2014-15 ANNUAL REPORT

Indian Institute of Technology Mandi

Indian Institute of Technology Mandi

ANNUAL REPORT

2014-15

INDIAN INSTITUTE OF TECHNOLOGY MANDI
Kamand - 175005, Himachal Pradesh, India

VISION

To be a leader in science and technology education, knowledge creation and innovation, in India marching towards a just, inclusive and sustainable society.

MISSION

- To create knowledge through team effort and individually for the benefit of society
- To impart education to produce professionals capable of leading efforts towards innovative products and processes for the development of the Himalayan region in particular and our country and humanity in general
- To inculcate a spirit of entrepreneurship and to impart the ability to devise globally recognized solutions for the problems of society and industry, particularly in the fragile eco-system of the Himalayas
- To train teachers capable of inspiring the next generation of engineers, scientists and researchers
- To work intensely with industry in pursuit of the above goals of education and research, leading to the development of cutting edge and commercially-viable technologies
- To operate in an ambience marked by overriding respect for ability and merit.

CONTENTS

1. From the Director's Desk
2. Academic Structure 1
2.1 Schools
2.2 Research Groups
2.3 Degree Programmes
2.4 Design Practicum Approach
2.5 Academic Linkages
2.6 Statistics
- Number of students by batch, gender, category and state
- Number of faculty
- Total sponsored R & D by agency and by school

3. Design Practicum 8
4. Academic Schools 14
4.1 School of Computing and Electrical Engineering 14
- Faculty
- Research Projects
- Progress of the Research projects
- Paper Published in National & International Journals
- Book / Book Chapters Published
- Conferences Attended and Paper Presented
- Workshops and Conferences Organized
- List of the Initiatives/Events Organized
- Products/Technologies Developed
- Special Achievement
- Outreach Activities
- New Research Facilities/Equipment Installed/Laboratory Established
- Industry/Field Visit

4.2 School of Engineering 24
- Faculty
- Research Projects
- Progress of the Research Projects
- Few Major Instruments Installed in Design Lab
- Paper Published in International Journals Publications

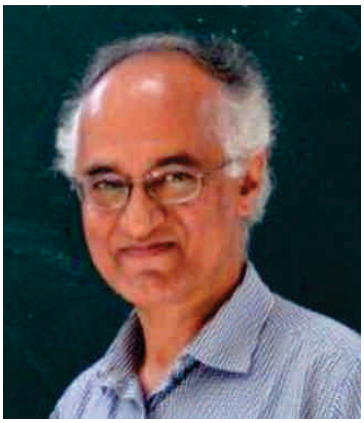
4.3 School of Basic Sciences 33
- Faculty
- Post Doc Fellows
- Research Projects
- Progress of the Research projects
- Paper Published in National & International Journals Publications

- Conferences Attended and Paper Presented
- Outreach Programmes
- Other Achievements

4.4 School of Humanities and Social Sciences 53
- Faculty
- Research Projects
- Book Chapters/Encyclopedia Entries
- Conferences
- Fellowship/Award

5. Memorandum of Understanding (MoU) 56
6. Research Facilities 59
7. UHL: The Centre for Uplifting Himalayan Livelihood(UHL) 61
8. Design and Innovation Centre; Patents, Design and Innovation Culture 61
9. Centre for Design & Fabrication of Electronics Devices (C4DFED) 62
10. Multimedia Analytics and Systems (MAS) 62
11. BioX 63
12. Condenced Matter Physics 63
13. Summer Internship Program 64
14. Central Library 65
15. Student Amenities and Facilities 69
16. National Service Scheme (NSS) 72
17. Hiking and Trekking 76
18. Guidance and Councelling Scheme (GCS) 76
19. Cultural Society 78
20. Important Events 79
21. 6th Foundation Day Celebrations 81
22. Career and Placement Details 83
23. Alumni Affairs 84
24. Permanent Campus 85
25. Board of Governors 92
26. Finance Committee 93
27. Building & Works Committee 94
28. Senate 95
29. Academic Officials 97
30. Administrative Officials 97
31. List of Regular Employees as on 31st March 2015 98
32. List of Contract Employees (On Consolidated Emoluments) as on 31st March 2015 98
33. Student Leadership 98
34. Ph.D Scholars – 2014 Batch 99
35. MS (by Research) Scholars – 2014 Batch 100
36. M.Sc.(Chemistry) – 2014 Batch 100
37. M.Tech. (Energy Materials) – 2014 Batch 100
38. B. Tech. Students – 2014 Batch 101

From the Director's Desk



The year 2014-15 saw IIT Mandi completing 6 years and consolidating our achievement as the only new IIT to develop and occupy its new campus. All of our B. Tech students and over half the PG students, 35% of the faculty and a number of staff live and work in Kamand. The campus has all the basic amenities of a residential IIT with the addition of some sports fields and several canteens. The year 2014-15 has been one of growth of academic activities, with recognition of the achievements of our faculty.

We initiated long-term faculty exchange programmes with the TU9 in Germany, with generous funding from MHRD and the German BMBF. Three faculty from IIT Mandi each spent 2-3 months with their collaborators in Stuttgart University and TU-Berlin. German Professors from Stuttgart University and Karlsruhe Institute of Technology visited IIT Mandi. A further 3 such exchange visits have been approved for 2015.

After a series of brain-storming workshops with academic and industry experts, we initiated a programme in Civil Engineering with a focus on mountain regions by recruiting several young faculty and announcing a B. Tech (Civil Engg.) to commence in August 2015. In 2014-15, we started PG Masters programmes in Chemistry and Materials for Energy, and have planned an integrated MSc-PhD in Physics for 2015-16. PG students have grown to 1/3rd of the student body. With 5 new faculty in BioX, we have initiated research related to agriculture and medicine, and have started a Herbal Garden for use by campus residents.

Our faculty and students have won several laurels. These include: A paper on novel energy materials was featured on the cover of the international journal Energy Technology. MS scholar Aditya Chauhan was awarded the Young Scientist Award in the Indian Sciences Congress, 2015. Shubham Ajmera of the graduating B. Tech batch became the 1st student from IIT Mandi to get a direct job offer from abroad, landing a job with Google, California.

In 2015-16, we expect to continue growing towards world renown. With the fast pace of campus development, we expect to become a fully residential Institute with all 800-900 students and many of the faculty and staff working, playing and living in Kamand. I am confident that our innovative faculty, students and alumni will burnish the lustre of this academic gem in the Himalayas!

Prof. Timothy A Gonsalves

Director

ACADEMIC STRUCTURE

Academic activities teaching, learning and research are carried out in three orthogonal but complementary structures. These are Faculty Schools, Student Degree Programmes and Research Groups. Each of these is designed to serve a distinct purpose. The three interact in flexible ways to best achieve the academic goals of the Institute. The structure encourages inter-disciplinary learning and research that evolves in step with the march of technological innovation.

Schools:

Faculty members belong to broadly and loosely defined Schools. Each School provides a home base for faculty whose interests share some fundamental academic principles. Some faculty members also have joint appointments in other Schools. By broadly grouping faculty members into Schools, IIT Mandi has avoided traditional departments and divisions within the institute. This has been done with a view to actively foster an interdisciplinary culture and collaborative research and projects across disciplines within the institute. Currently, the Schools in the Institute are:

1. School of Computing and Electrical Engineering

Faculty members in the broad areas of computer science, computer engineering, electrical engineering including electronics and semiconductors, signal processing, automation and control and electrical energy systems are all part of this school.

2. School of Engineering

Faculty members from other areas of engineering including mechanical engineering and engineering material science are all part of this school.

3. School of Basic Sciences

Faculty members from all areas of basic sciences, including physics, mathematics, chemistry and biology are all part of this school.

4. School of Humanities and Social Sciences

Faculty members from English, German studies, Economics, Sociology, Psychology and other areas of Humanities and Social Sciences are all part of this school.

During the year 2014-15, 66 full time faculty members belonging to the different Schools and 14 visiting faculty members from established Institutes like IIT Madras and IIT Roorkee participated in different teaching programs. Also, some of the elective courses being offered at other institutions (IIT Delhi, Roorkee, Madras, Kharagpur, MNIT, Bombay, etc.) were conducted via NKN.

More detailed information on the list of faculty members in each schools may be found in the section 'Academic Schools'.

Research Groups:

The structure at IIT Mandi allows for the creation of a Research Group to act as a focus for R&D towards some specific goal. The Group will draw on faculty and students from either one School or from different Schools and Degree Programmes. The Group may have technical and support staff on short-term contracts. Once the goal is achieved, the Group may be disbanded.

An example of a Research Group at the Institute is the Intel Project Group formed for the execution of the Intel-IIT Mandi research project. The group consists of faculty members, post doctoral fellows and research students from the School of Computing and Electrical Engineering and School of Basic Sciences.

Degree Programmes:

1. Bachelor of Technology (B. Tech) in the following engineering disciplines
   a) Computer Science & Engineering (CSE)

b) Electrical Engineering (EE) and

c) Mechanical Engineering (ME)

2. M. S. (by Research) in the following engineering disciplines
   a) Computer Science and Engineering
   b) Mechanical Engineering and
   c) Electrical Engineering
3. Ph. D in Engineering, Basic Sciences and Humanities & Social Sciences
4. M.Sc. (Chemistry)
5. M.Tech. (Energy Materials)

The Degree Programmes are designed according to the job and career needs of students. A student in a given Degree Programme may be taught and guided by faculty members from several Schools. The Degree Programmes may also be started and wound up based solely on job and student aspirations.

Currently, the intake in B.Tech.programme is 40 students in each branch. The institute has plans to introduce B.Tech. in Civil Engineering from Academic Year 2015-16.

A B.Tech. student at IIT Mandi will study foundation courses in basic sciences, engineering sciences and practice, humanities and social sciences, and the core in his/her chosen discipline. Electives in the discipline will enable the student to develop significant knowledge in a specialized area with exposure to research trends and developments. The category of free/open electives outside the chosen discipline will enable the student to obtain significant inter-disciplinary knowledge. In addition, the curriculum allows specialization in a 'Minor' area, by taking a set of 3-4 courses in another discipline.

Two new PG programmes M.Sc. (Chemistry) and M.Tech (Energy Materials) were started from Academic Year 2014-15 with an initial intake of 12 students in each programme.

Design Practicum Approach:

The goal of the B.Tech curriculum at IIT Mandi is to train students to become design engineers capable of conceiving, designing and deploying innovative and cost-effective products and processes for widespread use in the society.

To this end, the curriculum aims at the integration of innovation and design into the learning process. This is achieved through a 'Design Practicum' Model of learning, which is built into the curriculum.

In the first year of the B.Tech programme, the students carry out a 'Reverse Engineering' project, where student teams dismantle a common gadget/equipment, understand how it works and then put it back together in working order. At the second year level, student teams propose product ideas and then build working prototypes of these products. Many of these product ideas are useful to the society. The products which were successfully built and demonstrated included hand gesture simulation system, computer assisted wheelchair and autonomous cleaning robot.

At the third year level, the students have the option of working on an 'Inter-disciplinary Socio-Technical Project' (ISTP). In this project, interdisciplinary student teams explore some of the issues/problems of society and propose technology-based solutions for them and also evaluate them from various angles. Some of the ISTP student teams have students from IIT Mandi and from WPI, Boston, working together. Finally, during the fourth year, the students have the option of doing a Final Year Project either individually or in a group.

Overall, the curriculum at IIT Mandi is designed to encourage and enable the student to become well-qualified and well-rounded engineers in all respects.

Academic Linkages

The Institute has developed promising research and teaching collaborations with several Institutions around the world. These collaborations have led to exchange visits by a number of Institute's students and faculty members. The existing collaborations include: Blekinge Institute of Technology Sweden, IT University Denmark, Technical University (TU) of

Stuttgart and the other eight TU Institutions of Germany, Dublin City University, Ireland, Worcester Polytechnic Institute (WPI), USA and HEPIA - University of Applied Sciences, Switzerland; and, the India-UK Advanced Technology Centre for research on next generation networks. The Institute has also such agreements with a few Indian Institutions. The collaboration with the IT University, Denmark has led to co-teaching of a Software Engineering course simultaneously to students located in India and Sweden. As mentioned earlier, the collaboration with WPI has led to a semester-long undergraduate research project (Interdisciplinary Socio-Technical Project), in which US-IIT Mandi students work together in teams to address socio-economic issues of the local community.

Statistics

Number of students by Batch, Gender, Category & by State

Existing students of IIT Mandi as on 31st March, 2015

	2010-11		2011-12		2012-13		2013-14		2014-15	
By Gender	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
	14	3	117	10	135	17	128	16	154	23

Category Wise (Batch Wise)

	B.Tech					M.Sc. (Chemistry)					M.Tech				
Year	Gen	OBC	SC	ST	Total	Gen	OBC	SC	ST	Total	Gen	OBC	SC	ST	Total
2010	--	--	1	1	2	--	--	--	--	--	--	--	--	--	--
2011	52	30	17	9	108	--	--	--	--	--	--	--	--	--	--
2012	58	32	16	9	115	--	--	--	--	--	--	--	--	--	--
2013	57	32	18	9	116	--	--	--	--	--	--	--	--	--	--
2014	56	34	14	10	114	6	3	1	—-	10	2	1	--	--	3
GRAND TOTAL					**455**					10					3

	M.S.					Ph.D.				
Year	Gen	OBC	SC	ST	Total	Gen	OBC	SC	ST	Total
2010	1	--	--	--	1	9	2	3	--	14
2011	2		--	--	2	11	4	2	--	17
2012	4	2	--	--	6	25	6	--	--	31
2013	7	--	--	--	7	19	2	--	--	21
2014	7	2	—-	--	9	31	9	1	--	41
GRAND TOTAL					**25**					124

State wise data

Sl.No.	State	2010-11	2011-12	2012-13	2013-14	2014-15
1	Andhra Pradesh	--	12	21	12	6
2	Assam	--	--	--	1	1
3	Bihar	1	5	9	10	16
4	Chattisgarh	1	1	5	3	2
5	Chandigarh	--	2	1	1	1
6	Delhi	--	4	6	13	12
7	Gujarat	--	1	3	--	4
8	Haryana	1	6	8	18	18
9	Himachal Pradesh	5	6	10	6	8
10	Jharkhand	1	1	--	3	2
11	Jammu & Kashmir	--	1	2	3	1
12	Karnataka	--	1	--	1	2
13	Kerala	2	--	2	4	--
14	Madhya Pradesh	--	7	4	6	10
15	Maharashtra	--	8	9	2	5
16	Meghalaya	--	1	--	--	--
17	Odisha	--	--	1	2	1
18	Punjab	1	8	15	8	8
19	Rajasthan	1	23	25	23	31
20	Telangana	--	--	--	--	4
21	Tripura	--	1	--	--	--
22	Tamil Nadu	--	3	--	1	2
23	Uttar Pradesh	4	36	28	22	36
24	Uttarakhand	--	--	--	3	4
25	West Bengal	--	--	3	2	3

Total students – 617

Existing Faculty at IIT Mandi as on 31st March, 2015

	2014-15		
By Gender	Male	Female	Total Faculty
No. of Faculty	62	18	80

Total sponsored R & D received in Financial Year 2014-15 (Agency and by School);

S.No.	Project No.	Project Title	Sponsoring Agency	PI/Co-PI	Sanctioned Amount in ₹	Duration of Project
EXTERNAL						
1	IITM/DST/BSR/49 Date of sanction: 07.07.14 Date of completion: 06.07.19	Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) Program-2013	DST	Dr. Bharat Singh Rajpurohit	245,00,000	5 Years
2	IITM/DST/BSR/59 Date of sanction: 30.09.14 Date of completion: 29.09.17	A Multi Dimentional Smart Energy Grids Analysis for Indian Scenario	DST	PI: Dr. Bharat Singh Rajpurohit Prof. S.N. Singh (IITK) Co-PI: Dr. Samar Agnihotri Dr. Y.N. Singh (IITK)	100,98,100	3 Years
3	IITM/DST/VD/64 Date of sanction: 10.12.14 Date of completion: 10.12.17	Building a Secure and Trustworthy Cyberspace: A Behavioral Game-Theoretic Approach	DST	Dr. Varun Dutt Dr. V. S. Chandrashekhar Pammi (University of Allahbad)	22,89,600	3 Years
4	IITM/DST/DPS/82 Date of sanction: 11.03.15 Date of completion: 20.06.17	Arsenic and Heavy Metal Mapping in Water, Coal & Fly-Ash Samples from Urjanchal (Singrauli) Area of Central India	DST	Dr. Dericks Praise Shukla	22,08,334	2.3 Years
5	IITM/DST-UKIERI/BSR/56 Date of sanction: 23.04.14 Date of completion: 22.04.17	Smart Multi-Terminal DC U-grids for autonomous Zero-Net Energy Buildings	DST-UKIERI	Dr. Bharat Singh Rajpurohit Co-PI: Prof. S.N. Singh (IIT Kanpur) Dr. Dr. Francisco Gonzalez-Longatt (Coventry University, UK)	27,20,800	2 Years
6	IITM-DST-VR/SKP/76 Date of sanction: 15.01.15 Date of completion: 14.01.18	Quantum Dots for Novel Solar Solutions	DST-VR	Dr. Suman K. Pal Prof. Tonu Pullerits (Lund University, Sweden)	40,27,000	3 Years
7	IITM/DST/AB/78 Date of sanction: 26.09.14 Date of completion: 25.09.19	Investigations into Scene Recovery for Optical & Range Cameras and Applications to Medical Image Analysis	DST-INSPIRE	Dr. Arnav Bhavsar	35,00,000	5 Years

8	IITM/NBHM/RRY/47 Date of sanction: 27.01.15 Date of completion: 26.01.18	Development of Higher Order Accurate Numerical Schemes for Elliptic Equation with Various Discontinuties & its Application to Immersed Interface Problems	NBHM (DAE)	Dr. Rajendra Kumar Ray	2,99,500	3 Years
9	IITM/BRNS/RKR/51 Date of sanction: 15.07.14 Date of completion: 14.07.17	Modeling of Contaminated Sediments in Lakes/Rivers	BRNS (DAE)	PI: Dr. Rajendra Kumar Ray Co-PI: Dr. O.P. Singh	21,07,100	3 Years
10	IITM/CSIR/SKP/70 Date of sanction: 29.01.15 Date of completion: 28.01.18	Carrier Multiplication in Electronically Coupled Nanocrystals and Harvesting	CSIR	Dr. Suman K. Pal	12,58,000	3 Years
11	IITM/UGC/MVD/73 Date of sanction: 01.10.14 Date of completion: 30.09.17	The Sixteenth Century Renaissance in Southern India	UGC	Dr. Manu V. Devadevan Co-PI: Prof. Kesavan Veluthat (Univ of Delhi)	48,00,000	3 Years
12	IITM-INSA/RAV/74 Date of sanction: 17.10.14 Date of completion: 16.10.17	Investigation of Photocatalytic Activity in Ferroelectric Ceramics & their Composites	INSA	Dr. Rahul Vaish	15,00,000	3 Years
13	IITM-ICMR/JKR/75 Date of sanction: 01.01.15 Date of completion: 31.12.15	Nano Structure Metal Oxide: Application to Biosensing	ICMR	Dr. Jaspreet Kaur Randhawa	15,05,980	1 Year
14	IITM/DeitY-MLA/ASO/77 Date of sanction: 20.11.14 Date of completion: 19.11.19	Visvesvaraya PhD Scheme for Electronics & IT	DeitY-MLA	Dr. Anil K. Sao	309,90,000	5 Years
15	IITM/DRDO-SASE/MT/79 Date of sanction: 05.03.15 Date of completion: 04.09.15	Snow Avalanche Forecasting Using Machine Learning and Data Mining	DRDO-SASE	Dr. Manoj Thakur	5,04,000	6 months
16	IITM/NRB/BSR/80 Date of sanction: 10.02.15 Date of completion: 09.02.18	Design & Development of High Performance Synchronous Machine (PMSM) based Drives for Motion Control	NRB-DRDO	Dr. Bharat Singh Rajpurohit Co-PI: Dr. Rajeev Kumar	28,30,973	3 Years
17	IITM/DIC-Committee/86 Date of sanction: 01.07.14 Date of completion: 30.06.17	Design Innovation Centre	MHRD	PI: Dr. O.P. Singh Members: Dr. Kunal Ghosh, Dr. S.K. Masakapalli, Dr. Atul Dhar, Dr. Mohammad Talha Advisor: Prof. Ramesh Oruganti Co-Advisor: Prof. Madhusadan Rao (IIT Delhi)	130,00,000	3 Years

CONSULTANCY						
1	IITM/CONS/PPLP/VD/03 Date of sanction: 16.02.15 Date of completion: 16.02.18	Machine Learning and Data Mining for Sales and Analytics in Pharma	Dr. Varun Dutt	Purdue Pharma L.P., USA	USD$96,062	3 Years
SEED GRANT						
1	IITM/SG/VD/32 Date of sanction: 16.09.14 Date of completion: 15.09.17	Why do People Exhibit a lack of Understanding about Earth's Climate? Influence of Repeated Feedback	IIT Mandi Seed Grant	Dr. Varun Dutt	5,00,000	3 Years
2	IITM/SG/VBK/33 Date of sanction: 22.08.14 Date of completion: 21.08.17	Controlled growth of aligned CNTs for electronic and sensor device applications	IIT Mandi Seed Grant	Dr. Viswanath Balakrishnan	6,20,000	3 Years
3	IITM/SG/AH/34 Date of sanction: 27.09.14 Date of completion: 26.09.17	Using Anthropogenic Carbon dioxide for Sustainable Future through Hetrogeneous Electrocatalyst	IIT Mandi Seed Grant	Dr. Aditi Halder	7,20,000	3 Years

DESIGN PRACTICUM

As mentioned earlier, the B.Tech curriculum follows a 'Design Practicum' approach to inculcate design and innovation skills among engineering students. As part of this, all students must take a course called Design Practicum during the second year. In this one-semester course students were asked to design and build innovative products that address real world problems in our society. Interdisciplinary teams of six students each were randomly formed from electrical, computer science and mechanical engineering branches. Each team of six students reported its progress to an interdisciplinary team of two faculty members drawn from engineering, science and humanities disciplines. In the first week the students were informed about some basics of designing and developing a new product, during the second week they were asked to talk to people and prepare a list of problems faced by people and also a list of new ideas that will help to solve these problems.

Out of these several ideas they were asked to pick a few and come up with a product design. After thorough analysis of the feasibility and other parameters like time and cost etc., one of the designs was chosen for product development. At this stage they prepared a budget and got approval from the faculty mentors. After detailed designing they prepared a mock-up and analyzed the pro's and con's. Next, they worked hard on building a real model prototype that works. This stage was really challenging as they faced many common problems like getting things in time, compatibility of components brought for different purposes and finally getting it work. On the final day the students demonstrated their prototypes for public display. At the end of the day satisfaction and benefit the student derived was immense which will stay with them forever.

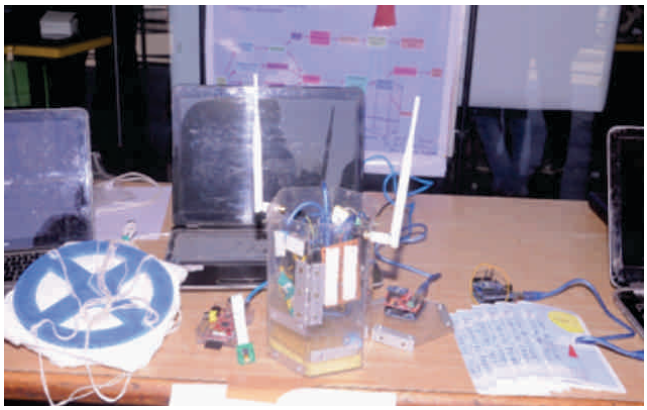
The following prototypes were developed during the year:

Product No.1: Salad Designer

This product takes as an input an image from the user, and then informs the user the vegetables needed to create a design of the shape of that image. The user then puts those vegetables in designated chambers in accordance with their colors. The machine then forces those vegetables down a grid cutter, beneath which lies a horizontal cutter which cuts the vegetables horizontally. These cut vegetables then lie in their respective chambers.

Product No.2: High Altitude Ballooning Probe

This product is a system containing all the important sensors like temperature, humidity, accelerometer, altitude meter, GPS and camera. There are also additional ports given for attaching other sensors too according to the researchers' requirement. This system is provided with a kit containing balloons, parachute, and a casing for safe flight as well as landing of this system. While in air, this system will transmit all data from all sensors to our ground station consisting of receiver and micro controller units which can be easily connected to laptop for visualizingdata - temperature humidity, altitude etc.



Product No.3: BCI - Brain Computer Interfacing

The project shows the capabilities of human computer interaction and tries to reproduce the results on a small computer game, brain acting as controller. It consists of two brain states and when brain will change from one state to another the pre-coded action in game will take place. Via this one can show that when a person is attentive, certain action will take place and when the person is in relaxed state, another set of predefined action will take place.

Product No.4: Quadcopter

It is a gadget which has four propellers – motor assembly to make it fly. It may be used for technological purposes like spying, as water sprinkler etc. This is based on the principle of drag and drift force generated due to pressure difference in upper and the lower sides of the rotating propellers.

Product No.5: Note Taking Printer

It is a robot that will move on the paper and print on it. The robot is fitted with an inkjet cartridge which will print while the robot is moving. The robot will move from left to right, printing a line, and then move little down to go to a new line and then move back right to left printing the new line. It can receive the data to print from mobile or computer. Voice to text feature is also added to this gadget.

Product No.6: Computer-Assisted Wheel-chair

This product aims to facilitate and liberate physically challenged or aged people, by giving them control of their mobility and of their interaction to the digital universe, as means to stay connected to their loved ones, at an affordable price. It is meant to be used indoors, on level ground.

Product No.7: River Siever

'River Siever' 'sieves' or filters/skims out trash and other macro-impurities from river bodies such as lakes, canals, rivers etc. Trash floating on water is a major cause of water pollution particularly in India. The River Siever capable of moving in water like a boat will collect all the trash floating on the surface of water up to a foot deep which can later be easily discharged to a discharge station.

Product No.8: Multi-Purpose Agriculture Tiller

This product is an agriculture tool designed to perform various functions such as ploughing, automated seed sowing, pesticide sprinkling and fertility measuring.

Product No.9: E-Braille Learner

This product is a braille teaching/learning machine. In this machine, input signals from a keyboard are processed by a microcontroller attached to a set of actuators inside a box having top surface as "Pad". The Pad has a structure of "braille cell"(in this cell, each alphabet is represented by the combination of six raised/unraised dots). On this Pad, people can put their hands and get the sensation of English alphabets as braille code.

Product No.10: Self Powered Smart Road System

This is a speed breaker set-up that can generate electricity when vehicles pass over it. The busier the road, the more is the energy generated. The energy generated will be stored in a LIPO battery and can be used at night. Emergency buttons can be installed at various points, the pressing of it will alert emergency services. Traffic monitoring data can also be stored.

Product No.11: Smart Vehicle Ignition Override System Using Breathalyser

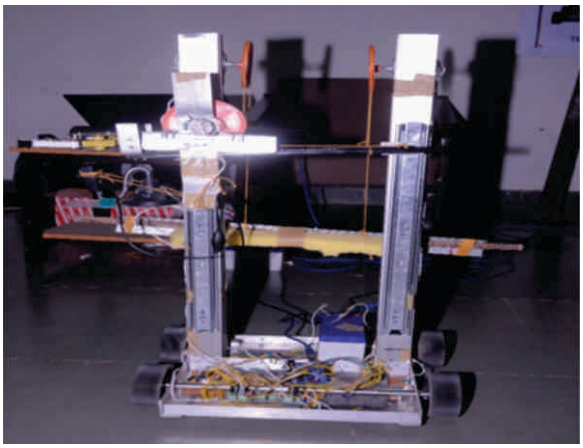
The purpose of this project was to develop an in-car breath tester which will put brakes on drink driving and thus save lives. The system includes interlocks which are wired to the car's ignition system and prevents it from starting if the driver fails the breath test for alcohol.

Product No.12: Trash and Debris Collecting Boat

This product is an autonomous boat for cleaning the floating trash using a rotating conveyor belt. In front of the boat, ultrasonic sensors are fitted for detecting obstacles and trash. The collected trash will automatically be stored in a dumpster. Sensors are also fitted for detecting if the dumpster is full. This boat can be remotely controlled.

Product No.13: Biometric Voting Machine

It is a machine which will make the voting procedure very simple from vote casting to result declaration.



Product No.14: Library Assistant Robot

This product is an automatic library assistant robot which accesses the library database and finds the book entered by the user according to its bar-code. The robot is basically a Line Follower. It identifies the right book from the right shelf and fetches it to the Librarian.

Product No.15: Pollution Monitoring System for Vehicles

It is a fully autonomous product built to monitor a vehicle's pollution performance in real time and has multiple functionalities.

Product No.16: Hand Gesture Simulation System

This product is developed to help the dumb people communicate with the rest of the world. It uses technology to convert the sign language used by the dumb persons into visual output.

Product No.17: Autonomous Emergency Response System for Dams

Autonomous emergency response system is for alerting and notifying the people who are in danger andfor alerting the authorities about the emergency situation of the victims through mobile sms.

Product No.18: Autonomous Cleaning Robot

This product is an autonomous robot that would help clean the floor in a reasonably good way without much effort from the user. It uses a vacuum cleaner toabsorbs all the dust particles on the floor and a micro fiber cloth to swipe the floor.

Product No.19: Intelligent Traffic Congestion Monitor (I.T.C.M)

This product calculates the traffic density within an area of consideration and show a warning sign to people if there's too much traffic in that region.

Product No.20: Smart Home Door Security System

This product is for replacing the conventional door bell and security systems with a smart system that can be connected to a mobile phone over the Wi-Fi-internet network.

ACADEMIC SCHOOLS

School of Computing and Electrical Engineering

The School of Computing and Electrical Engineering (SCEE) of IIT Mandi aims to maintain excellence in teaching and research in technologies related to Computing, Communication, Electronics and Electrical Engineering. The area of research covers a broad spectrum of theoretical and application-based topics such as: smart grid, renewable energy, materials for efficient semiconductor devices, next generation communication and efficient human-computer interaction etc. At the undergraduate level, we emphasizeson hands-on learning approach by providing the students with firm foundationsin theory and practices associated to Computer Science and Electrical Engineering. We also have joint faculty positions with other schools like the School of Basic Sciences and School of Humanities and Social Sciences to expose the students to social, ethical, and liberal education. At the post-graduate level, our faculty provide mastery over basics and inculcate professional capabilities in students in addition to providing excellent research opportunities in the field of Computer Science and Electrical Engineering. Our faculty are engaged in both practical and theoretical research, often in partnership with government agencies, private industries and non-governmental organizations. National and international collaborations are one of the prime focuses of the faculty.

IIT Mandi has obtained funding of Rs. 2.25 Crore for 13 regular PhD students and 7 Part time PhD students from DeiTy (Department of Electronics and Information Technology) under the VISVESVARAYA PhD scheme for Electronics and IT. These PhD students will work in the area of ESDM (Electronics System and Design) and IT (Information Technology). Under the scheme, faculty of IIT Mandi is encouraged to interact with industry and work on research problems faced by them. In addition, this is good platform to translate a research prototype to a product usable in the society. School of Computing and Electrical Engineering would be applying for infrastructure grant from DeiTy to set up a research centre at IIT Mandi.

