotional concerns of the students.

Further detailed assessment and counselling of those students who were found to have stress symptoms on the questionnaire is done.

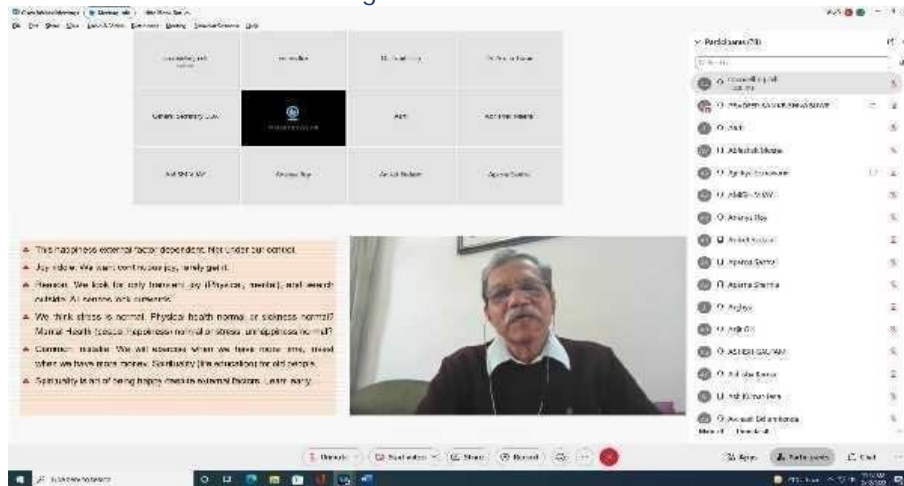
Online group motivational sessions on **“Dealing with new normal”** are conducted for students in quarantine. Further online small group interactions were done with students in quarantine.

Some of the events organized by Counselling Cell during 2021-22 are as follows:

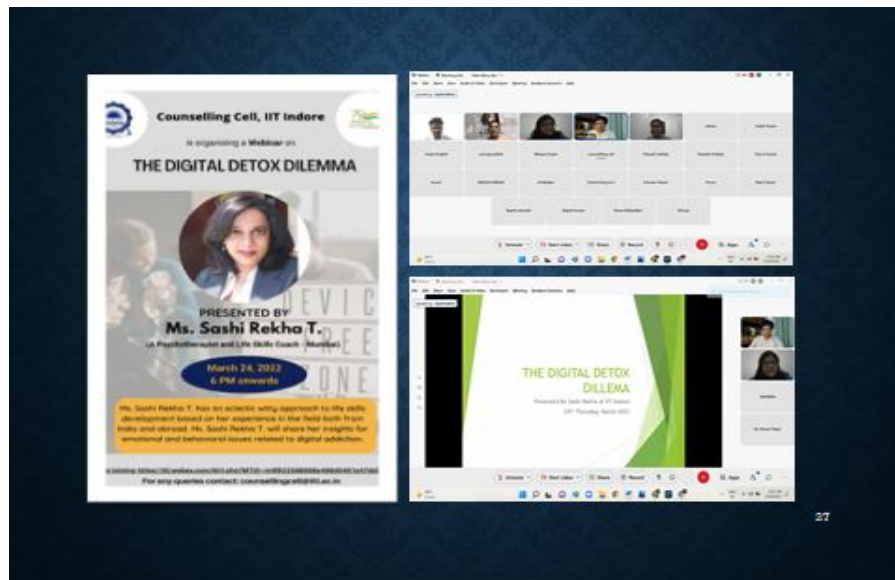
- ❖ Counselor and General Secretary Counselling Outreach and Alumni conducted a meeting with Student Mentors on December 6, 2021.
- ❖ A webinar on “Be Joyful To Be Successful” by Professor Pradeep. R. Bijwe, Ex- IIT Delhi, was organized on February 12, 2022 for the IIT Indore community.
- ❖ A webinar on “The Digital Detox Dilemma” by Ms. Sashi Rekha T, Psychotherapist and Life Skills Coach - Mumbai, was organized on March 24, 2022 for IIT Indore community.
- ❖ The Counselling Cell conducted One-On-One Counseling sessions for students with regards to stress related to exams and feel that they might need to talk to someone. These online sessions were taken by Ms. Sashi Rekha T., Psychotherapist and Life Skills Coach - Mumbai.



Meeting with Student Mentors



Webinar on “Be Joyful To Be Successful” by Professor Pradeep. R. Bijwe, Ex- IIT Delhi



Webinar on “The Digital Detox Dilemma” by Ms. Sashi Rekha T, Psychotherapist and Life Skills Coach – Mumbai

Online Counselling Services

For dealing with academic pressure and other stress for Students and Researchers



One-On-One Counseling sessions for students with regards to stress related to exams

Placement Cell

The Training and Placement Cell is the Central point of Contact for Campus Placements of students of the Institute. The Placement session at IIT Indore was a virtual event throughout the year, which started in the month of September 2021 and ended in May 2022 (for full-time hirings), while for Internship the process started in the month of August 2021 and lasted until September 2021. Total number of companies visited for On-Campus Placement is 130.

The number of selected students increased by 6.4 % as compared to previous year. The placement was conducted in two phases where Phase I started from September 1, 2021, while second phase started from December 2021, amidst the pandemic following Covid Appropriate Behavior as laid down by the Institute and Guidelines approved by Govt. of India per se. Despite the detrimental effects, graduating students and recruiters showed utmost support and cooperation throughout the process. Taking into consideration, the increasing no. of courses and the corresponding specializations, the Placement cell has continuously strived towards achieving maximum participation of students from across all programs.

Highlight in Brief

Key Metrics	Details
Total No. of Companies	130
Total No. of Offers	246(including PPO)
Total No. of accepted Offer	48
International Job Offers	30
Highest Domestic CTC	62.5 LPA (INR)
Average Domestic CTC	23.5 LPA (INR)
Highest International CTC	48.2 LPA (INR)
Average International CTC	42.75 LPA (INR)
Top Recruiting Sector	Software Development/AI

Student Pre-Placement Preparation

One of the primary functions of Placement office is to prepare students for their Campus placement and internships, by making them adept to the various techniques of practicing Online Coding Challenges, working on Online Software while appearing for Online Assessments as part of the Campus Placement Process. The Placement Cell facilitates variety of hackathons by premier recruiters to impart hands on Experience for various domains viz, engineering, coding, consultancy, finance, analytics etc.

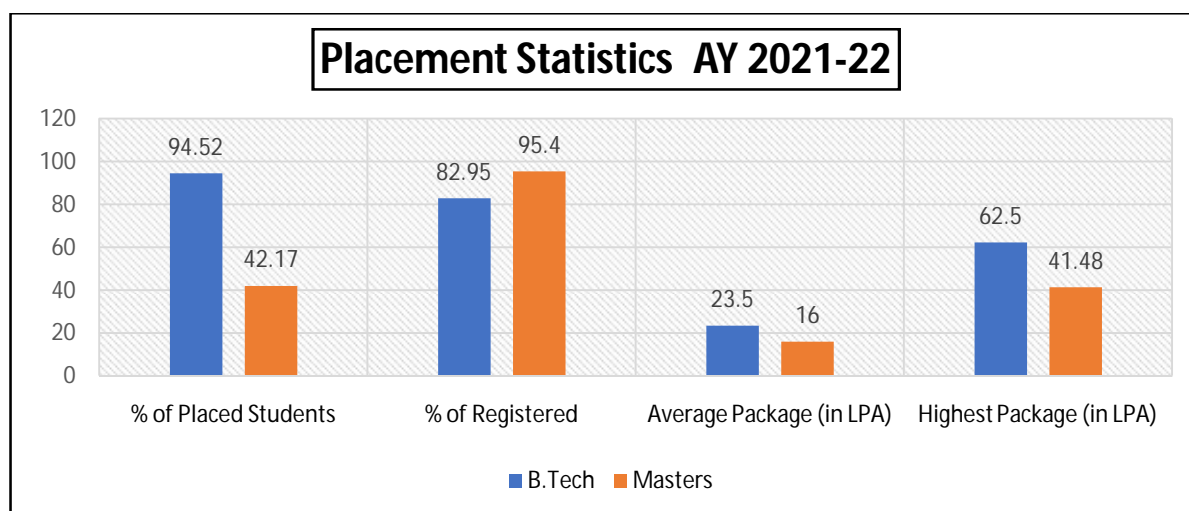
Placement Office acts as a connecting link between the Recruiter and Students facilitating career Progression through due planning and preparation. The Placement Cell works in tandem with the Student Placement Managers to ensure that the best of the industry recruiters visit the Campus for Placements. The student team at the Institute takes the necessary inputs for identifying and mapping the student's skill sets by systematic industry groundwork. Placement activity begins through rigorous analysis of Market trend with an aim to invite the most prominent recruiters offering lucrative compensation. Efforts were made to understand the virtual process that include career planning and help was extended to discover opportunities based on student's background, qualifications, and previous experiences.

Recruiters Profile

IIT Indore has seen remarkable growth in terms of both the number of companies visiting the Campus and the Compensation being Offered. The initial part of the season was dominated by companies offering Software Development, Research Engineer, AI/ML, Data Science Analyst roles. Most of these firms are world leaders in their respective domains. The world's best consulting firms, banks, software companies take part in placements, and over the years IIT Indore has tried to fetch the best of the recruiters to hire the finest pool of students. Some non-core roles have grabbed attention over the previous years due to multiple factors such as hefty compensation, career growth prospects, work-culture and ethical guidelines etc.

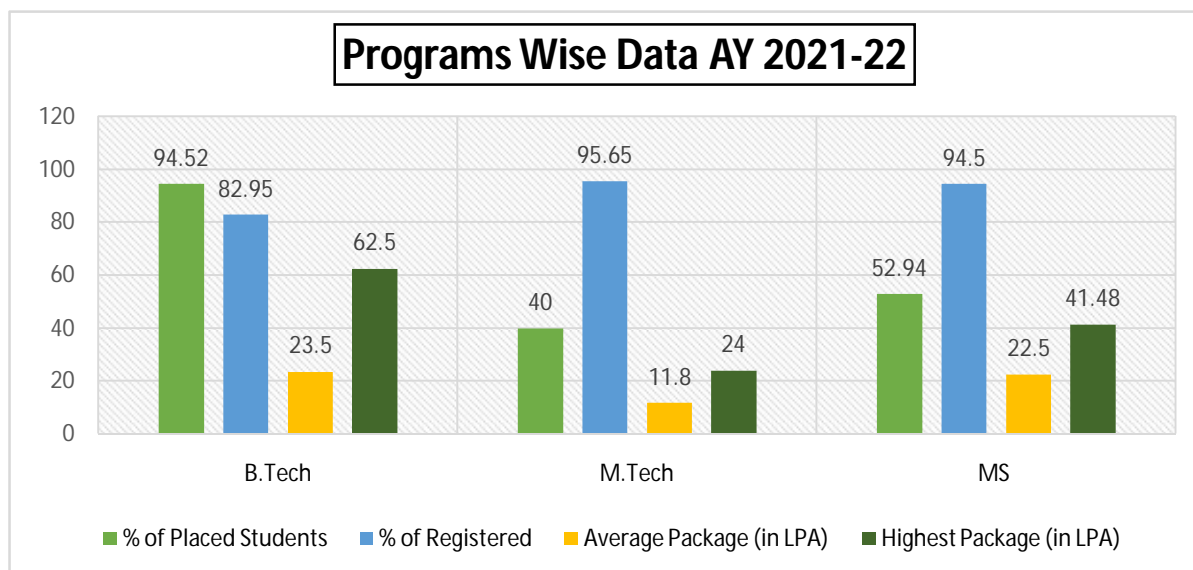
Overall Placement Statistics with Chart and Matrix (AY 2021-22)

Overall Placement Statistics 2021-22							
Program	Batch Size	Registered Students	Total Placed	Percentage of Placed Students	Percentage of Registered Students	Average Package, INR (in LPA)	Highest Package, INR (in LPA)
BTech	264	219	207	94.52	82.95	23.5	62.5
Masters	87	83	35	42.17	95.4	16	41.48



Program- Wise Placement Statistics in Chart and Matrix (AY 2021-22)

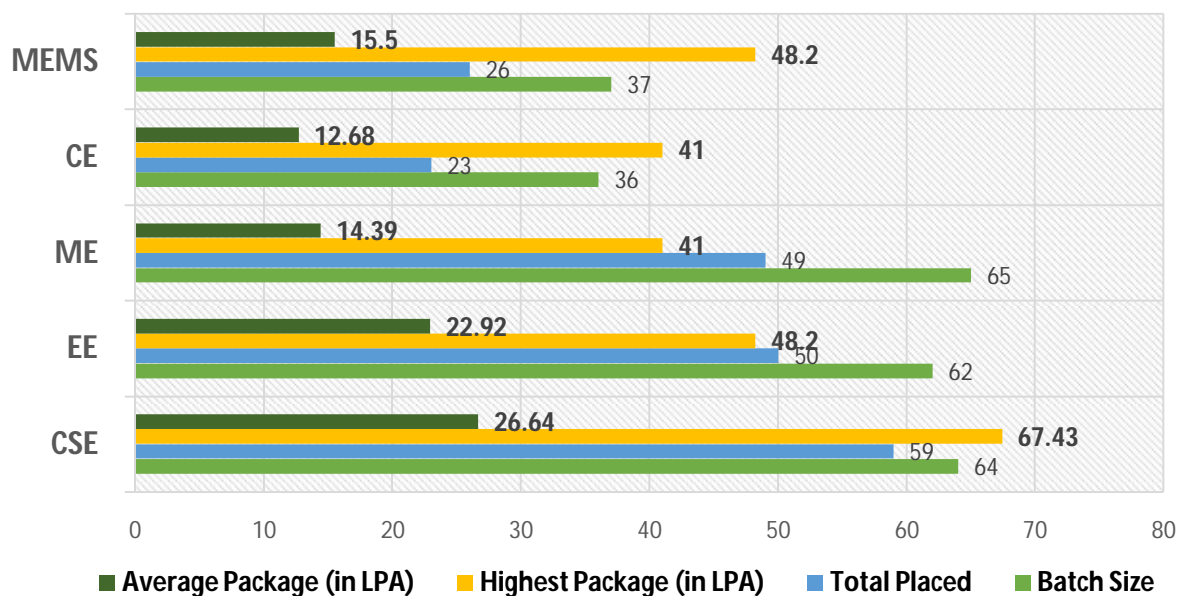
Programs Wise Data AY 2021-22							
Program	Batch Size	Registered Students	Total Placed	Percentage of Placed Students	Percentage of Registered Students	Average Package, INR (in LPA)	Highest Package INR (in LPA)
BTech	264	219	207	94.52	82.95	23.5	62.5
MTech	69	66	26	40	95.65	11.8	24
MS	18	17	9	52.94	94.5	22.5	41.48



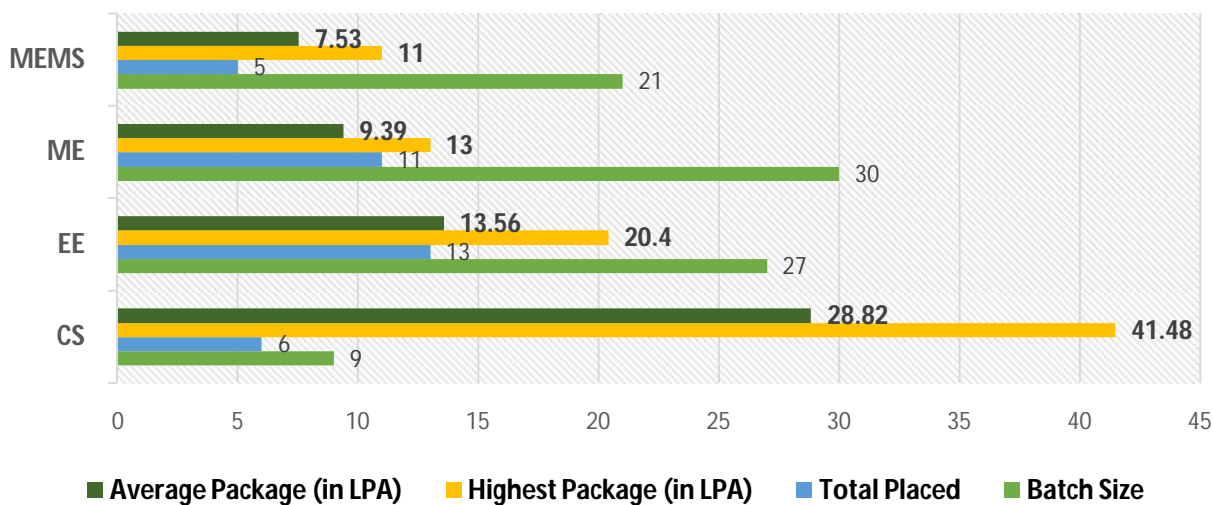
Department Wise Placement Statistics in Graphs and Matrix

