

The IITG Monitor

The Quarterly Newsletter

Matribhasha Diwas 2017

Matribhasha Diwas 2017 was organized at the Institute with the support of the Director, Registrar and other employees of the Institute. As part of Matribhasha Diwas 2017 celebrations, a poem writing competition and an Essay writing Competition was organized for the Employees and Students of the Institute. Original poems and essays were submitted in Assamese, Bengali, Oriya, Hindi, Tamil and Telugu languages. A number of employees and students participated in the competitions.

The topic for Poetry writing competition was “My Mother Tongue” and for Essay writing competition was “India:



Prof. Jyoti Prakash Tamuli, Professor and HoD, Department of Linguistics, Gauhati University

Mother Tongue or English”. Several students and employees participated in the competitions.

A final program to conclude the Matribhasha Diwas 2017 Celebrations was organized on 23rd February 2017, in which the prizes and certificates were given out to the winners of the various competitions. An invited talk was also arranged at the program.

Prof. Jyoti Prakash Tamuli, Professor and HoD, Department of Linguistics, Gauhati University, was invited as Chief Guest. Prof. Tamuli presented a talk on the topic,”

Building on what we bring: Creating spaces for the mother tongue.” Dr. Tamuli gave a power point presentation emphasizing on the role of mother tongue in maximizing the chances of human success and adaptability. The presentation was supported by two short videos as well. Dr. Tamuli’s presentation was highly appreciated by the audience. The program was attended by the Director, Deans, Faculty members, Officers and Staff and students of the Institute.



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The 68th Republic Day of India was celebrated on 26 January 2017 in the Institute campus. Prof. Gautam Biswas, Director of the Institute, hoisted the tricolour and addressed the gathering. This was followed by colourful cultural

programmes presented by the students of the Institute, Akshara School and children of the campus.

Seen here is Prof. Gautam Biswas, Director, IIT Guwahati, taking ceremonial salute of the march past of students.



Conference/ Seminar Abroad

BSBE

Dr. Lalit Mohan Pandey, Assistant Professor, attended the 3rd International Conference on Surface and Interface of materials (SIM 2017) at Arnoma Grand Bangkok, Bangkok, Thailand from 03.01.17 to 05.01.17.

Chemistry

Dr. Parameswar K. Iyer, Professor, attended the Asian Advances Materials Congress at Diamond Princess Cruise, Singapore from 11.03.17.

Dr. Anil Kumar Saikia, Professor, attended the Collaborative Conference on Organic Synthesis at Super Hotel Candle, Hanoi, Vietnam from 13.03.17 to 17.03.17.

Civil

Dr. Hemant B. Kaushik, Associate Professor, attended the 16th World Conference on Earthquake Engineering (16WCEE) at Santiago, Chile from 09.01.17 to 13.01.17.

Dr. S.K. Deb, Professor, attended the 16th World Conference on Earthquake Engineering (16WCEE) at Santiago, Chile from 09.01.17 to 13.01.17.

Dr. Sandip Das, Assistant Professor, attended the 16th World Conference on Earthquake Engineering (16WCEE) at Santiago, Chile from 09.01.17 to 13.01.17.

Dr. Abhishek Kumar, Assistant Professor, attended the 16th World Conference on Earthquake Engineering (16WCEE) at Santiago, Chile from 09.01.17 to 13.01.17.

Dr. Rajan Choudhary, Associate Professor, attended the 16th Annual International Conference on Asphalt, Pavement Engineering and Infrastructure at Liverpool, UK from 22.02.17 to 23.02.17.

Design

Dr. Uday Kumar, Associate Professor, presented a paper

at Typography Day 2017 at University of Mpratuwa, Sri Lanka from 23.02.17 to 25.02.17.

Mr. Supradip Das, Assistant Professor, attended the Eleventh International Conference on Design Principles & Practices at Toronto, Canada from 02.03.17 to 04.03.17.

Dr. Pratul Chandra Kalita, Assistant Professor, attended the Eleventh International Conference on Design Principles & Practices at Toronto, Canada from 02.03.17 to 04.03.17.