Faculty

Dr. A. K. Sao
Chairperson
Assistant Professor
Specialisation: Image processing
PhD from Indian Institute of Technology Madras, Chennai.
Home Town : Bhilai, Chattisgarh
Phone: 01905-237918
EMail: anil

Dr. Arnav Bhavsar
Assistant Professor
Specialisation: Image analysis, Computer vision
Ph.D. from Indian Institute of Technology Madras, Chennai, India (2011)
Home Town: Surat, Gujarat, India
Phone: 01905-300049
EMail: arnav

Dr. Aditya Nigam
Teaching Fellow
Specialisation: Biometrics, Computer Vision, Image Processing
Ph.D. from IIT Kanpur
Home Town: Kanpur, UP.
Phone: 01905-237919
EMail: aditya

Dr. Arti Kashyap
Associate Professor (Joint Appointment)
Specialisation: Magnetism and magnetic materials
PhD from IIT Roorkee.
Home Town: Mandi, Himachal Pradesh
Phone: 01905-237907/300042
EMail: arti

Prof. B. D. Chaudhary
Dean(SRIC)
Visiting Professor
Specialisation: Software Technology
PhD from I.I.T. Kanpur in 1979 year
Home Town: Darbhanga, Bihar
Phone: 01905-237998
EMail: bdchaudhary

Dr. Bhakti Madhav Joshi
Assistant Professor
Specialisation: ac drives and control
PhD from IIT Bombay in 2014
Home Town: Pune (Maharashtra)
EMail: bhakti

Dr. Hitesh Shrimali
Assistant Professor
Specialisation: Analog and mixed signal VLSI design, Analog-to-digital converters, Design and modeling of Radiation hard circuits
Ph.D. from: Indian Institute of Technology, Delhi
Home town: Ahmedabad, Gujarat
EMail: hitesh

Dr. Padmanabhan Rajan
Assistant Professor
Specialisation: Speech processing, speaker recognition
PhD from IIT Madras in year 2012.
Home Town : Cochin, Kerala
Phone: 01905-300049
Email: padman

Dr. Renu M. Rameshan
Assistant Professor
Specialisation: Image Processing
PhD from IIT Bombay in 2013
Home Town: Trivandrum, Kerala
EMail: renumr

Dr. Bharat Singh Rajpurohit
Assistant Professor
Specialisation: Power Electronics Application to Power Systems
PhD from IIT Kanpur in 2009.
Home Town : Jodhpur, Rajasthan
Phone: 01905-237921
EMail: bsr

Dr. Dileep A. D.
Assistant Professor
Specialisation: Pattern Recognition, Kernel Methods for Pattern Analysis, Machine Learning, Speech Technology, Computer Vision
Ph.D. From Indian Institute of Technology Madras, Chennai in year 2013
Home Town: Udupi, Karnataka
Phone: 01905-300047
EMail: addileep

Dr. Kunal Ghosh
Assistant Professor
Specialisation: Solar Photovoltaics
PhD from Arizona State University, 2011
Home Town: Kolkata
Phone:
EMail: kunal

Dr. Ramesh Oruganti
Dean Academics
Visiting Professor
Specialisation: Power Electronics, Solar photovoltaic energy systems
PhD from Virgina Tech
Phone: 01905-237976/300068
Email: ramesho

Dr. Samar Agnihotri
Assistant Professor
Specialisation: Information Theory, Communication Complexity, Wireless Communications
Ph.D. From Indian Institute of Science in year 2009
Home town: Delhi
Phone: 01905-237907
Email: samar

Dr. Satinder Kumar Sharma
Assistant Professor
Specialisation: Nanoelectronics,Sensors,Photovoltaic& self assembly.
PhD from Kurukshetra University in 2007.
Home Town : Mandi, Himachal Pradesh
Phone: 01905-237908
EMail: satinder

Dr. Subashish Datta
Assistant Professor
Specialisation: Control Theory
Ph.D. From IIT Bombay in year 2013
Home Town: Baripada, Odisha
Email: sd

Dr. Varun Dutt
Assistant Professor (Joint Appointment)
Specialisation: Artificial Intelligence, Human-Computer Interaction, Judgment and Decision Making, Environmental Decision Making
Ph.D. From Carnegie Mellon University (USA) in year 2011
Home Town: Lucknow, Uttar Pradesh
Phone: 01905-237932/300043
Email: varun

Mentor Professors

Prof. Deepak Khemani
Professor, Department of Computer Science and Engineering, IIT Madras
Specialisation: Artificial Intelligence
PhD from IIT Bombay.
Phone: +91 44 2257 4365
EMail: khemani

Dr. Sanjeev Manhas
Associate Professor, Department of Electronics and Communication Engineering, IIT Roorkee
Ph. D. from De Montfort University, Leicester, UK in Electronics and Electrical Engineering, 2003.
Phone: +91-1332-285174
Email: samanfec

Dr. Satyajit Thakor
Assistant professor
Specialisation: Communication Theory, Information Theory, Network Coding
PhD from Institute for Telecommunications Research, Uni. of South Australia in 2012.
Home Town: Anand, Gujarat
Phone: 01905-237999
EMail: satyajit

Dr. Timothy A Gonsalves
Professor
Specialisation: Computer networks and distributed software systems
PhD from Stanford University in 1986.
Home Town: Ooty, Tamil Nadu
Phone: 01905-300001
EMail: tag

Dr. Yvonne Dittrich
Adjunct Professor
Specialisation:
PhD from University of Hamburg in year 1997
Home Town: Copenhagen
Phone:
EMail: ydi

Prof. Hema A Murthy
Professor, Department of Computer Science and Engineering, IIT Madras
Specialisation: Speech, Signal processing, Computer networks
Ph.D. from IIT Madras, 1992
EMail: hema

Research Projects

Externally Sponsored Research Projects

S.No.	Project Title	Sponsoring Agency	Investigator	Amount Sanctioned (in Rs.)	Duration of Project
1	Development of Advanced/ Optimized control techniques of grid Connected Power Electronics Systems for Renewable Energy Sources Date of sanction: 20.5.13 Date of completion: 19.5.16	DST	Dr. Bharat Singh Rajpurohit	20,70,000	3 Years
2	IU-ATC Project Date of sanction: 11.9.12 Date of completion: 10.3.15	DST	PI: Dr. Arti Kashyap. Co-PIs: Prof. T.A. Gonsalves, Dr. Samar Agnihotri, Dr. Nitu Kumari, Dr. Sarita Azad, Dr. Manoj Thakur, Dr. Satyajit Thakor	81,48,000	2.5 Years
3	Aakash Education Proposal	MHRD	PI: Dr. Arti Kashyap. Co-PI: Dr. Om Prakash Singh. Mentor: Prof. T.A. Gonsalves	62,50,000	2.8 Years
4	Fund for Improvement of S&T Infrastructure in Universities and Higher Educational Institutions (FIST) Program-2013.Date of sanction: 7.7.14 Date of completion: 6.7.19	DST	Dr. Bharat Singh Rajpurohit	245,00,000	5 Years
5	Smart Multi-Terminal DC U-grids for Autonomous Zero-Net Energy Buildings Date of sanction: 23.4.14 Date of completion: 22.4.16	DST-UKIERI	PI: Dr. Bharat Singh Rajpurohit Co-PIs: Prof. S.N. Singh (IIT Kanpur), Dr. Dr. Francisco Gonzalez-Longatt (Coventry University, UK)"	27,20,800	2 Years
6	A Multi Dimentional Smart Energy Grids Analysis for Indian Scenario Date of sanction: 30.9.14 Date of completion: 29.9.17	DST	PI: Dr. Bharat Singh Rajpurohit, Prof. S.N. Singh (IITK). Co-PIs: Dr. Samar Agnihotri, Dr. Y.N. Singh (IITK).	100,98,100	3 Years
7	Building a Secure and Trustworthy Cyberspace: A Behavioral Game-Theoretic Approach Date of sanction: 10.12.14 Date of completion: 10.12.17	DST	Dr. Varun Dutt, Dr. V. S. Chandrashekhar Pammi (University of Allahbad).	22,89,600	3 Years
8	Visvesvaraya PhD Scheme for Electronics & IT Date of sanction:20.11.14 Date of completion: 19.11.19	DeitY-MLA	Dr. Anil K. Sao	309,90,000	5 Years
9	Investigations into Scene Recovery for Optical & Range Cameras and Applications to Medical Image Analysis Date of sanction: 26.9.14 Date of completion: 25.9.19	DST-INSPIRE	Dr. Arnav Bhavsar	35,00,000	5 Years

10	Design & Development of High Performance Synchronous Machine (PMSM) based Drives for Motion Control Date of sanction: 10.2.15 Date of completion: 9.2.18	NRB-DRDO	Dr. Bharat Singh Rajpurohit, Co-PI: Dr. Rajeev Kumar	24,94,973	3 Years

Seed Grant Projects

S.No.	Project Title	File No.	Investigator	Amount Sanctioned (in Rs.)	Duration of Project
1	Person Authentication using Audio Visual Biometrics Date of Sanction: 1.11.11 Date of Completion: 30.10.14	IITM/SG/AKS/014	Dr. Anil K. Sao	5,00,000	3 years
2	Grid Connected/Stand Alone Power Electronic Converter Control Date of Sanction: 25.1.12 Date of Completion: 24.1.15	IITM/SG/BSR/017	Dr. Bharat Singh Rajpurohit	5,50,000	3 years
3	Radiation Impact on SiC based Devices for Space Applications Date of Sanction: 23.4.13 Date of Completion: 22.4.16	IITM/SG/SKS/27	Dr. Satinder Sharma	6,70,000	3 years
4	Why do People Exhibita lack of Understanding about Earth's Climate? Influence of Repeated Feedback Date of Sanction: 16.9.14 Date of Completion: 15.9.17	IITM/SG/VD/32	Dr. Varun Dutt	5,00,000	3 years

Sponsored Consultancy Research Projects

S.No.	Proposal Title	Faculty name	Agreement signed with	Amount Sanctioned (in Rs.)	Duration of Project
1	Face Recognition in Real Time Signing Date- 5.3.14 Completion Date- 4.3.15	Dr. Anil K. Sao	Aindra Systems, Bangalore	1,34,832	1 Year
2	Machine Learning and Data Mining for Sales and Analytics in Pharma Signing Date- 16.2.15 Completion Date- 16.2.18	Dr. Varun Dutt	Purdue Pharma L.P., USA	USD$96,062	3 years

Paper Published in National & International Journals

1. Vikram Singh, Vardhineedi Sri Venkata Satyanarayana, Nikola Batina, Israel Morales Reyes, Satinder K. Sharma, Felipe Kessler, Francine R. Scheffer, Daniel E. Weibel, Subrata Ghosh, Kenneth E. Gonsalves. Performance evaluation of nonchemically amplified negative tone photoresists for e-beam and EUV lithography Journal of Micro/Nanolithography. MEMS, and MOEMS, Vol13, page 043002, Year: 2014.
2. Dutt, V., Arlo-Costa, H., Helzner, J., & Gonzalez, C. (2014). The Description-Experience Gap in Risky and Ambiguous Gambles. Journal of Behavioral Decision Making, 27(4), 316-327.
3. Mehlhorn, K., Ben-Asher, N., Dutt, V., & Gonzalez, C. (2014). Observed Variability and Values Matter: Towards a Better Understanding of Information Search and Decisions from Experience. Journal of Behavioral Decision Making, 27(4), 328–339.
4. Effect of Co substitution on the magnetic and electron-transport properties of Mn2PtSn Y Huh, P Kharel, A Nelson, V R Shah, J Pereiro, P Manchanda, A Kashyap, R Skomski and D J Sellmyer J. Phys.: Condens. Matter 27 076002, (2015).
5. Xiaoli Xu, Satyajit Thakor, Yong Liang Guan, Reduced functional dependence graphs, IET Networks, Volume 4, Issue 2, March 2015, p. 102 – 110 DOI: 10.1049/iet-net.2013.0133 , Print ISSN 2047-4954, Online ISSN 2047-4962.

Book / Book Chapters Published

1. Kunreuther H., S. Gupta, V. Bosetti, R. Cooke, V. Dutt, , M. Ha Duong, H. Held, J. Llanes Regueiro, A. Patt, E. Shittu, and E. Weber, 2014: Integrated Risk and Uncertainty Assessment of Climate Change Response Policies. In: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

Conferences Attended And Paper Presented

1. G. G. Grewal, B. S. Rajpurohit and J. G. Singh "Electrical Energy Management in Steel Rolling Plant", International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE 2014), March 19-21, 2014, Pattaya City, Thailand.
2. N. Wongwantanee, J. G. Singh and B. S. Rajpurohit "Effects of Islanding on Voltage Stability in Islanded Network System", International Conference and Utility Exhibition on Green Energy for Sustainable Development (ICUE 2014), March 19-21, 2014, Pattaya City, Thailand.
3. S. A. Lakshmanan, B. S. Rajpurohit and A. Jain, "Islanding Detection for Grid Connected Solar PV system", National Conference on Zen & Tao of Electrical and Electronics Engineering, Jan. 07-09, 2014, Bangalore, India. (Best paper award).
4. Lakshmanan.S.A, , B. S. Rajpourhit, Amit Jain'' Analysis and Control of 3-Phase VSI for Grid connected Solar PV systems under different irradiation", International Conference on Standards and Eco Systems, IEEE Standard Association March 6-7 2014, Central Power Research Institute (CPRI), Bangalore, India.
5. Lakshmanan.S.A, , B. S. Rajpourhit, Amit Jain" Standards, Regulation and Performance Measures of Grid Connected Solar PV systems for Smart Power Systems", International Conference on Standards and Eco Systems, IEEE Standard Association March 6-7 2014, Central Power Research Institute (CPRI), Bangalore, India.
6. Joshi, B. M., "Effect of stator inter-turn fault on the operation of single-inverter two-machine vector-controlled induction motor drive", accepted for publication in IEEE International Conference on Power Electronics, Drives and Energy Systems (PEDES 2014), IIT Bombay, Mumbai, 16-19 December 2014.

7. A. Bhavsar, G. Wu, and D. Shen. "Motion-guided resolution enhancement for lung 4D-CT". International Conference Control, Automation, Robotics and Vision, (ICARCV 2014), 2014.
8. S. Jain, R. Ray, and A. Bhavsar. "A comparative study of iterative solvers for image de-noising". International Conference Frontiers of Intelligent Computing: Theory and Applications (FICTA 2014), 2014 .
9. S. Mandal, A. Bhavsar, and A. K. Sao. "Hierarchical example-based range image super-resolution with edge preservation". International Conference on Image Processing (ICIP 2014), 2014.
10. K. Gupta, V. Gupta, A. K. Sao, A. Bhavsar, and A. D. Dileep. "Class-specific hierarchical classification of HEp-2 cell images: The case of two classes". Workshop on Pattern Recognition Techniques for Indirect Immunofluorescence Images (with ICPR 2014), 2014.
11. Sharma, N., & Dutt, V. (2014). Modeling Choices at the Individual Level in Decisions from Information Search. In Paper presented at the 1st Annual Conference on Cognitive Science (ACCS 2014). New Delhi, India.
12. Sharma, N., & Dutt, V. (2014). Modeling Choices at the Individual Level in Decisions from Experience. In Poster presented at the Interdisciplinary Emerging and Converging Research & Academia collaborative workshop in Innovative Engineering, Technology & Science Fields (IECRAIETS), IIT Mandi, India.
13. Kumar, M., & Dutt, V. (2014). Understanding Cooperation against Climate Change through a Public-Goods Game. In Poster presented at the Interdisciplinary Emerging and Converging Research & Academia collaborative workshop in Innovative Engineering, Technology & Science Fields (IECRAIETS), IIT Mandi, India.
14. Chaturvedi, P. & Dutt, V. (2014). Assessment and Perception of Landslide Risks. In Poster presented at the Interdisciplinary Emerging and Converging Research & Academia collaborative workshop in Innovative Engineering, Technology & Science Fields (IECRAIETS), IIT Mandi, India.
15. Chouhan, R., Ranganathan, K. & Dutt, V. (2014). An Investment Device: Applications of Decision from Description and Experience to Portfolio Allocations. In Poster presented at the Interdisciplinary Emerging and Converging Research & Academia collaborative workshop in Innovative Engineering, Technology & Science Fields (IECRAIETS), IIT Mandi, India.
16. V. Singh; V. S. V. Satyanarayana; S. K. Sharma; S. Ghosh; K. E. Gonsalves. Novel non-chemically amplified (n-CARs) negative resists for EUVL. Proc. SPIE 9051, Advances in Patterning Materials and Processes XXXI, 905106 (March 27, 2014); doi:10.1117/12.2041183.
17. V. S. V. Satyanarayana; V. Singh; S. Ghosh; S. K. Sharma; K. E. Gonsalves. Design and synthesis of novel resist materials for EUVL. Proc. SPIE 9048, Extreme Ultraviolet (EUV) Lithography V, 90481W (April 17, 2014); doi:10.1117/12.2045736.
18. V. Singh ; V. S. V. Satyanarayana ; F. Kessler ; F. R. Scheffer ; D. E. Weibel ; S. K. Sharma ; S. Ghosh, K. E. Gonsalves. Optimization of processing parameters and metrology for novel NCA negative resists for NGL. Proc. SPIE 9048, Extreme Ultraviolet (EUV) Lithography V, 90481Y (April 17, 2014); doi:10.1117/12.2045882.
19. S. Mandal, A. Bhavsar, and A. K. Sao. "Super-resolving a single intensity/range image via non-local means and sparse representation". Indian Conference on Computer Vision, Graphics and Image Processing, (ICVGIP 2014), 2014.
20. S. Shete, A. Bhavsar, and A. K. Sao. "Enhancing shape from focus-measure-fusion and sparse representation". Indian Conference on Computer Vision, Graphics and Image Processing, (ICVGIP 2014), 2014.
21. M. Yadav, R. Garg, A. Bhavsar. "Better guiding the guided range image filter for range-image super-resolution". Indian Conference on Computer Vision, Graphics and Image Processing, (ICVGIP 2014), 2014.
22. Aditya Nigam and Phalguni Gupta, “Personal Authentication System using Ear” HIS at 12th Asian Conference on Computer Vision, (ACCV 2014), Singapore, 1 November - 5 November 2014.
23. Rahul Ajmera, Aditya Nigam and Phalguni Gupta, “3D Face Recognition using Kinect” International Conference

on Vision, Graphics and Image Processing, (ICVGIP 2014), IISC Bangalore, INDIA, 14 December - 17 December 2014.

24. Ankit Tandon, Aditya Nigam and Phalguni Gupta, “An Efficient Age-Invariant Face Recognition” Software Intelligence Technologies Applications, (SIT 2014), Hsinchu, Taiwan, 4 December - 6 December 2014.
25. Yogesh Kumar, Aditya Nigam, Kamlesh Tiwari, Phalguni Gupta,"An automated multimodal biometric system and fusion" IEEE Symposium on Computational Intelligence in Biometrics and Identity Management (CIBIM-2014), Florida, USA, December 9-12, 2014.
26. Atomic Magnetic Properties of Pt-Lean FePt and CoPt Derivatives R. Choudhary, P. Kumar, P. Manchanda, Y. Liu, A. Kashyap, D. J. Sellmyer, R. Skomski REPM'14 Proceedings of the 23rd International Workshop on Rare Earth Permanent Magnets and their Application, 289, 2014.
27. T. Agrawal, S. Agnihotri, N. V. Abhishek. Analog network coding in nonlinear chains. Accepted for publication in Wireless Communications and Networking Conference (WCNC) 2015, New Orleans, LA, Mar 2015.
28. T. Agrawal, S. Agnihotri, N. V. Abhishek. Low-complexity schemes to characterize the capacity of general wireless relay networks. COMSNETS 2015 (poster paper), Bangalore, India, Ja. 2015.

WORKSHOPS AND CONFERENCES ORGANIZED BY SCHOOL OF COMPUTING AND ELECTRICAL ENGINEERING, IIT MANDI

1. A National Workshop On Smart Micro-Grids for Autonomous Zero-Net Energy Buildings, December 14-15, 2014 (Coordinator: Dr. Bharat Singh Rajpurohit, Co-coordinator: Prof. S. N. Singh, IITK).

Prof. Francisco Gonzalez Longatt, Loughborough University, UK delivering a lecture

Invited Lecturers/Continuing Education Programs:

1. Dr. Aditya Tatu from Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar has delivered a lecture.
2. Dr. Arnav Bhavasar was invited as a session chair at ICARCV 2014, Singapore (Dec 2014)

PRODUCTS/TECHNOLOGIES DEVELOPED BY SCHOOL OF COMPUTING AND ELECTRICAL ENGINEERING, IIT MANDI

1. Products/Technologies developed by the Cognitive Neuroscience Lab by Dr. Varun Dutt:

As part of projects at the Applied Cognitive Science Laboratory, the following products/technologies were developed:

1. **Dynamic Climate Change Simulator:** To simulate global carbon-dioxide concentrations and temperature changes. The tool helps to improve public understanding about climate change.
2. **Dynamic Cyber-Security Games:** To understand the effect of motivational factors (costs and benefits) on attacker and defender behaviours in the cyber-security domain.
3. **Realistic Cyber-Security Simulator:** To simulate realistically the process of attacking and defending resources in the cyber-security domain. The simulator helps to understand how attackers may attack computers and how defenders may defend the IT infrastructure in the cyber world.
4. **Indirect-Visual Display for Defence Applications:** To simulate the use of Indirect-Visual Displays (IVDs) for Defence Applications, like driving unmanned ground vehicles (UGVs). This tool helps train defence personnel for IVD-based technologies.
5. **Algorithms for Acceleration and Steering of 4-wheeled vehicles:** Developed computational algorithms for acceleration and steering control of 4-wheeled vehicles. These algorithms enable driving vehicles like humans do and help to study the human driving behaviour in different environmental conditions.
6. **Gesture-based Social Networking Application:** An application which uses human gestures like wink and smile to enable posting comments and likes on a mobile-based social networking application. The gesture-based application minimizes the need to type on the graphical-user interface and reduces fat-finger errors

SPECIAL ACHIEVEMENT

Professional Achievements, Honors and Awards:

Awards: Dr. Varun Dutt's research group received $6^{th}/7^{th}$ position in a Choice Prediction Competition for Decisions under

Risk and Ambiguity.

Honors :

1. Dr. Varun Dutt was invited for the IEEE/PES Talk on "Decisions from Experience Reduce Misconceptions on Climate Change" at Pittsburgh, USA (2014)

Visit to Academic Institutes and Lectures Delivered:

1. Dr. Satyajit Thakor visited IIT Madras, November 2014.

Outreach Activities:

1. Dr. Anil Kumar Sao delivered a talk on "Compressed Sensing and its application for image/speech processing", PEC, Chandigarh, Event: interaction with UG and PG students on 30.10.2014 during Industry Institute Interaction week.
2. With National Service Scheme (NSS) and SCEE IIT Mandi organized a lab visit and painting competition on theme Energy Saving and Innovations in the Usage of Renewable Energy for the school students of Government Sen. Sec. School Kotli on dated 18th October, 2014.

New Research Facilities Created/Equipment Installed/Laboratory Established:

1. Set up Applied Cognitive Science (ACS) Lab at IIT Mandi

Resources:

Human : post-doctoral fellows, graduate and undergraduate students, and student interns. Infrastructure : Air-conditioned (hot and cold) environment with state-of-the-art 7 AIO Desktops, 1 workstation, driving simulator, Oximeter, Emotiv® 14-channel EEG headsets, Tobii® Eye Tracker, and other accessories.

Memorandum of Understanding Signed with:

PGI Chandigarh, Philips Healthcare, AIndra systems, ITU Denmark

Industry/Field Visit:

Dr. Bharat Singh Rajpurohit organized field visits for electrical engineering students to:

1. National Load Dispatch Center at Delhi.
2. 500kV HVDC Terminal and Converter Station at Mahindergarh Haryana.
3. High Voltage Lab., NIT Hamirpur, Saturday, Nov. 08th, 2014.

Important Photographs/albums:

Electrical Engineering Students on Field Trip

Group Photo of School Students With Director During Lab Visit

School of Engineering

School of Engineering is working towards vision of the institute. School is committed for high standard of engineering education through outstanding teaching, innovative curricula, and excellent research environment. School offers a number of common courses for B. Tech like Design practicum, Reverse engineering, Graphics for design, Materials science, Product realization technology, Mechanics of rigid bodies, Continuum mechanics and Engineering thermodynamics along with the core courses of Mechanical stream.

Presently, School of Engineering has 17 faculty members including 15 Assistant Professors, 1 Distinguished Visiting Professor and 1 Visiting Professor/mentor professor. This year 5 new faculty members have joined the School of Engineering. There are currently 18 Ph.D and 14 MS students in the school. M. Tech. in Energy Materials has been introduced this year. The main areas of research are broadly classified as Materials and Design, Thermo-fluids Engineering, Energy Efficient Buildings and Infrared Signatures. In Materials and Design area, the focus is towards the development of materials for sensor, actuator & energy harvesting applications and analysis of smart structures and systems. In thermo-fluids engineering, faculty members are investigating Radiative heat transfer, Nano-scale heat transfer and Flow analysis & Heat transfer analysis of IC engines. Additionally, molten metals/alloys are also being explored in the school. Energy efficient systems cover climate change studies, applications of phase change materials towards energy efficient buildings and the use of non-conventional energy sources at IIT Mandi to enhance energy efficiency. The school has successfully installed a number of equipment in Solid Mechanics and Materials laboratories.

Faculty

Dr. Rahul Vaish

Chairperson

Assistant Professor

Specialization: Glasses & Glass-ceramics

Ph. D (Engg.), Indian Institute of Science Bangalore, 2010

Home Town: Badaun, Uttar Pradesh

Phone: 01905-237921

e-mail: rahul

Dr. Arpan Gupta

Assistant Professor

Specialisation: Acoustics, Vibration, Bio-mechanics, Computational methods - FEM, CFD, Lattice Boltzmann Method

PhD from National University of Singapore (2012)
Home Town: Indore, MP

Phone: 01905-237923

EMail: agupta

Dr. Atul Dhar

Assistant Professor

Specialisation: IC Engines, Alternative Fuels, Emission Control

PhD from IITKanpur, in year 2013.

Home Town: Sultanpur, Uttar Pradesh

Phone: 01905-237993

EMail: atul

Dr. Deepak Swami

Assistant Professor

Specialisation: Groundwater flow and transport modelling, Water resources development and management, Disaster mitigation specially related to floods and flash flood.

PhD from IIT Roorkee in year 2014.

Phone: 01905-237918

EMail: Deepak

Dr. Dericks Praise Shukla

Assistant Professor

Specialisation:Remote Sensing & GIS, Hydro-geo-chemistry, Water contamination mostly As and other Heavy metals, Natural Hazards Assessment and Mapping

PhD from University of Delhi in 2012

Phone: 01905-237923

EMail: derricks

Dr. Mohammad Talha

Assistant Professor

Specialisation: Solid mechanics, Composite structures, Functionally graded materials, Structural mechanics, Uncertainty quantification and Imperfection sensitivity in composites.

PhD from IIT Kharagpur in year 2012.

Home Town: Patna, Bihar

Phone: 01905-237929,

EMail: talha

Dr. P. Anil Kishan

Assistant Professor

Specialization: Computational Fluid Dynamics

PhD from IIT Kharagpur in 2009.

Home Town: Tirupati, Andhra Pradesh

Phone: 01905-237922, e-mail: kishan

Dr. Rajesh Ghosh

Assistant Professor

Specialisation: Solid Mechanics, Biomechanics, Finite Element Analysis

PhD from Indian Institute of Technology Kharagpur (2013)

Phone:01905-237930

EMail: rajesh

Dr. Jaspreet Kaur Randhawa

Assistant Professor

Specialisation: Nanomaterials.

Ph. D. from: Gorakhpur University in 2000.

Home Town: Mohali, Chandigarh

EMail: jaspreet

Dr. Om Prakash Singh

Assistant Professor

Specialization: Heat and mass transfer, Double diffusive convection, IC engine

PhD from Indian Institute of Science, Bangalore, 2006.

Home Town: Arrah, Bihar

Phone: 01905-237992

e-mail: om

Dr. Prasun Jana

Teaching Fellow

Specialisation: Solid Mechanics, Vibration Damping, Composites, Finite Element Analysis, Plate buckling

PhD from IIT Kharagpur, 2013 (thesis submitted).

Home Town: Dantan (West Midnapur district), West Bengal

Phone: +91-9805432812

EMail: pjana

Dr. Rajeev Kumar

Assistant Professor

Specialization : Solid Mechanics, Vibration, FEM, Optimization

PhD from IIT Roorkee in 2008.

Home Town: Jaspur, Uttarakhand

Phone: 01905-237920

e-mail: Rajeev

Dr. Satish Chandra Jain

Visiting Professor

Specialisation: Mechanical Engineering, Machine Design, Tribology, Vibration and Noise, Computer Aided Design

PhD from Indian Institute of Technology, Roorkee (Erstwhile University of Roorkee) (1983)

Home Town: Patparganj New Delhi

Phone: 01905-237976

EMail: satish

Dr. Sudhir Kumar Pandey

Visiting Assistant Professor

Specialization: Condensed Matter Physics and Material Sciences.

Ph. D. from UGC-DAE Consortium for Scientific Research, Indore in 2007.

Home Town: Garhwa, Jharkhand

Phone: 01905-237992, e-mail: sudhir

Dr. Vishal Singh Chauhan

Associate Dean (Faculty)

Assistant Professor

Specialization: Design Engg., Electromagnetic Radiation during Deformation of metals and alloys, Solid Mechanics, FEM

PhD from BIT Mesra, Ranchi in 2009.

Home Town: Sanawad, MP

Phone: 01905-237920, e-mail: vsc

Mentor Professors

Prof. B. K. Mishra

Professor, Department of Mechanical and Industrial Engineering, IIT Roorkee

Specialization: Composite materials, Fracture mechanics, Wave propagation

PhD from IT-BHU in 1989.

Phone: +91-1332-285679

e-mail: bkmishra

Dr. Subrata Ray

Distinguished Visiting Professor

Specialization: Physical metallurgy, Composites and Tribology

Ph.D. from IITKanpur in 1976.

Phone: +91-1332-285606

e-mail: sray

Dr. Viswanath Balakrishnan

Assistant Professor

Specialisation: Growth of functional materials/thin films, electron microscopy &in situ exploration of structure-property relationships

PhD (Materials Science) from IISc, Bangalore in 2008.