Department Wise UG and PG Data (AY 2021-22)							
Dept Wise (UG & PG)	Batch Size	Registered Students	Total Placed	Percentage of Placed Students	Percentage of Registered Students	Highest Package, INR (in LPA)	Average Package, INR (in LPA)
CSE (BTech)	64	51	59	100	79.69	67.43	26.64
EE (BTech)	62	52	50	96.15	83.87	48.2	22.92
ME (BTech)	65	55	49	89.09	84.62	41	14.39
CE (BTech)	36	29	23	79.31	80.56	41	12.68
MEMS (BTech)	37	32	26	81.25	86.49	48.2	15.5
CS (Masters)	9	8	6	75	88.87	41.48	28.82
EE (Masters)	27	25	13	52	92.59	20.4	13.56
ME (Masters)	30	29	11	37.93	100	13	9.39
MEMS (Masters)	21	21	5	23.8	100	11	7.53

B.Tech Department Wise Data 2021-22

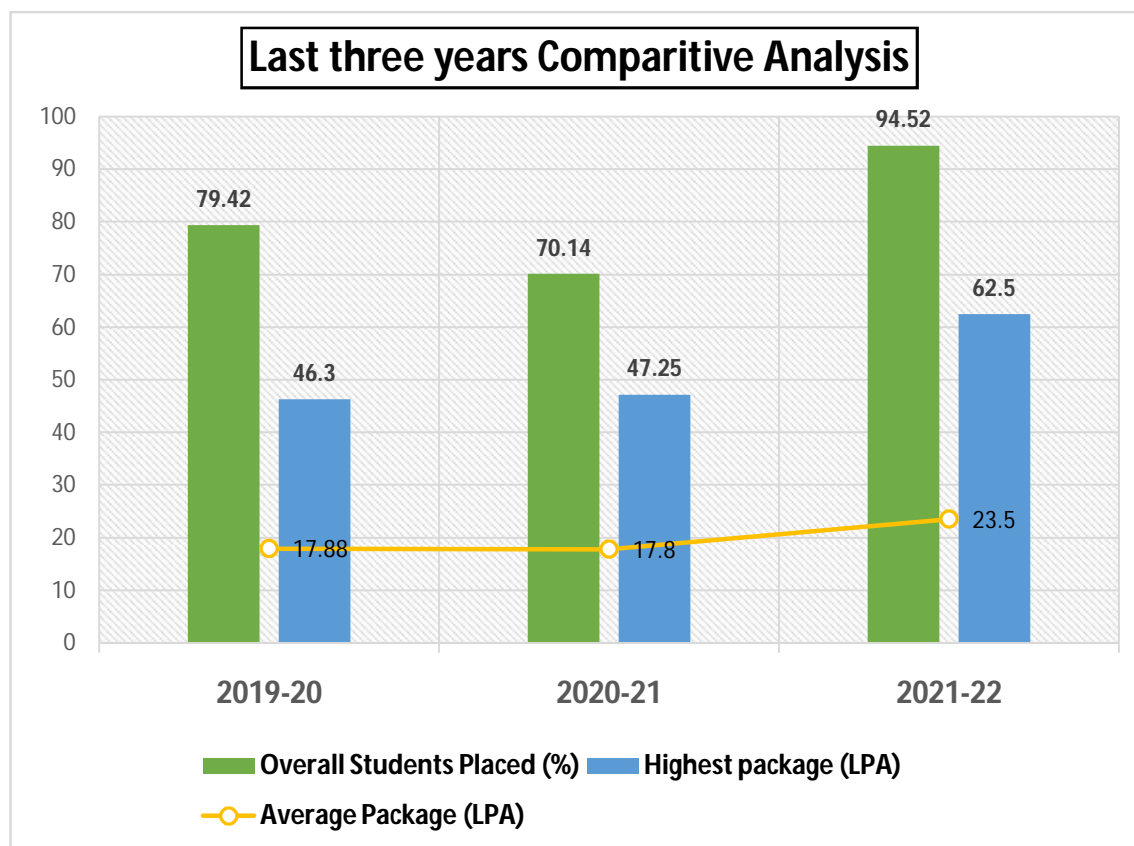


Masters Department Wise Data 2021-22



Last three years Placement Statistics Comparison

Last Three years comparison (2019-20, 2020-21 & 2021-22)			
Program	2019-20	2020-21	2021-22
Overall Students Placed (%)	79.42	70.14	94.52
Highest package, INR (LPA)	46.3	47.25	62.5
Average Package ,INR (LPA)	17.88	17.8	23.5



Internships Report

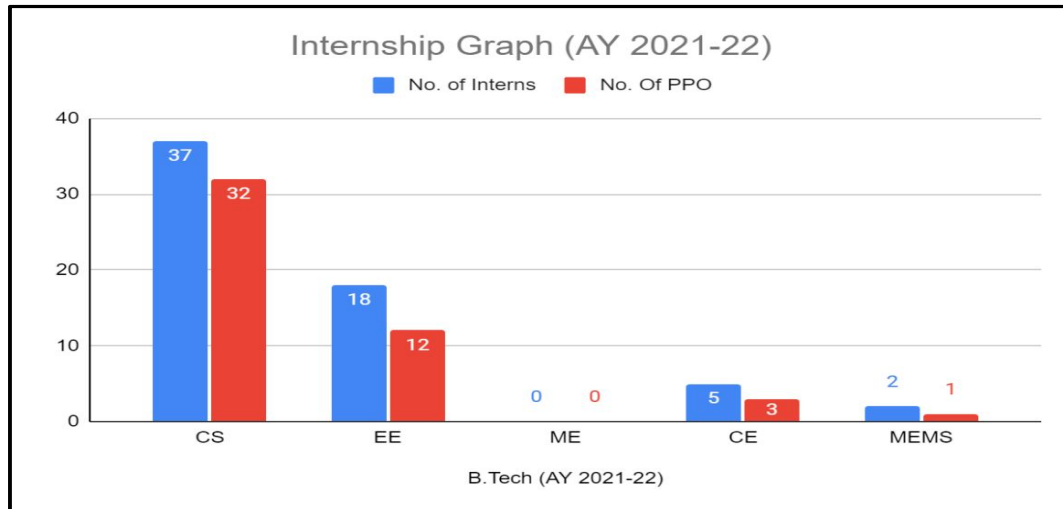
Industrial exposure is a Prerequisite to enter the corporate world. Students at IIT Indore pursue Internships usually as part of BTP Project. Students from their third year of B. Tech appear for the Campus Internship Process. Taking into consideration, student and the roles offered, the Placement Office strives to provide students with the best of the opportunities in their areas of interest. Placement Office also encourages research by providing students the research internship opportunities at esteemed universities. The Internship season 2021-22 started in August 2021 and continued until September 2021. There were total of 67 students who got selected for Internship, out of which 48 got Pre-Placement offers. Prominent recruiters include Goldman Sachs, D.E Shaw, Trilogy, Flipkart, Amazon etc

Department Wise Internship Matrix and Graph (AY 2021-22)

Department- wise Internship

Department	No. of Students (Interns)	No. of PPO
Computer Science	37	32
Electrical Engineering	18	12
Mechanical Engineering	0	0
Civil Engineering	5	3
Metallurgical & Material	2	1

Internship Graph (AY 2021-22)



Conclusion

The Placement Drive at IIT Indore has witnessed a tremendous increase in the Placement Statistics over the years. For the AY 2021-22, the Campus Placement Process started in the month of August 2021 and ended in May 2022. The Placement was successfully concluded in two phases. The Placement Process for phase I, was conducted during September- November 2021, which witnessed a participation of top-notch companies recognized globally, including Pre-Placement Offers (PPO), while phase II was conducted during December 2021- May 2022. A total of 268 students registered for placements (both UG and Masters). The entire Placement Process was conducted in virtual mode. The compensation Offered to our students and the number of job-offers has also seen steady rise over the years. Despite of the detrimental effects of the pandemic, IIT Indore has achieved excellent Placement record for the AY 2021-22. The overall placement percentage is 94.05 %. Some of the registered students also preferred to go for higher Studies in Institutes of National/International Repute. Our Excellent placement record over the years speaks about our value proposition which is showcased in subsequent years.

International Relations

IIT Indore is rapidly expanding internationally with an aim to globalize its teaching and research portfolios. Currently, we have grants received from Norwegian Research Council, INTPART, Arts and Humanities Research Council, DST - RFBR, SICI, Swedish Institute, DST, Max Planck Society, DAAD, DST-SERB, DST-RSF, Commonwealth and many more. We are collaborating extensively with countries like the USA, UK, Canada, Australia, Germany, France, Portugal, Japan, Russian Federation, Taiwan, Korea, South Africa for more of the international bilateral projects. We have 65+ active international MoU and 379 externally funded research projects along with 200+ international publications. Moreover, continuing the upward trajectory in recruiting foreign students in our degree programs, in 2021-22, we hosted 05 international students who pursued their Masters and PhD programs in various disciplines at IIT Indore. These students were from SAARC nations and joined us through the Study in India (SII), ASEAN, ICCR and EdCIL programs. Moving ahead with our national ranking and global recognition we are now receiving large number of applications of prospective international students.

Now we are also a member of Heritage Network with the aim to strengthen Higher Education Cooperation (research and training) between Europe and India in the field of Engineering Sciences. We are also partners with SICI, ACU (The Association of Commonwealth Universities), Green Network. We have also introduced Epidemic and Pandemic Innovations Center (EPIC) and Sharman Foundation Scholarship (Rs. 70,000/- per student annually) recently.

International Faculty: Prof. Indrajith D. Nissanka, Senior Lecturer, Department of Mechanical Engineering, University of Moratuwa, Katubedda, Sri Lanka visited IIT Indore on 2nd Feb 2022 (for 03 months) for Research Training under Indian Science and Research Fellowship (ISRF).

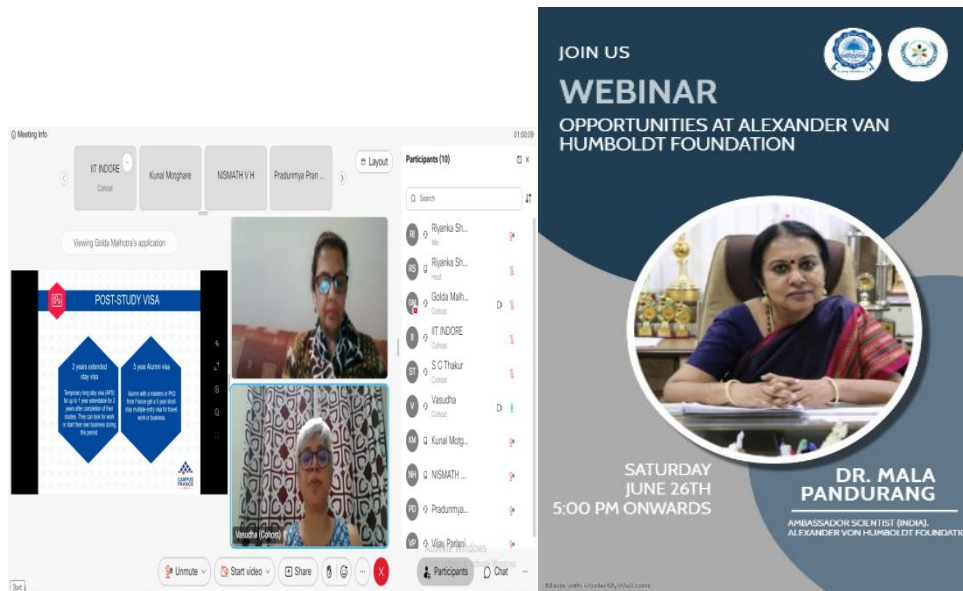
MoUs with Foreign Universities: We have 65+ active international MoUs, the most recent ones are mentioned below:

- The University of Alberta, Canada
- Université de lille, France
- Széchenyi István University, Hungary
- University of Luxembourg, Luxembourg
- University of Agder, Norway
- Leibniz University Hannover, Hannover, Germany
- The University of Bordeaux, France
- University of Rostock, Germany
- The University of Kansas, US
- National Taipei University of Technology, Taiwan
- Swinburne University of Technology, Australia
- Wigner Research Center for Physics, Hungarian Academy of Sciences, Budapest, Hungary
- Aristotle University of Thessaloniki, Greece
- University of Gothenburg, Sweden
- Foundation for Innovation and Social Entrepreneurship (FISE), Texas Global Health Security Innovation Consortium (TEXGHS) and Health Innovation Exchange (HIEx), UN
- Università degli studi Di Udine, Italy
- Forschungszentrum Borstel - Leibniz Lung Center, Germany
- Dipartimento di Scienze Biomediche dell' Università di Sassari (UNISS); Sassari, Italy
- University of Johannesburg, South Africa
- Tec De Monterrey, Mexico
- University of Purdue, USA



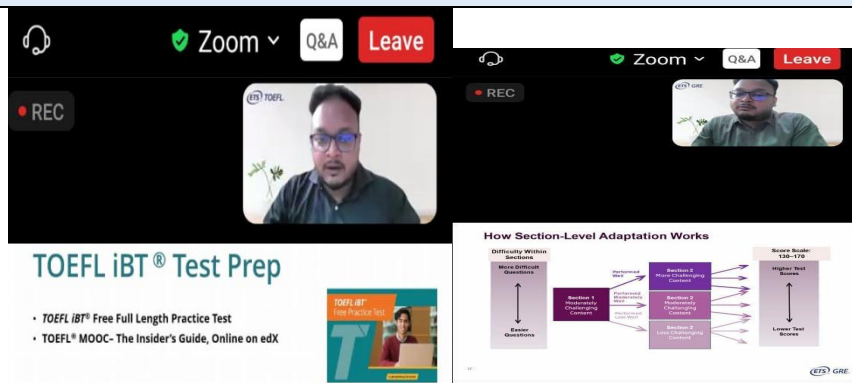
Virtual Meetings:

Webinars to explore higher studies opportunities in foreign universities for IIT Indore students.



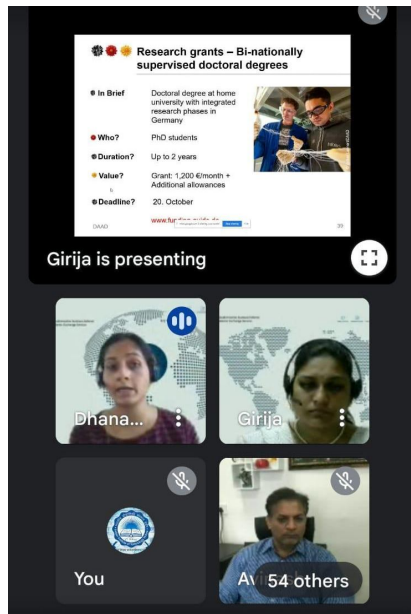
Webinar by Dr. Mala Pandurang on Opportunities at Alexander Von Humboldt foundation

GRE and TOEFL webinars by ETS-India held for the students of IITI.