Mr. Abhishek Srivastava, Assistant Professor, attended the Eleventh International Conference on Design Principles & Practices at Toronto, Canada from 02.03.17 to 04.03.17.

HSS

Dr. Priyankoo Sarmah, Associate Professor, attended the Meetings and Seminars on Multilingual Sentiment Analysis at Hankuk University of Foreign Studies, Seoul, Korea from 12.01.17 to 13.01.17.

Dr. Avishek Parui, Assistant Professor, attended the Narrative Conference at The Hilton Downtown, Lexington, Kentucky, USA from 23.03.17 to 26.03.17.

Physics

Dr. Alike Khare, Professor, attended the 3rd International Conference on Thin Film Technology and Applications (TFTA 2017) at Bangkok, Thailand from 03.01.17 to 05.01.17.

Dr. Pratima Agarwal, Professor, attended the 3rd International Conference on Thin Film Technology and Applications (TFTA 2017) at Bangkok, Thailand from 03.01.17 to 05.01.17.

Dr. Tapan Mishra, Assistant Professor, was on a Research visit for collaboration and exchange programme at Tokyo Institute of Technology, Tokyo, Japan from 07.02.17 to 14.02.17.

Seminar on Revisiting Partition: Concepts, Dynamics and Manifestations with special focus on North East India

"Revisiting Partition: concepts, dynamics and manifestations with special focus on north east India" was organized by the Department of Humanities & Social Sciences, Indian Institute of Technology Guwahati in association with the Institute of Social Change And Regional Development (ISCARD), Assam from 10-11 February 2017. The Inaugural of the seminar was on the evening of 9 February, 2017.

The seminar revisited many contentious issues like those of nation and nationalism, citizenship, legal rights of the affected and other peoples, the idea of community and the restructured lives of the people, after partition of India and Pakistan in 1947. In north east India Partition has remained a vibrant question through the post-1947 decades not only because of the abiding popular interest but also because of the various social, political, economic and humane offshoots of the process of Partition.



The seminar critically engaged in locating partition and the politics of decolonization in the eastern frontier of Colonial India and its impact on the construction of post-colonial politics and society. The effort of the seminar was to encourage interdisciplinary studies designed to construct a comprehensive story of Partition in this region.

Professor Gautam Biswas, Director IIT Guwahati inaugurated the seminar. The key note lecture was delivered by Urvasi Butalia, the author of "The Other Side of Silence: Voices from the Partition of India." Other invited speakers were Prof Hiren Gohain and M.P.Bezbaruah, Former Member, North Eastern Council, Prof Apurba Baruah, Dr Anasua Basu Ray Chaudhury, Prof. Arupjyoti Saikia, Prof Liza Das and Dr Avishek Parui among others.

Dr. Pahi Saikia (HSS/IITG), Dr Binayak Dutta (NEHU) & Prof Manorama Sharma (ISCARD) were the coordinators of the Seminar.





Alcheringa, by far the largest cultural festival of North-East India since its inception, entered its 21st edition. IIT Guwahati's Alcheringa provides a national level platform for participants and enjoys a footfall of 70000 people and participation from over 400 colleges that was held from 2-5 February 2017.

With the theme of this 21st edition being 'Eternal Sands', Alcheringa 2017 aimed at promoting the culture and heritage of the World, while portraying elements of the desert cultures such as the Arabian Nights and Egyptian Mythology.

On the opening night Indian classical music maestros and brothers Hafeez Ahmed Alvi and Azeem Ahmed Alvi mesmerized the audience with their epic jugalbandi. Also along side was an artist who is credited with popularizing a musical instrument, the 'Ghatam'. The Grammy Award Winner Pt. Vikku Vinayak Ram who pioneered its music left the audience in awe.