Home Town: Chidambaram, Tamil Nadu

Phone: 01905-237929

EMail: viswa

Dr. Sunil R. Kale

Professor, Department of Mechanical Engineering, IIT Delhi

Specialization: Heat Transfer, Fluid Mechanics, Particle-laden flows, Combustion and Energy Conversion

Home Town: Pune, Maharashtra

Phone: +91-11-2659 1127, 1709

e-mail: srk

Externally Sponsored Research Projects

S.No.	Project	Sponsoring Agency	Investigators	Project cost (in Rs.)	Duration of Project
1	Nonlinear analysis of piezolaminated composite structure Date of sanction:20-05-2013 Date of Completion :30-12-2015	DST	Dr. Rajeev Kumar	3.06 Lakh	2.7 years
2	Analysis of T-G Shaft due to Disturbances of Electric Grid Date of sanction:16-10-2015 Date of Completion:05-05-2017	BHEL Haridwar	Dr. Rajeev Kumar & Dr. Bharat Singh Rajpurohit	20 Lakh	1.7 years
3	Design & Development of High Performance Synchronous Machine (PMSM) based Drives for Motion Control Date of sanction: 10.02.2015 Date of completion: 09.02.2018	NAVAL RESEARCH BOARD	Dr. Bharat Singh Rajpurohit & Dr. Rajeev Kumar	25 Lakh	3 years
4	Glass and glass-ceramics for electrical energy storage devices Date of sanction: 01.04.2012 Date of completion: 31.03.2017	DST	Dr. Rahul Vaish	35 Lakh	5 years
5	Electromagnetic Radiation response of metals and alloys during deformation at low temperature conditions Date of sanction: 22.05.2013 Date of Completion: 21.05.2016	DST	Dr. Vishal Singh Chauhan	18.4 Lakh	3 years
6	Nano structured metal oxide: application to bio sensing Date of Sanction:1-1-2015 (2nd Year) Date of Completion: 31-12-2015	ICMR Delhi	Dr. Jaspreet	27 Lakh	1 year
7	Novel routes for Nano crystallisation of energetic compounds Date of sanction:13-02-2013 Date of Completion:12-02-2016	ARMREB, DRDO	Dr. Jaspreet	68 Lakh	3 years
8	CFD Modeing of Contaminated sediments in Rana pratap Sagar Lake, Rajasthan Date of sanction:05-07-2014 Date of Completion:31-08-2017	DAE	Dr O. P. Singh, Dr. Rajender Ray	22 Lakh	3 years
9	Arsenic and Heavy Metal Mapping in Water, Coal & Fly-Ash Samples from Urjanchal (Singrauli) Area of Central India Date of sanction: 11.03.2015 Date of completion: 20.06.2017	DST	Dr. Dericks Praise Shukla	22.08 Lakh	2.3 years
10	Investigation of Photocatalytic Activity in Ferroelectric Ceramics & their Composites Date of sanction: 17.10.2014 Date of completion: 16.10.2017	INSA	Dr. Rahul Vaish	15 Lakh	3 years

Seed Grant Projects

Sr.No.	Projects Title	File No.	Investigator	Amount Sanctioned (in Rs.)	Duration of Project
1	Controlled growth of aligned CNTs for electronic and sensor device applications Date of Sanction: 22.08.14 Date of Completion: 21.08.17	IITM IITM/SG/ VBK/33	Dr. Viswanath Balakrishnan	6,20,000	3 years

Sponsored Consultancy Research Projects

Sr.No.	Projects	Sponsoring Agency	Investigator	Amount Sanctioned (in Rs.)	Duration of Project
1	Design & Innovation Lab Date of sanction:17-07-2014 Date of Completion:16-07-2017	MHRD	Dr. O. P. Singh	1.3 Crore	3 years

Progress of the Research Projects

PI: Dr. Rajeev Kumar

Analysis of T-G Shaft due to Disturbances of Electric Grid

This project is aimed at studying the effects of electric grid loading on the mechanical effects on the turbine-generator shaft system for the 2 pole short circuit, 3 pole short circuit and Mail-synchronization. This project has been just approved from BHEL Hardware.

Design & Development of High Performance Synchronous Machine (PMSM) based Drives for Motion Control.

In this project, PMSM based drives for motion control will be designed and simulated using Finite Element Method. First phase (literature review) of the project has been completed.

PI: Dr. Jaspreet Kaur

Nano Structured Metal Oxide: Application to Bio Sensing

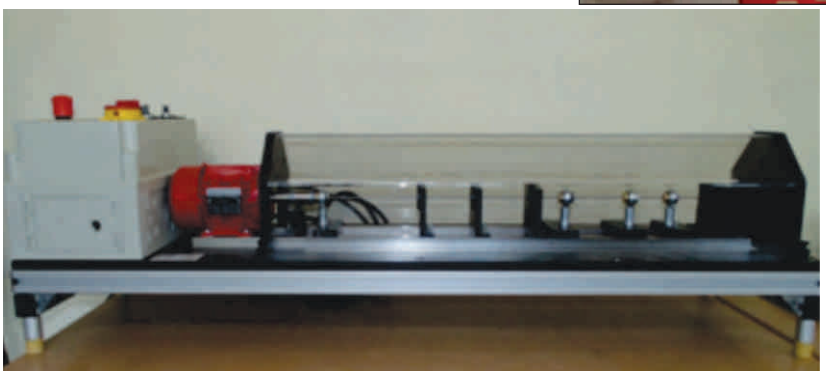
We have synthesised number of nanostructure of CuO and bimetallic systems and characterise them thoroughly. The electrochemical bio sensing studies reveal that one of the CuO nanostructure having candy like morphology has excellent sensing performance such as high sensitivity, selectivity and limit of detection and with broad range of the material showed excellent performance in human blood serum sample And glucose concentration as measured using the material matched very well with the pathological lab data. Further studies are in progress to develop a suitable sensing devise incorporating these materials.

Novel Routes for Nano Crystallisation of Energetic Compounds

Novel evaporation assisted solvent and antisolvent interaction method has been developed for making nanoparticles of organic compounds and Patent filling is in progress. Upscale synthesis is also possible using the same method. An additional novel method for nanocrystallisation of high energetic materials using microfludic is under development.

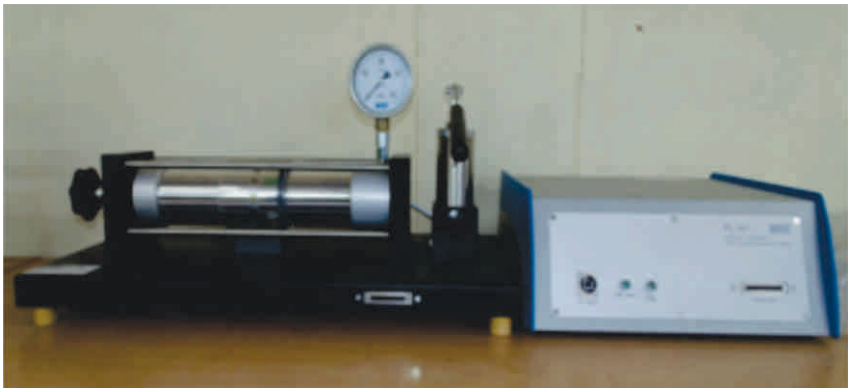
A Few Major Instruments Installed in Design Lab:

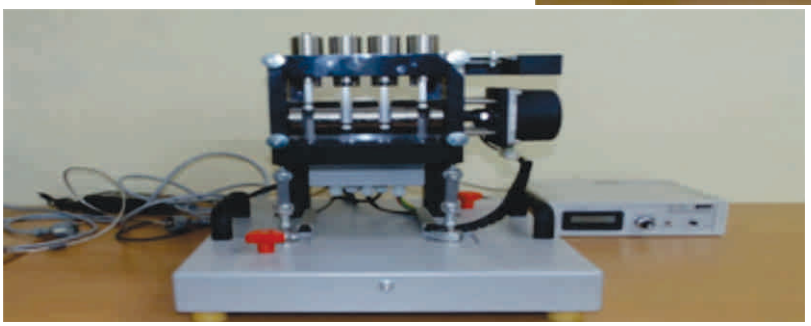
Electrochemical Works Station from ICMR Project



Whirling Shaft Apparatus

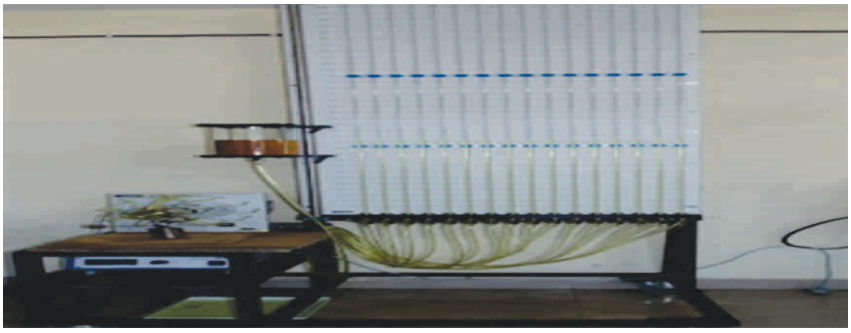
Stress & Strain Analysis on Thin Cylinder Pressure Vessel





Reciprocating of Engine Mass

Journal Bearing Apparatus



PAPERS PUBLISHED IN INTERNATIONAL JOURNALS

1. S. Patel, A. Chauhan and R. Vaish, "Elastocaloric effect in ferroelectric ceramics" Appl. Phys. Lett. 106, 172901 (2015).
2. A. Sharma, R. Kumar, Rahul Vaish and Vishal S Chauhan "Active vibration control of space antenna reflector over wide temperature range" Composite Structures 128, 291 (2015).
3. M. Sharma, A. Chauhan, R.Vaish and V.S. Chauhan, "Finite element analysis on solar energy harvesting using ferroelectric polymer" Solar Energy ,115, 722 (2015).
4. S. Patel, A. Chauhan and Rahul Vaish, Mechanical confinement for tuning ferroelectric response in PMN-PT single crystal, J. Appl. Phys.117, 084102 (2015).
5. A. Chauhan, S. Patel and Rahul Vaish, "Multicaloric effect in Pb(Mn1/3Nb2/3)O3-32PbTiO3 single crystals"Acta Materialia89, 384-395 (2015).
6. A. Kumar, A. Sharma, Rajeev Kumar, Rahul Vaish, Vishal S Chauhan and and C.R.Bowen "Piezoelectric materials selection for sensor applications using finite element and multiple attribute decision making approaches" J. Adv Dielectrics, 5,1550003 (2015).
7. C.K. Susheel, R. Kumar, V. S. Chauhan and Rahul Vaish, "Shape control of spacecraft antenna reflector using lead-free piezoelectric actuators" European Journal of Computational Mechanic, 23, 199 (2014)
8. S. Patel, A. Chauhan and Rahul Vaish, "Temperature dependence scaling behavior of the dynamic hysteresis in BNT-BT-ST ceramics" Materials Research Express 2 (3), 035501 (2015)
9. Aditya Chauhan, Satyanarayan Patel and Rahul Vaish, "Enhanced electrocaloric effect in pre-stressed ferroelectric materials" Energy Tech. 3 (2), 177-186 (2015)
10. Satyanarayan Patel, Aditya Chauhan and Rahul Vaish, "Improved electrical energy storage density in vanadium doped BaTiO3 bulk ceramics by addition of 3BaO-3TiO2-B2O3 glass" Energy Tech. 3 (1), 70-76 (2015)
11. G. Vats, H. S. Kushwaha, Rahul Vaish, Niyaz A. Madhar, M. Shahabuddin, J. M. Parakkandy and K. M. Batoo, "Giant energy harvesting potential in (100)-oriented 0.68PbMg1/3Nb2/3O3-0.32PbTiO3 with Pb(Zr0.3Ti0.7)O3/PbOx buffer layer and (001)-oriented 0.67PbMg1/3Nb2/3O3 - 0.33PbTiO3 thin films" J.Adv. Die. 4, 1450029 (2014).
12. H.S.Kushwaha, G. Parmesh, Rahul Vaish and K.B.R. Varma, "TiO2 microcrystallized glass plate mediated photocatalytic degradation of estrogenic pollutant in water" J. Non. Cryst. Solids,408, 13 (2015)
13. Monisha Rastogi, Aditya Chauhan, Rahul Vaish and Anil Kishan, "Selection and performance assessment of phase change materials for heating, ventilation and air-conditioning applications", Energy Conversion and Management 89, 260 (2015)
14. Satyanarayan Patel, Aditya Chauhan and Rahul Vaish, "Enhancing electrical energy storage density in anti-ferroelectric ceramics using ferroelastic domain switching" Materials Research Express 1 045502 (2014).
15. Gaurav Vats and Rahul Vaish, "Phase change materials selection for latent heat thermal energy storage systems (LHTESS): An industrial engineering initiative towards materials science" Adv.Sci. Focus 2 140 (2014).
16. Jayesh Gupta, Gurbir Singh, Lalin Divan, Rahul Vaish and Niraj Sinha, "Thermal barrier coating materials selection using analytic network process, Adv.Sci. Focus2 159 (2014).
17. Aditya Chauhan, Satyanarayan Patel, and Rahul Vaish, "Mechanical confinement for improved energy storage density in BNT-BT-KNN lead-free ceramic capacitors" AIP Advances, 4, 087106 (2014)
18. C. R. Bowen, J. Taylor, E. LeBoulbar, D. Zabek, A. Chauhan and R. Vaish, "Pyroelectricmaterials and devices for energy harvesting applications, Energy & Environmental Science, 7, 3836 (2014)

19. H. S. Kushwaha, Reshma Sao, and Rahul Vaish, "Label free selective detection of estriol using graphene oxide-based fluorescence sensor" J.Appl.Phys,116, 034701 (2014)
20. Anuruddh Kumar, Anshul Sharma, Rajeev Kumar, Rahul Vaish and Vishal S Chauhan, "Performance of lead-free piezoelectric materials in cantilever based energy harvesting devices" Int. J. Computational Mater. Sci. and Engineering, 3 1450010 (2014).
21. Satyanarayan Patel, Aditya Chauhan and Rahul Vaish "Enhanced energy harvesting in commercial ferroelectric materials" Materials Research Express 1 025504 (2014).
22. Satyanarayan Patel and Rahul Vaish "Finite element analysis of WC- Al2O3 composites" Int. J. Computational Mater. Sci. and Engineering 3 1450002 (2014).
23. Gaurav Vats, Himmat S Khushwaha, and Rahul Vaish, "Enormous energy harvesting and storage potential in multiferroic epitaxial thin film hetrostructures: an unforeseen era" Materials Research Express1 015503 (2014)
24. Aditya Chauhan and Rahul Vaish, "A comparative study on decision making methods with interval data", J. Comput. Engg. (2014), Article ID 793074.
25. Satyanarayan Patel, Aditya Chauhan and Rahul Vaish "A technique for giant mechanical energy harvesting using ferroelectric/antiferroelectric materials" J. Appl. Phys.115, 084908 (2014)
26. Reshma Sao, Gaurav Vats and Rahul Vaish, "A prime lead-free ferroelectric ceramic for thermal energy harvesting: 0.88Bi0.5Na0.5TiO3-.02SrTiO3-0.1Bi0.5Li0.5TiO3" Ferroelectrics 474, 1 (2015)
27. Satyanarayan Patel, Rahul Vaish, Niraj Sinha and Chris R. Bowen "Finite element analysis of the microstructure of AlN-TiN composites" Strain 50250 (2014).
28. Anuruddh Kumar, Anshul Sharma, Rajeev Kumar, Rahul Vaish and Vishal S Chauhan "Finite element analysis on vibration energy harvesting using lead-free piezoelectric materials- a comparative study " J. Asian Ceram Soc, 2 138 (2014).
29. Anshul Sharma, Rajeev Kumar, Rahul Vaish and Vishal S Chauhan "Performance of K0.5 Na0.5NbO3 (KNN)-based lead-free piezoelectric materials in active vibration control " Int. J. Appl. Ceram. Tech. 2 5 (2014).
30. Satyanarayan Patel, Aditya Chauhan and Rahul Vaish "Analysis of high field energy harvesting in ferroelectric materials" Energy Tech.2 480 (2014).
31. Reshma Sao, Rahul Vaish, and Niraj Sinha "Multifunctional drug delivery system using inorganic nanomaterials: A review" J. Nanosci. Nanotech. 15, 1960 (2015)
32. Aditya Chauhan, Satyanarayan Patel, Gaurav Vats and Rahul Vaish "Enhanced thermal energy harvesting using Li, K doped Bi0.5Na0.5TiO3lead-free ferroelectric ceramics" Energy Tech.2 205 (2014)
33. Anshul Sharma, Rajeev Kumar, Rahul Vaish and Vishal S Chauhan"Lead-free piezoelectric materials performance in structural active vibration control" J. Int. Mat. Sys.Struc.25 1596 (2014).
34. Gaurav Vats, Rahul Vaish and Chris R Bowen "Refrigeration and colossal low grade thermal energy harvesting in (Bi0.5Na0.5)0.915-(Bi0.5K0.5)0.05Ba0.02Sr0.015TiO3ceramics." J. Appl. Phys.115, 013505 (2014)
35. Saurabh Vats, Gaurav Vats, Rahul Vaish¬ and Varun Kumar "Selection of optimal electronic toll collection system for India: A subjective-fuzzy decision making approach" Appl. Soft. Comp. 21 444 (2014)
36. Gaurav Vats and Rahul Vaish "Selection of optimal sintering temperature of K0.5Na0.5NbO3 ceramics for electromechanical applications."J. Asian Ceram. Soc. 2, 5 (2014)
37. Satyanarayan Patel and Rahul Vaish "Design of PZT-Pt functionally graded piezoelectric material for low frequency actuation applications" J. Intelligent Mater Systems and Struct.26, 321 (2015)
38. Gaurav Vats and Rahul Vaish "Selection of lead-free piezoelectric ceramics"Int. J. Appl. Ceram. Tech. 11 883 (2014).

39. S. Sharma and S. K. Pandey, Investigation of the electronic and thermoelectric properties of Fe2ScX (X = P, As and Sb) full Heusler alloys by using first principles calculations. *J. Phys. D: Appl. Phys*.47, 445303 (2014)

40. S. Lal and S. K. Pandey, Density matrix approach to the orbital ordering in the spinel vanadates: A case study, Eur. Phys. J. B87, 187 (2014)

41. S. Patel and S. K. Pandey, Pressure induced spin state transition in BiFeO3: an ab inito electronic structure calculations, Eur. Phys. J. Appl. Phys. 67, 20602 (2014)

42. Md Matin, L. S. Sharath Chandra, S. K. Pandey, M. K. Chattopadhyay and S. B. Roy, The influence of electron-phonon coupling and spin fluctuations on the superconductivity of the Ti-V alloys, Eur. Phys. J. B 87, 131 (2014)

43. S. Sharma and S. K. Pandey, Investigation of thermoelectric properties of half-metallic Co2MnGe by using first principles calculations, J. Phys.: Condens. Matter26, 215501 (2014)

44. S. Sharma and S. K. Pandey ,A first principle study of electronic band structures and effective mass tensors of thermoelectric materials: PbTe, Mg2Si, FeGa3 and CoSb3 , Comput. Mater. Sci.85, 340 (2014)

45. O. P. Singh, Shaik Md. Ahmed, M. Abhilash, Modern 3D printing technologies: future trends and developments, Recent Patents Eng., 9(2), 1 (2015)

46. O. P. Singh, J. Srinivasan, Effect of Rayleigh numbers on the evolution of double diffusive salt fingers, Phys. Fluids 26(6), 1 (2014).

47. Erik S. Polsen, Daniel Q. McNerny, B. Viswanath, Sebastian W. Pattinson & A. John Hart, High speed roll to roll manufacturing of graphene using a concentric tube CVD reactor, Scientific Reports,5, Article number: 10257 (2015) DOI:10.1038/sre p10257

48. S. Pattinson, B. Viswanath, D. Zakharov, J. Li, E.A. Stach, A.J. Hart.

    Mechanism and enhanced yield of carbon nanotube growth on stainless steel by oxygen-induced surface reconstruction. Chemistry of Materials 27(3), 932 (2015).

49. Vijay Chauhan, P. Anil Kishan and Sateesh Gedupudi, Combined Cycle for Power Generation and Refrigeration Using Low Temperature Heat Sources, International Journal of Energy Optimization and Engineering, 3, 34 (2014).

50. Arpan Gupta, KM Lim, C. H. Chew, "Design of radial sonic crystal for sound attenuation from divergent sound source", Wave motion, 55, 1 (2015)

51. A. K. Agarwal, T. Gupta, P. C. Shukla, Atul Dhar Particulate emissions from biodiesel fueled CI engines, Energy Conversion and Management, 94, 311 (2015)

52. Anshul Sharma, Rajeev Kumar, Vishal Singh Chauhan, Active Control of Thermally Induced Vibrations in Smart Structure Instrumented with Piezoelectric Materials. Applied Mechanics and Materials612, 169, (2014).

53. Sachin Kumar and Jaspreet K. Randhawa, “Paliperidone loaded spherical nanoparticles” RSC Advances 4 30186 (2014)

54. Talha, Mohammad; Ashok kumar, Chimpalthradi R, Structural kinematics based damage zone prediction in gradient structures using vibration database, International Journal of Computational Materials Science and Engineering; 3,1450007 (2014)

55. Arpan Gupta, KM Lim, C. H. Chew, "Design of radial sonic crystal for sound attenuation from divergent sound source", Wave motion,(Impact Factor: 1.3). 01/2015; 55. DOI: 10.1016/j.wavemotion.2015.01.002

56. Mohammad Talha and B N Singh, Stochastic vibration characteristics of finite element modelled functionally gradient plates, Composite Structures, Vol. 130, pp. 95-106, 2015.

School of Basic Sciences

The school of Basic Sciences at IIT Mandi is a cluster of disciplines of Mathematics, Physics, Chemistry and Life Sciences. The core of the school consists of 35 faculties having expertise in contemporary fields of research.The school started its Ph.D. program in 2010 and presently 66 research students have enrolled to pursue research in various disciplines. The school aims to create an ambience for the smooth pursuit of scholarly activities in research and education to make an international impact. The school has also initiated Post-Doctoral research program and currently five Post-Doctoral fellows are working in this school. The school of Basic Sciences have started M.Sc. program in Chemistry with specialization in various areas such as Organic Chemistry, Inorganic Chemistry, Physical Chemistry & Nanosciences from August, 2014. The faculty members of the school are closely working with the engineering colleagues on different research projects.

Faculty

Dr. Subrata Ghosh

Chairperson

Assistant Professor

Specialisation: Organic Chemistry

PhD from IIT Guwahati in 2006.

Home Town: Bolpur-Santiniketan, West Bengal

Phone: 01905-300065

EMail: subrata

Dr. Abhimanew Dhir

Assistant professor (DST-INSPIRE)

Specialisation: Supramolecular Chemistry

PhD from Department of Chemistry, Guru Nanak Dev University, Amritsar, Punjab

Home Town: Jalandhar, Punjab

Phone: 01905-237912

EMail: abhimanew

Dr. Amit Jaiswal

Assistant Professor

Specialization : Nanobiotechnology

PhD from IIT Guwahati in 2013.

Home Town: Kolkata, West Bengal

Phone: 01905-237993

EMail: j.amit

Dr. A. Chakraborty

Assistant Professor

Specialisation: Theoretical Chemistry

PhD from IISc Bangalore in 2005.

Home Town: Kolkata, West Bengal

Phone: 01905-237930

EMail: achakraborty

Dr. Aditi Halder

Assistant Professor

Specialization: Design and development of new functional nanomaterials for the application of renewable energy, nano-electronics and sensor

PhD (Materials Science) from IISc, Bangalore in 2009.

Home Town: Kolkata,West Bengal

Phone: 1905-237933

EMail: aditi

Dr. Amit Prasad

Assistant Professor (Ramalingaswamy Fellow, DBT)

Specialisation: Immunology/Microbiology

Phd from Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow in year 2008

Home Town: Ranchi, Jharkhand

Phone:01905-237917

Email: amitprasad

Dr. Arti Kashyap

Associate Professor (Joint Appointment)

Specialisation: Magnetism and magnetic materials

PhD from IIT Roorkee.

Home Town: Mandi, Himachal Pradesh

Phone: 01905-300042

EMail: arti

Dr. Bindu Radhamany

Associate Dean (Research)

Assistant Professor

Specialization: X-ray spectroscopy

Ph.D. from UGC-DAE, consortium for scientific research, Indore (2005)

Home Town: Kollam, Kerala

Phone: 01905-300060

Email: bindu

Dr. C. S. Yadav

Assistant Professor

Specialisation: Low Temperature Physics

PhD from Jawaharlal Nehru University, New Delhi in 2008

Phone: 01905-237999

EMail: Shekhar

Prof. Kenneth Gonsalves

Visiting Distinguished Professor

Specialisation: Materials Synthesis

PhD from University of Massachusetts at Amherst.

Home Town: Charlotte, NC, USA

Phone: 01905-237976

EMail: Kenneth

Prof. Lalit Malhotra

Dean SRIC, Finance & Accounts

Visiting Professor

Specialisation: Thin Film Physics and Technology

PhD from IIT Delhi in 1971.

Home Town: Mandi, Himachal Pradesh

Phone: 01905-237916

Email: lalitmlhtr

Dr. Ajay Soni

Assistant Professor

Specialisation:Nanomaterials and Experimental Condense Matter Physics

PhD from UGC-DAE Consortium for Scientific Research, Indore (2009).

Phone: 01905-237926

EMail: ajay

Dr. Chayan K. Nandi

Assistant Professor

Specialisation: Physical Chemistry

PhD from IIT Kanpur in 2006.

Home Town: Sarangapur, Bankura, West Bengal

Phone: 01905-237917

Email: Chayan

Dr. Hari Varma

Assistant Professor

Specialisation: Atomic and Molecular physics

PhD from IIT Madras in 2008.

Home Town: Kochi, Kerala

Phone: 01905-300066

EMail: hari

Dr. Kaustav Mukherjee

Assistant Professor

Specialisation: Experimental Condensed Matter Physics

Ph.D. from UGC-DAE Consortium for Scientific Research, Indore (2008).

Home Town: Kolkata, West Bengal

Phone: 01905-237923

EMail: kaustav

Dr. Manoj Thakur

Assistant Professor

Specialisation: Optimization, Soft Computing, Machine Learning & its Application to Computational Finance

PhD from IIT Roorkee in 2007.

Home Town: Roorkee, Uttarakhand

Phone: 01905-237927

EMail: manoj

Dr. Muslim Malik

Assistant Professor

Specialisation: Differential Equations

PhD from IIT Kanpur in 2006

Home Town: Balrampur, UP
EMail: muslim

Dr. Pradyumna Kumar Pathak

Assistant Professor

Specialisation: Quantum Optics,QuantumInformation and Nanophotonics

PhD from Physical Research Laboratory, Ahmedabad, India.

Home Town: Mathura, Uttar-Pradesh

Phone: 01905-300033
Email: ppathak

Dr. Pradeep Kumar

Visiting Assistant Professor

Specialisation: Raman and Infrared Spectroscopy

PhD from IISc, Bangalore in 2014

Home Town: Rohtak, HR

Phone: 01905-237931
EMail: pkumar

Dr. Pradeep Parameswaran

Associate Dean (Courses)

Assistant Professor

Specialisation: Inorganic/Materials/Nano-Chemistry

PhD from University of Hyderabad in 2006.

Home Town: Varavoor, Thrissur District, Kerala

Phone: 01905-237931/300045
EMail: Pradeep

Dr. Prem Felix Siril

Associate Dean (SRIC)

Assistant Professor

Specialisation: Chemistry of Nanomaterials

PhD from DDU Gorakhpur University in 2003.

Home Town: Thiruvananthpuram, Kerala

Phone: 01905-300040

EMail: prem

Dr. Nitu Kumari

Assistant Professor

Specialisation: Differential Equations, Dynamical Systems, Nonlinear Dynamics

PhD from ISM Dhanbad in 2009.

Home Town: Dhanbad, Jharkhand

Phone: 01905-237926
EMail: nitu

Dr. P. C. Ravikumar

Associate Dean (Planning)

Assistant Professor

Specialisation: Organic Chemistry

PhD from IISc Bangalore in 2006.

Home Town: Chennai

Phone: 01905-300044
EMail: ravi

Dr. Prasanth P. Jose

Assistant Professor

Specialization: soft condensed matter physics

PhD from Indian Institute of Science Bangalore in 2005.

Home Town: Palakkad, Kerala

Phone: 01905-300064
EMail: prasanth

Dr. Pratibha Garg

Assistant Professor

Specialisation: Topology, Functions Spaces, Measure Theory.

PhD from IIT Delhi in 2007.

Home Town: Shamli, U.P.
EMail: pratibha

Dr. Prosenjit Mondal

Assistant Professor

Specialisation: Molecular Endocrinology and Metabolism

PhD from Institute of Life Sciences, Bhubaneswar in Year 2008.

Home Town: Babunpur,Burdwan

Phone: 01905-237919

EMail: prosenjit

Dr. R. C. Sawhney

Adjunct Professor

Specialisation: Endocrinology & Metabolism, High Altitude Physiology, Herbal Medicines

Ph.D from Postgraduate Institute of Medical Education and Research, Chandigarh in 1977

Home Town: Shimla

Phone: 01905-237943

EMail: sawhneyrc

Dr. Rajendra K. Ray

Assistant Professor

Specialisation : Computational Fluid Dynamics, Numerical Methods for PDEs

PhD from IIT Guwahati in 2009.

Home Town: Sainthia, West Bengal

Phone: 01905-237932

Email: rajendra

Dr. Sarita Azad

Assistant Professor

Specialization: Statistical Time Series Analysis

Ph.D in Applied Mathematics (2008) Delhi University and Indian Institute of Science, Bangalore.

Home Town: New Delhi

Phone: 01905-237928

EMail: sarita

Dr. Suman Kalyan Pal

Assistant Professor

Specialisation: Fast and Ultrafast Laser Spectroscopy

PhD from IACS, Jadavpur in 2006

Home Town: Katwa, West Bengal

Phone: 01905-237933

EMail: suman

Dr. Venkata Krishnan

Assistant Professor

Specialisation: Materials Chemistry, X-ray Science

PhD from University of Stuttgart, Germany in 2006.

Home Town: Coimbatore, Tamil Nadu

Phone: 01905-237930

Email: vkn

Dr. Rajanish Giri

Assistant Professor

Specialisation: Biophysics and protein folding, Intrinsically Disordered Proteins, Chimeric Antigen Receptor based Cancer Immunotherapy, Protein Engineering

PhD from: Sapienza University of Rome, Rome, Italy, 2013.

Home Town: Allahabad

Phone:01905-237927

EMail: rajanishgiri

Dr. Syed Abbas

Assistant Professor

Specialisation: Differential Equations and Ecological modelling

PhD from IIT Kanpur in 2009.

Home Town: Gonda, Uttar Pradesh

Phone: 01905-237933

EMail: abbas

Dr. Shyam Kumar Masakapalli

Assistant Professor

Specialisation: Metabolic Systems Biology (Fluxomics and metabolomics), Plant and microbial metabolism, NMR and GC-MS.

PhD from University of Oxford, UK in 2012.