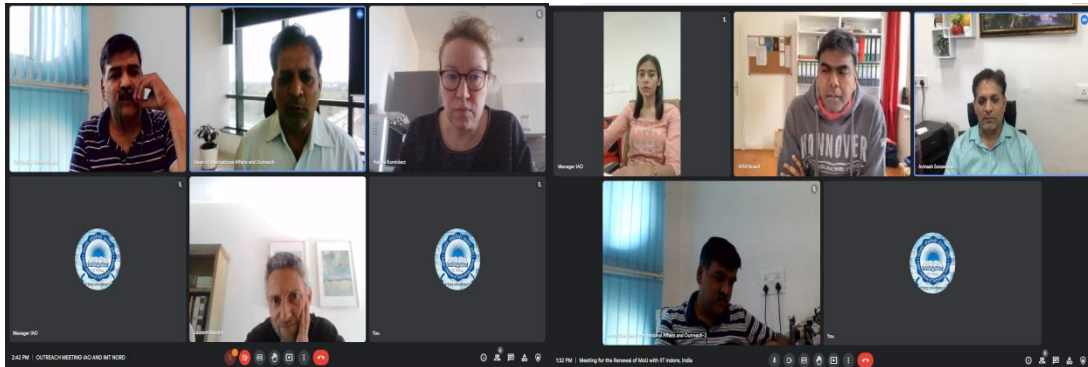


DAAD's E-visit to entail about the opportunities and procedures for applying through different

channels.



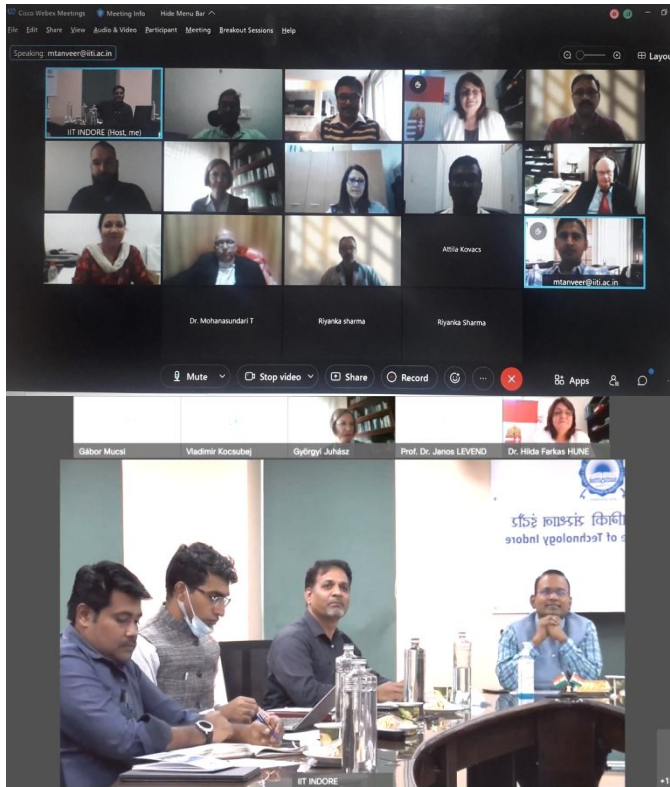
Meeting of International Relations representatives with IMT Nord, Europe



Meeting of International Relations representatives with Leibniz Universität Hannover.

Workshop and Seminars

IIT Indore in association with the Embassy of Hungary at New Delhi successfully hosted a virtual scientific meeting with a team of scientists from various Hungarian Universities/institutions. The primary objective of this scientific meeting was to proliferate the scope of cooperation in research, technology development, innovation and exchanges between IIT Indore and Hungarian Universities/institutions.



Visit of Norwegian delegates from the University of Agder, Grimstad, Norway for signing the MoU and finding possibilities of student/faculty exchange and collaborative research with IIT Indore.

USIEF: Fulbright outreach webinar organized for the students of IIT Indore.





Short interaction of Prof. Samir H. Mushrif from the University of Alberta, Canada with the IIT Indore students on "Study and Opportunities in higher studies, Work and Life in Canada".



Prof. Samir H. Mushrif, University of Alberta, Canada with the International Relations team

Student Exchange Program list

Program Name	Beneficiaries
Short-term Research Program (1-6 months)	International scientists
Short-term Research Program (1-3 months)	International UG/PG/PhD students
Research Internship Program (RISSHE) 1-6 months	International students

Outreach Initiatives: There were a total of 25 lectures delivered by the foreign faculties.

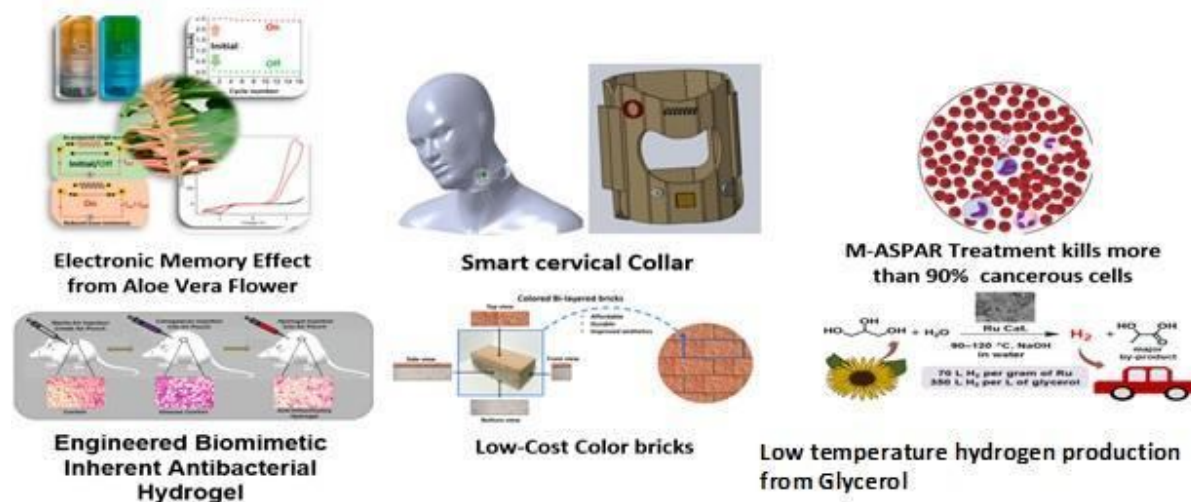
Talks	Speakers
Nobel Laureate Lecture Series	Prof. David J. Wineland (Nobel Laureate in Physics), Prof. William D. Phillips (Nobel Prize in Physics)
Role of Science in Nation Building	Prof. Anil D. Sahasrabudhe, Prof. Nirmal Kumar Ganguly, Prof. Gagandeep Kang, Prof. Anurag Agrawal, Prof. Rohit Srivastava
Public Outreach Lectures on Nobel Prizes - 2021	Prof. Rama Govindarajan, Prof. Gautam I. Menon, Prof. Ravi S. Srivastava, Prof. Dhevalapally B. Ramachary, Ms. Nidhi Razdan, Prof. Nishat Zaidi, Prof. Debasis Nayak

Research and Development(R&D)

IIT Indore envisages to promote inter-disciplinary research focusing on basic and applied research, technology development and innovation. This vision has helped the institute to excel in all spheres of science, engineering, and humanities and social sciences. A key competence of IIT Indore is in research driven academic Program as it forms a core component of the undergraduate and postgraduate teaching. IIT Indore has consciously promulgated the idea of involving undergraduate students in forefront research projects. This led to the initiation of a formal undergraduate research scheme, Promotion of Research and Innovation for Undergraduate Students (PRIUS). Research at IIT Indore has been recognized at both international and national levels. Faculty members and scientists are actively involved in several key international projects and joint collaborations with research organizations in Japan, South Korea, Russian Federation, Portugal, France, Germany, UK, USA and many other countries.

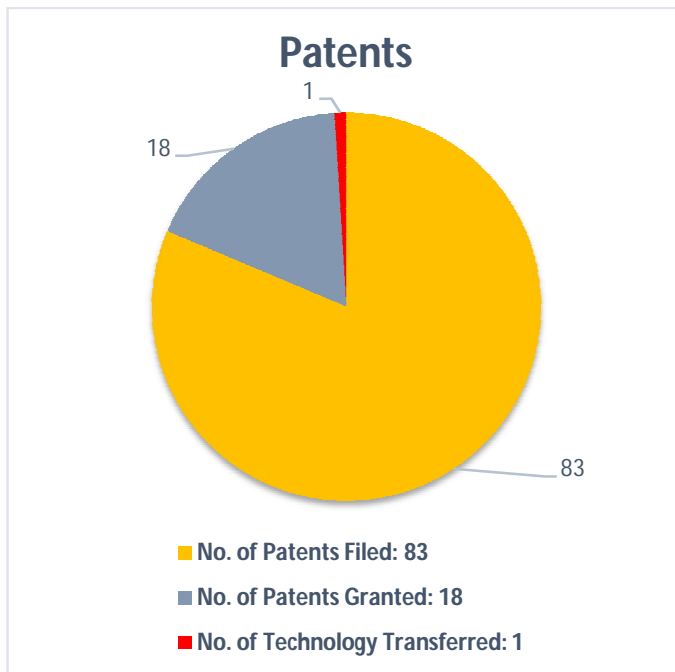
Key Achievement of Research & Development @ IIT Indore

- 460 R&D projects worth Rs. 270 cr. from different funding agencies
- 235 consulting projects worth Rs. 10 cr. till date.
- Over 4500 reputed publications.
- A mega project worth Rs. 100 Cr under the DST National Mission on Cyber physical system for developing technologies and training manpower in the field of cyber physical systems.
- 8 DST-FIST from Centers of Excellence (CoEs) established with a funding worth Rs. 17 Cr.
- Filed over 83 patents, 18 have been already granted.
- 16 YFRSG (Young Faculty Research Seed Grant) provided to young faculties of IIT Indore worth Rs. 1.6 Cr as a bridge funding by the institute before the first regular grant from the external funding agencies.
- 39 national and 45 international MoUs have been signed with IIT Indore.
- A Technology has been Transferred on “**Compressed coloured bi-layered bricks**” and 75 Technologies are ready at various stages and are inching towards commercialization and several more in the pipeline.

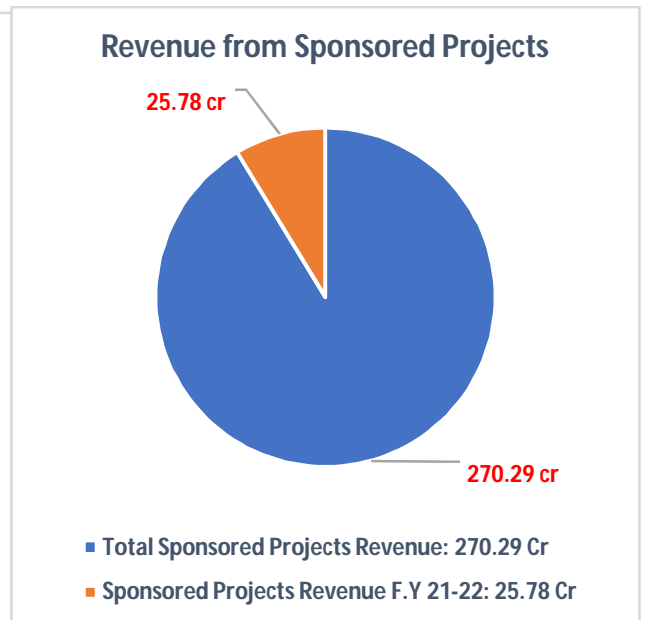
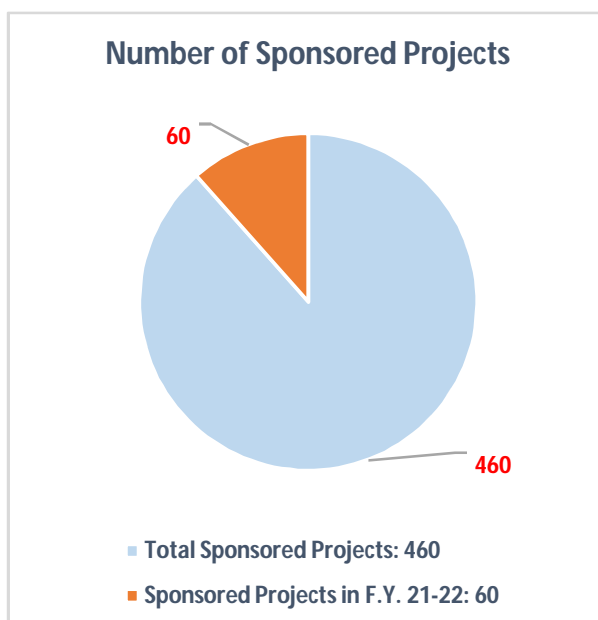


Typical six technologies among the 83 technologies that are available for commercialization

Patents

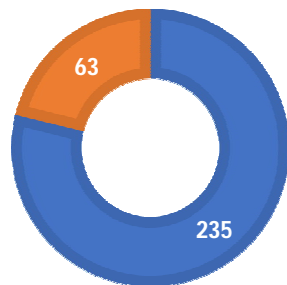


Projects



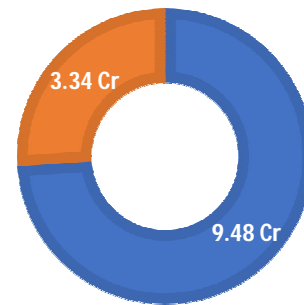
Consultancy

CONSULTANCY PROJECTS



- Total Consultancy Projects: 235
- Consultancy Projects F.Y. 21-22: 63

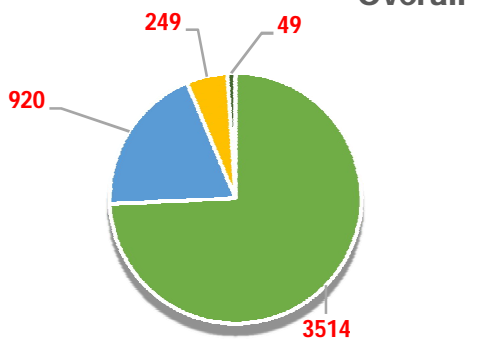
REVENUE FROM CONSULTANCY



- Total Consultancy Projects Revenue: Rs. 9.48 Cr
- Consultancy Projects Revenue F.Y. 21-22: Rs. 3.34 Cr

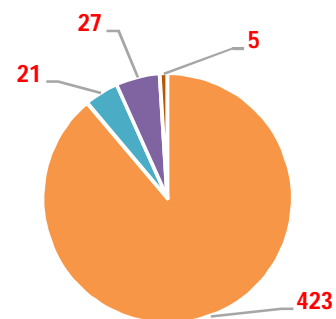
Publication

Overall



- Journals: 3514
- Conferences: 920
- Book Chapters
- Books: 49

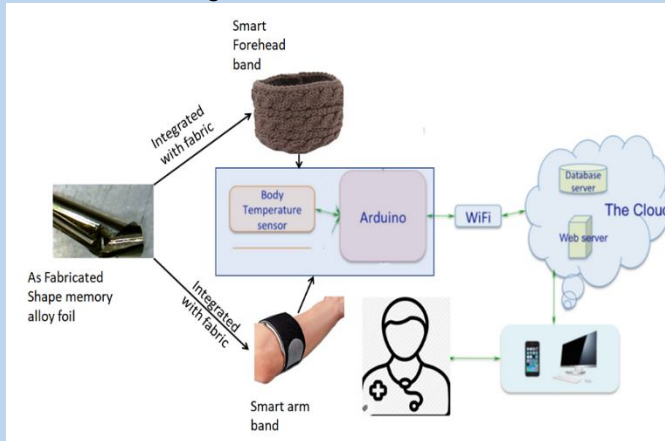
F.Y. 21-22



- Journals: 423
- Conferences: 21
- Book Chapters: 27
- Books: 5

COVID-19 (Research Works)

- Candidate Vaccine
- Reusable Mask
- UVC LED
- SARS-CoV-2 protein
- Sterilization Chamber against SARS-CoV2
- Wearable optical body temperature sensor
- Disinfection Tunnel for Covid-19
- Fusion peptide for SARS-CoV-2
- Fluorescent disinfectant bricks
- Time dependent Mathematical Model for Covid-19
- Machine Learning for virus detection



An initiative for Lab to Land Ecosystem



Start-ups from IIT Indore Research Lab by PhD students and Faculty members

THINK VLSI: Think VLSI focuses on skill development, service, and product development in the field of Electronics (VLSI Design, IoT, AI, ML, Robotics Automation) and Electrical Vehicle Infrastructure.