The next day showed some feet stomping action by Marnik, the Progressive house artist from Italy and Latin America's biggest electronic music artist Carl Nunes. Apart from this, the 21st edition had performers from over seven countries, The Madhater Project, Singapore music band, Portuguese guitarist and composer Nuno Marinho, Echo and Tito from Israel, All else fails from Canada, Vasco Atanasovski from Slovenia, Raymond Caldwell from USA and The Hip Circle, India. This was followed by the Bollywood star artist Javed Ali on the 4 February 2017 and then finally ended with the thrilling duo of Sajid-Wajid on the concluding day.

Other events in this edition included Rock-o-phonix, Haute Couture, Mr. & Mrs. Alcheringa, Raga High, Unplugged, Electric Heels, Step Up, Theatrix, Live Sketching, Custom Brush, MUN, Just A Minute and many others.

Alcheringa in this 21st edition also presented 'Tour-de-Northeast', which was an exhibition of the eight north eastern states with exhibitions and performers from the North-Eastern States to promote the rich and diverse culture of North-East India.



INSTITUTE LECTURE Professor Santanu Bhattacharya



On 25 February 2017, Professor Santanu Bhattacharya delivered an Institute Lecture on “*Numerous Opportunities with Supramolecular Gels*”. After securing a PhD in 1988 in bioorganic chemistry, he did his post-doctoral studies with Har-Gobind Khorana, a Nobel laureate at the Massachusetts Institute of Technology; the theme of his studies being signal transduction of membrane proteins. He is a Bioorganic Chemist and the Director of IACS Kolkata. He is known for his studies of unnatural amino acids, cyclic peptides, DNA binding small molecules as anticancer agents, biologically active natural products and design and synthesis of nanomaterials. He has published more than 223 peer-reviewed articles has sat in the editorial boards of several journals such as *Bioconjugate Chemistry*. He has received numerous honors and awards for his seminal scientific contributions. He is an elected fellow of the Indian National Science Academy (2007), The World Academy of Sciences (2012) and the Indian Academy of Sciences (2000). The Council of Scientific and Industrial Research (CSIR), the apex agency of the Government of India for scientific research, awarded him the Shanti Swarup Bhatnagar Prize for Science and Technology, one of the highest Indian science awards, in 2003, for his contributions to chemical sciences. He is also a recipient of the National Bioscience Award for Career Development of the Department of Biotechnology (2002), the TWAS Prize (2010) and Ranbaxy Research Award (2013).

His new discovery of “Symbiotic Gel” as was discussed in this lecture is one his greatest achievements to save the Guava fruits being damaged by Flies without destroying the life of the flies and very much attracted the attention of the audience of a large number of students and faculty members as it showed the concept of Symbiotic Society. The comprehensive interaction that followed the lecture testified the keen interest among the students and the faculty members.



Prof. Frank J Rhee, Hanyang University, South Korea after being felicitated by Prof. P. K. Borá Deputy Director on 20 January, 2017

Prof. Frank J. Rhee after a meeting with the Deans and Associate Deans of Academic Affairs and AER on 21 January, 2017

INSTITUTE LECTURE Prof. G. P. Rao

Prof. G. P. Rao visited IIT Guwahati on February 7, 2017 and delivered a lecture titled "*Genesis, genetics, and life-like evolution of the world of mathematics from Hindu zero and number concepts*", as a part of the institute lecture series. The lecture was mainly focused on the impact of Indian number system in the evolution of mathematics. Prof. Rao explained how his peers and scholars from different parts of the world expressed curiosity in knowing the contributions of Indian number system, which later motivated him to pursue his own research on this topic. Starting with the brief history of evo-



Prof. G. P. Rao and his wife with Prof. G. Biswas, Director, IIT Guwahati, Prof. C. Mahanta, HOD, EEE and Prof. M.G.P. Prasad, Dean, Academic Affairs.