Home Town: Rayagada, Odisha

Phone: 01905-237907

EMail: shyam

Dr. Tulika Prakash Srivastava

Assistant Professor (Ramalingaswamy Fellow, DBT)

Specialisation: Bioinformatics, Systems Biology, Metagenomics, Comparative Genomics, Protein Function and Structural analysis

Phd from IGIB, CSIR, Delhi, India in 2005

Home Town: Delhi

Phone: 01905-237922

Email: tulika

Post-Doctoral Fellows

Dr. Charu Dwivedi Post Doctoral Fellow (PDF) in School of Basic Sciences Specialisation: Separation Science and Radiation Chemistry Ph.D. from Bhabha Atomic Research Centre, Mumbai, India Email: charu	**Dr. Ganesh Adhikary** Post Doctoral Fellow (PDF) in School of Basic Sciences Specialisation: Photoelectron Spectroscopy Ph.D. from Tata Institute of Fundamental Research, India EMail: ganesh
Dr. Rajesh Chebolu Post Doctoral Fellow (PDF) in School of Basic Sciences Specialisation: Organic Synthesis Ph.D.: Doctorate in Medicinal Chemistry, NIPER, SAS Nagar, Mohali Email: rajeshchebolu	**Dr. Rik Rani Koner** Post Doctoral Fellow (PDF) in School of Basic Sciences Specialisation: Bioinorganic chemistry PhD from Indian Institute of Technology Guwahati Home Town: Bolpur Phone: 01905237994 EMail: rik

Externally Sponsored Research Projects

S.No.	IIT Mandi Reference No./ Project No.	Project Title	Sponsoring Agency	"Principal Investigator & Co-ordinator(s)"	Amount Sanctioned (in Rs.)	Duration of Project
1.	IITM-CPAM/HPD/08 Date of sanction: 04.09.12 Date of completion: 03.09.15	Collision Processes in Atomic and Molecular Physics	DST	"PI: Dr. Hari R. Varma Co-PI: Dr. P. C. Deshmukh (IIT Madras)"	10,62,000	3 Years
2.	IITM-NBM/SUG/10 Date of sanction: 01.08.12 Date of completion: 31.07.15	Towards Novel Barbiturates as Matrix Metalloprotenase (MMP) Inhibitors: Design, Synthesis, Characterization and Biological Evaluation	DST	Dr. Subrata Ghosh	22,85,000	3 Years
3.	IITM-DNA/CKN/13 Date of sanction: 08.01.12 Date of completion: 31.07.15	DNA aptamer conjugated gold nanoparticle for targeting cancer cells	DST	Dr. Chayan Kanti Nandi	22,80,000	3 Years
4	IITM-FDE/SYA/14 Date of sanction: 01.10.13 Date of completion: 30.11.16	Study of Fractional order Differential Equations with Applications	DST	Dr. Syed Abbas	6,41,000	3 Years
5	IITM-DST/PKP/17 Date of sanction: 27.06.12 Date of completion: 26.06.15	Nanophotonic Systems for quantum information processing & coherent central	DST	Dr. P. K. Pathak	13,44,000	3 Years
6	IITM-DBT/CKN/19 Date of sanction: 30.12.13 Date of completion: 29.12.16	Molecular Chaperone's mediated protein folding using time resolved single molecule Forster resonance energy transfer	DBT	PI: Dr. Chayan Kanti Nandi	69,58,200	3 Years
7	IITM-DRDO/SBG/20 Date of sanction: 27.07.12 Date of completion: 26.07.16	Supramolecular High Energy Compounds: synthesis, Characterization and theoretical Studies	DRDO	"PI: Dr. Subrata Ghosh Co-PI: Dr. Prem Felix Siril Dr. Aniruddha Chakraborthy"	41,48,500	4 Years

S.No.	IIT Mandi Reference No./ Project No.	Project Title	Sponsoring Agency	"Principal Investigator & Co-ordinator(s)"	Amount Sanctioned (in Rs.)	Duration of Project
8	IITM-NRN/PFS/21 Date of sanction: 16.01.13 Date of completion: 15.01.16	"Novel Routes for Crystallization Of Energetic Compounds"	ARMREB, DRDO	"PI: Dr. Prem Felix Siril Co-PI: Dr. Jaspreet Kaur Randhawa Dr. Prasanth P. Jose"	68,48,250	3 Years
9	*IITM/INTEL/KNG/26 Date of sanction: 01.07.12 Date of completion: 30.06.15	Resists Concepts for EUVL at the 16 nm Node and Beyond	INTEL	"PI: Prof. Kenneth Gonsalves Co-PI: Prof. Pradeep Parmeshwaran Prof. Subrata Ghosh Satinder Kumar Sharma"	217,62,000	3 Years
10	IITM/DST/VKS/29 Date of sanction: 11.04.12 Date of completion: 10.04.17	"Controlled Fabrication of Realistic Nano-circuits using Robust Artificial Peptides"	DST	Dr. Venkata Krishnan	35,00,000	5 Years
11	IITM/DST/AMD/30 Date of sanction: 19.03.12 Date of completion: 18.03.17	Engineering Molecular Organic Frameworks Crystal Structure and Photo Physical properties	DST	Dr. Abhimanew Dhir	35,00,000	5 Years
12	IITM/HSAA/PCR/32 Date of sanction: 15.06.12 Date of completion:14.06.15	Study of Fractional order Differential Equations with Applications	DST	Dr. P. C. Ravikumar	27,00,000	3 Years
13	IITM/HOCFD/DST/33 Date of sanction: 14.02.14 Date of completion: 13.02.17	Development of a class of higher order compact (HOC) Finite difference Scheme and its application to linear shear flows	DST	Dr. Rajendra Kumar Ray	13,32,000	3 Years
14	IITM/DBT/TPS/36 Date of sanction: 18.07.12 Date of completion: 17.07.17	Exploring the Human Microbiome: A Hunt for the candidates for Pre- and Pro-biotics	"Ramalingaswami Re-entry Fellowship DBT"	Dr. Tulika P. Srivastava	82,00,000	5 Years
15	IITM/NBHM/SYA/45 Date of sanction: 15.11.12 Date of completion: 14.11.15	Periodicity & a Almost Periodicity in Ecological Modeling NHBM	DAE	Dr. Syed Abbas	8,57,500	3 Years
16	IITM/DST/PAD/46 Date of sanction: 06.05.13 Date of completion: 05.05.16	Design and Synthesis of New Organic-Inorganic Hybrids: Bip-Evaluation as Cancer, Microbial and Inflamatory Therapeutic Agents	DST	"Dr. Pooja Co-PI: Dr. Pradeep C. Parameswaran"	27,72,000	3 Years

S.No.	IIT Mandi Reference No./ Project No.	Project Title	Sponsoring Agency	"Principal Investigator & Co-ordinator(s)"	Amount Sanctioned (in Rs.)	Duration of Project
17	IITM/NBHM/RRY/47 Date of sanction: 27.01.15 Date of completion: 26.01.18	Development of Higher Order Accurate Numerical Schemes for Elliptic Equation with Various Discontinuties & its Application to Immersed Interface Problems	NBHM (DAE)	Dr. Rajendra Kumar Ray	2,99,500	3 Years
18	IITM/BRNS/RKR/51 Date of sanction: 15.07.14 Date of completion: 14.07.17	Modeling of Contaminated Sediments in Lakes/ Rivers	BRNS (DAE)	"PI: Dr. Rajendra Kumar Ray Co-PI: Dr. O.P. Singh"	21,07,100	3 Years
19	IITM-DST-VR/SKP/76 Date of sanction: 15.01.15 Date of completion: 14.01.18	Carrier Multiplication in Electronically Coupled Nanocrystals and Harvesting	CSIR	Dr. Suman K. Pal	12,58,000	3 Years
20	IITM/CSIR/SKP/70 Date of sanction: 29.01.15 Date of completion: 28.01.18	Quantum Dots for Novel Solar Solutions	DST-VR	"Dr. Suman K. Pal Prof. Tonu Pullerits (Lund University, Sweden)"	40,27,000	3 Years
21	IITM/DRDO-SASE/MT/79 Date of sanction: 05.03.15 Date of completion: 04.09.15	Snow Avalanche Forecasting Using Machine Learning and Data Mining	DRDO-SASE	Dr. Manoj Thakur	5,04,000	6 months
22	IITM-SERB/SKP/81 Date of sanction: 16.04.15 Date of completion: 15.04.18	Engineering Chemical Structure to Improve Device Efficiency: Novel Organic Polymers /Macromolecules & their Nanocomposites for Photovoltaic Application	SERB	"Dr. Suman Kalyan Pal Co-PIs: Dr. Subrata Ghosh Dr. C.K. Nandi Dr. Suresh Chand (NPL) Dr. Rajiv Kr. Singh (NPL)"	43,64,000	3 Years
23	No. SR/FT/CS-58/2011 Date of sanction: 10.05.12 Date of completion: 09.05.15	'Development of polyoxometalates-organic hybrids having 'through-bond' electronic interactions between cluster and organic units for materials and catalytic applications' (Fast Track Project)	DST	Dr. Pradeep C. Parameswaran	26,90,000/- Lakhs	3 Years

Seed Grant Projects

Sr.No.	Projects Title	File No.	Investigator	Amount Sanctioned (in Rs.)	Duration of Project
1	Using Anthropogenic Carbon dioxide for Sustainable Future through Hetrogeneous Electrocatalyst Date of Sanction: 27.09.14 Date of Completion: 26.09.17	IITM/SG/AH /34	Dr. Aditi Halder	7,20,000	3 years

Progress of the Research Projects

Dr. Chayan K Nandi

Our research group at present is focusing on nanostructured materials for various state of art biomedical application such as dynamical information of protein corona for target specific drug delivery. We are also working on the protein folding dynamics using the most advanced single molecule Forster resonance Energy Transfer Technique. We have established custom built Super resolution Stochastic Optical Reconstruction Based Nanoscopy (STORM), for dynamical information of cellular component down to nanometer level. Apart from the biomedical application we are also designing nanosensor for small pollutant and biomolecules detection and also nanomaterials for light harvesting, especially for solar cell.

Figure: Custom Built smFRET and Super Resolution Setup

Dr. Pradeep Parameswaran

'Development of polyoxometalates-organic hybrids having 'through-bond' electronic interactions between cluster and organic units for materials and catalytic applications'

As part of this project, a new aromatic sulfonium counter ion motif for polyoxometalate (POM) clusters having potential for structural and electronic fine-tuning has been designed and its two derivatives (4-hydroxy)phenyl-dimethylsulfoniumtriflate (HPDST) and (4-allyloxyphenyl)-dimethylsulfoniumtriflate (APDST) exhibiting ionic liquid behaviours at ambient conditions have been developed. Using these, a series of aromatic sulfonium POM hybrids (HPDS)n/(APDS)n[XMO12O40] (HPDS & APDS = cations of HPDST and APDST respectively, X = P or Si and n = 3 or 4) have been developed and tested for photochromic behaviours. On exposure to UV light, these POM-hybrids exhibited colour change from yellow to green/blue. The coloration kinetics half-life times (t1/2) were less for APDS based hybrids compared to HPDS based hybrids suggesting that the alkyl substitution on the phenolic group helps to fine-tune the electron availability on the sulfonium moiety and hence in controlling the photochromic behaviours of the POM hybrids. The t1/2 values of these hybrids were considerably lower than those of the reported aliphatic sulfonium POM hybrids. It was also observed that the nature of the hetero atom in the POM cluster, which in turn determines the number of counter ions per cluster, also plays an important role in deciding the rate of photo coloration. We have also demonstrated the application of photo-reduced POM hybrids as reduction catalysts for the conversion of 4-nitrophenol to 4-aminophenol.

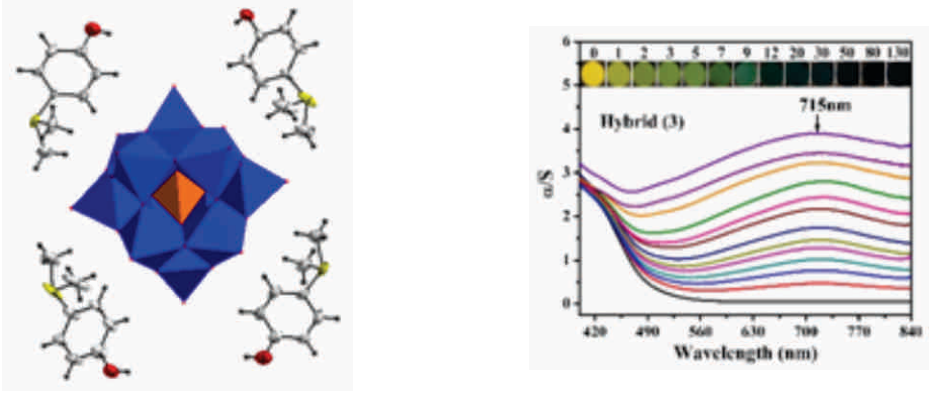


Figure: Crystal structures of a representative hybrid (left). Kubelka-Munk (K-M) transformed reflectivity of the hybrids after irradiation with 350 nm at various time intervals (right); inset shows the color of the hybrid corresponding to the irradiation time in minutes.

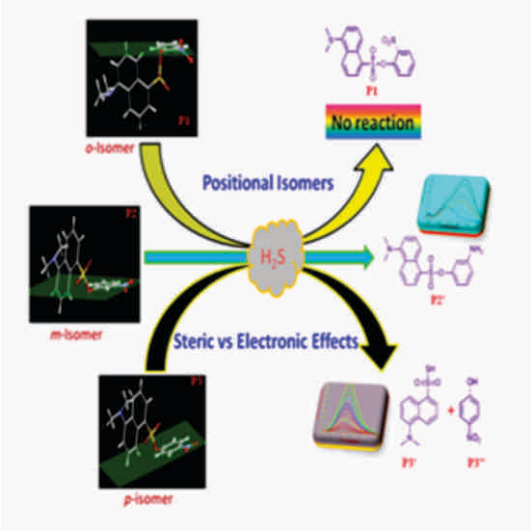
Dr. Subrata Ghosh

Currently we are focusing on the development of organic materials for various applications. While some photostable materials are being developed for bioimaging applications in order to understand some of the biological events, another set of materials are being used for electronics applications. Few projects that we have successfully completed are as follow:

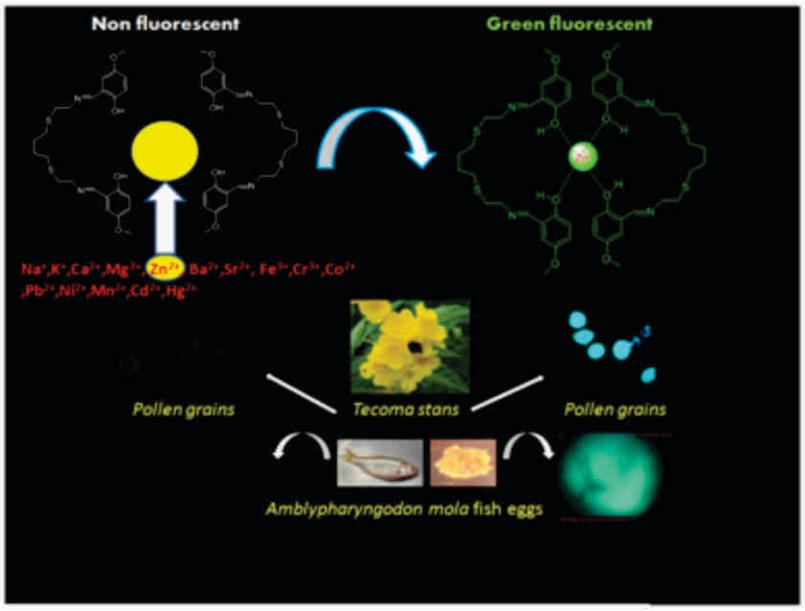
Materials for OLEDs Applications: Understanding at the Molecular Level

Planar aromatic structures allow close π-π stacking of molecules and hence fluorophores experience close aggregation phenomenon which obstruct molecules to emit from aggregate state. This limits the application area of fluorophores to the solution state only. Expansion of propeller like molecules in 3-D space do not allow close π-π stacking process. This contrasting effect is called aggregation induced emission (AIE) or aggregation induced enhanced emission (AIEE). Based on the thorough research conducted on ACQ and AIE phenomena, we started to explore the possibilities to stitch the AIEE/AIE propertiey to planar non-emissive luminophore so that application area of such molecules could be enhanced. We showed that introduction of dimensionality to planar structures is easy with 3-dimensional aliphatic arms such as long carbon chains, cyclohexane, adamantane and norbornene. These small but useful molecular design changes, helped to improve solid state emission and device efficiencies. Thus voluminous 3-D nature of molecules is key to stop aggregation and we have achieved aggregation enhanced emissions for planar coumarin motifs.

Molecular Level Understanding of the Reactivity of Gassotransmitters Toward Small Molecules:



A combined experimental and theoretical approach has enabled us to understand at the molecular level the importance of positional and electronic effects of chemical functionality present in molecular system that acts as an optical signaling agent. The present study demonstrates the structural implications of isomeric dual site reactive (nitro and sulfonte ester groups) molecular probes (P1, P2 and P3) on optical signalling of hydrogen sulphide (H2S), a known emerging mediator in human physiological activities and diseases. The reactivity of these probes towards H2S was established using fluorescence signaling studies. The reductive interaction of H2S with nitro functionality of P2resulted in the formation of orange fluorescent amine derivative P2', while the nucleophilic S-O bond cleavage of sulfonate ester group of P3 produced sulfonothionic acid derivative P3' as a green emissive fluorescent species. Crystal structure determination and structure-reactivity relationship studies demonstrated positional as well as electronic effects of nitro functionality on the reactivity of these probes. While the electronic effect is responsible for increasing the reactivity of sulfonate functionality, the accessibility of the reactive site by H2S is dictated by the steric factor. Though both –M (mesomeric) and –I (inductive) effects of nitro functionality are supposed to be prominent in P1 and P3, crystal structure analysis revealed a steric crowding on P1created by nitro group as well as out of plane arrangement of nitro group which in turn makes P1 much less reactive than P3. In case of P2, the probe is free from steric effect but the weak –I effect and the absence of –M effect made sulfonate functionality nonreactive towards H2S. At the same time, slow reductive interaction of nitro group of P2 yielded orange emissive fluorescent species P2'.



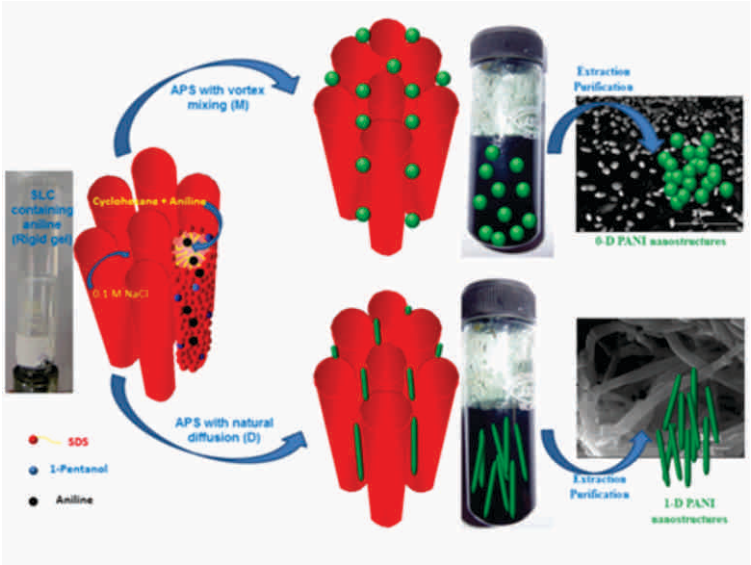
Photostable molecular materials for imaging zinc inside live cell:

Novel molecular probes for imaging zinc in biological systems are gaining interest as they help in understanding the role of zinc in regulating various bio-events. In this regard, a new C2-symmetric molecular system has been developed and successfully applied as light-up material for signaling divalent zinc with green emission. The fluorescence enhancement was highly zinc specific and this newly developed probe L1 bears sub micromolar detection capability. While probe L1 and the ensemble L1-Zn2+ exhibited remarkably high photostability, light-triggered fluorescence enhancement was observed in case of L1-Zn2+. The nature of L1-Zn2+ complex and the associated spectral shift are further supported by theoretical calculations. As the present probe absorbs in the visible region and emits in the green, it was preferred as a potential material for imaging zinc in biological systems including animal and plant cells such as pollen grains and fish egg cells. Such fluorescence imaging of zinc revealed the efficacy of the probe in the detection and localization of zinc in various biological systems.

Dr. Prem Felix Siril

Swollen Liquid Crystal Soft Templates for Structured Nanomaterial Synthesis Sponsored by DST, Govt. of India

The main objective of the project was to generate capability for the rational design and synthesis of structured nanomaterials using swollen liquid crystals (SLCs) as 'soft' templates. The project was successfully completed in 3.5 years and resulted in the development of a unique and versatile method for the morphology controlled synthesis of noble metal nanostructures, polyaniline nanostructures and their nanocomposites as shown in the figure.



Synthesi s of 0-D and 1-D PANI nanostructures in SLCs.

We believe that the developed method can be applied more generally to prepare similar nanostructures of other metals, polymers and their nanocomposites. We could also develop a unique method for the synthesis of nanocomposites of pristine graphene with metal nanoparticles and polymer nanostructures. The nanomaterials synthesized using SLCs were found to have interesting morphology. Rod shaped PANI nanostructures exhibited very good sensitivity and short response time for amperometric glucose biosensing than spherical PANI nanoparticles and bulk-PANI. Pd nanowires showed good catalytic activity for the reduction of 4-nitrophenol to 4-nitroamine having the reaction constant value =0.1 s-1. These nanowires also showed enhanced catalytic activity for the synthesis of biphenyl via Suzuki-Miyuara coupling reaction giving reaction yields greater than 80%. Goldcore and polyanilineshell nanocomposite havingnanowires morphology were found to have very good surface enhanced Raman scattering (SERS) activity due to the presence of nano junctions along with the ability of the polyaniline shell to adsorb small molecules. The prepared nanocomposite was also found to be an efficient catalyst for the reduction of organic dyes. The nanocomposite can have practical applications in effluent treatment due to its high catalytic activity. SLCs can be used as soft templates for the preparation of PANI-NS. Morphology of the nanostructures can be tuned by the way the oxidants are mixed with the monomer containing mesophases. There is ample scope to extend the work for the synthesis of nanostructures of metals, polymers and nanocomposites. Particularly the nanocomposites of pristine graphene with metals and conducting polymers can have very interesting applications in energy storage, catalysis and sensing. Future work will be done in this direction.

Novel Routes for Nanocrystallisation of Energetic Compounds Sponsored by DRDO, Govt. of India

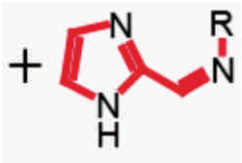
With the advent of nanotechnology, it has been realized that the elusive goal of combining high energy density and enhancing insensitivity of high energetic materials can be achived by nanosizing of energetic compounds. The main objective of the project is to develop novel methods for preparing nanoparticles of organic compounds such as high energetic compounds. A novel evaporation assisted solvent antisolvent interaction (EASAI) method has been developed and the same method has been used for preparing nanoparticles of high energetic compounds such as RDX and HMX.

Interestingly even non-spherical nanocrystals of the RDX and HMX could be sysnthesised by varying the solvent. Up scalability of the process was established without significantly compromising the average particle size. A patent is being filed on this process. The EASAI method has been further modified by using ultrasonication assisted precipitation.

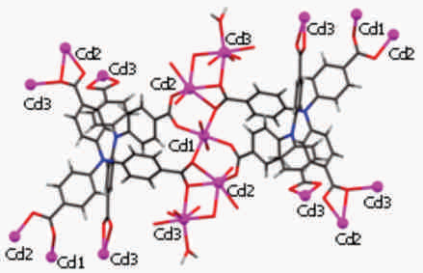
Microfluidics facilities were established at IIT Mandi and some interesting novel methods for the nanocrystallization using microfluidic arrays also has been developed.

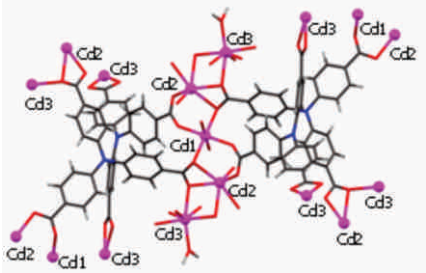
Dr. Rik Rani Koner

Sensitive Molecular Optical Material for Signalling Primary Amine Vapors



Given their adverse effects on human health and environment, sensitive recognition of amine vapors is highly desirable. To this endeavor, a new method has been developed which integrates a tailored approach using a reaction based fluorescent turn-on probe for the selective recognition of the primary amine vapors in the solid state at trace level (ppm). The present chemodosimetric probe has been successfully utilized for the detection of primary amines with high sensitivity and selectivity. The utility of probe 1 in selective discrimination of primary amines over other relevant reactive nucleophiles such as secondary amines, tertiary amines, thiols and alcohols has been established using fluorescence spectroscopy as one of the most efficient and sensitive optical techniques. Moreover, the changes in absorption spectra of probe 1 and the result of 'Dip-costing' method with primary amines support further its high specificity and selectivity. That the probe renders optical signal due to a fast chemical reaction in the solid phase was confirmed using various advanced spectroscopic techniques such as NMR and mass spectroscopy. To the best of our knowledge, this is the first example of a turn-on chemodosimeter that detects primary amines selectively through in situ molecular structure engineering leading to the generation of a new turn-on optical signal.





1.Novel Metal-Organic Framework with Tunable Fluorescence Property: Supramolecular Signaling Platform for Polynitrophenolics

Being an important class of solid crystalline materials with high porosity and large internal surface area, the development of new metal-organic frameworks (MOFs) with engineered architecture is an emerging area because of their potential applications in various sectors that include energy, catalysis, sensing, bioimaging and so on. With the aid of a rotational C3-symmetric tricarboxylic acid based ligand, a new MOF, tricarboxytriphenylamine (TCA) – Cd+2 (Cd-MOF), has been designed and synthesized as a new class of supramolecular material with tunable fluorescence property. Briefly, we have observed the existence of three symmetry independent coordination environments of Cd(II) ions with common octahedral and pentagonal bipyramidal geometries. Moreover, the three dimensional view of Cd-MOF complex reveals a small cavity with dimensions 6.405 Å X 6.405 Å. The tunable fluorescence property has been explored to selectively detect polynitrophenol based explosive materials. In addition to its potential in distinguishing polynitrophenols from other nitro-explosives such as RDX (1,3,5-trinitro-1,3,5-triazacyclohexane), HMX (Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine), TNT (2, 4, 6-trinitrotoluene) etc, and we report for the first time, the present MOF can differentiate polynitrophenols from polynitro alcohols.

Dr. Venkata Krishnan

Controlled Fabrication of Realistic Nano-circuits Using Robust Artificial Peptides

The research project deals with the physico-chemical understanding, design and fabrication of bio-inspired materials. The main goal of the research work will be to explore the use of molecules, methods and concepts of biology to design and create novel materials with new functions and properties. In particular, the project is aimed at fabricating nanomaterials in desired structures by controlling the assembly of nanoparticles based on the approaches adopted by nature, particularly biomolecule-directed-assembly, wherein achieving nanoscale structural control will enable the preparation of ordered hierarchical nanostructures in one, two and three dimensions, which could be used for a molecular electronics applications.

Dr. R.C. Sawhney

Ethnobotanical Garden

This investigation is aimed at mapping of all the plant specieces in the Kamand campus of the Institute and establishing of Herbarium and Medicinal Plant Garden for conservation ,education and research. In addition, as the local population has been using herbal remedies against different diseases an ethnobotanical survey of the region is also planned to initiate research activities for development of molecular drugs, nutraceuticals and functional foods against different diseases.

Kamand campus was divided into 15 grits of 200 meter each to survey the area for the presence of different plant species. One hundred twenty plants were photographed in their natural habitat, voucher specimens were collected and preserved for confirmation of nomenclature and 40 herbarium sheets were pasted. A First Aid Medicinal Plants Garden was established for use by the campus residents and also for ex-situ conservation, education and awareness. A preliminary survey of ten villages around the campus was done and a workshop with the local practitioners was organized to obtain ethnobotanical input on local use of medicinal plants. Twenty seven plants which have well established curative and health promotion activity have been identified for organic cultivation in the garden. In the first phase, cultivation trial of 15 medicinal plants namely Ocimum santum, Mentha pipreta, M. spicata, Asparagus racemosus, Viola serpens, Centella

asiatica, Bacopa moneirri, Curcuma longa, Rouwolfia serpentina, Ocimum kilimandscarium, Aloe vera, Withania somnifera, Cinnamomum tamala, Rosa damescena and Cymbopogon citratus was started. Out of these, 12 medicinal plants have been established and are at different developmental stages. Withania somnifera, Cymbopogon citratus and Rouwolfia serpentina cultivation was not successful and fresh plantation will be initiated in the next season.

A health drink was developed from these organically grown medicinal plants. Four different combinations as per Indian System of Medicine were prepared and coded randomly as A, B, C and D for taste hedonistic studies using standard performa. The study was carried out in 15 volunteers drawn from amongst faculty, students and staff of the Institute. Preparations A and D were found to be most acceptable and were packaged under hygienic conditions. They were named as Ambrosia-de-Uhl and Ambrosia-de-Uhl m and released for local consumption on 67th Republic Day. These preparations can be used as such and or in combination with traditional tea or black tea. Feedback on beneficial effects of these preparations was also obtained using standard performa. Both the preparations were highly rated by the resident consumers as excellent and are in great demand as refreshing, stress buster, antidotes against cough, cold and fever. An in house limited feasibility study was also carried out to develop nutraceuticals from Rubus ellipticus (Aakhe) which grows wildly in Kamand area. The juice and jam of this wild fruit were found to have unique taste and can be developed into a nutraceutical to administer bioactive extracts/ molecules or drugs and has potential to change economy of the local inhabitants. Work is in progress to plant additional species and identify the regional medicinal plants and domesticate them in the medicinal plants garden for drug discovery investigations by researchers of the Institute. Workshop organized on local ethnomedicinal plants" on 28th July, 2014 to obtain information ethnobotanical uses of regional plants.

Dr. Rajanish Giri

Research Areas: Biophysics, Protein Folding of structured and unstructured proteins, Intrinsically Disordered Proteins, Folding and binding mechanisms of disordered domains of p53.

Recent findings that nearly one third of human proteome and 75% regulatory proteins are disordered in physiological buffer conditions, led to a new period in protein science research, known as Intrinsically Disordered Proteins (IDPs). IDPs, being functional even without structures, led to a non-conventional view known as Disorder-Function-Paradigm. One of the project proposal on E1A on coprote in disorder folding mechanism is approved for funding from DST-SERB. Currently Dr. Giri lab has cloned amyloid beta peptide sequence and his lab is in the progress of expression and purification of this protein. This protein is one of the difficult system to work with due to its poor solubility and potential aggregation.

Dr. Bindu Radhamany

Our lab focuses on understanding the fundamental physics behind strongly correlated electron systems that exhibit emerging phenomena like multiferroicity, topological insulator, charge ordering, metal to insulator transitions etc using structural and spectroscopic techniques.

Inverse Photoemission Spectroscopic Studies on Phase Separated La0.2sr0.8mno3

Inverse photoemission spectra were collected on La0.2Sr0.8MnO3 at 300 and 100 K. As the compound becomes insulating, at around the Fermi level, an increase in the intensity was found. After detailed analysis, we find that this unusual behaviour is due to the localisation of disorder induced states closer to the conduction band. (Navneet et al Solid state comm.217 (2015) 70)

Evidence of Spin Lattice Coupling in Mntio3: An X-Ray Diffraction Study

We have studied the temperature evolution of the structural parameters of MnTiO3 using the x-ray diffraction technique. Our results show the onset of the intra chain and inter chain magnetic transitions taking place at temperatures much above the transition temperature shown by the bulk measurements. (Mourya et. al. EPL, 110 (2015) 27007)

Anomalous temperature behavior of BaBiO3

We have investigated the crystal structure of BaBiO3 at low temperatures using x-ray diffraction measurements. The activation energy obtained from the resistivity data were explained based in the tilting of BiO6 octahedra. (Ganesh Adhikary et al., Mater. Res.)