SCAS TECHNOLOGIES is developing the product using Swadeshi Microprocessor Challenge (SMC) that first time initiation in UAVs stepping towards Atma Nirbhar Bharat.



Smart i fabTech is developing 3 d printing and related components for catering industry and bio-medical sector.



Freebird Aerospace is a DGCA approved drone manufacturer specializing in the design, development and manufacturing of unmanned aerial vehicles that meet the regulatory aerospace standards and solve specific industry needs.

Faculty Affairs

Faculty Affairs Office deals with all administrative matters related to the faculty members. It maintains administrative records from recruitment to relieving of the faculty members. The office is headed by Dr. Amod C. Umarikar, Acting DoFA and Associate Dean, who is assisted by Cdr. Sunil Kumar (Retd.) - Joint Registrar, Mr. Sunil Sawle – Junior Superintendent and Mr. Amit Mishra – Junior Superintendent (Technical).

This office enables the following tasks

- Conduct of recruitment drive and appointment of permanent/contractual/visiting/emeritus faculty members in various departments.
- Joining formalities of newly joined faculty member.
- Maintenance of Service Records and Personal File of faculty members.
- Processing of all service matters including pay, promotion, leave, LTC, dependent list, deputation, annual increment, extension of tenure for contractual appointments, confirmation, etc.
- Regular updation of service details.
- Providing responses to MHRD/RTI Queries and Lok Sabha/Rajya Sabha questionnaires.

Some of the major works undertaken during the year 2021-22 are as follows:

- Conduct of Special Recruitment Drive for Reserved category candidates.
- Development of Faculty Application Portal for New Recruitment.
- Formulation of various policies for standardization of rules and procedures.
- Streamlining the joining formalities to ensure minimal movement and faster adaptation of the newly joined member to the new environment.
- Provision of Welcome Kit to the newly joined faculty members.
- Reduced paperwork and approval through emails.
- Timely provision of LTC to faculty members.

Faculty positions filled as on March 31, 2022

Designation	Strength
Professor	46
Associate Professor	43
Assistant Professor Grade-I	65
Assistant Professor Grade-II	14
Total	168

The number of faculty members joined service at IIT Indore during the year 2021-22 is 16 and details are as follows:

Designation	Strength
Assistant Professor Grade-I	02
Assistant Professor Grade-II	14
Total	16

Total 33 Professor and 09 Associate Professor were appointed.

Dr. Gourinath Banda, Associate Professor, Computer Science and Engineering relieved on lien for one-year w.e.f. December 6, 2021 to join as Associate Professor at University of Southern Denmark.

Recognition and Awards

Best Technology Development Award 2021

Prof. Avinash Sonawane, Department of Biosciences and Biomedical Engineering was awarded Best Technology Development Award 2021 for "Development of a novel asparaginase (M-ASPAR) drug," which is under phase I and II clinical trials to improve the treatment of primary and relapse acute lymphatic leukemia- a type of blood cancer.



Best Teacher Award 2021

- Prof. Suman Mukhopadhyay, Department of Chemistry
- Dr. Ankur Miglani, Department of Mechanical Engineering
- Dr. Shomik Dasgupta, School of Humanities and Social Sciences



Learning Resource Center

The Learning Resource Center (LRC) has been providing essential support to the Institute's teaching, learning, research and other scholarly activity on the campus. Using appropriate technology, the Library delivers resources to satisfy information needs, promote lifelong learning and create productive environments for the scholarly community.



Figure 1. The Learning Resource Center (LRC) Building

LIBRARY COLLECTION

The Library continues to build and extend its collection both in print and digital format. These include books on all relevant subjects for teaching and research. The LRC also boasts of a select collection of fiction, literature, and general interest books such as current events, sports, etc. to take care of the leisure and recreation reading needs of the users. Special Collections such as the Gandhian Studies Collection, Hindi Collection, Children's Books Collection and Matrubhasha collection take pride of place in the LRC. The total collection of print books are 37,777 and E-Books are 8027 as on 31st March 2022.

ELECTRONIC RESOURCES

In today's world of Information explosion, access to electronic information resources is essential, particularly in an academic environment. During the period under report, the LRC has subscribed and provided access to more than 2500+ e-Journals and 09 databases. Some of the major subscribed e-resources are Science Direct (5 subject collection), Taylor & Francis (Science and Technology package), American Chemical Society, Royal Society of Chemistry, IEEE/IET Electronic Library, SIAM, Lecture Notes in Computer Science with Computer Science e-Books, Scifinder –n, Scopus, Indiastat, CMIE Prowess, CSD Enterprise Campus, Grammarly, Turnitin Feedback Studio, etc.

Further, as a member to the E-Shodhsindhu Consortium, IITI academic community is getting access to more than 6110 e-Journals and some databases. The complete list of e-resources with hyperlinks is available on the LRC website for users' convenience.

CIRCULATION AND REFERENCE SERVICE

The library circulation service is automated using Koha-ILMS (open-source software). During the period 2021-22, a total of 12054 documents were issued/renewed to all categories of users for home study. User category wise circulation data is presented in below table:

	BTech	MTech	MSc	MS Research	Ph.D.& RA	Faculty	Others
Documents circulated for home study	4809	373	1134	206	3047	1658	827

The Library also provides user services like reference, new addition of books, orientation program for new students, inter library loan, subject guides, training session programs for e-resources, QR codes for various library services, etc.

DOCUMENT DELIVERY SERVICE PORTAL

The LRC arranges to get research articles that are not held in its collection from different sources. This service is being provided for academic and research purposes to the faculty, research scholars, students and staff within the limit of copyright laws. To streamline this service, the LRC has developed a "Document Delivery Service" portal by using open source software. This can be accessed at http://library.iiti.ac.in/?page_id=2988 on library website.

INSTITUTIONAL REPOSITORY

The library has created an Institutional Digital Repository (<http://dspace.iiti.ac.in:8080/jspui/>) using a widely used open source DSpace software to collect, preserve, organize and provide access to IITI scholarly publications. During the period of this report, 96 Master's degree theses, 115 PhD thesis and 319 Newspaper clippings were uploaded to the repository.

RFID SYSTEM IMPLEMENTATION

A RFID System has been implemented in the LRC and it was inaugurated by Dr. Subhas Sarkar, Union Minister of State for Education, Government of India on December 25, 2021. This system has added value to the services of the library with regard to issue/return, tracking of documents and enhances security feature to the collection.



Figure 2.
Inauguration of RFID System

MATRUBHASHA COLLECTION:

With an aim to promote Bharateeya languages and make literature in Indian Languages available to IITI community, the LRC initiated a unique Matrubhasha collection drive in September 2021 and requested

IIT Indore community to demonstrate their love for the Matrubhasha by donating some books in their mother tongue. This Matrubhasha Collection section of the Library was dedicated to the community by Prof. Suhas S. Joshi, Director, IIT Indore on February 21, 2022 on the occasion of the International Mother Language Day. More than 500 books in 8 Indian languages (viz. Sanskrit, Telugu, Kannad, Odia, Marathi, Bengali, Gujrati and Hindi) were donated by IIT Indore faculty and staff members.



Figure 3. Inauguration of Matrubhasha Collection

INFRASTRUCTURE:

Library Shelves

The library continues to add new infrastructure for new LRC building to attract and facilitate the usage of its resources. This year the library procured 102 units of double side library shelves and get it installed on the second floor (book stack area) of the LRC.

Swadhyay

Creation and development of different reading spaces and other facilities are under process for new LRC building. Swadhyay (Self study space) was dedicated to its users which provide conducive environment for self study. This space is independent from main LRC building and open from 6.00 a.m. to 2.00 a.m.

LRC SERVICES DURING COVID-19

The LRC team have worked very hard during the lockdown period of second wave of covid-19 to make the library services available to its users to the extent possible. During this period, the LRC has provided access of e-resources through RemoteXs to users. The LRC have arranged 177 research papers from other libraries and also provided 2544 similarity check reports to students and faculty. The LRC team has co-ordinated with students and hostel team to collect issued books for providing no dues to students.

Central Workshop

The Central Workshop, IIT Indore, was established during AY 2011-2012 and spared over 10000 square feet of area. It is equipped with modern state-of-the-art facilities for laboratory classes to support fabrication works of research projects and other fabrication works of the Institute. Besides, the state-of-the-art facilities developed under the roof of the Central Workshop are also extended for research scholars to perform novel and cutting-edge research. It has seven shops, Machining, Welding, Forming, Foundry, Injection Molding, Fitting, and Carpentry, with a team of efficient and highly skilled operating staff. The workshop has more than 54 machines/ instruments for undertaking turning, milling, drilling, surface grinding, injection moulding, sheet shearing, bending, drawing, wire drawing, nibbling, arc welding, MIG/MAG welding, TIG welding, gas welding, plasma air cutting, induction heating, metal casting, fitting and carpentry related fabrication works.

The workshop also has a facility for cutting force dynamometers and surface roughness measurements. It was established to provide hands-on experience to students in the Production and Fabrication of simple mechanical components. This is a small, effective, and successful working model using machine tools and computers at the workbench. Students will be exposed to different manufacturing methods, materials and components, procedures, and software programs currently used in commercial manufacturing and assembly processes. This will be of immense help in transforming students into engineers. Besides, the state-of-the-art facilities developed under the roof of the Central Workshop are also extended for research scholars to perform novel and cutting-edge research.



The central workshop undertakes practical classes in the Basic Manufacturing Techniques Laboratory (IC-156), Manufacturing Processes Laboratory (ME-258), and Machining Science and Metrology Laboratory (ME-355). This year due to COVID-19 pandemic, all the laboratory experiments were conducted in online mode by following safety protocol.

Faculty In charge, Central Workshop- Dr. Dan Sathiaraj

Assistant Professor, workshopincharge@iiti.ac.in

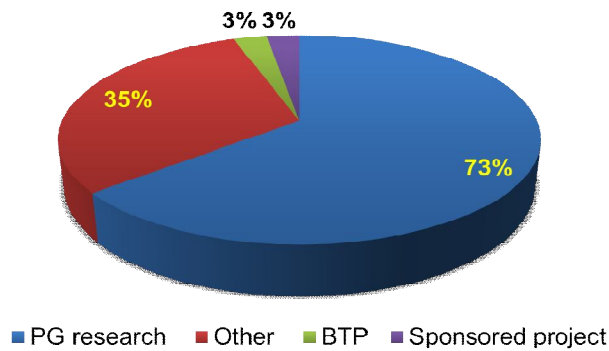
Research Interests:

- Medium to High entropy alloys
- Severe plastic deformation (SPD)
- Recrystallization and grain growth study
- Micro, Nanomachining of MEAs and HEAs
- Surface modification Engineering (SMAT, Laser Shot-peening, etc.)
Mechanical and functional property study

Activities during the year 2021-2022

The central workshop this year introduced a muffle furnace facility and handheld surface roughness evaluation facility for practical classes and to support research work. Service-related works of lathe machines and TIG welding machines were also completed during the year.

During 2021-2022, the central workshop received 114 Nos. of work requests for various purposes, including PG Research, BTP, Sponsored projects, and other fabrication works. The distribution of work requests for various categories is shown in Figure.



The photographs of some work requests are as follows



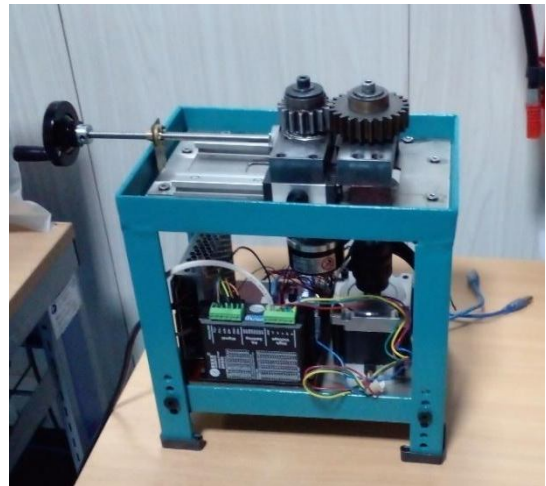
Fabricated 30 ft length Wooden Wind Tunnel



Fabricated Water Channel



Fixture for Jominy Quench Setup



Fabricated structure for Single Gear Flank Roll Tester



Fabricated Nursing Stations for the Health Center



Fabricated Emergency Pole for Safety and Security Department



Fabricated components for Mufflers



Fabricated Tables by utilizing scrapped materials

Health Center



Facilities-

The health center provides outpatient department, day care and in-patient facility for minor ailments. Emergency services are available 24 X 7. It facilitates well equipped physiotherapy services to institute community. Health Center team provides essential investigation facility including ECG and Rapid investigations. For routine investigations, In-house Diagnostic laboratory facility is outsourced from Apollo hospitals limited. Pediatric immunization is carried out on weekly basis.

Specialist Consultation Facilities- Specialist consultation services are provided for Dental, ENT, Obstetrics and Gynecology, Psychiatry, Ophthalmology, Orthopedics cases. Further facilities such as minor dental procedures, Antenatal follow up, minor ENT procedure were also made available to community members.

Pradhan Mantri Janaushadhi Kendra -Health Center initiated the procedure for establishment of Pradhan Mantri Bharatiya Janaushdhi Kendra under guidance of administrative authorities.

Covid 19 Case Management-The health Center provided Covid screening, evaluation, treatment to institute community. Moderate to severe patients were referred to higher centers. However, cases under home isolation and admitted in tertiary centers were followed up for their health conditions on daily basis by the health Center staff.

Covid 19 vaccination:Health center organized Covid vaccination for students, employees, and their dependents on campus for the first, second and the precautionary (third) doses. Covid vaccination drive was conducted for Kendriya Vidyalaya students for the age group of 12 to 14 and 15 to 18.

Other activities-

- 1) Diabetes and Hypertension screening camp was organized on December 23, 2022.
- 2) Webinar on "Covid-19 and After Covid conditions: Cautions and care" was organized on July 24, 2021.