Prof. Rao presented how the Indian numerals were introduced to the Western world through the famous book of Al-Khwārizmī's, "*The Compendious Book on Calculation by Completion and Balancing*". Prof. Rao formed a basic template of the number system just like DNA molecule which were the basic building blocks of human genetics. Then he showed how various advanced concepts of mathematics could be put into this basic template as in the case of genetics with the complex DNA characteristic. The lecture was well received and widely acknowledged by both students and faculty in the institute. Prof. Rao urged everyone to think beyond regular classroom teaching and get the philosophy behind each subject. His aim was not to show 'what' to learn but to give some insight as to 'how' to learn.

On February 8, 2017, Prof. Rao gave another lecture on "*A perspective of the field of control of dynamic systems*". The objective of his lecture was to give a brief overview on the evolution of Control System from classical to modern time, such as: open loop control, feedback control, optimal control, adaptive control, robust control and intelligent control. At the end, Prof. Rao had an interactive session with the students and faculty members of EEE Department.

INSTITUTE LECTURE Professor Richard N. Zare



On 01 February 2017, Professor Richard N. Zare delivered an Institute Lecture on "*Chemical Fizzics: The Life of a Bubble*". He is the Marguerite Blake Wilbur Professor in Natural Science at Stanford University. Professor Zare is renowned for his research in the area of laser chemistry, resulting in a greater understanding of chemical reactions at the molecular level. He has received numerous honors and awards for his seminal scientific contributions. During his lecture on bubbles Professor Zare gave a live demonstration on how scientific problems can be designed, experiments be performed and the results are explained based on the curiosity about the surrounding environments. A large number of students and faculty members attended the lecture. The comprehensive interaction that followed the lecture testified the keen interest that the lecture generated among the students.

INSTITUTE LECTURE Dr. Victoria Martin

Dr. Victoria Martin, Professor at the University of Edinburgh and an Associate of CERN, gave a public lecture titled "The Higgs Boson: Past, Present & Future" at IIT Guwahati on 22 March, 2017.



Dr. Martin is a member of the team that won Nobel prize for the discovery of Higgs boson in 2012. A good number



of students from different institutes, universities and colleges in Guwahati attended the lecture and actively interacted with Dr. Martin.

The Outreach Education Programme and the Department of Physics, IIT Guwahati in association with the British Council, India organised the lecture.

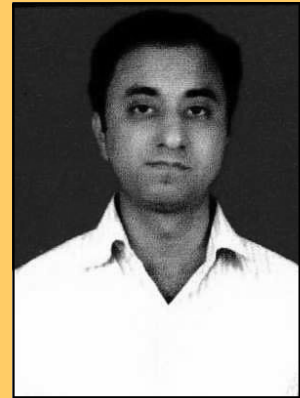
New Joinings



Dr. Cota Navin Gupta
Assistant Professor
Biosciences and Bioengineering



Dr. Meena Khwairakpam
Assistant Professor
Centre for Rural Technology



Dr. Siddhartha Singha
Assistant Professor
Centre for Rural Technology



Dr. Debayan Dhar
Assistant Professor
Design



Dr. Sudip Mitra
Associate Professor
Centre for Rural Technology

National Workshop on NEMS/MEMS and Theranostic Devices NWNTD-2017

The 3rd National Workshop on NEMS/MEMS and Theranostic Devices NWNTD-2017, was organized by Centre for Excellence in Research and Development of Nanoelectronics Theranostic Devices under the aegis of Centre for Nanotechnology at the Indian Institute of Technology Guwahati from 21 to 23 February , 2017. The workshop was targeted to improve the academic awareness on the micro/ nanoelectronic fabrication and characterization in the NE region of the country. About 170 participants, comprising senior research scholars and faculty members from Eastern and North-eastern India, attended the workshop.

The scientific program included Invited Talks, Panel Discussion and Lab Session on sophisticated equipment such as Confocal Microscope; Atomic Force Microscope; Langmuir-Blodgett Trough; Electron Beam Lithography; RF Sputtering; Electrospinning; TEM; Materials Printing System; PHL; Thermal E-beam; DC Probe; Ellipsometer.

There were three sessions, Session-I: Academia for Excellence, Session-II: Engineering of Products and Session-III: Fabrication and Characterisation Laboratory followed by special lectures by distinguished researchers from academia and industry.