Dr. Prasanth Jose

Anomalous dynamics in complex fluids, polymer, glassy and phase separating systems

Our group worked on from extensive equillibrium molecular dynamic simulations on Simple Lennard Jones system and Binary Lennard Jones(LJ) system(Kob-Anderson Model). We study the changes in structural and dynamic properties of these homogeneous liquid on its transition from stable liquid phase to an unstable mixture of liquid-gas phase over a temperature grid and density grid. In the case of Binary LJ liquid, as temperature reduces we find that the gas-liquid mixture become a mixture of glassy states and gas, which is similar to gels. We compute coarse-grained density to identify existence of secondary structures and chord length distribution to understand the domain formation. We identify multiple intermediate structures hidden in these systems via local bond order parameter.

Glassy state is ubiquitous in nature and the relation between structure and dynamics is an unsolved problem in dynamics of glass transition despite numerous investigations. Using equilibrium molecular dynamics simulation of Kremer-Grest linear polymer melt model, we studied structure and dynamics of system from high temperature to low temperature at high density. The radial distribution functions give the splitting of primary peak, formation of secondary structure and slight chain penetration at enough low temperatures. Further we characterized the heterogeneous dynamics in this polymer system at low temperatures by calculating the various correlation function such as mean squared displacement, Non-Gaussian Parameter (NGP), Van Hove correlation functions and incoherent scattering functions. Our study shows the formation of cages, shown as peaks in the NGP, causes the dynamical heterogeneity in the system. . Our study shall shed light on the microscopic correlated motion and dynamical heterogeneity in model linear polymer melt systems.

PAPERS PUBLISHED IN NATIONAL AND INTERNATIONAL JOURNALS

1. Pal, S. K. /Versatile photoluminescence from graphene and its derivatives/Carbon *2015*, /88/, 86. (Review Article) (Suman K.Pal).
2. A hybrid polymeric material bearing a ferrocene-based pendant organometallic functionality: synthesis and applications in nanopatterning using EUV lithography.V.S.V. Satyanarayana, V. Singh, V. Kalyani, C.P Pradeep, S. Sharma, S. Ghosh, K.E Gonsalves. RSC Adv., Vol. 4, Pages 59817 – 59820, 2014.
3. Imatinib intermediates as a two-in-one dual channel sensor for the recognition of Cu2+ and I– ions in aqueous media and its practical applications.S.R. Patil, J.P. Nandre, D. Jadhav, S. Bothra, S.K. Sahoo, M. Devi, C.P Pradeep, P.P. Mahulikar, U. D. Patil. Dalton Trans., Vol. 43, Pages 13299 – 13306, 2014.
4. A uracil nitroso amine based colorimetric sensor for the detection of Cu2+ ions from aqueous environment and its practical applications. S.R. Patil, J.P. Nandre, P.A. Patil, S.K. Sahoo, M. Devi, C.P. Pradeep, Y. Fabiao, L. Chen, C. Redshaw, U.D. Patil. RSC Adv., Vol. 5, Pages 21464 – 21470, 2015.
5. Dansyl-carbazole AIEE material for selective recognition of thiourea derivatives. S. Sharma, C.P Pradeep, A. Dhir. New J. Chem., Vol. 39, Pages 1822 – 1826, 2015.
6. New polyoxometalates containing hybrid polymers and their potential for nano-patterning.

   V. Kalyani, V.S.V. Satyanarayana, V. Singh, C.P Pradeep, S. Ghosh, S.K. Sharma, K.E. Gonsalves. Chem. Eur. J., Vol. 21, Pages 2250 – 2258, 2015.
7. Ratiometric detection of ATP and CTP with a fluorescent spider-like receptors in water. A.K. Gupta, A. Dhir, C.P Pradeep. Eur. J. Org. Chem., Pages 122 – 129, 2015.
8. Quantum Chemical and Spectroscopic Investigations of (Ethyl 4 hydroxy-3-((E)-(pyren-1-ylimino)methyl)benzoate) by DFT Method. Diwaker & A. K. Gupta, Int. J. Quan. Chem., 2014, 2014, Article ID 841593.
9. Spectroscopic (FT-IR, 1H, 13C NMR, UV), DOS and orbital overlap population analysis of coppercomplex of (E)-4- (2-(4-nitrophenyl) diazenyl)-N, N bis ((pyridin-2-yl) methyl) benzamine by density functional theory. Diwaker, Spectrochim. Acta Part A: Mol. and Biomol. Spec., 136, 2015, 1932-1940.

10. Quantum mechanical and spectroscopic (FT-IR, 1H, 13C NMR, UV) investigations of 2-(5-(4- Chlorophenyl)-3-(pyridin-2-yl)-4, 5-dihydropyrazol-1-yl)benzo[d]thiazole by DFT method . Diwaker, Spectrochim. Acta Part A: Mol. and Biomol. Spec., 128, 2014, 819-829.
11. Synthesis, spectroscopic characterization and computational studies of 2-(4-bromophenyl)-2-oxoethyl 3-methylbenzoate by density functional theory. Diwaker, C. S. C. Kumar, A. Kumar, S. D. Raju, C. K. Quah, H. K. Fun, J. Mol. Struc., 1092, 2015, 192-2015.
12. Abbas, S., Dynamical Analysis of a model of harmful algae in flowing habitats with variable rates, Nonlinear Analysis, RWA, 22, 16-33, 2015.
13. Tripathi, J.P., Abbas, S., Thakur, M., A density dependent delayed predator-prey model with Beddington-DeAngelis type Function Response incorporating a prey refuge, Comm. Nonl. Sci. Num. Simu., 22 (1), 427-450, 2015.
14. Tripathi, J.P., Abbas, S., Thakur, M., Dynamical analysis of a prey–predator model with Beddington–DeAngelis type function response incorporating a prey refuge, Nonlinear Dynamics, Volume 80, Issue 1-2, pp 177-196,2015.
15. Banerjee, M., Abbas, S., Existence and non-existence of spatial patterns in a ratio-dependent predator–prey model, Ecological Complexity, Volume 21, 199–214,2015.
16. Abhishek Chaudhary Charu Dwivedi, Mohit Chawla, Abhishek Gupta and Chayan Kanti Nandi. “Lysine and Dithiothretol Promoted Ultrasenstive Optical and Colorimetric Detection of Mercury Using Anisotropic Gold nanoparticles. J. Mater. Chem. C, 3, 6962, 2015.
17. Charu Dwivedi, Abhishek Gupta, Abhishek Chaudhary and Chayan Kanti Nandi.“Gold Nanoparticle Chitosan Composite Hydrogel Beads Shows Efficient Removal of Methyl Parathion from Waste Water” RSC Advance4 (75), 39830-39838, 2014.
18. Syamantak khan, Abhishek Gupta, Abhishek Chaudhary and Chayan Kanti Nandi. “Orientational Switching of Protein Conformation as a Function of Nanoparticle Curvature and Their Geometrical Fitting.” Journal of chemical physics, 141, 048707-1, 2014.
19. Abhishek Chaudhary, Abhishek Gupta, Syamantak khan and Chayan Kanti Nandi. “Morphological effect of gold nanoparticles on the adsorption of bovine serum albumin.” Phys. Chem. Chem. Phys.16 (38), 20471-20482, 2014.
20. Gourab Dey, Abhishek Gupta, Trinetra Mukherjee, Pankaj Gaur, Abhishek Chaudhary, Subhra Kanti Mukhopadhyay, Chayan K. Nandi, and Subrata Ghosh. "Functional Molecular Lumino-Materials to Probe Serum Albumins: Solid Phase Selective Staining Through Noncovalent Fluorescent Labeling" ACS Appl. Mater. Interfaces6 (13), 10231-7, 2014.
21. Syamantak Khan and Chayan K Nandi, "Optimizing the underlying parameters for protein-nanoparticle interaction: advancement in theoretical simulation"Nanotechnology Reviews, 3(4), 347-359, 2014.
22. Chayan K Nandi, Hans Dieter- Birth, and Bernhard Brutschy, "A new liquid droplet laser desorption source combined with supersonic jet expansion: Application to Phenol and its water clusters"Z. Phys. Chem, 228 (4-5), 449-457, 2014.
23. Abhishek Gupta, Abhishek Chaudhary, Pooja Mehta, Charu Dwivedi, Syamantak Khan, Navneet Chandra Verma, Chayan Kanti Nandi. “Nitrogen Doped Thiol Functionalized Carbon Dots for Ultrasensitive Hg (II) Detection” Chem. Comm. 51, 10750, 2015.
24. Syamantak Khan, Navneet Chandra Verma, Abhishek Gupta and Chayan Kanti Nandi “Reversible Photoswitcing in Carbon Dots” Nature Sci. Rep. 5, 11423, 2015.
25. Charu Dwivedi, Abhishek Chaudhary, Abhishek Gupta and Chayan Kanti Nandi. “Direct Visualization of Lead Corona and its Nanomolar Colorimetric Detection using Anisotropic Gold Nanoparticles”.*/ACS Appl. Mater. Interfaces/**/7/**, 5039-5044, /2015./*

26. Abhishek Chaudhary, Abhishek Gupta and Chayan Kanti Nandi."Anisotropic Gold Nanoparticle for the Highly Sensitive Coloremetric Detection of Glucose in Human Urine". */RSC Advance /**10.1039/C4RA16690F (2015*).
27. R. D. Parshad, Nitu Kumari, Said Kouachi (2015) A remark on "Study of a Leslie Gower type tritrophic population model [Chaos Solitons and Fractals 14 (2002) 1275-1293]", Chaos Solitons & Fractals (Elsevier), Vol. 71, pp. 22-28.
28. M. Venkateswarulu, Pankaj Gaur, Sougata Sinha, Avijit Pramanik, Subrata Ghosh*. At the molecular level through photophysical studies: structural implications on the reactivity of dual-site sensitive positional isomers toward a gasotransmitter (H2S). J. Phys. Chem. C2015, 119, 19367−19375. (IF: 4.8)
29. Sunil Kumar, Punita Singh, Ritu Srivastava, Subrata Ghosh*. Packing Directed Beneficial Role of 3-D Rigid Alicyclic Arms on Templated Molecular Aggregation Problem. RSC Adv., 2015, 5, 61249–61257. (IF: 3.84)
30. Sougata Sinha, Pankaj Gaur, Sagarika Dev, Subhrakanti Mukhopadhyay, Trinetra Mukherjee, Subrata Ghosh*. Hydrazine responsive molecular material: Optical signaling and mushroom cell staining. Sens. Actuators B: Chem. 2015, 221, 418–426. (IF: 4.1)
31. Sougata Sinha, Pankaj Gaur, Trinetra Mukherjee, Subhra Kanti Mukhopadhyay, Subrata Ghosh*. Exploring 1,4-dihydroxyanthraquinone as long-range emissive ratiometric fluorescent probe for signaling Zn2+/PO43-: ensemble utilization for live cell imaging. J. Photochem. Photobiol, B: Biol.2015, 148, 181–187. (IF: 2.96)
32. Sougata Sinha, Pankaj Gaur, Sagarika Dev, Trinetra Mukherjee, Jomon Mathew, Subhra Kanti Mukhopadhyay, Subrata Ghosh*. Highly photostable zinc selective molecular marker bearing flexible pivotal unit: opto-fluorescence enhancement effect and imaging applications in living system. Dalton Trans. 2015, 44, 9506–95015. (IF: 4.2)
33. Vishwanath Kalyani, V. S. V. Satyanarayana, Abdus Salam Sarkar, Ashwani Kumar, Suman K. Pal, Subrata Ghosh, Kenneth E. Gonsalves,Chullikkattil P. Pradeep. A radiation sensitive hybrid polymer based on an Mn-Anderson polyoxometalate cluster and a UV active organic monomer: synergistic effects lead to improved photocurrent in a photoresponse device. RSC Adv. 2015, 5, 36727–36731. (IF: 3.84)
34. Vishwanath kalyani, V. S. V. Satyanarayana, Vikram Singh, Chullikkattil P. Pradeep, Subrata Ghosh, Satinder K Sharma, Kenneth E Gonsalves. New Polyoxometalates Containing Hybrid Polymers and Their Potential for Nano-Patterning. Chem. Eur J. 2015, 21, 2250 – 2258. (IF: 5.73).
35. V. Krishnan, Y. Kasuya, Q. Ji, M. Sathish, L. K. Shrestha, S. Ishihara, K. Minami, H. Morita, T. Yamazaki, N. Hanagata, K. Miyazawa, S. Acharya, W. Nakanishi, J. P. Hill, K. Ariga, Vortex-Aligned Fullerene Nanowhiskers as a Scaffold for Orienting Cell Growth, ACS Appl. Mater. Interfaces, 7, 28, 15667-15673, 2015.
36. Inverse photoemission spectroscopic studies on phase separated La0.2Sr0.8MnO3 Solid State Communications 217 (2015) 70–73 Navneet Singh, M. Maniraj, J. Nayak, S. K. Pandey, R. Bindu.
37. Evidence of spin lattice coupling in MnTiO3: An x-ray diffraction study EPL, 110 (2015) 27007R. K. Maurya, Navneet Singh, S. K. Pandey and R. Bindu.
38. Green synthesis of a Palladium-Polyaniline nanocomposite for Suzuki-Miyaura coupling reactions in water, S. Dutt, R. Kumar and P.F. Siril, RSC Advances 2015, 5, 33786-33791 DOI: 10.1039/C5RA05007C.
39. Controlling the size and morphology of Griseofulvin nanoparticles using polymeric stabilizers to enhance solubility and bioavailability,R. Kumar and P. F. Siril, Journal of Nanoparticle Research, 2014, 17 (6), 1-11.
40. Ultrafine Carbamazepine nanoparticles with enhanced water solubility and rate of dissolution, R. Kumar and P. F. Siril, RSC Advances, 2014, 4 (89), 48101-48108 DOI: 10.1039/C4RA08495K
41. Goldcore - Polyanilineshell composite nanowires for SERS and catalytic applications,S. Dutt, P. F. Siril, Vipul Sharma and Selvakannan Periasamy New Journal of Chemistry, 2015, 39, 902-908DOI: 10.1039/C4NJ01521E).
42. Manganese oxalate nanorods as ballistic modifier for composite solid propellants,S. Singh, M. Chawla,P.F. Siril and G.Singh, Thermochim. Acta, 2014, 597, 85-92doi:10.1016/j.tca.2014.10.016.

43. A novel approach for the synthesis of polyaniline nanostructures using swollen liquid crystal templates, S. Dutt and P.F. Siril, Material Letters, 124, 2014, 50-53. DOI: 10.1016/j.matlet.2014.03.068
44. Morphology controlled synthesis of polyaniline nanostructures using swollen liquid crystal templates, S. Dutt and P.F. Siril Journal of Applied Polymer Science, 131 (18), 2014, 15.DOI: 10.1002/app.40800
45. Optimized synthesis of HMX nanoparticles using a simple re-precipitation method,R. Kumar, P.F. Siril and P. Soni, J. Energ. Mater. 33 (4), 277-287.
46. A remark on "Study of a Leslie Gower type tritrophic population model [Chaos Solitons and Fractals14(2002) 1275-1293]". R. D. Parshad, Nitu Kumari, S. Kouachi Chaos Solitons & Fractals (Elsevier), Vol. 71, pp. 22-28. , year (2015)
47. Turing patterns and long time behavior in a three species food chain model. R. D. Parshad, Nitu Kumari, A. Kasimov and H. A. Abderrahmane, Mathematical Biosciences (Elsevier), Vol. 254, pp. 83-102. , year (2014)
48. Sarita Azad, S. Debnath, and M. Rajeevan (2015) Analyzing Predictability in Indian Monsoon: A Data Analytic Approach. Environmental process (Springer) doi: 10.1007/s40710-015-0108-0
49. Pankaj Narula, Sarita Azad, and Pietro Lio' (2015) A Bayesian Framework for Estimating Reproduction Number in Tuberculosis Transmission Model. Asia Pacific Journal of Public Health (Sage) doi: 10.1177/1010539515595068
50. Pankaj Narula, P. Sihota, Sarita Azad, and Pietro Lio' (2015 Analyzing Seasonality and Predictors of Tuberculosis across Indian States. Journal of epidemiology and global health (Elsevier) doi:10.1016/j.jegh.2015.02.004
51. Deepak Sharma and Sarita Azad (2015) Selection of India's Energy Resources: Fuzzy Decision Making Approach. Energy Systems (Springer) 6(3): 439-453
52. M. Venakaswaralu, P. Gaur, R. R. Koner. Sensors and Actuators B 2015, 210, 114.
53. Pinaki Mukherjee, Priyanka Manchanda, Pankaj Kumar, Lin Zhou, Matthew J. Kramer, Arti Kashyap, Ralph Skomski, David Sellmyer, and Jeffrey E. Shield "Size induced chemical and magnetic ordering in individual FeAu nanoparticles", ACS Nano, 2014, 8 (8), pp 8113–8120.
54. P. Kumar, A. Kashyap (IIT Mandi),B. Balamurugan, J. E. Shield, D. J. Sellmyer and R. Skomski (UNL) "Permanent magnetism of intermetallic compounds between light and heavy transition-metal elements", Journal of Physics: Condensed Matter 26, 064209 (2014).
55. L. H. Lewis, A. Mubarok, E. Poirier, N. Bordeaux (NW Univ) and P. Manchanda, A. Kashyap, (IIT Mandi) and R. Skomski (UNL) and J. Goldstein, F. E. Pinkerton, R. K. Mishra, R. C. Kubic Jr., K. Barmak (Iowa State Univ, Ames) "Inspired by nature: investigating tetrataenite for permanent magnet applications", Journal of Physics: Condensed Matter 26 (6), 064213 (2014).
56. P. Manchanda, R. Skomski, A. Prabhakar, A. Kashyap "Magnetoelectric effect in Fe linear chains on Pt (001)", Journal of Applied Physics 115 (17), 17C733 (2014).
57. P. Manchanda, A. Kashyap, J. E. Shield, L. H. Lewis, R. Skomski "Magnetic properties of Fe-doped MnAl", Journal of Magnetism and Magnetic Materials 365, 88 (2014).
58. P. Manchanda, R. Skomski, N. Bordeaux, L. H. Lewis, A. Kashyap "Transition-metal and metalloid substitutions in L10-ordered FeNi", Journal of Applied Physics 115 (17), 17A710 (2014).
59. Pankaj Kumar, Ralph Skomski, P. Manchanda, A. Kashyap and P.A. Dowben "Effective Mass and Band Gap in strained Graphene", Current Applied Physics, 14, S136 (2014).
60. Magnetism and Magnetocrystalline Anisotropy in Low-dimensional Rh and Ir P .Kumar, R.Skomski, A. KashyapIEEE Transactions on Magnetics,50, 1100204 (2014).
61. Magnetoelectric control of surface anisotropy and nucleation modes in L10-CoPt thin-filmsP. Manchanda, P. Kumar, H. Fangohr, D. J. Sellmyer, A. Kashyap, and R. Skomski IEEE Magnetics Letters 5, 2500104 (2014).
62. Strain and Stress in magnetoelastic Co-Pt multilayers P .Manchanda, U. Singh, S. Adenwalla, A. Kashyap and R. Skomski IEEE Transactions on Magnetics,50, 2504804 (2014).

Conferences Attended and Papers Presented

1. Chayan Kanti Nandi, "Unrevealing the Origin of Multicolour Fluorescence of Carbon Dots: From Self assembly to Single Molecule Level" Advance in Spectroscopy and Ultrafast Dynamics (ASUD 2014), 12-14th December 2014.
2. Syamantak Khan, Navneet Chandra Verma, Abhishek Gupta and Chayan Kanti Nandi "Photodynamics of Carbon Nanoparticles" Advance in Spectroscopy and Ultrafast Dynamics (ASUD 2014), 12-14th December 2014.
3. Navneet Chandra Verma, Syamantak Khan, Abhishek Gupta and Chayan Kanti Nandi Nanoparticle at the Air Water Interface. Advance in Spectroscopy and Ultrafast Dynamics (ASUD 2014), 12-14th December 2014.
4. Sunil Dutt and Prem Felix Siril* "Polyaniline Nanostructures Using Swollen Liquid Crystal as 'Soft' Template for Glucose biosensing applications" Second international conference on Nanostructured Materials and Nanocomposites (ICNM-2014), 19-21 December 2014, Mahatma Gandhi University, Kottayam.
5. Raj Kumar and Prem Felix Siril* "Polyvinyl alcohol stabilized Griseofulvin nanoparticles preparation and characterization" International conference on Recent Advances in Nanoscience and Nanotechnology 2014 (ICRANN-2014), 15-16 December, JNU, New Delhi, India.
6. Raj Kumar and Prem Felix Siril*, "Evaporation Assisted Solvent-Antisolvent Interaction method for preparing ultrafine nanoparticles of poorly water soluble drugs" 7th Bangalore India Nano, 5-6 December 2014, Hotel Lalit Ashok, Bangalore, India.
7. Tripti Vats, Sunil Dutt and Prem Felix Siril*, "A novel approach towards the synthesis of graphene/palladium nanoparticle composite with enhanced catalytic properties using Swollen Liquid Crystal 'Soft' Templates"7th Bangalore India Nano, 5-6 December 2014, Hotel Lalit Ashok, Bangalore, India.
8. Mohit Chawla and Prem Felix Siril*, "Morphology controlled synthesis of noble metal nanostructures and nanocomposites using swollen liquid crystal templates" International conference on Electron Microscopy, 9-11, July 2014, Delhi University, India.
9. Dr. Muslim Malik, International Conference on Algebra, Geometry, Analysis and their applications (ICAGAA-14)} on 27th November 2014 at Jamia Millia Islamia University, New Delhi
10. Dr. Muslim Malik, Tittle of the Talk: Application of functional analysis to a Differential Equation with Deviated Argument delivered at Internatonal Conference on 3-4 November 2014 at Jamia Milia Islamia University, New Delhi
11. Dr. Muslim Malik, Advanced Workshop on Hyperbolic PDEs: Theory, Numeric and Applications and Conference on Partial Differential Equations at the LNM Institute of Information Technology, Jaipur, December 01-11, 2014.
12. Dr. Rajanish Giri attended an Invited lecture: National Symposium on Biophysics & Golden Jubilee Meeting of Indian Biophysical Society, New Delhi, India. February 14-17, 2015). (abstract title: Proteins without structure and deviations from Structure-Function-Paradigm).
13. Dr. Rajanish Giri attended an Invited lecture: 5th Annual International Conference on Advances in Biotechnology (Biotech 2015)", Organized at IIT Kanpur, 13-15 March, 2015. (abstract title: Intrinsically disordered proteins: A case of multiple disordered partners of KIX)

Outreach Programmes

1. Dr. Pradeep C. Parameswaran gave an invited lecture titled 'Polyoxometalates/polymer Hybrids for Nano-patterning Applications' at the School of Chemistry, University of Hyderabad on December 29th, 2014.
2. Dr. Pradeep C. Parameswaran gave a lecture titled 'Polyoxometalates based Hybrid Copolymersfor Nano-patterning Applications' at the 'National Symposium on Advanced Materials' held at Indian Institute of Technology Mandi during 27-28th May, 2014.
3. Dr. Venkata Krishnan,Title: The Strange & Beautiful World of Quantum Mechanics?DST- INSPIRE Programme, July 2014, Shoolini University, Solan, Himachal Pradesh, India by Dr. Aniruddha Chakraborty.Participated as a

mentor, interacted with students and presented a lecture at DST INSPIRE Internship Camp for school students at Palampur, India on Sep. 24, 2014.

4. Dr. Venkata Krishnan,Participated as a jury member of a panel to evaluate projects by school students for the National Children Science Congress held at JNV Pandoh, India from Nov. 24 to 25, 2014.
5. Dr. Venkata Krishnan, Participated as a resource person and presented a talk entitled "Waste Management: Technology Solutions" at a workshop on "Solid and liquid waste management" held at the Rural Development Department, Shimla, India on Apr. 09, 2014.
6. Dr. Venkata Krishnan, Represented IIT Mandi and managed a stall at the Knowledge Expo 2014 held at Noida, India from Nov. 20 to 22, 2014.
7. Dr. Venkata Krishnan, Represented IIT Mandi and presented a talk entitled "Approach for Unnat Bharat Abhiyan by IIT Mandi" at the all IITs UBA meeting held at IIT Delhi, India on Dec. 15, 2014.
8. Dr. Venkata Krishnan, Spent a period of 8 days (Feb. 05 to 13, 2015) at Worcester Polytechnic Institute, U.S.A. and held discussions with the faculties on projects of social-technical relevance. Also, presented a talk entitled "IIT Mandi: Projects and Life in the Himalayan Region" on Feb. 11, 2015.

Other Achievement

1. Dr. Pradeep C. Parameswaran has been selected for the ''BMBF funded IIT Mandi-TU9 Germany faculty exchange program 2015'' to visit RWTH Aachen University. Dr. Parameswaran and Prof. Fabian Kiessling's group of Experimental Molecular Imaging (ExMI), RWTH Aachen University are working a joint research program on ''Development of gelator systems from bio-compatible materials for microbubbles based drug delivery and ultrasound imaging applications."
2. Dr. Rik Rani KonerAwarded BMBF fellowship for research collaboration with Prof. Annie Powell under IIT-Mandi-TU9 scheme.

School of Humanities and Social Sciences

The role and function of the humanist disciplines in the undergraduate engineering curriculum of the IITs has been universally recognized as an indispensable component. In assisting the potential technologist to attain the twin goals of individual excellence and happy harmony with society, the humanist disciplines need to be configured to meet immediate, practical, professional requirements without losing sight of the overriding claims of all-round liberal education. The curriculum in Humanities and Social Sciences comprise of thirteen credits spread over five streams, viz., the a) Creative Stream b) International Language Competence c) Communicative Competence d) Social Competence and e) Managerial Competence. This past year saw a number of publications by the faculty in national and international journals, prestigious fellowships as well as total grants of over 50 lakh rupees. Humanities and Social Sciences faculty also involved themselves in the Interdisciplinary Socio-Technical Practicum, a third year course run in conjunction with Worcester Polytechnic Institute (USA) which enables engineers to solve socially relevant technical problems.

Faculty

Dr. Ashok Kumar M

Chairperson

Assistant Professor

Specialisation : Sociology of Religion, Caste and Christianity in India PhD from IIT Bombay.

Home Town : Tenali, Andhra Pradesh

Phone : 01905-237928

Email : ashok

\Dr. Bhavender Paul

Adjunct Professor

Specialisation : Management Strategy, Managerial Finance, Biotechnology & Pharmaceutical Technology

Ph.D. Biochem. E. Rutgers U., New Brunswick NJ '77; MBA, Syracuse U., Syracuse NY '85

Home Town : San Mateo, CA USA (originally from Patiala, Punjab)

Phone : 01905-237998

Email : bp

Dr. Ramna Devi Thakur

Visiting Assistant Professor

Specialisation : Development Economics PhD from HPU Shimla

Home Town : Mandi

Phone : 01905-237918

Email : ramna

Prof. Balasundaram Subramanian

Visiting Professor

Specialisation : German Studies and Political Philosophy Ph.D in German Studies in 1981

Home Town : Velachery, Chennai

Phone : 01905-237996

Email : bs

Dr. Manu V. Devadevan

Assistant Professor

Specialisation : Literary practices in South Asia, Political and economic processes in premodern South Asia & South Asian Epigraphy PhD from: Mangalore University, Mangalagangothri, Mangalore.

Phone : 01905-237908

Email : manu

Dr. Rajeshwari Dutt

Assistant Professor

Specialisation : Indigenous culture and politics in 19th Century Yucatan, Mexico Ph.D. From Carnegie Mellon University (USA) in year 2012

Home Town : Kolkata, West Bengal

Phone : 01905-237919

Email : rdutt

Dr. Shail Shankar

Assistant Professor

Specialisation : Identity and group dynamics, Health and Well Being PhD from University of Allahabad.

Home Town : Deoria

Phone : 01905-237912

Email : shail

Ms. Sara Ladas

Visiting Instructor German

Specialisation : German and Roman Philology

Home Town : Weil der Stadt / Stuttgart

Phone : 01905-237918

Email : sara

Ms. Vandana Chauhan

Visiting Instructor German

Specialisation : German Language

Home Town : Delhi

Email : sara

Dr. Suman Sigroha

Assistant Professor

Specialisation : Colonialism, Postcolonialism, Imperialism and Romance Literature PhD from IIT Delhi.

Home Town : Faridabad

Phone : 01905-237994

Email : suman.sigroha

Dr. Tripti Singh

Teaching Fellow

Specialisation : Indian Digital Arts, Visualisation, New Media Arts and Visual Content Development. PhD from Banasthali University in year 2011

Home Town : Kanpur

Phone : 01905-267053

Email : tripti

Dr. Varun Dutt

Assistant Professor (Joint Appointment)

Specialisation : Judgment and Decision Making, Environmental Decision Making, Artificial Intelligence, Human-Computer Interaction Ph.D. From Carnegie Mellon University (USA) in year 2011

Home Town : Lucknow, Uttar Pradesh

Phone : 01905-237932

Email : varun

Externally Sponsored Research Projects

Sr. No.	Project Sponsoring Agency	Title	Investigators	Project cost (in Rs.)	Duration of Project
1	UGC Date of sanction: 1.10.14 Date of completion: 30.9.17	The Sixteenth Century Renaissance in South India	Dr. Manu V. Devadevan	48,00,000 lakh	3 years
2	Date of sanction: 15.12.12 Date of completion: 15.12.15	A Comprehensive Reader for the Humanities & Social Sciences	Prof. B. Subramanian	5,00,000 lakh	3 years

List of Publications

1. **B. Subramanian**, "Das postkathartische Moment modernerEssayistik. Zum Essay "Der blindeSchütze" von Rudolf Kassner" inStudiaGermanicaGedanensia, 2015.
2. **B. Subramanian,** "Alexander von Humboldt's Travelogue. A Convenient Vehicle for Miscellaneous Discussions? Journey as Philosopheme in Humboldt and Darwin." In Le Soiet le Cosmos d'Alexander von Humboldt à nous jours. Ed. SorayaNourSckell& Damien Erhardt. Duncker&Humblot, Berlin 2015.
3. **B. Subramanian,** "Engineering Education in India. A Comprehensive Overview" in Christensen, S. H. ; Didier, C. ; Jamison, A. ; Meganck, M. ; Mitcham, C. ; Newberry, B. (eds.) . International Perspectives on Engineering Education: Engineering Education and Practice in Context. Volume I. Springer Science + Business Media B.V. Heidelberg/New York/ London 2015.

Book Chapters/Encyclopedia Entries

1. **Manu V. Devadevan**, several entries in the, Encyclopedia of the History of Science, Technology, and Medicine in Non-Western Cultures, Springer, New York, 2015.