Annual numerical data of Health Center of the Year -2021-2022					
S. No.	Details of Outpatient Department	IN PATIENT AND DAY CARE CASES	COVID POSITIVE CASES	TRAUMA AND EMERGENCY CASES	ECG AND OTHER RAPID INVESTIGATIONS
1	10109	237	411	403	612



राजभाषा हिंदी संबंधित किये गए कार्यक्रमों का ब्यौरा

1. हिन्दी पखवाडा २०२१ का आयोजन

भारतीय प्रौद्योगिकी संस्थान इंदौर द्वारा राजभाषा समिति के तत्वाधान में १४ से २८ सितम्बर २०२१ के दौरान "हिन्दी पखवाडा" का आयोजन किया गया।

१४ सितम्बर २०२१ को हिंदी दिवस एवं हिंदी पखवाडा का उद्घाटन समारोह का आयोजन किया गया। संस्थान की हरित कैम्पस की अवधारणा को परिलक्षित करते हुए अतिथियों का स्वागत पौधे देकर किया गया। तत्पश्चात सभी अतिथियों द्वारा दीप प्रज्ज्वलन कर कार्यक्रम की औपचारिक शुरुआत की गयी।



हिंदी पखवाडा 2021 के अंतर्गत निम्नलिखित प्रतियोगिताओं का आयोजन किया गया।

क्रमांक	प्रतियोगिता का नाम	दिनांक	प्रतिभागियों की संख्या
१	हिंदी स्वरचित कविता पाठ	२० सितम्बर २०२१	३९
२	हिंदी निबंध लेखन प्रतियोगिता	२२ सितम्बर २०२१	३९
३	वस्तुनिष्ठ प्रकार की लिखित परीक्षा (हिंदी राजभाषा के विषय में)	२४ सितम्बर २०२१	३१

संस्थान के पुस्तकालय द्वारा हिंदी पखवाडा के अवसर पर हिन्दी पुस्तकों की विशेष प्रदर्शनी लगाई गयी ताकि अधिकाधिक लोग हिन्दी भाषा में उपलब्ध साहित्य एवं ज्ञान से परिचित हो सकें। संस्थान के संकाय सदस्य, छात्रगण तथा कर्मचारीगण सभी ने इस पुस्तक प्रदर्शनी का लाभ लिया तथा इसे सराहा।

दिनांक २८ सितम्बर २०२१ को पुरस्कार वितरण एवं समापन समारोह का आयोजन किया गया। समारोह के मुख्य अतिथि के रूप में संस्थान के निदेशक (कार्यवाहक) प्रोफेसर नीलेश कुमार जैन उपस्थित रहे। विशेष अतिथि के तौर पर अधिष्ठाता (प्रशासन) महोदय उपस्थित रही। सम्मानित अतिथि के रूप में कुलसचिव महोदय श्री एस. पी. होता उपस्थित रहे। कार्यक्रम की अध्यक्षता प्राध्यापक रजनीश मिश्रा, संयोजक, राजभाषा समिति ने की।

मुख्य अतिथि द्वारा विजेता प्रतिभागियों को पुरस्कार एवं प्रमाण पत्र प्रदान किये गए। प्रतिभागियों को प्रोत्साहित करने के लिए समस्त प्रतिभागियों को सहभागिता प्रमाण पत्र भी प्रदान किये गए। अंत में श्रीमती शिल्पा चौहान के धन्यवाद ज्ञापन के साथ समारोह एवं हिन्दी पखवाडा २०२१ का समापन हुआ जिसका सार निम्न पंक्तियों में कहा जा सकता है।

“ भारत माँ के भाल पर सजी स्वर्णिम बिंदी हूँ, मैं भारत की अपनी बेटी आप की अपनी हिन्दी हूँ ”

सभी कार्यक्रमों का संस्थान की वेबसाईट पर सजीव प्रसारण किया गया।



"विश्व हिंदी दिवस - २०२२"

संस्थान की राजभाषा समिति द्वारा दिनांक १० जनवरी २०२२ को विश्व हिंदी दिवस कार्यक्रम का आयोजन किया गया। इस कार्यक्रम में संस्थान के संकाय सदस्यों, छात्रों तथा कर्मचारियों द्वारा अनुसंधान पेपर को हिंदी भाषा में रूपांतरित कर उन पर व्याख्यान दिया गया। इन में कुल 15 अनुसंधान पेपर पर संबंधित प्रतिभागी द्वारा व्याख्यान दिया गया। हिंदी रूपांतरित अनुसंधान पेपर को छपवाकर संस्थान के पुस्तकालय में प्रदर्शनी हेतु रखवाया गया जिससे अधिकाधिक छात्र हिंदी में अनुसंधान पेपर हिंदी भाषा में बनाने हेतु प्रेरित हो सके। इसके अतिरिक्त इस अवसर पर हिंदी कविता पाठ का भी आयोजन किया गया जिस में संस्थान के संकाय सदस्यों, छात्रों तथा कर्मचारियों ने बढ़-चढ़कर हिस्सा लिया। हिंदी में अनुसंधान पेपर प्रस्तुत करने वाले प्रतिभागियों को पुरस्कृत किया गया। कविता पाठ में भाग लेने वाले प्रतिभागियों को भी पुरस्कार प्रदान किये गए।



Administration

1. Staff Position:

As on 31st March 2022, **114** non-teaching staff have been appointed, as per the details given in the table below:

Group 'A' Officers - **21** Technical staff - **38**

Other Administrative Staff - **55**

Number of non-teaching staff members appointed during the year is as under:

Non-teaching staff - **03**

No. of staff were relieved due to resignation/other reasons – **04**

1.2. List of staff appointed between

1st April, 2021 and 31st March 2022 are as under:

S No.	Name of Employee	School / Discipline / Center	Position Designation	Date of Joining
1	Mr. Divyanshu Jain	Learning Resource Center	Library Information Assistant	09-Jun-21
2	Mr. Nipul Gordhanbhai Shihora	Learning Resource Center	Library Information Assistant	09-Jun-21
3	Ms. Apeksha Rajpurohit	Training & Placement	Junior Superintendent	28-Jun-21

1.3 List of Staff Promoted/upgraded between

1st April, 2021 and 31st March 2022 are as under:

SNo	Name of Employee	School / Discipline / Center	Promoted Designation	Promoted w.e.f.
1	Mr. Prashant S. Kulkarni	Infrastructure Development Office	Senior Engineer (Civil)	23-Sept-21
2	Mr. Pranay Chopra	Infrastructure Development Office	Deputy Executive Engineer (Electrical)	22-Dec-21
3	Mr. Vijayendra Shastri	Infrastructure Development Office+ Housekeeping	Assistant Registrar	20-Sept-21
4	Dr. Anand Petare	Central Workshop	Assistant Workshop Superintendent	30-Nov-21
5	Ms. Rajni Sharma	Health Center	Nursing Sister	27-May-21
6	Ms. Pooja Dutta	Purchase + Legal Cell	Assistant Registrar	20-Sept-21
7	Mr. Shailendra Kumar Jat	Infrastructure Development Office	Deputy Executive Engineer (Civil)	23-Sept-21
8	Mr. Roshan Bhatia	Finance and Accounts	Section Officer	20-Sept-21

9	Dr. Shilpa Raut	Health Center	Chief Medical Officer (NFSG)	04-May-21
10	Mr. Sunny Namdev	Physics	Senior Assistant	09-Sept-21
11	Mr. Rakesh Jain	Administration	Senior Assistant	09-Sept-21
12	Mr. Mayur Bangar	Finance and Accounts	Senior Assistant	13-Sept-21
13	Mr. P. K. Parthiban	Chemistry	Technical Superintendent	27-Aug-21
14	Ms. Pooja Tiwari	Health Center	Pharmacist	24-Dec-21

1.4 Details of Training Programs (Outside)

SN o	Name of Employee	Post Held	Training obtained from	Training/Course	From	To
1	Mr. Nilesh Jadhav	Junior Superintendent	Arun Jaitley National Institute of Financial Management	PUBLIC PROCUREMENT (ADVANCED)	28-Jun-21	30-Jun-21
2	Mr. Sunil Chandanshive	Senior Assistant	Arun Jaitley National Institute of Financial Management	PUBLIC PROCUREMENT (ADVANCED)	28-Jun-21	30-Jun-21
3	Mr. Harsh Raj Singh Chauhan	Junior Assistant	Arun Jaitley National Institute of Financial Management	PUBLIC PROCUREMENT (ADVANCED)	28-Jun-21	30-Jun-21
4	Mr. Dushyant Pratap	Junior Assistant	Arun Jaitley National Institute of Financial Management	PUBLIC PROCUREMENT (ADVANCED)	28-Jun-21	30-Jun-21
5	Mr. Swapnil Sonp	Junior Assistant	Arun Jaitley National Institute of Financial Management	PUBLIC PROCUREMENT (ADVANCED)	28-Jun-21	30-Jun-21
6	Mr. Deepanshu	Junior Superintendent	ISTM, New Delhi	03 days Online workshop on "Pay Fixation"	01-Sept-21	03-Sept-21

1.5 Details of Training Programs (In-house)

SN	Topics of Training	Trainer/Instructor	Designation	Date	Officials participated in training
1	Inaugural Session	Mr. S.P. Hota	Registrar I/c	26-Nov-21	All Non-Teaching Staff
2	Leave Rules	Mr. T. Satyanarayana	Joint Registrar (Admin)	3 & 4 Dec - 2021	All Non-Teaching Staff
3	Budget & HEFA	Mr. Pradeep Agarwal	Joint Registrar (F&A)	10 & 11 Dec - 2021	All Non-Teaching Staff
4	R&D and CIER	Dr. Kumar Gaurav	Assistant Registrar (R&D & CIER)	17-Dec-21	All Non-Teaching Staff
5	Academic Affairs	Mr. Suresh Chandra Thakur	Assistant Registrar (Academics)	18-Dec-21	All Non-Teaching Staff
6	Works & Tender IDO	Mr. Vijayendra Shastri	Assistant Registrar (IDO)	12-Jan-22	All Non-Teaching Staff
7	Purchase Procedures other than Works & GeM	Ms. Pooja Dutta	Assistant Registrar (MMS)	21-Jan-22	All Non-Teaching Staff
8	Inventory and Store Management	Mr. S.P. Hota	Registrar I/c	28-Jan-22	All Non-Teaching Staff
9	Leadership Practices	Dr. Kumar Gaurav	Assistant Registrar (R&D & CIER)	4-Feb-22	All Non-Teaching Staff
10	CCS (Classification, Control & Appeal Rules) 1965	Mr. Neeraj Kumar	Assistant Registrar (Academics)	11-Feb-22	All Non-Teaching Staff
11	Driving and Road Safety Considerations	Mr. Ramakant Kaushik	Chief Security Officer (Grade-II)	18-Feb-22	All Non-Teaching Staff
12	CCS (Classification, Control & Appeal Rules) 1965 - Part II	Mr. Neeraj Kumar	Assistant Registrar (Academics)	25-Feb-22	All Non-Teaching Staff
13	Work-Life Balance	Cdr. Sunil Kumar (Retd.)	Joint Registrar (FA & SA)	4-Mar-22	All Non-Teaching Staff
14	Noting & Drafting	Mr. S.P. Hota	Registrar I/c	11-Mar-22	All Non-Teaching Staff

15	Noting, Drafting & Office Procedures	Mr. Suresh Chandra Thakur	Assistant Registrar (Admin)	25-Mar-22	All Non-Teaching Staff
16	Allowances (TA/LTC/CEAS)	Mr. Pradeep Agarwal	Joint Registrar (F&A)	1-Apr-22	All Non-Teaching Staff
17	English and Effective Communication for Professionals: Strategies, Discourse, and Practical Application	Dr. Ananya Ghoshal	Assistant Professor	8-Apr-22	All Non-Teaching Staff
18	An overview of RTI Act 2005	Mr. Suresh Chandra Thakur	Assistant Registrar (Admin)	3-Jun-22	All Non-Teaching Staff
19	Transport Allowance for Central Government Employees	Mr. Tanmay Harsh Vaishnav	Section Officer (F&A)	10-Jun-22	All Non-Teaching Staff
20	Disaster Management and Overview	Mr. Ramakant Kaushik	Chief Security Officer (Grade-II)	17-Jun-22	All Non-Teaching Staff
21	Management of Departmental Library	Mr. Rajesh Kumar	Assistant Librarian (Grade-I)	24-Jun-22	All Non-Teaching Staff
22	Abilene Paradox : Management of Agreements	Mr. Saroj Kumar Mallick	Executive Engineer (Electrical)	01-Jul-22	All Non-Teaching Staff
23	Expert Talk cum Motivational Session	Commodore (Dr) Manohar Nambiar	Registrar, IIT Hyderabad	15-Jul-22	All Non-Teaching Staff

Finance and Accounts

The year 2021-22 is characterized with the following Income and Expenditure:

(₹ in crores)

S. No.	Particulars	2021-2022
		Current Year
1	<u>INCOME</u>	
1.1.	Grants	114.92
1.2.	Academic Receipts	25.29
1.3.	Income from Investment	8.54
1.4.	Interest Earned	3.41
1.5.	Other Income	33.01
1.6.	Total of 1	185.17
2	EXPENDITURE	
2.1.	Staff Payments & Benefits	65.46
2.2.	Academic Expenses	18.91
2.3.	Administrative & General Expenses	20.91
2.4.	Transportation Expenses	0.32
2.5.	Repairs and Maintenance	2.79
2.6.	Depreciation	41.85
2.7.	Other Expenses	16.34
2.8.	Total of 2	166.58
3	Balance being excess of Income over Expenditure	18.59

The position relating to creation of capital assets is as under:
(₹in crores)

S. No.	Particulars	2021-2022		
		HEFA	Other Purpose	Total
2.1	Opening Balance of Grant-in-Aid Plan	26.78	29.29	56.07
2.2	Grant received during the year	64.70	106.68	171.38
2.3	Deficit under OH-31 being added from IRG	-	5.19	5.19
2.4	Total funds available at the disposal of the Institute	91.48	141.16	232.64
2.5	Grant utilized for Revenue Expenditure	-	99.57	99.57
2.5.1	Interest on Term Loan for HEFA	15.35	-	15.35
2.5.2	Repayment of HEFA Loan (75%)	50.39	-	50.39
2.6	Plan Grant after adjusting utilization for Income & Expenditure	25.74	41.59	67.33
2.7	Utilized for developing infrastructure, Buildings & Works & for Equipment's, and other Assets	-	31.22	31.22
2.8	Unspent balance as on 31.03.2022	25.74	10.37	36.11

Funds availability and status of utilization thereof:

During financial year 2021-22, against sanction of Revised Detailed Project Report (DPR) of ₹1,911.12 crores, a sum of ₹ 171.38 crores (For Recurring & non-recurring Purpose ₹ 106.68 crores + For HEFA Purpose ₹ 64.70 crores) were released by Ministry of Education and Deficit under OH-31 being added from IRG credited to Grant-in-Aid ₹ 5.19 crores. The Internal income of the Institute reckoned during the year was ₹ 44.86 crores, after adjusting payment of 25% HEFA principal loan from IRG (Institute share) ₹ 11.98 crores and after considering the unspent balance as on 01.04.21 of ₹ 56.07 crores, the total funds available at the disposal of the Institute was of the order of ₹ 277.50 crores.

A sum of ₹31.22 crores have been utilized for the creation of Capital assets and a sum of ₹ 165.31 crores (For Recurring purpose Rs. 99.57 crores + For HEFA purpose ₹ 65.74 crores) (which excludes Depreciation of ₹ 41.85 crores) was incurred on recurring expenditure out of the grant at the disposal with the Institute. Further Internal Revenue Generation for the year amounting to ₹44.86 crores transferred to Corpus Fund.

Reforms, measures and initiatives undertaken during the year include:

During the year under review the following reforms, measures Initiatives were initiated from Finance & Accounts :

Public Finance Management System (PFMS) is a platform for all DBT payments.

Institute has developed payment gateway on IIT Indore website with State Bank of India and HDFC Bank Ltd as channel partner bank for the facility.

Education assistance for children:

During the financial year 2021-2022, the Institute reimbursed a sum of ₹ 42,46,000/- 118 faculty and staff members against for education assistance according to Government of India norms.

Transport facilities for staff members:

Transport facilities to students/ faculty members/ staff members have been provided for the benefit of movement of staff from institute campus to Indore city at subsidized rates as the IITI Campus is located far away from Indore city.

Advances:

During the reporting year, a total sum of ₹ 96.52 lakhs was sanctioned as personal advances for the following.

Sl. No.	Nature of Advance	No. of Beneficiaries	Amount Sanctioned	Amount outstanding as on 31.03.2022
			(in ₹)	(in ₹)
1	House Building Advance	02	19,48,880	89,91,216
2	Car Advance	-	-	77,000
3	Two-wheeler advance	-	-	6,500
4	Personal computer advance	07	3,49,900	5,77,404
Total			22,98,780	96,52,120

Insurance:

Group Medical Insurance cover of ₹ 2.50 lakhs is provided for In-Patient treatment and Group Personal Accident cover of ₹ 5.00 lakhs is provided to all Students of the Institute. Expenses towards insurance is ₹ 10,97,273/- during financial year 2021-22. Care of Out-patient treatment is taken care mainly by the Health Center internally.