Prof. Gautam Biswas, Director, IIT Guwahati, spoke on “Research & Development”; Prof. Dharendra Nath Buragohain, Founder Director IIT, Guwahati, talked on “Genesis of an Institution” and also shared his experiences; Dr. Gautam De, Chief Scientist & Head, Nano-Structured Materials Division & Advanced Materials Characterization Unit CSIR-Central Glass & Ceramic Research, Institute, Kolkata, spoke on “Electrospun mesoporous nanofibers”; Prof. Gundu H. R. Rao, Emeritus Professor, University of Minnesota, US, presented a lecture on “Nanoparticles-based Theranostic”; Prof. Navakanta Bhat, Department of Electrical Communication Engineering & Centre for Nano Science and Engineering (CeNSE) IISc, Bangalore delivered his lecture on the topic “From Science to Product”; Prof. Prabuddha Ganguli, CEO/ Advisor, Vision-IPR, Mumbai, presented a lecture on “Technology Convergence & IPR”; Prof. Saptarshi Majumdar, Department of Chemical Engineering, IIT Hyderabad, spoke on the equipment “Langmuir-Blodgett Trough”, Prof. Chandra Shekhar Sharma, Dept of Chemical Engineering, IIT Hyderabad, delivered his talk on “Lithography & Electrospinning”; Dr. Lopamudra Giri, Assistant Professor IIT, Hyderabad, presented a lecture on “Confocal Microscopy”, Dr. Harsha Bhat-tacharjee (Ophthalmologists), Medical Director & Trustee, Sri Sankaradeva Nethralaya, Guwahati, delivered speech on Medical Institution: Prospects; Dr. Dipankar Das (Ophthalmologists), Senior Consultant, Sri Sankaradeva Nethralaya, Guwahati, delivered his lecture on the topic “Engineering Problems from Ophthalmology”; Mr. Tarun Khurana, Co-founding Partner, Khurana & Khurana Advocates and IP Attorneys, spoke on “Intellectual Property Rights”, Dr. Nandini Bhandaru, Post-Doctoral Researcher, IIT, Kharagpur, delivered a talk on “Atomic Force Microscopy”.



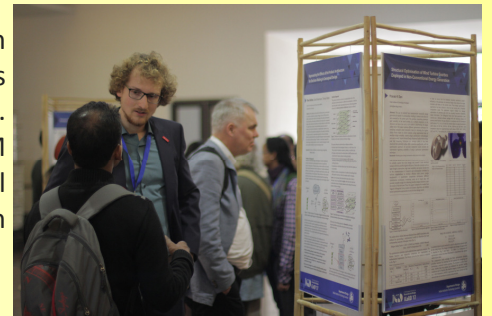
6th International Conference on Research into Design

Department of Design in collaboration with CPDM, IISc had organized 6th International Conference on Research into Design (ICoRD'17) from 9 to 11 January 2017 at IIT Guwahati. The conference was chaired by Prof. Debkumar Chakrabarti, IIT Guwahati and the programme chair was Prof. Amaresh Chakrabarti, IISc Bangalore.

The theme for this year's ICoRD was 'Design for communities'. The conference was held to bring together the international community from diverse areas of design practice, education and research. It aimed to showcase cutting edge research in design to the stakeholders and to provide a platform for interaction, collaboration and development of the community in order for it to take up the challenges to realize the vision. The conference was intended for all stakeholders of design, and in particular for its practitioners, researchers, pupils and educators.

Prof. Gautam Biswas along with Prof. Debkumar Chakrabarti and Prof. Amaresh Chakrabarti inaugurated the conference by watering a *Bakul* sapling, which was later planted outside the Department of Design and named as 'ICoRD tree'. Prof. Amit Ray (founder member of Design departments at IIT Kanpur, IIITDM Jabalpur and Shiv Nadar University) and Prof. Cees de Bont (Dean of the School of Design at The Hong Kong Polytechnic University) were felicitated with an award for outstanding contribution to design science and education.