Conferences

1. **B. Subramanian,** „Der Essay im Zeichen der Moderne" Annual conference of Goethe Society of India, University of Delhi. Delhi, Feb 2015.
2. **B. Subramanian**, „Rilkes Duineser Elegien aus der Perspektive der östlichen Mystik." GIG & University of Mumbai. Mumbai, December 2014.
3. **B. Subramanian,** „Das postkathartische Moment modernerEssayistik. Zum Essay "Der blindeSchütze" von Rudolf Kassner." Conference on Der deutschsprachige Essay und Essaysimus von der Romantikbiszur (Post-)Moderne, University of Gdansk. Gdansk, June 2014.
4. **Rajeshwari Dutt,** "Between Two Worlds: British and the Maya in Nineteenth Century Belize" The British Scholar Society[1]s Britain and the World Conference, Austin, 4 April 2015.
5. **Rajeshwari Dutt,** "Teaching Across Cultures and Place: World History in the US and Indian Classrooms", American Historical Association Conference, New York, January 4, 2015.

Fellowship/Award

1. B. Subramanian, "Goethe-Fellow, International Goethe Society Weimar", 2014.
2. B. Subramanian, "Elected International Representative of GIG (Gesellschaftfürinterkulturelle Germanistik)", 2014
3. Ramna, 'ERASMUS MUNDUS' Visiting Research Fellowship, University of Oxford, UK, 2015.

MEMORANDUM OF UNDERSTANDING

Collaboration between Indian Institute of Technology Mandi and Institutions Overseas

International Activities of IIT Mandi with the Institutions Located Overseas

Indian Institute of Technology (IIT) Mandi provides international Bachelor's, Master's and Ph.D. students with possibilities for spending up to a year at IIT Mandi. By visiting IIT Mandi, international students can work with the Institute's faculty on collaborative research topics involving institutional, regional, and national interests. IIT Mandi also provides possibilities for faculty members at international universities to spend some time for the purposes of teaching and research. The fields in which IIT Mandi is currently involved at the Bachelor's, Master's, and Ph.D. levels include: Computer Engineering, Electrical Engineering, Civil Engineering, Mechanical Engineering, Basic Sciences, and Humanities and Social Sciences. For those international universities with which IIT Mandi has an existing Memorandum of Understanding (MoU)/agreement, the terms and conditions for the exchange of students and faculty is determined by the underlying MoU/agreement. For students and faculty of international universities with which IIT Mandi does not have an existing MoU/agreement, the terms and conditions on exchange, IPR, and funding pattern will need to be worked out.

Using an existing MoU with Worcester Polytechnic Institute (WPI), USA, IIT Mandi invited a team of 21 undergraduate students from WPI to visit the Institute for two months between mid-March, 2015 and mid-May,2015. These students worked with similar number of IIT Mandi undergraduate students in solving a number of socio-economic issues concerning the local communities in Mandi and Kamand. Furthermore, between April, 2014,and August, 2014IIT Mandi had 2 students spend a semester from HES-SO, Haute école du paysage, d'ingénierie et d'architecture de Genève (HEPIA). These two students from HEPIA worked on their capstone projects under the mentorship of IIT Mandi faculty. In addition, in 2014, IIT Mandi had one student each from the following institutions: University of Durham, U.K.; University of Benin, Nigeria; Georg-August Universität Göttingen, Germany; and, Asian Institute of Technology, Thailand.

IIT Mandi and TU9, Germany organized collaborative workshop on "Emerging Semiconductor Technologies" IECRAIETS – 2014 at the Institute's Kamand Campus on September 26th-27th, 2014. The objective of this collaborative confluence was to involve experts from semiconductor fields, especially micro/nano electronics, VLSI technology, and explore possible future collaborations.

Furthermore, IIT Mandi's graduate and undergraduate students have visited several EU institutions under academic exchange in the last 1-year. These visits include: 9 students to TU, Munich; 2 students to TU, Aachen; 5 students to Blekinge Institute of Technology, Karlskrona, Sweden; 1 student to TU Berlin and 1-student as a part of Indian Government's Youth Delegation to China. Also, in 2014, two students visited Germany for their summer internships under the 2014 DAAD-WISE scholarship. One of these students visited Friedrich-Alexander University Erlangen-Nürnberg and the other visited TU, Berlin. In addition, one graduate student went Oxford University under the British EXPERTS4Asia scholarship.

A number of IIT Mandi's faculty also visited EU institutions in 2014 for fostering academic collaborations with international partners. Some of these visits include: Prof. B. Subramanian (School of Humanities and Social Sciences) to TU Dresden , Dr. Varun Dutt (School of Computing and Electrical Engineering and School of Humanities and Social Sciences) to TU Munich, Dr. Satinder Kumar Sharma (School of Computing and Electrical Engineering) and Dr. Tulika P. Srivastava to TU, Stuttgart, Dr. Arti Kashyap (School of Basic Science and School of Computing and Electrical Engineering) to TU, Berlin, and Dr. Rajeev Kumar (School of Engineering) to Leibniz University Hannover. Finally, Dr. Prem Felix Siril, Dean (SRIC), and Prof. Timothy A. Gonsalves, Director, IIT Mandi visited a numbers of TUs in 2014 for furthering teaching and research collaborations.

Furthermore, in 2014,a Memorandum of Understanding (MoU) was signed between Consortium of Finish Higher Education Institutions, Finland and Indian Institutes of Technology, India (including IIT Mandi). Under this MoU, the following general forms of cooperation may be pursued: Visits by and interchange of faulty, staff, and students for research, teaching, studying and discussions; Exchange of materials, publications, and information; Joint education and research activities; and, Joint research seminars, conferences and other events. Currently, IIT Mandi is discussing student exchange under this MoU with Finnish Institutions.

Photographs:

Mr. Phillipp-Georg Stephan and Dr. Heiko Richter meeting with Dr. Prem Siril and Director, IIT Mandi

Mr. Phillipp-Georg giving a presentation in A1-NKN classroom, Kamand Campus

Dr. Aarti Kashyap in Berlin town on her TU Berlin visit

A team of WPI students visitng IIT Mandi for ISTP, 2015

Dr. Varun Dutt representing IIT Mandi along side IIT Madras at the TUM International Week, 2014

Research facilities

Advanced Materials Research Center (AMRC)

Development of advanced materials, particularly for engineering devices, is a critical area for competing at the international level. In this endeavor, IIT Mandi has started researching in the interdisciplinary area of novel materials for electrical, electronics, biological and other applications by setting up laboratories that house synthesis and characterization facilities. In order to serve research activities, fully functional synthesis and characterization labs are already established at IIT Mandi with a full range of basic instruments and facilities. In addition, an Advanced Materials Research Centre (AMRC), a centralized research facility has been established in a purpose-built building in the new campus. At AMRC, researchers investigate the basic structure of materials, and develop novel materials for electrical, electronics, biological, and other applications. AMRC caters to about 45 Ph.D. scholars and 10 postdoctoral researchers, who work in an inter-disciplinary team led by about 20 faculties. In addition, about 40 M.Sc. (Chemistry) and M.Tech. (Energy Materials) also make use of the facilities as a part of their academic curriculum.

AMRC houses several state-of-the-art equipments for materials research including: (i) High Resolution Powder X-ray Diffractometer, (ii) Single Crystal X-ray Diffractometer, (iii) High Resolution Transmission Electron Microscope, (iv) Nuclear Magnetic Resonance Spectrometer, (v) Fluorescence Confocal Microscope, (vi) High Resolution Mass Spectrometer, (vii) Femtosecond Pump-Probe Set-Up, (viii) Scanning Electron Microscope, (ix) Atomic Force Microscope, (x) Nano-indentation (xi) Magnetic Property Measurement System (MPMS) and (xii) Physical Property Measurement System (PPMS). Several other equipments such as Atomic Layer Deposition (ALD), Raman Spectrometer and X-ray Photoemission Spectrometer will be installed in the near future. In addition to the above mentioned sophisticated instruments, AMRC also houses regular characterization instruments, such as UV-vis spectrophotometer, circular dichroism spectrometer, atomic absorption spectrometer, optical microscope, fluorescence spectrometer, electrochemical analyzer, thermos gravimetric analyzer coupled with differential scanning calorimetry, high performance chromatography, gel permeation chromatography, gas chromatography, dynamic light scattering setup, etc.

The facilities available at AMRC is not only used by the researchers of IIT Mandi, but are also extended to outsider researchers and industrial users. Predominantly, AMRC gets external users from the neighboring regions in Himachal Pradesh, Punjab and Jammu-Kashmir states, although there are also some external users from distant institutions. Several external users often visit or send-in their samples for analysis at the AMRC facilities. A representative list of external institutions that have made use of the AMRC facilities is given below.

List of External Institutions that have made use of AMRC Facilities:

Himachal Pradesh University (HPU), Shimla, Himachal Pradesh

Institute of Himalayan Bio-resource Technology (IHBT), Palampur, Himachal Pradesh

Jawaharlal Nehru Government Engineering College, Sundernagar, Himachal Pradesh

National Institute of Technology (NIT), Hamirpur, Himachal Pradesh

National Institute of Technology(NIT), Tiruchirappalli, Tamil Nadu

National Institute of Technology(NIT), Warangal, Telangana

National Institute of Technology(NIT), Durgapur, West Bengal

University of Jammu, Jammu, Jammu and Kashmir

Punjab University, Chandigarh

Punjabi University, Patiala, Punjab

Guru Nanak Dev University (GNDU), Amritsar, Punjab

Shoolini University, Solan, Himachal Pradesh

Sirda Group of Institution, Sundernagar, Himachal Pradesh

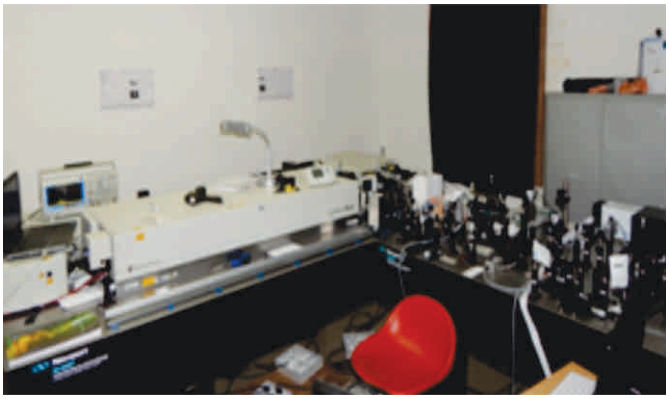
Santlongowal institute of engineering and technology, Sangrur, Punjab

Shiv Nadar University, Gautam Buddha Nagar, Uttar Pradesh

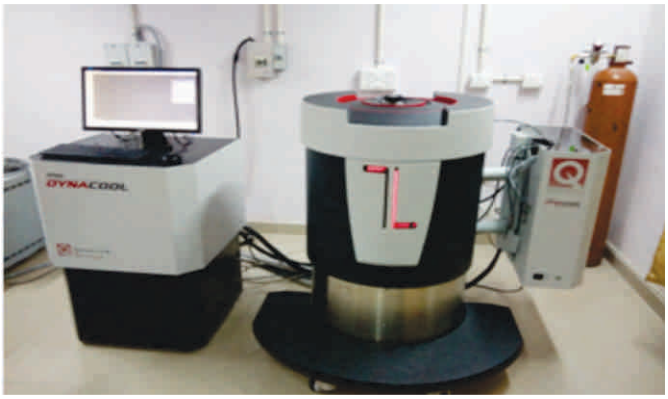
Publications Using AMRC Facilities:

The research results, obtained using the facilities available at AMRC, have been published in reputed international journals. AMRC has produced more than 100 research articles since its inception in 2013 and in the year 2014-15, more than 50 research articles have been published.

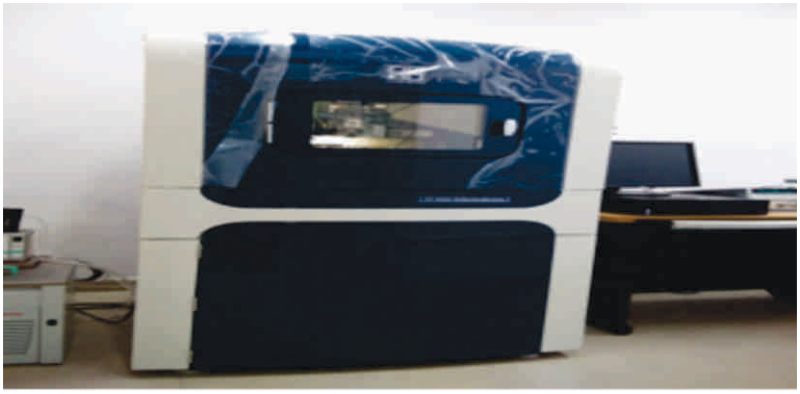
The Major Equipment Procured and Commissioned are:



Femtosecond Laser Pump-probe Setup



Physical Properties Measurement System (PPMS)



Nanoindentation

General Characterization and Synthesis Lab Instruments:

UV-VIS-NIR Spectrophotometer

UHL: The Centre for Uplifting Himalayan Livelihood (UHL):

IIT Mandi with its focus on multi-disciplinary approach carries a vision to be a leader in science and technology education, knowledge creation and innovation, in an India marching towards a just, inclusive and sustainable society. With this goal in mind, many of the faculty members at IIT Mandi have involved themselves into the activities which in the long run will help achieve the vision of IIT Mandi. One such effort is the Centre for Uplifting Himalayan Livelihood (UHL) set up in 2012 with the help of a small grant by DST, Govt of India. Within a small time and a very limited grant, the Center has already taken many projects of social and economic importance and has created an impact. Some of the projects undertaken are "Health awareness among the rural women with the use of low-cost tablet", "Farmer's advisory system" particularly for Apple crops, Azola cultivation for enhancing mild production and quality and "Eco- friendly Utilization of hazardous Pine Needles for social benefits". Apart from these long term activities many short term projects are also taken up in various domain like education and health etc by various faculty members.

1. Picture of Azola Growing at a Farmer's House in Navlay Village.

Design and Innovation Centre:

The Design Innovation Centre at IIT Mandi provides necessary ecosystem for graduates and research scholar to develop much needed skills that are required to design and develop products and technologies. Since India is moving towards "Make in India" policy and IIT Mandi's mission and vision are coherent with the country vision, our institute attempt to produce graduates and research scholars with skills that would enable them to think independently in terms of creativity and innovation. With the conviction that technological innovation constitutes an essential element for achieving progressive development and permanent improvement in any activity, state-of-the-art design centre is being set-up in the campus funded by MHRD. Since the next wave of economic growth globally will be led by innovation and entrepreneurship, this would be the key economic driver for India in the coming years.

Some Key Achievements of this Centre are Briefly Listed Below:

1. Patent No. 1

Title: Dye Sensitized Solar Panels by an aerosol jet 3D printing mechanism"; Inventors.

Inventors: Sk Moiz Ahmed (student), M. Abhilash (student), Dr. O. P. Singh (faculty); Indian Institute of Technology (IIT) Mandi,

Patent No: 2942/DEL/2014

Brief Description: There has grown an increasing need for alternative energy production due to depleting natural resources. Green energy has grown into a popular research area and yet the methods to harvest green energy are scarce. In these times solar energy has grown to be a promising source of energy with its unending reserves of solar power. While the currently manufactured solar panels employ techniques like Chemical vapor deposition, plasma enhanced vapor deposition etc. Traditional 3D printers employ a heated nozzle that melts the thermosetting material and prints an object of desired shape by slicing the CAD model of the object into thin slices. But these 3D printers either print plastics or metal

alloys but none of them print solar panels in any form. We intend to introduce an alternative method which can serve as an alternative to the traditional sporadic method of coating by using the 3D printing technique.This invention relates to the production of Dye Sensitized Solar Panels by pressurized syringe type pumping mechanism. The technique is based on the printing of DSSC solar cells by utilizing a pumping mechanism that can impart aerosol particles onto the surface and serve as an aerosol jet printing mechanism for various research and quality optimization applications. Figure 1 below shows the design of the patented 3D printer.

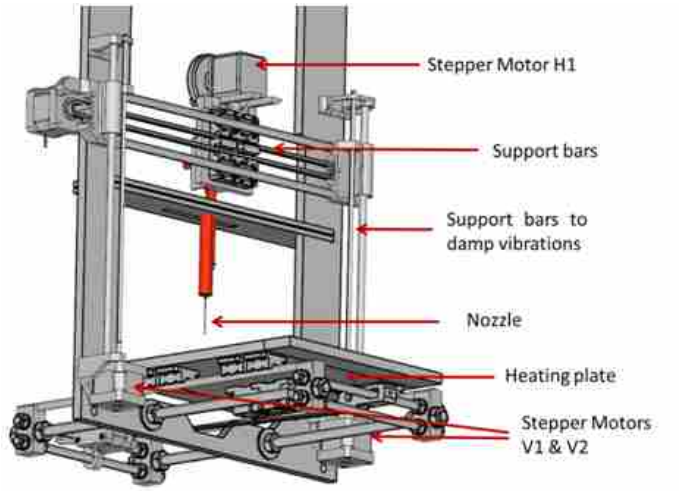


Figure 1 Patented Design of the 3D Printer to Print Solar Panels

Stay Beyond Graduation: DIC encourages students to stay beyond their graduation to work on innovative technologies that would finally lead to making prototypes and commercialisation of the technology.

Design and Innovation Culture: To foster Design and Innovation culture among students, IIT Mandi offers specialised course curriculum to the students. Reverse Engineering, Design Practicum, Inter-Sociotechnical projects etc. are offered to the students. Currently, an industry standard course on "Applied Finite Element Method" is being offered. This course introduces students to various computational methods that helps in design and analysing products designs before making prototypes.

Centre for Design & Fabrication of Electronic Devices, (C4DFED):

This is a recently established Centre in IIT Mandi and we are in the process to create, 100 class, 1000 class and 10000 class clean room facility to serve as a facility for multidisciplinary research, development and applications in Nano-electronics, extreme ultraviolet lithography (EUL) resists materials for the next generation technology node, IC design and fabrication and Nano-Micro (NEMS & MEMS) systems and designs. The C4DFED aims to contribute towards the advancement of the material design plus testing for volatile, non-volatile memories, graphene-polymer Nano-composite and CNT FETs design and fabrications, flexible electronics include NEMS/MEMS sensors, photovoltaic, intelligent packaging, RF identification devices, bio-electronic interfaces, device prototyping along with interface between academia and semiconductor industries.

Multimedia Analytics and Systems: (MAS):

The multimedia analytics and systems (MAS) lab at IIT Mandi broadly focuses on extracting useful information from multiple information sources. This includes sources like images, audio and video streams, and also information from social networks, documented records etc. The group is currently looking at topics on computer vision, medical image analysis, speech and audio signal processing and social network analysis. The current research as the MAS lab can potentially contribute to various domains. Some of these are healthcare, security and surveillance systems, human computer interaction, ecology and environment and social media. For example, some of the objectives of the ongoing "Speech synthesis for Indian languages" project (funded by DIT) include assistance to the visually-impaired, better dissemination of information (like vegetable prices) in rural areas. Other activities include ongoing collaboration efforts

with hospitals and industry for radiological and histo-pathological image processing, analysis of healthcare census data, and medical instrumentation. Another interesting task which marries environmental/ecological aspects to technology is automatic classification of bird sounds and images. This can be used to monitor environmental changes and promote conservation efforts. The group is also involved in projects related to 3-D vision and human activity analysis.

BioX:

Situated in the largely agrarian, scenic and fragile central Himalayas, IIT Mandi has a focus on agriculture and the environment. Another important focus area of research is human health. Towards this, IIT Mandi has initiated activities in the life sciences in the broad areas of immediate relevance to the Himalayan region, and to health care particularly for the rural and lower-income strata of society particularly those engaged in the cultivation of fruits, vegetables, saffron and medicinal plants in this region. The faculty of School of Basic Sciences is engaged in highly interdisciplinary research including life sciences, biophysics, nanotechnology, bioinformatics, plant systems biology, and others. The thrust areas of research which are being focused are as mentioned below:

- Himalayan biodiversity conservation
- Immunomodulators for inflammatory disorders
- Natural products biotechnology for health and industry
- Nanotechnology for Theranostics
- Diabetes and related endocrine disorders
- Big data analysis and bioinformatics
- Biophysics, protein folding and Intrinsically Disordered Proteins (IDPs)

The research areas related to human health primarily involve exploring potential therapies for diabetes, Alzheimer's, Parkinson's, Cardiovascular disease and cancer. These involve developing therapy and diagnostics, drug/gene delivery systems, and noninvasive bioimaging procedures for the above and other diseases. Another target is the exploration of potential probiotics for human health and gaining insights into gut microbiota for health benefits.

The research areas related to the environment include exploration of microflora and extremophiles of the Himalayas, development of biofuels from agricultural and food waste material, and the development of nanosensors for pollutant detection in different environments.

Condensed Matter Physics:

The condensed matter physics group at IIT Mandi focuses in addressing various problems like understanding exotic electronic states of matter (topological insulator, superconductor, multiferroic material, metal to insulator transitions etc.); energy demands of future generation (thermoelectric materials, nanomaterials for energy, organic photovoltaics and optoelectronics of graphene, Carrier multiplication in QDs with the aim to use them in QD solar cells for energy harvesting); what happens far from equilibrium (protein folding, glass phase transitions). The group has developed the facility for the growth of polycrystalline, single crystalline materials and nanostructure synthesis. Theoretical physics group focuses on simulations of phase transitions in complex liquids, photoabsorption studies on atomic systems, nanophotonics and quantum optics, DFT based band structure calculations. Some of the above work is being funded by joint research project with Lund University of Sweden funded by DST-VR, BNRS, SERB, UGC-DAE CSR and DST.

Summer Internship Programme

IIT Mandi organized 'SUMMER INTERNSHIP 2014' for Bachelors and Masters students from all over India during 2nd June - 25th July, 2014. Eight interns were invited for summer internship, based on recommendations from selected advisors. The students come from the B. Borooah College, Guwahati, NIT Jalandhar, Kakatiya University, Warangal, NIT Rourkela, SRM University, Central University of Jharkhand, Devi Ahilya Vishwavidyalaya, Indore, Birla Institute of Technology, Hyderabad. Each student's skill set was matched with an appropriate project within the lab. Students were admitted in different branches like: Chemistry/Chemical Science/Chemical Engineering/Science/Food Tech, Research Experience, Nanotechnology and Experimental condensed matter physics, CFD, Numerical methods for PDEs etc. The summer internship duration was for 8 weeks. The internship includes a stipend and housing assistance as well.

Central Library

Central Library plays a vital role in furthering the academic and research mission of IIT Mandi and facilitates creation and dissemination of knowledge. Library provides essential support by offering current library services which are integrated with teaching, learning and research activities. The Library facilitates excellence in teaching, creates an appropriate learning and research environment, anticipates and responds to student learning and research needs, and provides the information infrastructure essential in today's changed environment.

Central library at IIT Mandi is rapidly developing its collection of books, reference books, reports, periodicals, and electronic resources. The Text Book Collection in the Library provides vital supports for on-going undergraduate teaching programs. The books are on various disciplines ranging from Computer Science Engineering, Mechanical Engineering, Electrical Engineering, Mathematics, Physics, Chemistry, Economics, Philosophy, Psychology & English literature. The collection for Post Graduate programs is also being developed simultaneously.

Central Library provides access to the various e-journals databases. This includes access to hundreds of journal titles on subjects such as Mathematics, Chemistry, Physics, Computer Science, Electrical Engineering, Mechanical and Astronomy. Central Library is completely automated by using open source library management software KOHA. All documents are bar-coded and by retro conversion all collections acquired prior to automation are also included in the Central Library books database. Transaction of books is also automated. Library has introduced various innovative services including CAS/SDI, On-line status of ILL, On-line reservation of books etc. By using Web OPAC, users can check their borrowing details online. Two workstations have been set up for users to access library holdings.

Softwares Used in Library:

(i) KOHA: For automation purpose.

(ii) DSpace: For digitization purpose.

(iii) Greenstone: For digitization purpose.

(iv) Linux: For operating system.

1. Collection Development and Management

Collection building is one of the important functions of the library that supports academic and research work of the students, faculty, staff, and other users. Library collection comprises of books, journals, reports, pamphlets and other reading material in science, engineering, technology, humanities and social sciences.

1.1Print Documents added during the year 2014-15

During the period of 2014-15, Central Library acquired 835 books including 46 reference books. It also added few periodicals/magazines, besides reprints, technical reports and annual reports of other universities/institutions.

A list of new additions of books is issued every week and can be accessed on the library home page. This list also circulated by e-mail. An email alert is also sent to the requesting faculty members(s) about the arrival of publications requested by them.

1.2 New electronic resources subscribed during the year 2014-15

The Central Library Provides Web-Based Access to the Following E-Resources:

1.2.1 Full-text e-journals: Access to 10000 + full-text journals from the following databases:

AIP, ACM Digital Library, ACS, APS, ASME, Cell Press, IOP, Elsevier's Science Direct, IEEE Electronic Library, JSTOR, SIAM, Springer Link, Taylor & Francis (S&T complete Collection), Nature, Annual Reviews etc.

1.2.2 Bibliographic e-databases: SciFinder, MathSciNet, SCOPUS & Web of Science.

1.2.3 E-Books: Central Library provides access to a collection of more than 8000 e-Books in various disciplines. The e-book collection contains the titles which are a rigorous recommendation by the subject experts of the institute and cater to the needs of the users. The publishers of e-books collection include Science-Direct (Elsevier), McGraw Hill, Pearson, T&F, IEEE, IEEE-MIT press, IEEE-Wiley, Morgan Claypool, CUP, ASME, World Scientific and John Wiley. The e-books collection also includes the Lecture Notes Series on Mathematics (LNM), Physics (LNP) & Computer Science (LNCS) of Springer publisher.

The process of e-book collection development for this year has already been started. The efforts are being made to include the book collection of other renowned publishing houses.

2. Circulation

Circulation activities are now automated. Library users can check their borrowing details by using WebOPAC. We serve the users consisting of the faculty, research scholars, students and staff. Circulation desk is kept open for 50 hours a week. On an average, the monthly circulation transactions are about 1600.

3. Digital Library

Central Library has its own homepage (http://www.iitmandei.ac.in/academics/lib/), which provides web-based access to its resources, procures over 10,000 electronic journals and databases. An institutional repository of publications has recently launched which provides access to the intellectual output of the IIT Mandi community. The library is a part of the institute-wise network and has adequate computing infrastructure to cater to the needs of the users.

4. OPAC (On-line Public Access Catalogue)

The OPAC is one of the most heavily used databases of the library and is accessible 24*7 via library web page (http//www.webopac.iitmandi.ac.in/). Besides listing all the documents available in the library, it allows on-line renewal and reservation, circulation and tells the current status of each & every book. OPAC is searchable by author, title, accession number, subject and several other fields.

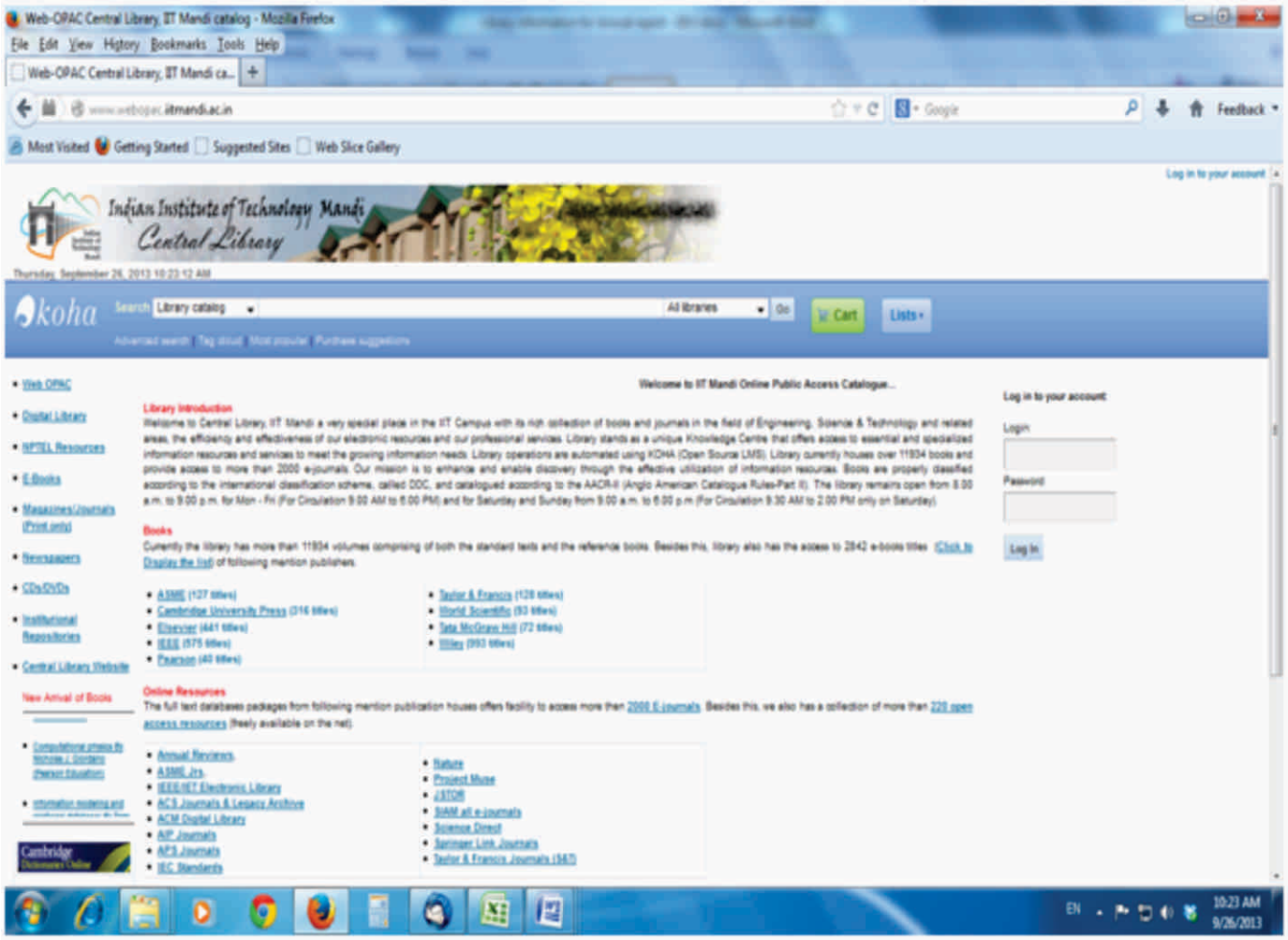
5. Services Offered

- Fully automated Circulation
- Online book reservation, Information search, Patron's library book loan status check
- Web OPAC (Web based Online Public Access catalogue)
- Reserve collection development for student's in-house reading
- New Arrival Book Section
- Reference Service
- Inter-Library Loan
- Document Delivery Service
- Information Alert Services
- Selected e-resources subscription for Central Library
- Digital library services

- User education program

6. Future Plans:

- Implementation of RFID Tags.
- Database for Table of Contents of Library Books.
- Database for Institutional Repository.
- Database of different softwares available with CDs/DVDs available in the Library.
- Database of indexes available in the print books
- Single Search Platform



WEB OPAC

2nd CONVOCATION

Second Convocation of the institute was held on 15th March, 2015. The Hon'ble President of India, Shri Pranab Mukherjee was to be the Chief Guest of the function. However, the President was unable to reach the venue due to inclement weather. In the President's absence, the Hon'ble Shri Kalyan Singh, Governor of Himachal Pradesh was the Chief Guest. Furthermore, the Chief Minister of Himachal Pradesh, the Hon'ble Shri Virbhadra Singh presided. Other dignitaries included, Shri M. Natarajan, the Chairman, Board of Governors, IIT Mandi.