Fellowships/scholarships:

To Research Students:

During financial year 2021-22, Institute has disbursed Fellowships for following category of Students:

S. No.	Category of Students	No. Studer	Fellowship (per month)
01.	Institute Funded through MOE grant-PHD	189	JRF- ₹ 31,000/- SRF- ₹ 35,000/-
02.	DST Funded (PHD)	33	
03.	CSIR Funded (PHD)	78	
04.	UGC Funded (PHD)	92	
05.	Institute Funded through MOE grant – M. Tech.	122	₹ 12,400/-
06.	Institute Funded through MOE grant – M. S. Research	41	₹ 12,400/-
07.	DBT – NCCS Pune	5	₹35,000/-

Merit cum Means Scholarship:

Institute has disbursed ₹ 1,34,98,192/- as Merit cum Means Scholarships to B. Tech & MSc. Students who are meeting the eligibility criteria set by Institute under various categories.

Remission of Tuition Fees to Depraved Class of Students:

Institute has Remitted/dispensed ₹ 4,30,77,937/- as Remission of Tuition fees of Under Graduate Students of Depraved Class admitted in Academic Session 2021-22 as per Ministry of Education letter F. No. 24-2/2016 TS 1 dated April 04, 2016.

Summary of the Balance Sheet and Income & Expenditure is as under:

A. BALANCE SHEET AS AT 31ST MARCH'2022
(Amount in ₹)

SOURCES OF FUNDS	SCHEDULE	AS AT 31-03-2022	AS AT 31-03-2021
Corpus/Capital Fund	1	9,29,09,26,320	8,35,93,31,248
Designated/Earmarked/Endowment Funds	2	15,43,59,784	12,34,96,131
Current Liabilities & Provisions	3	3,71,59,69,394	4,29,67,02,488
TOTAL		13,16,12,55,498	12,77,95,29,867
APPLICATION OF FUNDS			
FIXED ASSETS	4		
A. Tangible Assets		9,39,51,66,561	8,53,21,73,071
B. Intangible Assets		3,76,96,022	4,34,99,732
C. Capital Work-In-Progress		47,37,67,960	95,49,74,024
INVESTMENTS FROM EARMARKED/ ENDOWMENT FUNDS	5		
Long Term			
Short Term		5,75,571	5,75,571
INVESTMENTS - OTHERS	6	-	-
CURRENT ASSETS	7	2,86,99,62,108	2,80,33,48,531
LOANS, ADVANCES & DEPOSITS	8	38,40,87,276	44,49,58,939
TOTAL		13,16,12,55,498	12,77,95,29,867

B. INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH'2022

(Amount in ₹)

PARTICULARS	SCHEDULE	2021-2022	2020-2021
(A) INCOME			
Academic Receipts	9	252,976,202	202,933,380
Grants & Subsidies:			
i. Grant Utilised for payment of Interest on Term Loan from HEI	10	1,149,235,713	1,040,099,273
ii. Grant Utilised for Revenue Expenditure			
iii. IRG Utilised for Revenue Expenditure			
Income from Investments	11	85,436,386	58,375,213
Interest Earned	12	34,060,991	74,459,952
Other Income	13	316,598,982	10,505,882
Prior Period Income	14	13,475,118	6,775,974
TOTAL (A)		1,851,783,391	1,393,149,674
(B) EXPENDITURE			
Staff Payments & Benefits (Establishment Exp)	15	654,598,650	541,079,060
Academic Expenses	16	189,120,212	179,115,960
Administrative and General Expenses	17	209,121,862	191,762,101
Transportation Expenses	18	3,148,192	2,168,764
Repairs and Maintenance	19	27,885,142	28,328,871
Finance Costs	20	153,568,757	136,025,231
Depreciation	4	418,513,266	371,460,138
Other Expenses	21	2,265,823	8,935,484
Prior Period Expenses	22	7,591,103	9,494,564
TOTAL (B)		1,665,813,007	1,468,370,173
Balance being excess of Income over Expenditure (A-B)		185,970,384	-75,220,499
Less: (i) Interest on grant (payable to MOE)		-34,060,991	-74,459,952
(ii) Deficit under OH-31 being Utilised from IRG		-51,897,669	-29,046,182
(iii) Payment of 25% HEFA Principal Loan from IRG (Institute Share)		-167,979,343	-119,848,542
(iv) Transfer to Corpus fund towards Internal Revenue Generation of 2021-2022 (2020-21) (See Significant Accounting Policies - point no. 8.1)		-448,609,675	-129,695,725
Total		-516,577,294	-428,270,900
Add: Amount transfer from Capital Fund			
- Depreciation	418,513,266	-	-
- Leave Encashment liability	80,446,821	-	-
- Gratuity liability	17,617,207	-	-
Balance being Surplus (Deficit) Carried to Capital Fund		-516,577,294	-428,270,900

Campus Infrastructure Development

The Infrastructure Development Office constructed and developed various buildings, services, and infrastructure facilities in the campus.

Building/ Services completed during the year :

1. Nalanda Auditorium with AV facilities
2. Kshipra Residential Complex
3. Indoor Sports Complex
4. Vehicle Covered Parking
5. Central Air-Cooling facilities
6. Construction of Permanent sitting benches
7. Providing and fixing raised flooring in the Computer & Information Center
8. Construction of front canopy shed, compound gate at Kshipra Residential Complex
9. Road marking & Kerb stone painting of Campus roads
10. Construction of Automatic Sliding gates at Gate no. 1B at Road No. 1
11. Toughene
12. Interior Furnishing of Drishti Bhavan (Taste Buds) for TIH activities
13. Repairing & Painting work at School Building at IIT Indore

Details of Completed Projects/ Works:

1. Nalanda Auditorium with AV facilities

Date of completion: 15.04.2021

Configuration – G +2

Brief Description: The Nalanda auditorium having capacity of more than 2000, & the same is one of the largest in Central India.

Nalanda auditorium is equipped with latest AV facility with special stage lighting provision. The height of the auditorium is 22m. A unique feature of the auditorium is that the slab is supported on PT beam structure and there is NO column throughout its span of 45 m.



2. Kshipra Residential Complex

Estimated Cost – Rs. 29.56 Crs

Built Up area – 10000 sqm.

Date of Completion – 31.05.2021

Configuration – G +6

Brief Description: The KRC is a residential facility comprising 27 2BHK units and 27 3 BHK units for staff and faculty members of IIT Indore. It also has a common hall on the ground floor for the community members.



3. Indoor Sports Complex

Estimated Cost – Rs. 12.63 crores

Built Up area – 4,257 sqm

Date of Completion – 03.05.2022

Brief Description: a) Indoor Badminton Court (06 numbers)

b) Indoor Basketball Court – (02 numbers)

c) Viewing gallery capacity is 580 numbers (Basketball & Badminton Court)

d) Gym

e) Squash Court (03 numbers)

f) Swimming pool of Olympics size (50 meters x 25 meters) (Capacity of viewing gallery -288 Nos.)

g) Outdoor Volleyball Court

h) Outdoor Basketball Court



4. Vehicle Covered Parking in front of JC Bose

Estimated Cost – Rs. 29,92,400

Built Up area –640 sqm

Date of Completion –19.02.2022

Brief Description: To Facilitate the Parking facilities for the IIT community



5. Centrally Air-Conditioning Facilities

Estimated Cost – Rs. 29.42 cr

Date of Completion –

Brief Description: Laboratories, Offices, Learning Resource Center & Lecture Hall Complex are fully equipped with Central Air-Cooling facilities connected by the Central HVAC Plant

6. Construction of Permanent sitting benches at bus stops (E-Vehicles) at IIT Indore

Estimated Cost – Rs.3,53,010

Date of Completion – 15.06.2021

Brief Description: To facilitate students, faculties and staff members



7. Providing and fixing raised flooring in the Computer & Information Center (Hub building) at IIT Indore

Estimated Cost – Rs.12,94,084

Built Up area –200 sqm

Date of Completion – 04.02.2022

Brief Description: The raised flooring is done to provide an elevated structural floor above a solid substrate (often a concrete slab) to create a hidden void for the passage of mechanical and electrical services.



8. Construction of front canopy shed, compound gate at Kshipra Residential Complex at IIT Indore

Estimated Cost – Rs.6,72,501

Built Up area – 70.43 sqm

Date of Completion – 05.03.2022

Brief Description: To protect the entrance foyer from rain and direct sunlight and also to restrict the rain water entry in lift area.



9. Road marking & Kerb stone painting of Campus roads at IIT Indore

Estimated Cost – Rs. 18,24,500

Date of Completion – 08.11.2021

Brief Description: To guide and control traffic within the campus roads and kerb stone painting done for day and night visibility, with different color combinations as per requirement/design



10. Construction of Automatic Sliding gates at Gate no. 1B at Road No. 15 at IIT Indore

Estimated Cost – Rs. 10,81,450

Date of Completion – 27.08.2021

Brief Description: To control the traffic and movement of vehicles by security personnel by providing automated system



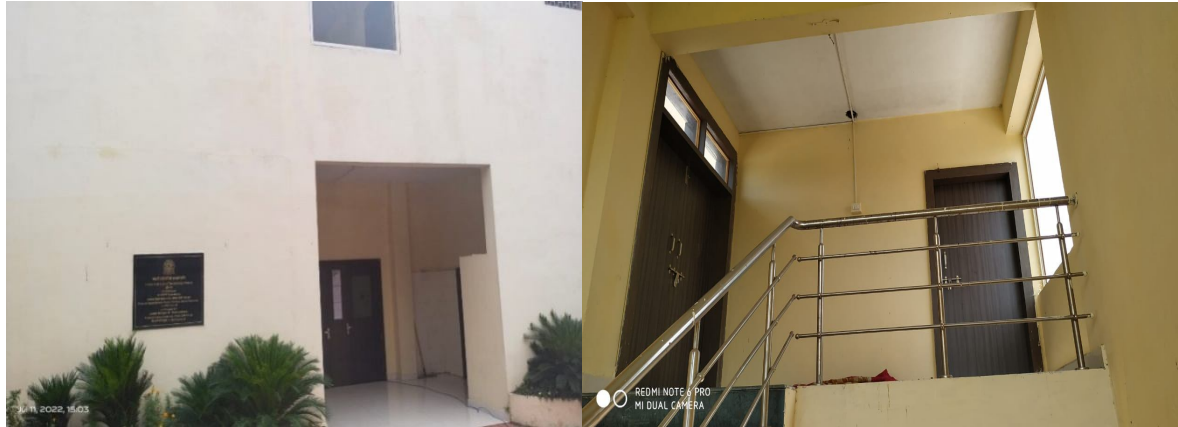
11. Interior Furnishing of Drishti Bhavan “Office of IIT Drishti CPS Foundation) for TIH activities at IIT Indore

Estimated Cost – Rs. 8,88,060

Built Up area – 405.5 sqm

Date of Completion – 28.06.2021

Brief Description: Setting up of Drishti Bhavan for TIH activities



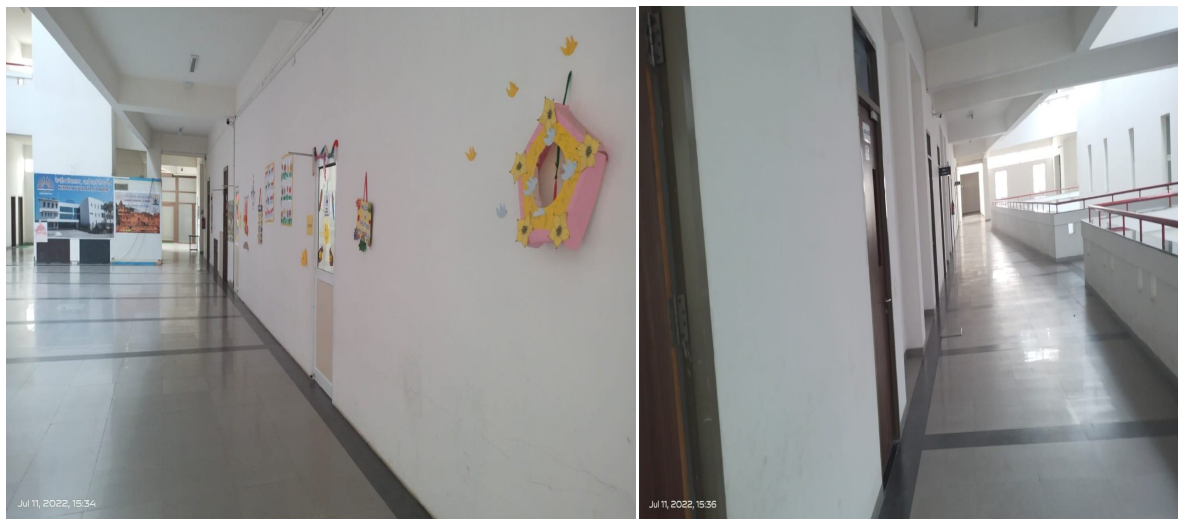
12. Repairing & Painting work at School Building at IIT Indore

Estimated Cost – Rs. 5,77,565

Built Up area – 8628 Sqm.

Date of Completion – 23.07.2021

Brief Description: The building was occupied in the year 2016-17. The painting was got damaged at various locations. The painting was done o enhance the life of building.



IIT NEWS

IIT Indore and DAVV ink pacts with AIGGPA over public policy, governance



IIT Indore and AIGGPA officials pose for a photo after signing pact on IIT Indore campus on Tuesday.

OUR STAFF REPORTER Indore Two leading educational institutions of the city...

आइआईटी इंदौर व आरआरकेट मिलकर करेंगे शोध कार्य

इंदौर (संविधान प्रतिक्रिया) राजा रामदास प्रौद्योगिकी केंद्र (आरआरकेट) और परंपरागत प्रौद्योगिकी संस्थान (आइआईटी) इंदौर के बीच...

IIT-I sets up DRISHTI in Interdisciplinary Cyber Physical Systems

OUR STAFF REPORTER Indore The Indian Institute of Technology Indore, has set up a Technology Innovation Hub (TIH) named DRISHTI...

499 students step out with IIT degree

OUR STAFF REPORTER Indore A group of students and faculty members gathered for the convocation ceremony...

आइआईटी इंदौर में हो रही हरियाली की 'इंजीनियरिंग'

गर्जन दिवसकर्मा इंदौर भारतीय प्रौद्योगिकी संस्थान (आइआईटी) इंदौर अब हरियाली की इंजीनियरिंग भी कर रहा है...

IIT develops low-cost coloured bricks for affordable rural houses

Times News Network Indore Indian Institute of Technology (IIT), Indore has developed a low-cost coloured bricks using stone waste...

Army student officers see facilities at IIT-Indore

OUR STAFF REPORTER Indore Future technical officers of the Indian Army who are undergoing training at the MCTE, Mhow...

IIM-IIT Indore's first joint master's degree course launched

OUR STAFF REPORTER Indore The first batch of two-year Master of Science in Data Science and Management (MSDM)...

आंत्रप्रन्थार को आइआइएम और आइआईटी दे रहे आत्मनिर्भरता का

इंदौर (संविधान प्रतिक्रिया) भारतीय प्रौद्योगिकी संस्थान (आइआईटी) इंदौर के कुशलता से आंत्रप्रन्थार को आइआइएम और आइआईटी दे रहे आत्मनिर्भरता का...

500 एकाइ परिसर में 70% क्षेत्र को हारभरा करनी तैयारी

भारतीय प्रौद्योगिकी संस्थान में लागतार विकास कार्य जारी, हर वर्ष रोजे जा रहे एक हजार से ज्यादा पौधे

IIT Indore faculty represents South Asia at Stanford University

OUR STAFF REPORTER
Indore

A faculty member of Indore Institute of Technology (IIT) Indore represented South Asia at Stanford University in Exploring Humanities, Pedagogies, Conversations, Controversies, and Connections, a conference organised by Humanities Pedagogy Collective on July 15. The conference attended by Dr Ananya Ghoshal, assistant professor of English, aimed to connect educators, scholars, and practitioners across disciplines and explore new pedagogical approaches for the 21st century in a post-pandemic world. IIT Indore was in a press release issued on Monday. Along with Stanford University, more than 35 major universities, schools, and colleges also participated, including Princeton University, National Humanities Alliance (NHA, Washington), University of California Berkeley, Uppsala University, and the University of Toronto. Dr. Helling Ghoshal, IIT Indore's acting director, said that such global representation of the institute speaks about the richness of experience and research of the faculty members. Dr Ghoshal was a panelist for both the opening and the closing plenaries of the conference and presented a talk on "Integrating Ecocriticism and the Humanities".