Over the three days 250 delegates attended the conference including 40 international delegates. Total 130 papers and 47 posters on various topics related to design research were presented during the four sessions of the conference. Each session had given an opportunity for participants to attend one workshop. Seven keynote presentations from eminent international experts were the main highlight of the conference. These presentations unveiled a panorama from past to future of Design education and design research. The doctoral symposium on first day brought all young design researchers together to share the achievements and challenges in design research.



BSBE

Title: Investigations into estrogen regulation of tumor cell derived ECM remodeling genes and the role of key transcription factors.

Funding Agency: DBT.

Principal Investigator: Dr. Anil Mukund Limaye.

Title: Engineering Entomopathogenic Fungi, *Metarhizium anisopliae* and *Beauveria bassiana* to express heterologous insect specific toxins.

Funding Agency: DBT.

Principal Investigator: Dr. Gurvinder Kaur Saini.

Title: Hydrogenogenic carbon monoxide conversion under mesophilic condition using anaerobic granular sludge biomass for biodesulphurization.

Funding Agency: DBT.

Principal Investigator: Prof. Kannan Pakshirajan.

Title: Understanding the mechanism of ABC-type metal sequestering proteins: structure-based novel drug development against human pathogens.

Funding Agency: DBT.

Principal Investigator: Dr. Shankar Prasad Kanaujia.

Title: Development of reverse genetic based recombinant Newcastle disease virus model for understanding immune response in patients infected with Hepatitis C virus.

Funding Agency: DBT.

Principal Investigator: Dr. Sachin Kumar.

Title: Organelle dynamics and cellular ageing in yeast.

Funding Agency: DBT.

Principal Investigator: Dr. Shirisha Nagotu.

Title: Silk based bioengineered small diameter vascular conduits.

Funding Agency: DBT.

Principal Investigator: Dr. Biman B. Mandal.

Title: Investigations into structural organization and curvature-dependent membrane binding of alpha-synuclein.

Funding Agency: DBT.

Principal Investigator: Dr. Nitin Chaudhary.

Title: Novel biological treatment process for water recycle-reuse and energy conservation in refinery industry.

Funding Agency: DST.

Principal Investigator: Prof. Kannan Pakshirajan.

Title: Mapping Yellow Mosaic Virus (YMV) tolerance trait loci in *Vigna radiata* (L) Wilczek using doubled haploids.

Funding Agency: DBT.

Principal Investigator: Prof. Rakhi Chaturvedi.

CHEMISTRY

Title: Synthesis of bent core liquid crystals exhibiting room temperature blue phases.

Funding Agency: SERB.

Principal Investigator: Dr. Srikanth Turlapati, Mentor: Dr. A. S. Achalkumar.

Title: Incorporation of Pendant Lewis Pairs into Secondary Coordination Sphere of the Metal ions: Cooperative Substrate Binding and Activation.

Funding Agency: SERB.

Principal Investigator: Dr. Animesh Das.

Title: Effect of naturally occurring as well as synthetic cyclic molecules on inhibition of beta amyloid aggregation in vivo and in vitro.

Funding Agency: DBT.

Principal Investigator: Dr. Bhubaneswar Mandal.

Title: Development of Novel Inhibitors of AKT: An Unorthodox Approach Targeting the Pleckstrin Homology Domain.

Funding Agency: DBT.

Principal Investigator: Dr. Debasis Manna.

Title: Development of Highly Stable Zr(IV) and Hf(IV) Based Metal-Organic Framework Materials for Applications in Gas Storage, Separation and Chemical Sensing.

Funding Agency: SERB.

Principal Investigator: Dr. Shyam Prasad Biswas.

Title: Stimuli sensitive polymer-biomolecule conjugates as tumor targeted theranostic agents for combination chemotherapy.

Funding Agency: SERB.

Principal Investigator: Dr. Himani Kalita, Mentor: Dr. Parameswar K. Iyer.