As part of this Convocation, 116 B.Tech. students, 8 M.S. (by Research) students, and 3 Ph.D. students graduated from the Institute.

Mr. Shoubhik Debnath was awarded the President's Gold Medal, Mr. Anand Dhandhania was awarded the Director's Gold Medal. Mr. Shoubhik Debnath, Mr. Krishna Karnani, and Mr. Deepak Sharma were awarded the Institute Silver Medals. Furthermore, Ms. Damini Singal was awarded the Rani Gonsalves Memorial Medal for Outstanding Female B. Tech. Student.

STUDENT AMENITIES AND ACTIVITIES

Sports Facilities and Activities

The sporting year of 2014-15 may have existed in the shadow of the 2014 extravaganza however, in IIT Mandi, we did not assume a 'rest period'. Significant momentum was created in the Inter IIT sport meet held at Madras, the outcomes of which have reaffirmed our commitment to the provision of quality sporting opportunities for our students and the wider college community.

The sporting offer to students, staff, graduates and community users remains to be of a high standard, great value and reflective of the excellence enshrined within engineering college strategic objectives. In 2014 the Department of Sport brought together key stakeholders for the Strategy for Sport, chaired by the Dean of Students, with the purpose of creating a vision for IIT Mandi Sport and Recreation for the next years. Just over 800 students activated membership to use the Sports Centre. The Sports Department hosted club & college level events.

The development of talented students is a key strategic priority and year on year the Sports Scholarship Programme has been enhanced to provide a fit-for-purpose environment within which to excel. We continue to support the Orientation Programme and many events to encourage more students to get active. Whilst recreational sports constitutes the highest levels of participation, the 'heartbeat' of sports at third level are the student clubs. The Department continued to work closely with IITS to maximize sporting opportunities for student clubs, at all levels. Student Sports thrived through many club achievements such as the notable performances of the girls in Inter- IIT Tournament the respective national competitions. The cricket staff team and Girls TT Team, won Bronze medal their Inter IIT Competition. Overall IIT Mandi collected 2 Inter IIT Titles.

We reassigned roles in response to changing business demands and the team attended just under 100 training and professional development sessions. As well as maximizing the sport and fitness expertise of the professional staff in the Department, the team is represented across many College committees and we have also created service liaisons and strategic links across campus to include Global Relations, Inter Hostel Tournaments to name a few. A number of facility improvements took place this year. Also strategically, College approved investment for the Outdoor Sports Development. The Sports Programmes were in general very well attended and exceeded targets. New classes and a Personal Training service were introduced and along with the existing.

The majority of the participation is at a recreational level in the Fitness. Volunteer efforts by students and clubs were supported. The importance of the College community and their families continued to be a priority through the Family Fun Day. The Sports Department permanent cista communis cuts continue to be absorbed by self-financing activities in order to ensure essential staffing provision to deliver the services, programmes and safe operation of the sports facilities. Market conditions continue to be challenging and forecast figures are adjusted accordingly in response to changing economic demands and many income generating initiatives are already under way. Mission Statement and Strategy for Sport there have been significant developments in sport in the last 4 years, most notably the opening of the Badminton hall and TT hall in 2015, which evolved from the Strategic Plan for Sport in 2009. Since then there has been a dramatic increase in the provision, operations and development of an extensive range of sports facilities, services, and programmes. The College is faced with a challenging market for attracting, recruiting and retaining students and it is timely that we embark on a new era for sports development, so that we are confident and competent in the delivery of sport and recreation activities which support the College's Strategic Mission, Sport and Recreation has an important role to play in enhancing the 'Student Experience' and delivering College objectives.

In 2014 the Sports Department brought together key stakeholders for the Strategy for Sport, chaired by the Dean of Students, with the purpose of creating a vision for Inter IIT Tournament and Recreation for the next years that supports students and the College community in their participation, whether at a recreational or high performance level. It will provide a framework of objectives for the development and provision of quality sports facilities and services and position sport within the heart of our organization. The Department continued to contribute meaningfully to College life via the

delivery of enjoyable, inclusive and varied sports and health related activities. The Mission of the Sports Department will be reflected in the Strategy for Sport and is likely to establish a structure to unleash further the contribution of sport to the Student Experience and wider College objectives with an overarching mission to involve as many students as possible in sport during their time at College, at the level of their choosing. The role of the Sports Department is to recognize the importance of sport in providing a rounded, well-balanced university education. The Sports Department personnel are committed to developing and enhancing the vibrant sporting tradition through the provision of quality facilities, services and programmes for all customers and to identify areas where sport can add value and contribute significantly to a very positive student experience.

The Main Objectives of the Department Given Below:

1. Provision and development of top quality Institute sport facilities.
2. To encourage and support the development of high performing sports men and women.
3. To raise the profile of Sport and Recreation in Institute.
4. To encourage more people and opportunities for involvement in sport and recreation.
5. To further develop the efficiency and effectiveness of the Sports Department and its staff,
6. in providing a better service.
7. To expand the academic linkage to sport.
8. To link with Institute Strategic Objectives

Awards Given by the Sports Department

Citation:- None found suitable

Colour Certificate: - Shivangi Kataria, Bhisham Tahilani, Uday Sood, Ansul Sharma

Special Mention:- Milan Gupta , Rishab Trivedi, Vipin Raj Meena, Ankur Singh, Ankit Sriwastav, Manas Sumar, Sagar Kumar Peddinti, Chinmay Krishna, Karan Mahajan, Nitesh Kumar, Rahul Singh , Ashok Godhra,

Sportsman of the Year:- Mohit Rawat

Fresher of the Year:- Purushottam

Events & Tournaments

S.No.	Month	Name of Tournament
1	February	Foundation day sports events
2	March	Volleyball tournament with local teams
3	April	Aagaz inter year tournament
4	July	Summer camp (Fitness)
5	August	Orientation programme
6	September	Rann-neeti
7	October	Fitness camp
8	November	Athletics day and Battle field fresher's
9	December	Inter IIT camp and Sports Meet
10	March	PG Sports day and Inter Hostel (Kamand premium league) and Fitness camp
11	April	Aagaz
12	June	Yoga day

Memorable Moments

Girl's Table Tennis Team (Right) Won the First Medal (Bronze) in Inter IIT Sports Meet

Faculty & Staff Cricket Team Won Bronze Medal in Inter IIT Sports Meet

National Service Scheme (NSS):

NSS Activities and Expenditure Incurred During Financial Year 2014-2015

Sr. No	Activities	Date of the Activity	Expenditure on Activity (in Rs.)	Remarks Exp.
1	Blood Donation Camp	16-05-2014	5842.00	
2	Teaching Programme for Migrant Labour Children	29-05-2014 to 06-08-2014	4200.00	
3	NSS Orientation Day at IIT Mandi, Kamand Campus		-	**No. Exp.**
4	Participation in Abhyuday, Social Conference, IIT Bombay	16-08-2014 to 17-08-2014	19989.00	
5	Tree Plantation Campaign at IIT Mandi, Kamand Campus	31-08-2014	15165.00	
6	First Aid and Safety Training Programme at IIT Mandi Kamand Campus	26-09-2014 to 28-09-2014	42574.00	
7	Lab. Visit and Painting Competition for the Students of G. S. S. S. Kotli, Mandi (H.P.)	18-10-2014	-	**No. Exp.**
8	Cleanliness Camp at IIT Mandi, Kamand Campus	01-11-2014	3270.00	
9	Blood Donation Camp	07-11-2014	2685.00	
10	Guidance/Teaching Programme for the Students of Government Sen. Sec. Schools of Katindhi and Kataula, Mandi	15-11-2014- till continue	4210.00	
	Total Expenditure incurred		**97935.00**	

Activities Undertaken

(Financial Year 2014-2015)

Sr. No	Activities	Date of the Activity
1	Blood Donation Camp	16-05-2014
2	Teaching Programme for Migrant Labour Children	29-05-2014 to 30-07-2015
3	NSS Orientation Day at IIT Mandi, Kamand Campus	06-08-2014
4	Participation in Abhyuday, Social Conference, IIT Bombay	16-08-2014 to 17-08-2014
5	First Aid and Safety Training Programme at IIT Mandi Kamand Campus	26-09-2014 to 28-09-2014
6	Hindi Fortnight, 2014	14-09-2014 to 28-09-2014
7	Laboratories Visit and Painting Competition for the Students of G. S. S. S. Kotli, Mandi (Himachal Pradesh)	18-10-2014
8	Cleanliness Camp at IIT Mandi, Kamand Campus	01-11-2014
9	Blood Donation Camp	07-11-2014
10	Guidance/Teaching Programme for Government School Students, Katindhi and Kataula, Mandi (Himachal Pradesh).	15-11-2014- till Continue

Blood Donation Camp

Blood Donation Camp

Teching Program for Children of Migrant Labourers

NSS Orientation Day

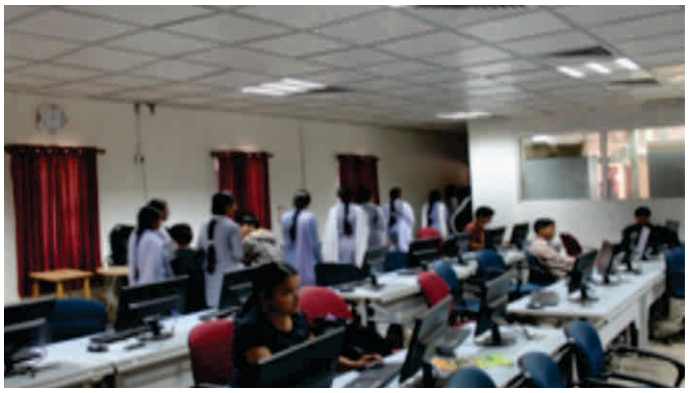
NSS Orientation Day

Participation in Abhyuday, Social Conference, IIT Bombay


Tree Plantation Campaign at IIT Mandi Kamand Campus


First Aid and Safety Training Programme at IIT Mandi Kamand Campus



Laboratories Visit and Painting Competition for the Students of G. S. S. S. Kotli, Mandi

Cleanliness Camp at IIT Mandi, Kamand Campus

Guidance/Teaching Programme for the Students of Government Sen. Sec. Schools of Katindhiand Kataula, Mandi

Hiking and Trekking

For an IIT in the lap of Himalayas, a full-fledged Hiking and Trekking club caters to the spirit of adventure that resides in the students of IIT Mandi. Himachal Pradesh is one of the most beautiful places on earth. Places like Prashar, Rewalsar, Kamand, Manikaran etc. are ideal for hiking. Nature truly signifies its beauty in these set of mountains where our institute is situated. With the Director himself having keen interest in hiking, the club arranges trips on regular basis for its members to various places. Hiking and Tracking club of IIT Mandi is the single largest club at IIT Mandi.

Students, Staffs and Faculties are the members of this club. More than 234members registered in this club during 2015. During the period of 2014 to 2015 the club had carried out one 5 days and many full-day or half-daylong hiking and trekking activities. The members trekked to Great Himalayan National Park, Prashar lake, Naina Devi Temple, Shikari Devi Temple Bijli Mahadev and to the hill tops adjoining to the South campus.

Guidance & Counselling Service (GCS)

A 7-day orientation program was organized from 3rd– 9th of August 2014 for B.Tech new entrants. Various events were organized to introduce the fresher to their new environment and life at IIT Mandi.

The orientation for B Tech 2014 students started with hostel admission on 3rd August. The freshmen and parents had a formal welcome function on 4th followed by admission formalities and the day ended with a fresher mixer in the evening.

For the next four days their days started with physical activities such as yoga or jogging at 6:30 am and ended by 10 pm with movie screening or star gazing or indoor gaming. During the mornings students had English club activities and class room sessions on various academic as well as non academic topics. In the afternoons they went for trekking or treasure hunt or participated in sports. On the last day of Orientation they were taken on a hiking trip to Rewalser.

The classroom sessions started with introduction to engineering and their disciplines. On the consequent days, the students were given an overview of academic structure and grading, library, NSS and other sections as well as flora fauna of IIT Mandi. They participated in interactive sessions on academic values and ethics, safety in the mountains and stress management.

Volunteer Activities

Other than the routine counseling the GCS coordinated the following programs for the benefit of student community.

Mentoring Program:

The GCS was able to implement the peer mentoring program for B.Tech. students with success for the third consecutive year. GCS volunteers were assigned as mentors to the freshmen students. These mentors were the contact persons before the freshmen reached Mandi and remained their guide throughout the first year.

Study Support Group:

GCS volunteers organized study support group during Feb-June 2014 semester. Meetings were held among students to share study materials and tips.

Cultural Society

Exuberance- 10th & 11th May, 2014

Exuberance, the intra college cultural festival was held this year in the Kamand campus. It comprised of various cultural events and competitions which fetched participation and spectatorship from B. Tech, MS, PhD and MSc batches. For the first time, Exuberance was held in an inter year cultural championship format wherein the four B.Tech years, Msc and MS PhD batches competed among themselves in music, dance, art and photography competitions to win the overall general championship trophy. The championship events were co-ordinated by Farah Anjum and Abhimanyu Mittal of B. Tech II year. Apart from the competitive events, drama performances and an introductory poetry slam were also held as parts of the fest.

a) **Music Competition:** It was an inter year music competition between the four B. Tech years and MS PhD and MSc comprising of both singing and instrumental performances. Music teachers were called from the Vallabh Degree College to judge the event. In total 9 performances were there.

b) **Dance Competition:** It was a competition between 2 groups of dancers: one group comprised of 1st and 3rd year students and the other group of 2nd and 4th year students. They presented their performances in a dance battle form in different genres. Each group consisted of 7-8 dancers and competed in 3 different performances one on one. Mrs. Divya Verma, a trained dancer, was the judge for the competition.

c) **Art Competition:** It was an inter year art competition in which participants made sketches and paintings. The event was judged by Dr. Tripti Singh the Art Geeks Club Advisor. Art geek members as well as other students participated actively.

d) **Photography Competition:** It was an online inter year photography competition themed "that moment..". It was judged by Dr. Prashant Jose, the photography faculty advisor. In total 21 entries came from all the years of B.Tech, MS and PhD.

e) **Drama Performances:** There were 2 dramas performed, one by the dramatics club and another by the first year students. Both were of comedy/satire genre. In both the plays, around 10 people participated each.

f) **Poetry Slam:** this was an event in which a basic poetry writing workshop was organized, headed by Akshat Gupta of B.Tech II year, followed by a practical session given to the participants in which they all practiced poetry writing. Later, participants recited their earlier and the-then written poems on stage. Total 12 people participated.

First Youth Fest of IIT Mandi

IIT Mandi witnessed 'YUVYOM'14', the first youth festival organized by the Cultural Society between 14th & 16th Nov'14. Multiple events were scheduled over the weekend and the festival witnessed a huge participation. The students enjoyed an open-air movie screening of "Rang De Basanti" in front of a bonfire. The movie screening was followed by LAN Gaming.

Day two began with kabaddi, followed by kite flying, face painting competition and a musical evening with You Tube artists. This was followed by the most awaited Halloween Party. For this event, the Art Geeks Club decorated the hall with ghosts, goblins and carved pumpkins. Participants wore masks and some were disguised with painted faces.

Day three began with carnival games, followed by a quiz. Thereafter followed the cultural night, in which Music and Choreograph Section students presented their performances. This was followed by DJ night which got everyone's feet moving.

Exodia 2014(April 11-13)

Exodia'14 was the third edition of the annual technical-cultural festival Exodia organized by the students of IIT Mandi. The 3 day event took place between 11-13 April with an aim of promoting technical and cultural talent and providing an incubation nest for the same. Through its humble existence of 3 years Exodia received tremendous participation and support, hiking heights which we never thought we would be able to.

Various technical workshops in domains like Android development, Ethical Hacking, Robotics have been conducted and have successfully managed to impart technical education and learnings to its participants.

Exodia'14 was graced by the presence of Gautam Mahajan (inventor of PET bottles).

Like its previous editions, Exodia'14 saw huge participation coming from Himachal Pradesh and beyond. There were 623 students from 13 Institutes. This has encouraged technical communication and collaboration between the various colleges and we hope to build a strong network with in the state in future.

Technical events like Junkyard Wars (A competition to build machine out of scrap), Dementia (Coding Marathon) which saw international online participation come in, Nitro Blaze (Remote controlled car), designing competition - ArCAD, robotics events like Line Follower and Sumo Wars and many others were also held to promote technical activities in a fun and engaging way.

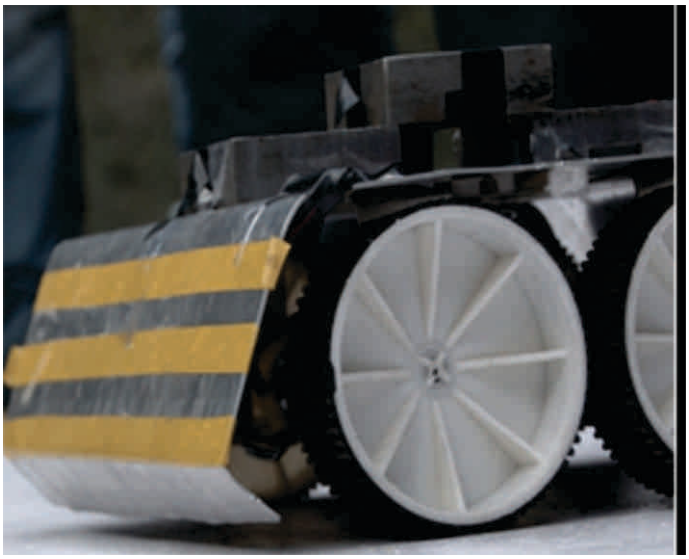
Apart from technical events Exodia also played host to may cultural events like Band Slam, Synchronians (A group dance competition), Instrumania, Groove Fanatics (Solo Dance) and Exodia Idol (Solo Singing). These events provided its participants a stage to showcase their talents. These events also brought to the fore front a flavor of Himachali Culture with various groups choosing to compete through their native genre.

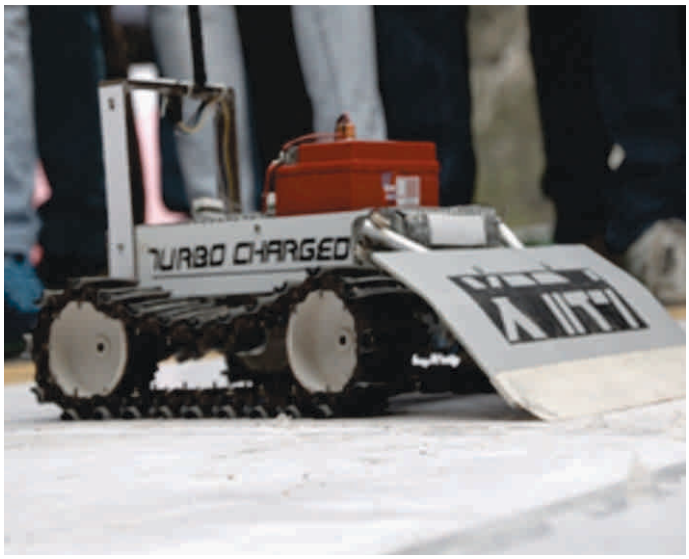
This edition of Exodia saw it picking up a social mettle as well when we ran a social campaign targeted at bringing about awareness about pursuing Higher education. There is a vast world beyond school education which can help students realize their dreams. IIT Mandi has always tried to help students whether through guidance, counselling or coaching. This Exodia students continued this effort and held talks and presentations in various schools of Mandi to spread this awareness.

We are immensely indebted and are in gratitude for the unbounded help and continued support provided by the IIT Mandi and Government of Himachal Pradesh without whom all of this would have been unfruited diligence. We sincerely hope for this continued support and help for the upcoming edition of Exodia where we will be once again setting out to promote cultural and technical activities in Himachal Pradesh.

1. Workshops:

There was a seminar by 'No Country for Women' held on 3rd April on women empowerment through their employment. They also organized a business idea presentation for betterment of women on 5th April after the seminar held on 3rd April.





2. Guest Lecture:

By Vigyan Prasar:

Scientist from Vigyan PrasarDr. Arvind Ranade was here for the seminar that was arranged by Vigyan Prasar (Department of Science and Technology, Govt. Of India) for the orientation of the nearby schools of Mandi on 5th April for setting up VIPNET science clubs and promoting practical science in the student community.

3. Technical Event

a. Dementia: Online coding contest on Codechef catered around 1000 coders from around the world.

b. Junkyard Warz: A competition to build a machine out of scrap had unparrelled participation with 15 teams working for the best. Also, with a mind blowing problem statement the event became all the more thrilling.

c. Line follower: A competitions where robots compete against each other according to a specific problem statement.

d. Sumo Warz: A sumo competition between robots to show their strengths against each other.

e. APPtitude: An Android app making competion was another successful event that was held during Exodia'15 with the support of Google Developer Group, Jalandhar.

6th FOUNDATION DAY CELEBRATIONS, 24th FEB 2015

IIT Mandi celebrated its 6th Foundation Day on February 24, 2015, at its permanent campus at Kamand. Dr. Priscilla Gonsalves, the first lady of IIT Mandi, was the Chief Guest for the function. On the occasion, the Director, IIT Mandi, Prof. Timothy A. Gonsalves welcomed dignitaries, faculty, staff, and students. The dignitaries included, Prof. Subrata Ray, Distinguished Visiting Professor; Prof. Ramesh Oruganti, Dean (Academics); Prof. Lalit Malhotra, Dean (Finance and Accounts); and, Mr. Mohammad Shakeel, Registrar, IIT Mandi. Six years ago, IIT Mandi's foundation stone was laid on the very same day at Kamand to mark the beginning of this Institute. Now, the Institute has a large number of its students and faculty residing at the Kamand campus. With academic, research, cultural activities happening on its permanent campus on a regular basis, the Institute is already proving to be a single destination for excellence, innovation, and learning in the Himalayas. The day was commemorated with various sports events, cultural activities, and an award ceremony for students, faculty, and staff of IITMandi.

The sports events included games like the volleyball, tug-of-war, and cross-country race with participation from faculty, staff, and students. The volleyball game was won by a team of 3rd year and 4th year B. Tech. students. The tug-of-war for men was won by the 4th year B. Tech. students. Also, the tug-of-war for women was won by the girl's student team.

The sports activity was followed by lighting of the lamp and honouring dignitaries. The lamp lightning was followed by Director's address. In his address, the Director highlighted the role a foundation plays in building of an institute. He mentioned that a strong foundation helps in the overall development of the academic edifice and helps in incorporating changes which come about in the future. Using the analogy of the construction of the Burj Khalifa, the tallest building in the world, he explained that the quality of the academic foundation needs to be measured. He mentioned that there are several ways of measuring academic quality and some of these ways include, publications, student exchange, placements, faculty interaction with industry, and ability to get funds from abroad. He said that before we construct the next floor, we also need to stop, take stock, and plan for changes.

The Director's address was followed by an address by the Chief Guest, Dr. Priscilla Gonsalves. In her address, the Chief Guest reminded the audience of the beginning years when there was no IIT Mandi at Kamand and the area was in darkness; and, now, after 6 years, the Kamand valley sparkled like a jewel. Also, she recounted the fact that there were a number of hardships related to living at Kamand; however, the students, staff, and faculty had adapted to their surroundings courageously. She also thanked the Kamand residents for welcoming the IIT Mandi community to their neighbourhood.

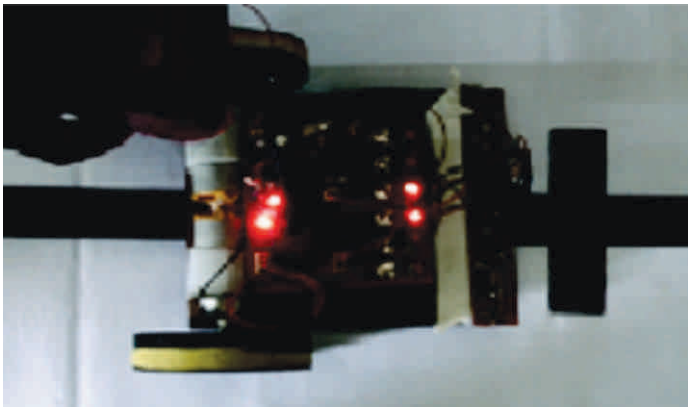
The Chief Guest's address was followed by a cultural programme. In the cultural programme, children of IIT Mandi's Kamand and Mandi day cares and Takshila School put up entertaining dance performances and a skit on saving tigers and caring for our plants, trees, and forests. Other items included a classical dance performance by Sonali Malhotra, IIT Mandi, and a mix of Western and Indian style dance performance by first-year B.Tech. students. The day also saw distribution of awards to the students, staff, and faculty for their achievements and excellence in their work at IIT Mandi. The day got to a close with a vote of thanks by the Registrar and marked the start of a new semester in the new year at IIT Mandi .

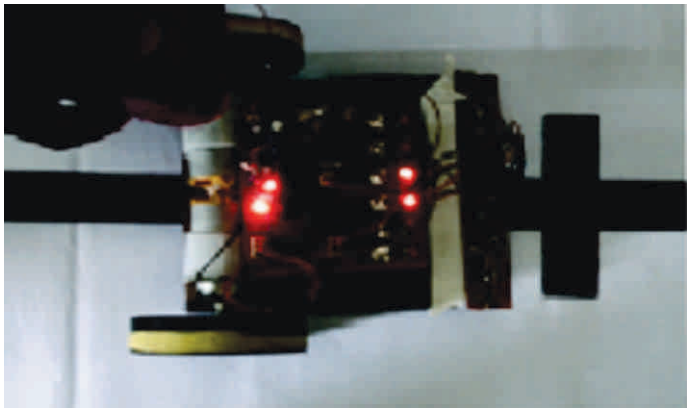


TECHNICAL SOCIETY

1. UTKARSH:

Utkarsh is a relatively new event. It is an in house technical meet organized specially for the fresher in the month participate in Utkarsh and showcase to the fresher what is to come their way during the four years of theirin IIT Mandi.



3. Mozilla Workshop

Programming club organised a Mozilla workshop on 8th Nov.2014. Workshops consisted of Technical Session , General Awareness of Web, learning web making. At the end of workshop Mozilla student ambassadors were also recruited. About 50 students took part in the workshop.

4. Intra-College Mech Fest

As a signature festival of IIT Mandi, Energy Club of IIT Mandi organized events based on Mechanical engineering which includes junkyard Warz, Stick-O-Bridge and many more. Huge participation from students made it grand successful.

5. Hiko Hiko

Electronics Club initiated semester long event for first year students to understand different parts of electrical and electronics field. Whole event was divided in tutorial/practice session and competitions.

6. Robotics Workshop

For creating awareness and enthusiasm in the field of robotics, robotics club arranged workshop delivered by experienced people in this field. This gave Students chance to learn line following robots, obstacle detector and Gesture controlled robots and to connect with this field.

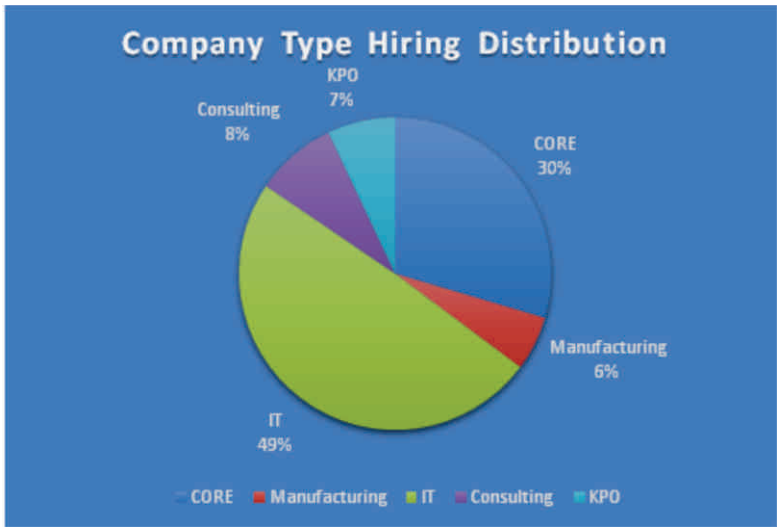
7. Electro Mania

This was a circuit designing competition held by Electronics Club for all students. Motto behind this event was developing interest in 1st year students for this field and to give platform to all students to show their talent.

Career and Placement Cell

The Career and Placement (CnP) Cell of the institute facilitates campus placement of the final year B.Tech. students as well as graduating M.Sc., M.Tech., and research students. For the just graduated 2015 batch of B.Tech. students some of the placement statistics are as follows:

Batch 2015					**Package**		
Branch	**Total students**	**Eligible Students**	**Placed**	**% Placed**	**Highest**	**Lowest**	**Average**
Computer Science	49	47	41	87	26	3.2	13
Electrical	29	27	17	68	9	3.2	6
Mechanical	30	30	19	63	11	3.2	6.5
Total	108	104	77	76			



Apart from the campus placements, the CnP cell also arranges internships to our students in various reputed organizations to provide them an exposure to the best professional practices and environments. These internships also include industrial internships, an academic requirement, to our third-year BTech students.

Along with the campus placements and internships, the CnP cell organizes all throughout the year various career counselling, guidance and training workshops, lectures, and interactions to help students gain an exposure to various career options available to them and how to approach those.

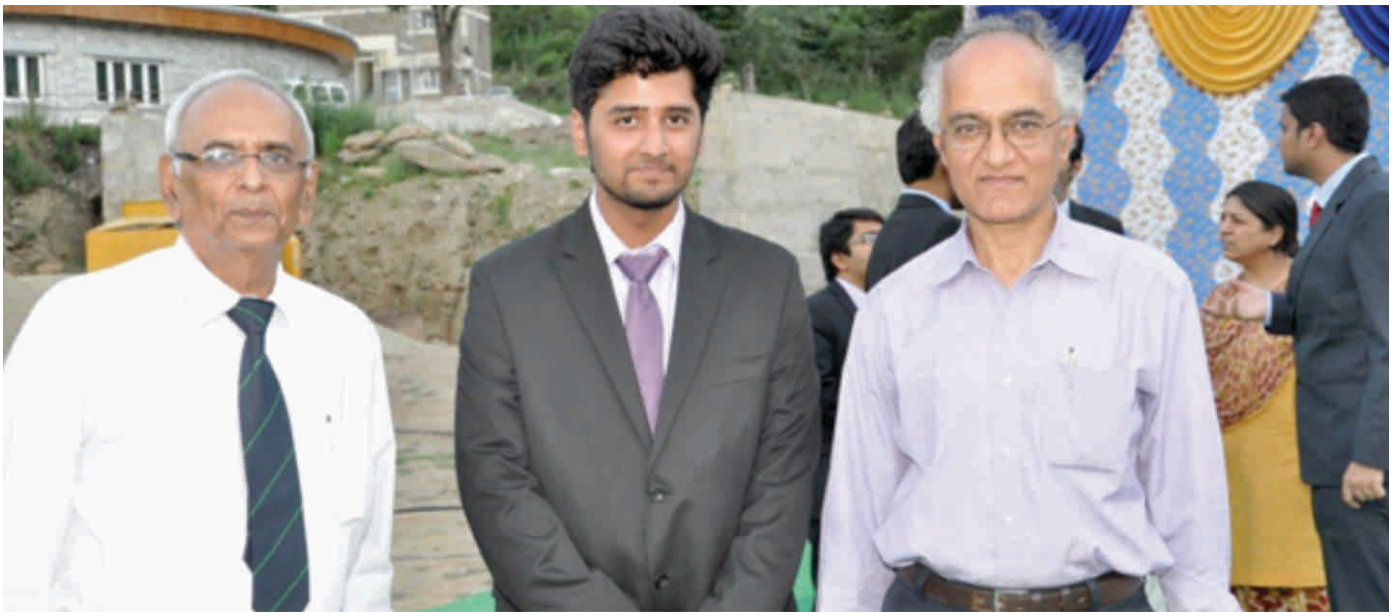
Prof.QuekSer Tong of NUS interacting with students to discuss available career opportunities in Singapore.