MP Vignay Sarmelan ends on a high note 'There's a need to link ancient Indian knowledge with education system'

OUR STAFF REPORTER
Indore

Union minister of state for education Subhash Sarker said here on Saturday that the Indian Institute of Technology should link ancient Indian knowledge to the education system. India was known for its world-class institutions, such as Nalanda, Vikramashila, Takshashila, Vallabhi, and so forth where quality multi-disciplinary teaching and research were common, he said while addressing the valedictory function of the Madhya Pradesh Vignay Sarmelan (MPSV-500) at IIT Indore. He was the chief guest of the function. "Our institutions used to practise the Vedas with the Sciences, Mathematics, Ayurveda, Literature, Economics, Engineering, Astronomy and human values. These institutions produced great scholars, such as Charak, Susruta, Aryabhata, Varahamihira, Bhaskaracharya, Brahmagupta, Chanakya, Panini, Gargi and Maitreyi among numerous others who made substantial contributions to the growth of knowledge in diverse fields like Mathematics, Astronomy, Medical Sciences, Yoga, Fine Arts, Surgery, Civil Engineering and so forth," Sarker said. He added that the National Education Policy (NEP), 2020 would be held on an even more meaningful occasion.

IIT-I gets patent for design invention Professor Of The Institute Gets Another Individual Patent

OUR STAFF REPORTER
Indore

Professor of the Institute of Technology (IIT), Indore has received a patent for a design invention relating to a bacterial life cycle that is applied by a desludging digital chips of cameras systems and mobile devices. The invention "Design Space Exploration Using a Bacterial Optimization Mechanism," is being used for various magnitudes efficient state of the art inventions used for this purpose, claimed the Institute. Speaking about the invention, Dr Anshu Sengupta, faculty at Computer Science Department, IIT Indore said, "The invention is capable of enhancing the speed of the chips and reducing power using biological chemistry and elimination-diffusion processes." Sengupta said, "The present invention relates to design space exploration (DSE) and more particularly to a design exploration system using a bacterial foraging optimization algorithm for designing or obtaining an application processor (ASP) or hardware accelerator. The invention is a novel approach to treat Acute Lymphocytic Leukemia (ALL). Approximately 26,000 new cases of ALL are diagnosed in India each year. Professor Avinash Sonawane, principal investigator of the research, said, "Since last 12 years, with the financial support from DST, SERB, IISRT and IIRIS, Government of India, we were working to develop a novel asparaginase drug that can reduce serious side effects as well as improve the treatment of primary and relapsed ALL treatment." The repeated administration of asparaginase currently in use for the treatment of ALL patients causes serious side effects such as allergic reactions, neurotoxicity, immunogenicity, pancreas, liver and spleen among other organs.

IIT Indore maintains position in World University Rankings

OUR STAFF REPORTER
Indore

IIT Indore is 4th amongst the Indian universities. Maintaining its previous position, IIT Indore has again found place in a band of institutions ranked between 40-50 in the Times Higher Education World University Rankings 2022. IIT Indore is 4th amongst the Indian universities in the global university rankings. The Times Higher Education World University Rankings 2022 include more than 1,500 universities across 80 countries and regions, making them the largest and most diverse university rankings to date. The rankings use 13 carefully calibrated performance indicators that measure an institution's performance across four areas: teaching, research, knowledge transfer and international outlook. Though IIT Indore could not climb up in the upper band this year, it maintained its position.

आइआईटी में जलवायु परिवर्तन और पर्यावरण पर मंथन शुरू

आइआईटी में जलवायु परिवर्तन और पर्यावरण पर मंथन शुरू

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योग से सहयोग के मंत्र का अनुसरण

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आईआईटी इंदौर में काउंटर टेरिस्ट डील का पूवर्ध्यास

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आईआईटी इंदौर में काउंटर टेरिस्ट डील का पूवर्ध्यास

आइआईटी इंदौर विश्व रैंकिंग में 84वें स्थान पर

आइआईटी इंदौर विश्व रैंकिंग में 84वें स्थान पर

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IIT-I prof bags National Bio Entrepreneurship Award, 2021

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IIT-Indore joint start-up summit will be held online

IIT-Indore joint start-up summit will be held online

'Rananeeti-The Case Study Challenge' to be introduced this year

OUR STAFF REPORTER
Indore

The seventh edition of the 15 Summit, virtually to be hosted by IIM-Indore and IIT-Indore, will be held from August 20-22. Every year, the 15 Summit brings in a lot of stalwarts of the industry and the entrepreneurial world as speakers at the summit. The guest speakers share their knowledge, expertise and experience with the participants and answer some of the questions that will be posed by the audience. The summit also boasts a flagship event, 'Get Funded', which provides a platform for budding entrepreneurs to present their ideas to more than 10 VC houses at the same time, and also learn from their experiences. **Start-up Expo, 'Chai pe Charcha'** This edition of the summit introduces 'Rananeeti, the 15 Case Study Challenge', a thrilling out-of-the-box event where participants who can devise the most novel and compelling solutions to real-time business conundrums will receive certificates and Rs 20K worth of vouchers and cash prizes. A myriad of workshops in various domains will help sharpen business acumen of the participants. The summit will also witness a panel discussion by in-

आइआईटी इंदौर विश्व रैंकिंग में 84वें स्थान पर

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आइआईटी इंदौर विश्व रैंकिंग में 84वें स्थान पर

IIT-Indore first IIT to start PM Jan Aushadhi Kendra

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IIT-Indore first IIT to start PM Jan Aushadhi Kendra

ALL IN IIT INDORE GET THE JOB

OUR STAFF REPORTER
Indore

Indian Institute of Technology-Indore has probably become the first educational institute in the state to get all inhabitants, including students vaccinated. While many teaching and non teaching members received the second jab of the Covid 19 vaccine, most of the students had got the first shot of late. IIT Indore has organised a special vaccination camp on the campus for students and staff members. The institute claimed that all in residential campus are now vaccinated and those outside the campus have also been suggested to get vaccination done.

शोध नीदरलैंड्स-जापान के प्रोफेसरों के साथ मिलकर किया काम

आइआइटी इंदौर ने खोजी कोविड की नई दवा

आइआइटी इंदौर

इंदौर: लगातार चार दिनों के शोध के बाद आइआइटी इंदौर के शोधकों ने कोविड-19 के लिए नई दवा खोजी है।



कोविड-19 के इलाज के लिए, बलिक संयोजन को नई दवा के रूप में खोजा गया है।

कोविड-19 के इलाज के लिए, बलिक संयोजन को नई दवा के रूप में खोजा गया है।

IIT-B faculty Suhas Joshi is new director of IIT Indore

OUR STAFF REPORTER Indore

Prof. Suhas Shrikumar Joshi, a faculty of IIT Bombay, has been appointed as the new director of IIT Indore.

IIT-Indore to give tech boost to traditional toy sector in state

OUR STAFF REPORTER Indore

Indore: Indian Institute of Technology (IIT) Indore has signed a MoU with the State Government to provide technical support to the traditional toy sector.

5 IIT-I students bag Young Scientist Congress Award

OUR STAFF REPORTER Indore

Five students from IIT Indore have been conferred with the Young Scientist Congress Award by the Council of Science and Technology.

IIT, CIMEI join hands for tech support to startups

Indore: Indian Institute of Technology (IIT), Indore has signed a memorandum of understanding (MoU) with Confederation of Indian MSME in Electronics System Design & Manufacturing (CIMEI).

CIMEI is a registered trade association of entrepreneurs from ESDM segment of MSME across the nation.

'Ek Bharat Shrestha Bharat' unit visits 4 schools

The unit of the 'Ek Bharat Shrestha Bharat' (EBSB) of the Indian Institute of Technology (IIT), Indore, visited the high schools of Simrol village for distribution of education and health kits.



The kits will help the school monitor the health of the students and teachers and create an enabling environment for academic and co-curricular activities.

आइआइटी छोटे संस्थानों को आगे बढ़ाने में करें मदद

इंदौर: आइआइटी इंदौर (IIT) ने छोटे-छोटे संस्थानों को आगे बढ़ाने में मदद करने के लिए एक योजना शुरू की है।

योजना के तहत, आइआइटी इंदौर को छोटे-छोटे संस्थानों को तकनीकी सहायता और प्रशिक्षण प्रदान करने में मदद करने के लिए एक योजना शुरू की है।

Climate extremes in India: Past and Future in Environmental Science

OUR STAFF REPORTER Indore

Climate extremes in India: Past and Future in Environmental Science. A research project led by Prof. Jayachandran S. studied the impact of climate change on the environment.

आइआइटी इंदौर के पहले माइक्रोप्रोसेसर वेग से विकसित कर रहा ड्रोन

इंदौर: आइआइटी इंदौर के शोधकों ने एक नए प्रकार का ड्रोन विकसित किया है।

यह ड्रोन माइक्रोप्रोसेसर वेग से विकसित किया गया है और इसे विभिन्न अनुप्रयोगों के लिए उपयोग किया जा सकता है।

IIT Indore faculty selected national respondent for Himalayan glaciers

OUR STAFF REPORTER Indore

IIT Indore faculty selected national respondent for Himalayan glaciers. Prof. Mohan Singh has been selected as a national respondent for the study.

आइआइटी छोटे संस्थानों को आगे बढ़ाने में करें मदद

इंदौर: आइआइटी इंदौर (IIT) ने छोटे-छोटे संस्थानों को आगे बढ़ाने में मदद करने के लिए एक योजना शुरू की है।

योजना के तहत, आइआइटी इंदौर को छोटे-छोटे संस्थानों को तकनीकी सहायता और प्रशिक्षण प्रदान करने में मदद करने के लिए एक योजना शुरू की है।

आइआइटी इंदौर देश के पहले माइक्रोप्रोसेसर वेग से विकसित कर रहा ड्रोन

इंदौर: आइआइटी इंदौर के शोधकों ने एक नए प्रकार का ड्रोन विकसित किया है।

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उज्जैन में खुलेगा आइआइटी इंदौर का सेटलाइट कैम्पस : डॉ. यादव

आसपास की शैक्षणिक इकाइयों को शोध कार्य में कराने में मदद

उज्जैन में खुलेगा आइआइटी इंदौर का सेटलाइट कैम्पस : डॉ. यादव। आसपास की शैक्षणिक इकाइयों को शोध कार्य में कराने में मदद।

KV IIT gets sanction up to Class 9

OUR STAFF REPORTER Indore

KV IIT gets sanction up to Class 9. Kendriya Vidyalaya Sangathan has received sanction for Class IX for the academic session 2021-22.

IIT-I, Vijayan Bharti to hold MPVS-2021

OUR STAFF REPORTER Indore

IIT-I, Vijayan Bharti to hold MPVS-2021. A conference was organised at IIT Indore for promoting Madhya Pradesh Skilled Manpower (MPVS-2021).

हाइड्रोजन पयूल के उपयोग पर कोर्स करा रहा आइआइटी इंदौर

इंदौर: मानव संसाधन विकास मंत्रालय के सहयोग से भारतीय प्रौद्योगिकी संस्थान (आइआइटी) इंदौर में सूअ आफ हाइड्रोजन पयूल के उपयोग पर पांच दिनी शार्ट टर्म कोर्स कराया जाएगा।

इंदौर: मानव संसाधन विकास मंत्रालय के सहयोग से भारतीय प्रौद्योगिकी संस्थान (आइआइटी) इंदौर में सूअ आफ हाइड्रोजन पयूल के उपयोग पर पांच दिनी शार्ट टर्म कोर्स कराया जाएगा।

In Covid times, IIT-I gets 5 patents for research work

OUR STAFF REPORTER Indore

In Covid times, IIT-I gets 5 patents for research work. Researchers at IIT Indore have filed 5 patents during Covid-19 pandemic.

IIT-I developing surveillance system to detect forest fire

OUR STAFF REPORTER Indore

IIT-I developing surveillance system to detect forest fire. Researchers at IIT Indore are developing a surveillance system to detect forest fires.

आइआइटी इंदौर जल्दी शुरू करेगा बायोमेडिकल इंजीनियरिंग में एमटेक

इंदौर: आइआइटी इंदौर जल्दी शुरू करेगा बायोमेडिकल इंजीनियरिंग में एमटेक।

इंदौर: आइआइटी इंदौर जल्दी शुरू करेगा बायोमेडिकल इंजीनियरिंग में एमटेक।

आइआइटी इंदौर देश के पहले माइक्रोप्रोसेसर वेग से विकसित कर रहा ड्रोन

इंदौर: आइआइटी इंदौर के शोधकों ने एक नए प्रकार का ड्रोन विकसित किया है।

यह ड्रोन माइक्रोप्रोसेसर वेग से विकसित किया गया है और इसे विभिन्न अनुप्रयोगों के लिए उपयोग किया जा सकता है।

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IIT Indore - Ranked 396th in QS World University Rankings 2023

In yet another matter of great pride to Indore, IIT Indore has been ranked 396th in the QS World University Rankings 2023. It is 9th amongst the Indian Universities and is ranked the highest amongst the second generation IITs. The universities are judged across 08 key ranking indicators including academics, research, citations, international outlook and employment outcomes to provide the most comprehensive and balanced comparisons available. This year's QS World University Rankings included almost 1,500 institutions from around the world including universities from diverse locations across Europe, Asia and North America. Prof. Suhas Joshi, Director, congratulated the IIT Indore community and urged them to pursue their research and academic activities with diligence, which essentially will contribute to growth of the Institute and pave the way for more global recognitions in future.

Institute Functions

1. **International Day of Yoga:** On June 21, 2021 by following the mantra of “Yog se Sahyog” IIT Indore celebrated the 7th International Day of Yoga. The event was streamed live for all the fraternity who could not attend in person owing to the COVID protocol. The event was conducted by Dr. Omanand Guruji. Dr. Omanand is a merit holder throughout education and honoured with various Awards. His students came to Indore from 95 countries who become successful Yoga professionals. He served as President of Hindu University of America, Florida, USA. Currently he is serving as Honorary Patron of Paramanand University Trust and Paramanand Institute of Yoga Sciences & Research. The event saw a large participation and was attended by all the dignitaries including Prof. Neelesh Kumar Jain, Director (Officiating). The one hour event ended with a pledge to inculcate the habit of practicing Yoga on a daily basis. Later the participants, who have been practicing Yoga since before, shared their experience of well-being and benefits.



2. **ATAL FDP on Sustainable Construction Technology conducted by IIT Indore**
:Indian Institute of Technology Indore organized a 5-day Faculty Development Program (FDP) on Sustainable Construction Technology from July 26 to 30, 2021, as a part of FDPs conducted by AICTE Training and Learning (ATAL) Academy. The online program was attended by 200 participants from 22 states and professional and academic backgrounds.

Dr. Sandeep Chaudhary, Program Coordinator and faculty at IIT Indore said “Construction industry has a long way ahead to achieve sustainability and this FDP will add few steps in the right direction. The online program focused on environmental challenges associated with construction industry and their solution with the help of latest sustainable construction technologies. In the course of 5 days, 14 experts from both industry and academia, imparted technical knowledge on various sustainable construction technologies. The diverse professional associations of the experts with reputed institutes, like IITs, NITs, BITS, IIIT, NICMAR, JK Cement and others including foreign universities of South Korea and Belgium, brought knowledge and experience from various aspects of the construction industry. The program also included a session on stress management, to help the participants deal with rising stress levels in the pandemic.”

The participants, during the valedictory ceremony, shared their experience and highly appreciated the FDP, its expert speakers and knowledge shared. The recorded sessions from the program are also available for the public on the YouTube (www.youtube.com/channel/UCE3nxAxJOvB6KrqXf-YTHKA/), to further the knowledge of practising engineers, industry stakeholders, academicians and researchers associated with construction industry.