Alumni Affairs

2nd Graduation Dinner

On 24th May, 2014, IIT Mandi celebrated its second Graduation Dinner. The passing batch of 2010 along with Director, Deans and Faculty cherished the moment with some very enthralling speeches and mouth-watering delicacies. The evening started with the "Photo session" to engrave the chapter of passing batch into the book of memories that IIT Mandi will possess forever. While the day brought laughter to the faces remembering the times they all spent together, there was a feeling of discontentment that all this was soon going to end.

With all the Guru-mantras, batch of 2014 is now ready to sail into the bigger ocean, having received skills to defeat any wave coming their way. May their coming life be full of happiness and they bring laurels to themselves and their Alma-mater.



Second Alumni Meet

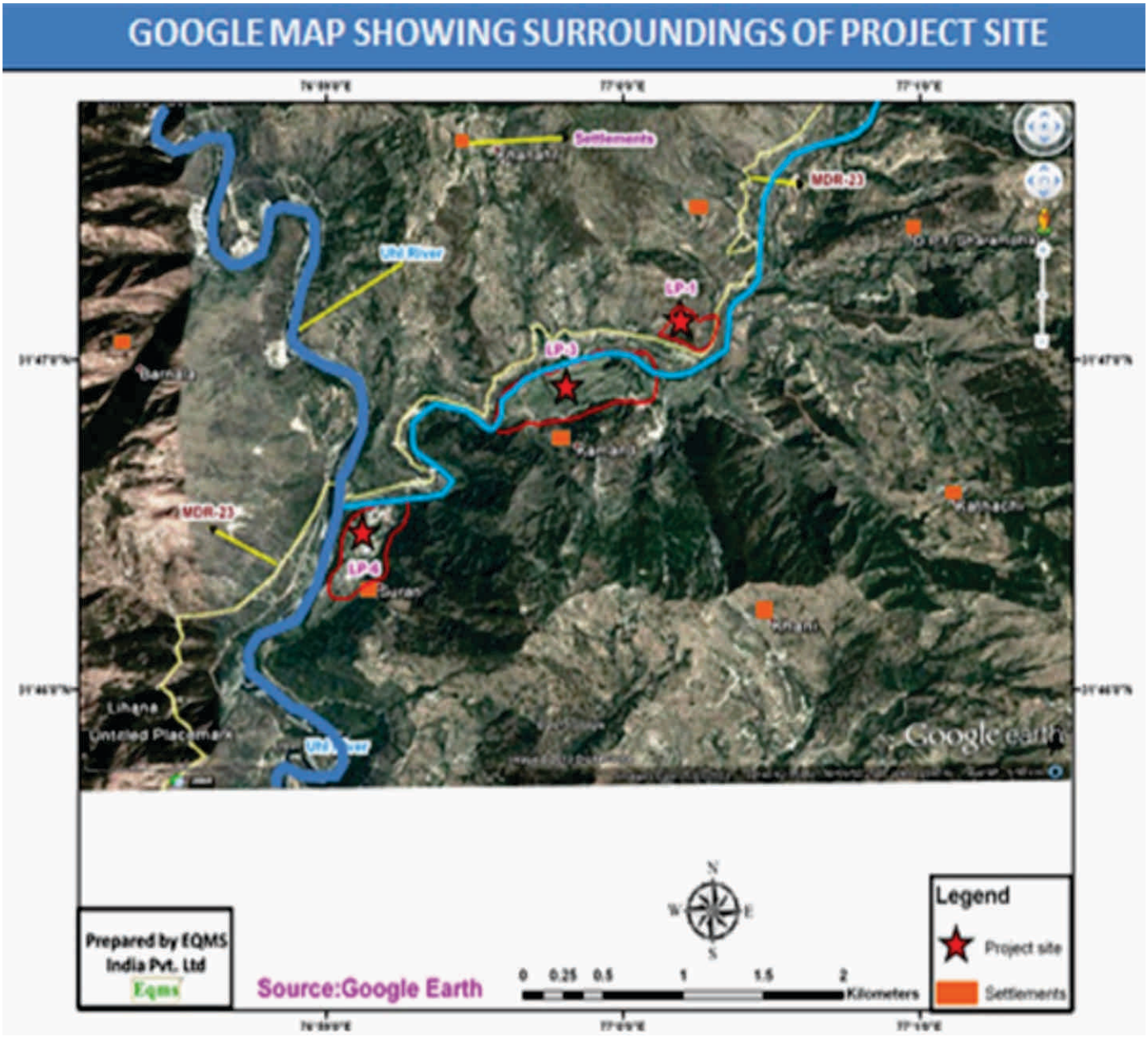
On 15th March 2015, the second Alumni meet was organized for 2014 graduates. This meet was organized right after the 2nd Convocation, hence most of the 2014 graduates could participate. Each graduate first informed all who were present about their present activities, like whether their or working or studying. Later graduates expressed the happiness in seeing all improvements on the campus.

Our Upcoming Campus at Kamand

The Govt. of India in the year 2008 decided to establish 8 new IIT's & one of these was in Mandi Himachal Pradesh. The foundation stone of IIT Mandi was laid on Feb 24, 2009.

IIT Roorkee was given the responsibility to mentor IIT Mandi in its beginning years. The first batch of students joined in July 2009 at IIT Roorkee campus in three branches i.e. Electrical, Mechanical & Computer Science & Engineering with an intake of 40 students in each branch for 4-year B.Tech degree programme.

Himachal Pradesh Government allotted 531 Acres (2674 bighas) of land at Kamand (18 Kms from Mandi town). A part of this land measuring 965 Bighas was in possession of State Govt. animal husbandry department which stands handed over to IIT Mandi (North and South campus) and remaining 1709 Bighas (370 Acres) was under perview of forest department for which approval in principle has been accorded & money stands deposited with forest department by State Govt.




View of North campus

In the middle of 2010 transit campus was established in Mandi town & whole of the staff started functioning from the transit campus at Mandi. The academic session was inaugurated on 15th August 2010. In the meantime IIT Mandi started developing its own campus at Kamand keeping with traditional village architecture of Himachal Pradesh by deploying M/s BDP as architect.

MASTER PLAN LP 6 (South Campus)

MASTER PLAN LP 3 (North Campus)

MASTER PLAN LP 1
(North Campus)

Buildings Already Constructed and Work in Progress (South Campus)

Phase-I South

Buildings Under Construction

Buildings Under Construction (North Campus)

LP 1 Phase-I North

Under Construction Community Centre

Under Construction School Building

At present IIT Mandi has already constructed 20000 sqm area which includes hostels, faculty residences and few academic buildings and approximately 100000 sqm area is under construction which is likely to be completed by May 2016. IIT Mandi has already shifted all its B.Tech students to permanent campus at Kamand during april 2015, Besides, most of the MS and PhD scholars have also been shifted to the permanent campus. Remaining MS/PhD students shall be shifted to permanent campus by end of 2015.

BOARD OF GOVERNORS

Chairman
Shri M. Natarajan
Former Scientific Advisor to Raksha Mantri
& Secretary DRDO
Plot No.8, 12th South Street,
Sringeri Saradha Nagar,
Thyagaraja Colony,
Tirunelveli – 627011

Members

Prof. Timothy A Gonsalves
Director, IIT Mandi
Indian Institute of Technology Mandi
Mandi – 175001 (H.P.)

Chief Secretary/ Secretary (TE)
Government of Jammu & Kashmir
Srinagar – 190 001

Prof. (Mrs.) Basabi Bhaumik
Head
Dept. of Electrical Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110 016

Prof. Subrata Ray
Distinguished Visiting Professor
Indian Institute of Technology Mandi
Mandi - 175001

Shri Raj Khilnani
Former DG, Anti-Corruption Bureau
21-B, Sangam Juhu Versova Link Road
Andheri West, Mumbai

Chief Secretary/ Secretary (TE)
Government of Himachal Pradesh
Shimla – 171 002

Prof. S. C. Sahasrabudhe
Director
Dhirubhai Ambani Institute of Information and
Communication Technology (DAIICT)
Near Indroda Circle Gandinagar – 382 007

Prof. Sunil R. Kale
Professor
Dept. of Mechanical Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi-110 016

Mr. Satish K. Kaura
CMD, Samtel Group
6th Floor, 7 TDI Centre District Centre, Jasola
New Delhi – 110 025

Secretary
Shri Mohammad Shakeel
Registrar (Ex-officio)
Indian Institute of Technology Mandi
Kamand Campus, VPO Kamand
Distt. Mandi - 175005
Himachal Pradesh

***During this year meetings of the Board of Governor were held on 16/06/2014 & 13/03/2015**

FINANCE COMMITTEE

Chairman

Shri M. Natarajan

Former Scientific Advisor to Raksha Mantri
& Secretary DRDO
Plot No.8, 12th South Street,
Sringeri Saradha Nagar,
Thyagaraja Colony,
Tirunelveli – 627011

Members

Prof. Timothy A Gonsalves
Director, IIT Mandi
Indian Institute of Technology Mandi
Mandi – 175001 (H.P.)

Finance Advisor
MHRD
Shastri Bhawan
New Delhi – 110001

Prof. S. R. Kale
Professor
Mechanical Engineering Department
Indian Institute of Technology Delhi
HauzKhas, New Delhi – 110 016

Bureau Head (Technical Education)
MHRD
Shastri Bhawan
New Delhi – 1100016

Prof. V. G. Idichandy
Dept. of Ocean Engineering
Indian Institute of Technology Madras
Chennai – 600 036

Secretary
Shri Mohammad Shakeel
Registrar (Ex-officio)
Indian Institute of Technology Mandi
Kamand Campus, VPO Kamand
Distt. Mandi - 175005
Himachal Pradesh

***During this year meetings of the Finance Committee were held on 16/06/2014 & 13/03/2015**

BUILDING & WORKS COMMITTEE

Chairman

Prof. Timothy A. Gonsalves
Director
Indian Institute of Technology Mandi
Kamand - 175005 (H.P.)

Member

Prof. R. L. Sharma
Vice Chancellor,
Himachal Pradesh Technical University
Camp Office: Gandhi Chowk, Hamirpur
District: Hamirpur (H.P.)

Er. Udayan Ukhal
Dy. General Manager
H.P. Power Corporation Ltd.
BBMB Colony, Sunder Nagar – 174402

Prof. Sunil R. Kale
Professor
Department of Mechanical Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi – 110026

Prof. S. C. Jain
Visiting Professor & Dean (I & S)
School of Engineering
Indian Institute of Technology Mandi
Mandi – 175 001

Member Secretary (Ex-officio)
Shri Mohammad Shakeel
Registrar (Ex-officio)
Indian Institute of Technology Mandi
Kamand Campus, VPO Kamand
Distt. Mandi - 175005 (H. P)

Mr. K. N. Rai
Former Chief Executive
Civil Works, DRDO
C-4, 4112, Vasant Kunj, New Delhi

Prof. K. C. Iyer
Professor
Department of Civil Engineering
Indian Institute of Technology Delhi
Hauz Khas, New Delhi – 110026

Prof. Lalit Malhotra
Visiting Professor & Dean (F & A)
School of Basic Sciences
Indian Institute of Technology Mandi
Mandi – 175001 (H.P.)

Er. Sunil Kapoor
Superintending Engineer
Indian Institute of Technology Mandi
Mandi – 175001 (H.P.)

Special Invitee
Er. A.K. Jain
Senior Consultant IIT Mandi,
Retd.Spl. D.G. CPWD

***During this year meetings of the B & W Committee were held on 28/05/2014 & 20/11/2014.**

SENATE

Chairman

Prof. T. A. Gonsalves, Director, IIT Mandi

Professors of the Institute

Prof. Ramesh Oruganti, Visitng Professor & Dean (Academics), IIT Mandi

Prof. B. Subramanian, Visiting Professor & Dean (Students), IIT Mandi

Prof. Lalit Malhotra, Visiting Professor& Dean (F&A), IIT Mandi

Prof. B. D. Chaudhary, Visiting Professor & Dean (SRIC), IIT Mandi

Prof. S. C. Jain, Visting Professor & Dean (I&S), IIT Mandi

Prof. Subrata Ray, Distinguished Visiting Professor, IIT Mandi

Prof. Kenneth E. Gonsalves, Distinguished Visiting Professor, IIT Mandi

Members of Academic Advisory Council

Prof. B. K. Mishra, IIT Roorkee

Prof. Arghya Taraphder, Dept. of Physics, IIT Kharaghpur

Prof. D. K. Mehra, Dept. of E & C, IIT Roorkee

Prof. Shormishtha Panja, Dept. of English, DU, Delhi

Prof. Deepak Khemani, Dept. of CSE,
IIT Madras IIT Madras

Prof. Sunil Kale, Dept. of ME, IIT Delhi

Prof. N. S. Narayanswamy, Dept. of CSE, IIT Madras

Prof. Anil Prabhakar, Dept. of EE, IIT Madras

Prof. Babu Viswanathan, Dept. of ME, IIT Madras

Prof. Hema Murthy, Dept. of CSE, IIT Madras

Prof. S. B. Krupanidhi, Dept. of MRC, IISc Bangalore

Prof. Milind A. Sohoni, IIT Bombay

Prof. S. N. Singh, Dept. of EE, IIT Kanpur

Prof. Rafikul Alam, Dept. of Mathematics, IIT Guwahati

Prof. Arindama Singh, Dept. of Mathematics, IIT Madras

Prof. P. K. Kapoor, Dept. of Operations Research, University of Delhi

Prof. A. D. Gupta, Dept. of Mechanical Engg. IIT Delhi

Prof. P. Vellaisamy, Dept. of Mathematics, IIT Bombay

Prof. Rahul Roy, Unit of Mathematics, ISI Delhi

Prof. Dhirendra Bahuguna, Dept. of Mathematics & Statistics, IIT Kanpur

Prof. T. Raja Sekhar, Dept. of Mathematics, IIT Kharagpur

Prof. Anant R. Shastri, Dept. of Mathematics, IIT Bombay

Prof. R. K. Sharma, Dept. of Mathematics, IIT Delhi

Prof. Thamban Nair M, Dept. of Mathematics, IIT Madras

Prof. P. Veeramani, Dept. of Mathematics, IIT Madras

Chairperson, School of Basic Sciences

Dr. Subrata Ghosh, Assistant Professor, SBS, IIT Mandi

Chairperson, School of Computing and Electrical Engineering

Dr. Anil Sao, Assistant Professor, SCEE, IIT Mandi

Chairperson, School of Engineering

Dr. Rahul Vaish, Assistant Professor, SE, IIT Mandi

Chairperson, School of Humanities and Social Sciences

Dr. Ashok Kumar Mocherla, Assistant Professor, SHSS, IIT Mandi

Dr. Pradeep Parameswaran

AP & Associate Dean (Courses), IIT Mandi

Dr. Bindu Radhamany

AP & Associate Dean (Research), IIT Mandi

Dr. Prem Felix Siril

AP & Associate Dean (SRIC), IIT Mandi

Dr. Vishal Singh Chauhan

AP & Associate Dean (F&A), IIT Mandi

Dr. Bharat Singh Rajpurohit

AP & Associate Dean (Faculty), IIT Mandi

Dr. P. C. Ravikumar

AP & Associate Dean (Planning), IIT Mandi

Dr. Arti Kashyap

Associate Prof. SCEE & SBS, IIT Mandi

School of Computing and Electrical Engineering

Dr. Varun Dutt, Assistant Professor, IIT Mandi

School of Engineering

Dr. Rajeev Kumar, AP, SE, IIT Mandi

School of Basic Sciences

Dr. Aniruddha Chakraborty Assistant Professor, IIT Mandi

School of Humanities and Social Sciences

Dr. Shail Shankar

Assistant Professor, IIT Mandi

Dr. Aniruddha Chakraborty

Assistant Professor, School of Basic Sciences, IIT Mandi

Dr. Samar Agnihotri

Assistant Professor, SCEE, IIT Mandi

Student General Secretary

Mr. Shivam Satija

Student Academic Affairs Secretary

Ms. Jyoti Singh &

Mr. Harshit Singhal

Student Research Affairs Secretary

Mr. Harivansh Rai Mittal &

Mr. Saurabh Singh

Member Secretary

Shri Mohammad Shakeel

Registrar, IIT Mandi (Ex-officio)

***During this year meetings of the Senate were held on 26/05/2014 &11/03/2015**

ACADEMIC OFFICIALS AS ON 31.03.2015

Prof. Timothy A. Gonsalves
Director
Prof. S. C. Jain
Dean Infrastructure and Services
Prof. Lalit Malhotra
Dean Finance & Accounts and Dean SRIC
Prof. B. K. Mishra
Dean, Planning
Dr. Pradeep Parameswaran
Associate Dean (Courses)
Dr. Prem Felix Siril
Associate Dean (SRIC)
Dr. Bharat Singh Rajpurohit
Associate Dean (Faculty)
Dr. Subrata Ghosh
Chairperson SBS
Dr. Rahul Vaish
Chairperson SE

Prof. Ramesh Oruganti
Dean Academics
Prof. B. Subramanian
Dean Students
Prof. B. D. Chaudhary
Dean SRIC
Dr. P. C. Ravikumar
Associate Dean (Planning)
Dr. Bindu Radhamany
Associate Dean (Research)
Dr. Vishal Singh Chauhan
Associate Dean (Faculty)
Dr. Ashok Mocherla
Chairperson SHSS
Dr. Anil Sao
Chairperson SCEE

ADMINISTRATIVE OFFICIALS AS ON 31.03.2015

Mr. Mohammad Shakeel
OSD & Registrar
Dr. A. K. Solanki
Deputy Registrar
Mr. J. R. Sharma
Finance & Accounts Officer
Mr. Suresh Kumar Rohilla
Assistant Registrar (Admn)
Mr. Parminder Jit Singh Gill
Assistant Registrar (S&P)
Dr. Chander Singh
Medical Officer
Dr. Ghanshyam Kapoor
GDMO
Er. Anil Kumar Jain
Senior Consultant
Er. Sunil Kapoor
Superintending Engineer

Mr. Naresh Singh Bhandari
Deputy Librarian
Mr. C. L. Sharma
Asstt. Registrar (Audits &Accounts)
Mr. Vivek Tiwari
Assistant Registrar (Academic)
Mr. Sudhir Kumar Gurung
Security Officer
Dr. K. C. Sharma
Medical Officer
Dr. Jyoti Sharma
Medical Officer
Dr. Shib Nath Jha
Principal Sports Officer

LIST OF REGULAR EMPLOYEES AS ON 31/03/2015

S.No.	Name	Designation
1	Ms. Monika Kashyap	P.S. to Director
2	Mr. Anuj Kumar Dubey	PA to Registrar
3	Mr. Vinod Kumar	Sr. Library Info. Asst.
4	Ms. Suchetna Shachi	Jr.Assistant
5	Ms. Sushma Kumari	Stenographer
6	Mr. Sunil	Jr.Assistant
7	Mr. Sushil kumar Pal	Jr. Assistant
8	Mr. Amit Sharma	Jr. Lab Assistant
9	Mr. Lalit Kumar	Jr. Lab Assistant
10	Mr. Ashish Kumar Ahirwal	Sr. Library Info. Asst.
11	Mr. Brijesh Kumar	Pharmacist
12	Mr. Neeraj Chauhan	Junior Engineer (Elect.)
13	Dr. Khushi Ram Bhagat	Physical Training Instructor
14	Ms. Chandan Sharma	Junior Superintendent
15	Mr. Abhijeet Tiwari	Sr. Library Info. Asst.
16	Mr. Ramesh Kumar	Jr. Accountant
17	Mr. Ankush Kapil	Sr. Lab Assistant
18	Mr. Manoj Kumar	Junior Attendant
19	Er. Hemant Kumar Behl	AE (Elect)
20	Ms. P.V.Suguna	Tech. Superintendent

LIST OF CONTRACT EMPLOYEES (ON CONSOLIDATED EMOLUMENTS) AS ON 31/03/2015

S.No.	Name	Designation
1	Mr. Kaul Singh	Physical Training Instructor
2	Mr. R.S. Raghav	Technical Superintendent
3	Ms. Lishma Anand	Counsellor
4	Mr. Daulat Ram	Field Supervisor
5	Mr. Pavin Samuel	Deputy Administrator (Students)
6	Ms. Sonia Sachdeva Sharma	Asst. Manager (Hospitality & Event Management)

STUDENT LEADERSHIP -2014-2015

Shivam Satija	General Secretary
Harika Garimella & Rishi Barve	Cultural Secretary
Aman Agarwal	Sports Secretary
Mandar Karpe	Technical Secretary
Saket Panwar	Literary Secretary
Jyothi Singh & Harshit Singhal	Academic Secretary
Saurabh Singh	Research Secretary

Students Admitted in the Institute During the Year 2014 -15
Ph.D Scholars - 2014 Batch

Sr. No.	Roll No.	Name	School
1	D14001	Fauzul Mobeen	SBS(Life Sciences)
2	D14002	Shaifu Gupta	SCEE
3	D14003	Anshul Thakur	SCEE
4	D14004	Krati Gupta	SCEE
5	D14005	Archana Sharma	SCEE
6	D14006	Anindita Ghosh	SHSS
7	D14007	Abhilash. M	SHSS
8	D14008	Mohammad Saquib	SBS(Chemistry)
9	D14009	Navneet Chandra Verma	SBS(Chemistry)
10	D14010	P.Guru Prasad Reddy	SBS (Chemisty)
11	D14011	Syamantak Khan	SBS(Chemistry)
12	D14012	Imran Ahamed	SBS(Physics)
13	D14013	Suneel Kumar	SBS(Chemistry)
14	D14014	Davinder Singh	SE
15	D14015	Sandeep K Shukla	SE
16	D14016	Rohit Pathak	SBS(Physics)
17	D14017	Duni Chand Thakur	SBS(Physics)
18	D14018	Avadhesh Kumar	SBS(Maths)
19	D14019	Nidhi Baranwal	SE
20	D14020	Juhi Pandey	SBS(Physics)
21	D14021	Karan Singh	SBS(Physics)
22	D14022	Pravesh Kumar	SBS(Chem)
23	D14023	Ravi Sharma	SBS(Maths)
24	D14024	Shivani	SCEE
25	D14025	Krishan Sharma	SCEE
26	D14026	Mohammad Sultan Alam	SCEE
27	D14027	Jyoti Nigam	SCEE
28	D14028	Palvi Aggarwal	SCEE
29	D14029	Ashish Shirish Joshi	SCEE
30	D14030	Indu	SCEE
31	D14031	Ankit Gupta	SE
32	D14032	Anuruddh Kumar	SE
33	D14033	Atendra Kumar	SBS(Maths)
34	D14034	Pravat Kumar Jena	SBS(Maths)
35	D14035	Monika Kaushik	SHSS(English)

36	D14036	Faria Rehman	SE
37	D14037	Sumeet Kumar Sharma	SE
38	D14038	Zahid Maqbool	SCEE
39	D14039	Anshul Kumar Mishra	SCEE
40	D14040	Pawan Kumar	SE
41	D14041	Tarun Arora	SCEE

MS (by Research) Scholars

Sr. No.	Roll No.	Name	School
1	S14001	Shikha Gupta	SCEE
2	S14002	Kartik Gupta	SCEE
3	S14004	Punit Kumar	SE
4	S14005	Kumar Gaurav	SE
5	S14006	Ashutosh Patel	SE
6	S14007	Vishrut Sunil Shah	SE
7	S14009	Sarveshwaran J	SCEE
8	S14010	Sanjay Singh Tomar	SE
9	S14011	K.S.Srikanth	SE

M.Sc. (Chemistry)

Sr. No.	Roll No.	Name	School
1	V14001	Arpit Bharadwaj	SBS
2	V14002	Diksha Gambhir	SBS
3	V14003	Prashant Gupta	SBS
4	V14004	Reena	SBS
5	V14005	Rituporn Gogoi	SBS
6	V14006	Shifali Bajaj	SBS
7	V14007	Snighda Jain	SBS
8	V14008	Sumeet Kumar	SBS
9	V14009	Vaidehi Pandit	SBS
10	V14010	Vikky	SBS
11	V14011	Vinod Kumar	SBS

M.Tech. (Energy Materials)

Sr. No.	Roll No.	Name	School
1	T14001	Abhishek Singh	M.Tech
2	T14002	Nayanjyoti Kuli	M.Tech
3	T14003	Nitesh Das	M.Tech
4	T14004	Ram Krishan	M.Tech

B.Tech Students – 2014 Batch Computer Science & Engineering

Sr. No.	Roll No.	Student Name	Branch
1	B14101	Amanshu Raikwar	CSE
2	B14102	Amit Kumar	CSE
3	B14103	Amod Kumar Choudhary	CSE
4	B14104	Arpit Karwasara	CSE
5	B14105	Aryan Kumar	CSE
6	B14106	Ashish Arya	CSE
7	B14107	Deepak Sharma	CSE
8	B14108	Devarakonda Vamsi Krishna	CSE
9	B14109	Harsh Gupta	CSE
10	B14110	Kapardi trivedi	CSE
11	B14111	Manjush Mangal	CSE
12	B14112	Marimganti Sudhanshu	CSE
13	B14113	Muthiyan Neha	CSE
14	B14114	Nasir Ansari	CSE
15	B14115	Nimit Kalal	CSE
16	B14116	Parul Bansal	CSE
17	B14117	Priyadharshinee.S	CSE
18	B14118	Priyansh Saxena	CSE
19	B14119	Purushottam	CSE
20	B14120	Raghav Sethi	CSE
21	B14121	Rahul Singh	CSE
22	B14122	Ramavath Kiran Kumar	CSE
23	B14123	Rishabh Kumar	CSE
24	B14124	Rohit Chauhan	CSE
25	B14125	Rohit Kumar Verma	CSE
26	B14126	Sachin Dhariwal	CSE
27	B14127	Sagar Kaushal	CSE
28	B14128	Sahil Arora	CSE
29	B14129	Saif Ali Akhtar	CSE
30	B14130	Saksham Bathla	CSE
31	B14132	Shikhar Gupta	CSE
32	B14133	Siddhant Kumar	CSE
33	B14134	Sumant Garg	CSE
34	B14135	Sunil Kumar	CSE
35	B14136	Tapesh Joham	CSE

36	B14137	Umang Agarwal	CSE
37	B14138	V Vivek	CSE
38	B14139	Varun Bansal	CSE
39	B14140	Vinay Goel	CSE
40	B14141	Yogendra Kumar Dhiwar	CSE
41	B14204	Akshay Mathew	CSE
42	B14225	Patel Shravan Rajnarayan	CSE
43	B14232	Shashank Sethi	CSE
44	B14241	Vinayak Sangar	CSE
45	B14305	Anindya Gangopadhyay	CSE
46	B14306	Ashutosh Kumar Verma	CSE
47	B14314	Harshit Bansal	CSE
48	B14322	Mandala Rishik Reddy	CSE
49	B14324	Naman Agarwal	CSE
50	B14332	Rajat Mehra	CSE

Electrical Engineering

Sr.No.	Roll No.	Student Name	Branch
1	B14201	Abhijeet Singh	EE
2	B14202	Abhinav Kumar	EE
3	B14203	Abhishek Kumar Mishra	EE
4	B14205	Akshay Pathak	EE
5	B14206	Anubhav Agrawal	EE
6	B14207	Arja Avinash Billrich	EE
7	B14208	Ashok Kumar Godara	EE
8	B14210	Challa Yaswanth Yadav	EE
9	B14211	Deepesh Yadav	EE
10	B14212	Divyanshu Verma	EE
11	B14213	Harshit Varshney	EE
12	B14214	Jitesh Kumar Gupta	EE
13	B14215	Kishor Kumar Verma	EE
14	B14216	Kuldeep Meena	EE
15	B14217	Kumar Ashutosh	EE
16	B14218	Lakshay	EE
17	B14219	Lokesh Kasana	EE
18	B14220	Mohit Jain	EE
19	B14221	Neha Grewal	EE
20	B14222	Nitesh Kumar	EE
21	B14223	Nitesh Bansiwal	EE
22	B14224	Partik Kumar Rajput	EE
23	B14226	Pulkit Rajgadiya	EE

24	B14227	Rakde Anurag Keshav	EE
25	B14229	Rishabh Meena	EE
26	B14230	Sandeep Singh	EE
27	B14231	Shailesh Meena	EE
28	B14233	Shikhar Shukla	EE
29	B14234	Shivam Richhariya	EE
30	B14235	Shradhan Kumar	EE
31	B14238	Shushmita Chaudhary	EE
32	B14239	Simranjeet Singh	EE
33	B14240	Sonawane Akshay Rajendra	EE
34	B14131	Sanjay Kumar Meena	EE
35	B14311	Danish Equbal	EE
36	B14320	Maeghel Puri	EE

Mechanical Engineering

Sr.No.	Roll No.	Student Name	Branch
1	B14301	Aakashdeep	ME
2	B14302	Abhishek Chaudhary	ME
3	B14303	Abhishek Kumar	ME
4	B14304	Akash Kumar Kushwaha	ME
5	B14307	Atishaya Jain	ME
6	B14308	Avnish Gupta	ME
7	B14309	Brahmanand Meena	ME
8	B14310	Chaman Kumar	ME
9	B14312	Eshan Joshi	ME
10	B14313	Gourav Bagri	ME
11	B14315	Hitesh Kumar Thakur	ME
12	B14316	Kaka Rahul Sai	ME
13	B14317	Katara Vimalkumar Dilipbhai	ME
14	B14318	Kunal Gour	ME
15	B14319	Lovedeep	ME
16	B14321	Manan Varshney	ME
17	B14323	Manish Yadav	ME
18	B14325	Navratan Lal Saroj	ME
19	B14326	Nikhil Kaushik	ME
20	B14327	Padam Chand Meena	ME
21	B14328	Pankaj Patidar	ME
22	B14329	Prashant Mundotia	ME
23	B14330	Prashant Singh	ME
24	B14331	Rahul Raj	ME
25	B14333	Ravi Kumar	ME
26	B14335	Satish Kumar Singh	ME
27	B14336	Saurabh Agrawal	ME
28	B14339	Thyaranadurgam Lohith	ME

www.iitmandi.ac.in

The Registrar
Indian Institute of Technology Mandi
Kamand Campus, VPO Kamand,
Distt. Mandi - 175005 Himachal Pradesh, India
Tel: +91 1905-267015 Fax: +91 01905-267075
Email: registrar@iitmandi.ac.in