3. **Vigyan Par Charcha conducted by IIT Indore :** 3. Rastriya Avishkar Abhiyan under Ek Bharat Shrestha Bharat, IIT Indore Team launched a program "Vigyan Par Charcha" in association with the State Education Department, Madhya Pradesh since January 13, 2021. This program is designed for students of Class 6 to 8 to develop their basic scientific concept as well as for teachers to develop their teaching skills by using Internet based tools and reduce stress level created due to online teaching. The program is being organized under the guidance of Dr. Niraj Kumar Shukla, Convener-Ek Bharat Shrestha Bharat, Dr. Ashisha Kumar (Team Leader), Dr. Mrigendra Dubey and Dr. Ajay Kumar Kushwaha. Also, the non-teaching staff members of IIT Indore Mr. Praveen Koushal, Mr. Lalit Jain and Mr. Neeraj Kumar Soni worked as a supporting staff for the program.

Prof. Neelesh Kumar Jain, Director (Officiating) said "The growing viewership of the program shows the interest amongst the students and teachers towards Science. Such programs not only find the hidden talents but also improve the education system as it is intended for teachers as well."

4. **Celebration of 75th Independence Day :** IIT Indore celebrated the 75th Independence Day with great zeal and fervor. The occasion was marked by hoisting of the national tricolor by Professor Neelesh Kumar Jain, Director (Officiating). This time we are celebrating the 75th Independence Day as the Azadi ka Amrit Mahotsav and lot of events are being conducted by the Institute to participate in this grandeur celebration. Though we do not belong to the era of freedom struggle, but definitely we have a greater role in nation building. There are lot of disruptive innovations required in the field of climate change, cleanliness, energy storage, removal of technical illiteracy. We as an IIT community have a larger role to initiate such innovations."

The Institute has conducted Fit India Freedom run 2.0 to make a resolve to include physical activity for at least 30 mins daily in our lives i.e. Fitness ki Dose, Adha Ghanta Roz. Similarly, the community is actively taking part in singing the National Anthem and uploading their videos in the designated portal by Government of India. Quizzes emphasizing on the freedom struggle are being conducted.

Prof. Jain also inaugurated the green initiative of QR code of plants in the Institute campus for cataloging and sharing the plant kingdom information with use of latest technology. Earlier, the Institute had the inauguration of new facility, Drishti Bhavan, IITI Drishti CPS Foundation, on August 12, 2021 by Prof. Deepak B. Phatak, Chairman, Board of Governors.



5. **NSG conducts mock drill at IITI** :26 Special Composite Group of National Security Guard conducted an exercise at IIT Indore on August 21, 2021. A total of 170 commandoes participated in the exercise along with local administration, local police, ATS, IB, State emergency services, State Disaster Management Forces, Fire and Medical Services. Apart from practicing the drills and procedures of NSG, the exercise was done to fine tune the coordination aspects with various agencies. It was aimed at honing and rehearsing Counter Terrorist drills so that optimum levels of Operational Preparedness are maintained to enhance the capacity of first responders.

Various emergencies were triggered simulating actual scenarios including medical and hostage situation. The commandoes performed various manoeuvres which included rappelling, forced entry, use of detonators thus thwarting the attempt of any possible destruction or hostage situation. The exercise commenced at 9:30 a.m. and lasted for 5 hours.



6. **Celebration of Teachers' Day 2021** :IIT Indore celebrated the Teachers' Day on September 5, 2021. Prof. Deepak B. Phatak, Chairperson, BoG was invited as Chief Guest for the event followed by the Distribution of Institute Awards for the Best Technology Development, Best Undergraduate Researcher, Best Teacher and Best Research Paper.



7. **Visit of Army Student Officers to IIT Indore** :IIT Indore hosted future Technical Officers of the Indian Army who are undergoing training at MCTE, Mhow on September 9, 2021. The visit was organized by Centre of Futuristic Defence and Space Technology (CFDST).

The student officers visited various labs and facilities of IIT Indore. It included laboratories of Civil Engineering, Computer Science Engineering, Mechanical Engineering, MEMS, Chemistry, Astronomy, Physics and Sophisticated Instrumentation Center. They were also given a brief introduction on the history and research activities of the Institute by Dr. Devendra Deshmukh, Dean of Academic Affairs. The student officers also interacted with the Faculty Members, Staff and Research Scholars. Further, they discussed methodology adopted by IIT Indore for research-driven teaching, innovation and application-

oriented research. The student officers were eager to learn different technology employed in CNC machine, X-Ray machine, Raman Spectroscopy etc.

Dr. Indrasen Singh, Head, CFDST organized the visit on behalf of the Institute. He said "IIT Indore conducts various research activities related to varied field including defence. The proximity of both the Institutes would act in advantage to further collaborate in common interest and areas. We have a MoU with MCTE to have close working relationship in terms of scientific research, exchange of know-how in various fields of expertise and sharing of facilities/resources between MCTE MHOW and IIT Indore."



8. **IIT Indore celebrates Mahatma Gandhi and Lal Bahadur Shastri Jayanti** :The day of Mahatma Gandhi and Lal Bahadur Shastri Jayanti was a plethora of activities for IIT Indore. The celebration started with the inauguration of nursery by Prof. Neelesh Kumar Jain, Director (Officiating), IIT Indore in the presence of Mr. S.P. Hota, Registrar In-charge. The structure of the 2000 sq. ft. nursery has been made from unserviceable material and in-house efforts. It houses various plants including organic, medicinal and herbal.

It was followed by a series of cultural program highlighting various important incidents and aspects of the life of Mahatma Gandhi and Shri Lal Bahadur Shastri. Students, Faculty, Staff, Families and Children actively participated in the event. During the occasion, Prof. Neelesh Kumar Jain said "We should endeavour to imbibe some of the qualities of Mahatma Gandhi and Shri Lal Bahadur Shastri. We need to follow the mantra of forgive and forget as was followed by Mahatama Gandhi. We may be able to rule any country by weapon or by force but if we have to win hearts then it can be done only through the spirit of truth and non-violence. We should work upon Swachh se Swasthya, the mandate of Mahatma Gandhi and the present government. The end should not justify the means hence we should be very careful in choosing the path leading to our destination. Shri Lal Bahadur Shastri has also had a great impact on the country. He had sown the seeds of green revolution through Jai Jawan Jai Kisan."



As part of an outreach Programs for local development in line with the Atmanirbhar Programs of the Government of India, Centre for Rural Development (CRDT), IIT Indore organized special Atmanirbhar stalls in the Takshila Lecture Hall Complex. These stalls were used for display and sale of organic and handmade products by the local tribal villagers of Simrol-Choral area and Khadi & Village Industries. It also included Fabric with hand block print Handloom and Classical Music design by Huda printers and crafters, handmade toys by National Leather Arts, Social and Rural development by Yashvi foundation, Handloom cluster Kasrawad Art Cluster and MP garments and batik prints, Supari Art and Kalakriti. A special display of books on the Life and Teachings of Mahatma Gandhi was also organized in the Learning Resource Centre of the Institute. Dr. Sandeep Choudhary, Convener CRDT apprised the audience on the vision of CRDT of providing a platform to local artisan and Collaborative Research Activities to develop products and technologies for rural people.

- IIT Indore to conduct 9th convocation in Hybrid mode :** IIT Indore organized its 9th convocation on 9th November 2021 with Principal Scientific Adviser to Govt of India Prof. K. Vijay Raghavan gracing the occasion as the Chief Guest. Shri Amit Khare, Advisor to the Hon'ble Prime Minister would be the Guest of Honour and Prof. Deepak B. Phatak, Chairperson, BoG will preside the ceremony. In this convocation total number of 498 students received their degrees which is largest number of the students graduating from IIT Indore till now. There are 2 recipients of gold medal (i.e. President of India and Buti Foundation), 8 recipients for Institute Silver Medals in different categories and a recipient of Best BTech project award. There are 4 female students of 11 recipients of medals and awards. This convocation is being organized in hybrid mode in which around 270 graduating students are attending it in person and others online.



- Celebrations of Constitution Day on 26th November 2021 :** The Institute celebrated the Constitution Day of India on 26th November 2021 to commemorate the day of adoption of our Constitution, a mass reading of the Preamble of the Constitution was organized at IIT Indore. Information about the two portals developed by the Ministry of Parliamentary Affairs were also circulated for wider publicity among the IIT community, including students, employees, families and their friends.



11. **Madhya Pradesh Vigyan Sammelan and Expo.2021:** On 25 Dec, 2021, Hon'ble Minister of State for Education, Government of India Dr. Subhash Sarkar visited IIT Indore Campus, as a Chief Guest for the valedictory ceremony of Madhya Pradesh Vigyan Sammelan and Expo.2021.

Minister inspired faculties to link ancient India's knowledge in educational system. He also added that NEP 2020 aims to enhance the new learning paradigm through the adoption of new education technologies or developing available in-house skills. National Education Policy 2020 has laid special focus on the use of technology in the teaching-learning process. It emphasizes online learning with proper support of digital infrastructure and bridging the present digital gap. He concluded his talk with many congratulations IIT Indore, MPCST and Vijnana Bharti for successfully conducting the MPVS-2021.

He also chaired an Important discussion meeting regarding academics, research & devolvement, international affairs, patents, incubation, entrepreneurship, Industry relations and general administration with all Deans, Registrar, and higher officials of IIT Indore. He also discussed the NEP plans pertaining to IIT systems, Technology development and make in India. Dr. Sarkar deliberated the initiatives of IIT Indore for the implementation of NEP-2020 and how IIT Indore is contributing towards the vision of Prime Minister Shri Narendra Modi Ji to make India Vishwa Guru.

Dr. Mohan Yadav, Hon'ble Minister of Higher Education, Govt. of MP praises the support provided by IIT, Vigyan Bharti and MPCST to implement NEP in Madhya Pradesh, Dr. Mohan also added that ideas of the common man also creates new inventions.

He visited hi-tech buildings, labs, Kshipra Residential Complex, Nursery & KV School, Central Workshop, HVAC Plant, Hostels, Central Dining Hall, MP region's biggest pillarless Auditorium, Health Center, Abhinandan Bhavan and Learning Resource Center. He has Inaugurated the RFID System Learning Resource Center (Library).

The event was concluded with the vote of thanks by General Secretary of MPVS-2021 Dr. Santsh Kumar Vishvakarma, Faculty of IIT Indore.



12. **World Hindi Day-2022 (January 10, 2022)** :The “World Hindi Day-2022”, was organized by the Institute Rajbhasha Samiti at IIT Indore. Prof. Neelesh Kumar Jain, Director (Officiating) graced the occasion as the Chief Guest. During his address, he emphasized the need to carry out the research and teaching activities in Rajbhasha and also in various Indian regional Languages. Citing examples of excellent research work done in China and Japan in their own native languages, he stressed upon the fact that language is not a limiting factor in achieving excellence in teaching and research in science and technology.

Dr Rajesh Kumar, Associate Professor and Convener, Rajbhasha Samiti delivered the welcome address and highlighted the importance of Rajbhasha. He demonstrated the power of Rajbhasha in making the learning process simple and lucid with posters designed on scientific topics by the Research Scholars. The event was also graced by Shri S.P Hota , Registrar In-charge. During his address, he highlighted the initiatives taken by the Institute in promoting the use of Rajbhasha such as use of bilingual signages, name boards, honour boards, letter heads and substantial increase in correspondence in Rajbhasha, cash incentives awarded for promoting Rajbhasha and also about the future plans for promotion and implementation of Rajbhasha to make it globally significant.

The event culminated with inauguration of Poster Presentation Competition at Library and Resource Centre. The participants and guests were also presented with coffee mugs printed with various themes and research scripts in Hindi as mark of appreciation. There was overwhelming response by the entire IIT Indore community.



13. **Celebration of 73rd Republic Day at IIT Indore** : IIT Indore celebrated the 73rd Republic Day with great zeal and fervour. The occasion was marked by hoisting of the national tricolor by Professor Neelesh Kumar Jain, Director (Officiating). In the prevalent pandemic situation, the physical presence of the guests was limited, and the event was webcasted live on the Institute website for the community.

Prof. Jain addressed the community and appreciated the efforts of the Institute during the pandemic situation. He said “I congratulate everyone on the occasion of 73rd Republic Day. We have done very good work in the last 25 months. Whilst we have done exceedingly well in the fields of research and academics, we have significantly increased our outreach and inclusiveness. We have signed 17 international and national MoUs and have been granted 11 patents. The majority of the students of KV IIT Indore belong to nearby villages and areas which shows our commitment towards inclusiveness. All of this has possible due to hard work, patience and perseverance of the entire community. It should be our endeavour to focus now on our future goals. The Institute should focus on developing patents, incubation & start-up, quality publication.”



14. **Professor Suhas S. Joshi takes over as the Director of IIT Indore** :Professor Suhas S. Joshi, Department of Mechanical Engineering, IIT Bombay has taken over as the second regular Director of IIT Indore from January 31, 2022. He takes over the charge from Professor Neelesh Kumar Jain who was the Officiating Director since Professor Pradeep Mathur relinquished his term as the Director on December 31, 2019.

13. **Celebration of 13th Foundation Day of IIT Indore** :Indian Institute of Technology Indore celebrated the 13th Foundation Day of the Institute on February 17, 2022. A series of event was planned during the day. Shri Shankar V. Nakhe, Director RR CAT was the Chief Guest. Prof. Deepak B. Phatak, Chairman, Board of Governors was the Guest of Honour and Prof. Suhas Joshi, Director, was present during the event.

The event started with the inauguration of Pradhan Mantri Jan Aushadi Kendra, which is one of the largest medicine supply chain networks. IIT Indore is the first IIT to open such a centre for the benefit of common people. The Kendra will provide medicine and surgicals at subsidized price which will not only benefit the community but also the locals. Magnum Opus 22, annual Alumni meet, flagship event of the Alumni Cell was declared open. Various talks and discussions will happen during the next few days involving the Alumni and IITI community.

Shri Nakhe highlighted the achievements of RRCAT and said “RRCAT has been associated with IIT Indore from the very first day. In the formative years of IIT Indore, RRCAT community was associated with IIT Indore for the development of labs, lab manuals and certain set-ups. Shri Nakhe congratulated all the stakeholders and community of IIT Indore to give wings to the students to fly, to think big and venture into the world with great knowledge. Institute Awards were also given to the non-teaching staff during the event.



14. **National Science Day 2022** :As an outreach event, Indian Institute of Technology Indore conducted a series of event during the National Science Day. The events, conducted by the Department of Chemistry, included online Science Drawing competition and Science model and Quiz competition held on February 27 & 28, 2022 respectively. Over 200 students from various schools of Indore participated in the drawing competition. Several teams of students from SICA School (No. 2 and 3), Army Public School, The Millennium School, and Kendriya Vidyalaya IIT Indore participated in Science Model and Quiz competition, where teams presented their innovative idea to find solution to the societal problems. The key theme of the program was to cultivate interest of young school students towards pursuing a career in science through interactive approach.



14. **IIT Indore celebrated International Women's Day** :IIT Indore celebrated the International Women's Day in a 2-day program i.e. March 7 & 8, 2022, felicitating all the women community and recognizing their immense contribution in the path of progress of the Institute. The celebration was also conjoined with Jan Aushadhi Diwas on March 7, 2022. The event was conducted by the Women's Cell in association with the Office of Students Affairs. The theme of the event for "Gender Equity for Sustainability". Dr. Kiran Bala, Convener, Women's Cell welcomed the guests and acknowledged the support provided to the women on their journey of success. The Chief Guest for Jan Aushadhi Diwas was Dr. Pragati Gupta, Ayush Medical Officer, PHC Simrol. The day also included talks by Dr. Nishad Fathima from CSIR-CLRI on "Science pursuits through the lens of a women scientist", Dr. Kalpana Nagpal from Amity University on "Gender equity: a new motivational way ahead" and Dr. Shweta Kaushal from IIM Indore on "Women leaders: the key to sustainable change". Sanitary Pads were also distributed to the labourers working at the campus in collaboration with Pradhan Mantri Jan Aushadhi Kendra (M/s Mishika Pharmaceuticals Pvt. Ltd.).








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