Title: Design and synthesis of Triazolyl donor/acceptor unnatural nucleosides and Oligonucleotide probes containing fused aromatic triazolyl base containing nucleosides.

Funding Agency: SERB.

Principal Investigator: Dr. Mohan Kasula; Mentor: Dr. Subhendu S. Bag.

Title: Design and Development of new and promising G-quadruplex stabilizers.

Funding Agency: SERB.

Principal Investigator: Ms. Samiyara Begum, Mentor: Dr. Ashish Kumar Gupta.

Title: Synthesis and application of PEG-tailed Multistimuli-Responsive Smart Hydrogels.

Funding Agency: SERB.

Principal Investigator: Dr. Subhajit Ghosh Mentor: Dr. Debapratim Das.

Title: A computational study for Optimizing Adsorption of Small Molecules Nano-Porous Solids.

Funding Agency: SERB.

Principal Investigator: Dr. Suresh Kumar, Mentor: Dr. C.V. Sastri.

Title: Bioinspired Semi-conductive Self-assembled Peptide-based Nano-Structures and their Applications.

Funding Agency: SERB.

Principal Investigator: Ms. Tanur Sinha, Mentor: Dr. Debapratim Das.

Title: Visible Light Photoredox Catalysis with Transition Metal Complexes: Application towards the Synthesis of Cross-Coupled Precursors for Biologically Relevant Molecules.

Funding Agency: SERB.

Principal Investigator: Dr. Gaurav Shukla, Mentor: Prof. Bhisma K. Patel.

Title: Development of C-H Activation for Medicinally Important Heterocycles Synthesis.

Funding Agency: SERB.

Principal Investigator: Dr. Subhasish Roy, Mentor: Prof. T. Punniyamurthy.

Title: Transition-Metal-Catalyzed C-H Activation/Isonitrile Insertion Reactions for the Synthesis of Diverse Nitrogen Heterocycles.

Funding Agency: SERB.

Principal Investigator: Dr. Vivek Kumar, Mentor: Prof. T. Punniyamurthy.

Title: Synthesis of Mixed-Metal Metal-Organic frameworks and their composites for analytical sensing, photovoltaic and charge storage applications.

Funding Agency: SERB.

Principal Investigator: Dr. Kaustuv Banerjee; Mentor: Dr. Shyam P. Biswas.

Title: Design, Synthesis and Characterization of Functional Columnar Liquid Crystals.

Funding Agency: SERB.

Principal Investigator: Dr. Hemant Kumar Singh, Mentor: Dr. A. S. Achalkumar.

Title: Fluorine and Boron doped pi conjugated organic materials via transition metal catalyzed C-F activation.

Funding Agency: BRNS.

Principal Investigator: Dr. Akshai Kumar Alape Seetharam.

CHEMICAL

Title: Removal of pharmaceutical derivatives present in waste water by advanced oxidation integrating with microstructure and rotating packed bed of grapheme (G)/Graphene oxide (GO)/GO-metal nanocomposites.

Funding Agency: DST.

Principal Investigator: Dr. S. K. Majumder.

Title: Design and Development of Biodegradable Flexible Polymer Bionanocomposites Blown films for Targeted Food Packaging Applications.

Funding Agency: SERB.

Principal Investigator: Dr. Purabi Bhagabati, Mentor: Dr. Vimal Katiyar.

Title: Nanoparticle dispersed deep eutectic solvents as low cost heat transfer fluid for concentrated solar power.

Funding Agency: MHRD.

Principal Investigator: Dr. Tamal Banerjee.

Title: Microfluidic prototypes to characterize rheological behaviours of biological and complex fluids.

Funding Agency: SERB.

Principal Investigator: Dr. Dipankar Bandyopadhyaya.

Title: Low-cost process development for the production of Xylitol from waste agricultural biomass with special focus on delignification and downstream processing.

Funding Agency: DBT.

Principal Investigator: Prof. Kaustubha Mohanty.

CIVIL

Title: Assessment of impact of climate change on crop water requirements and productivity of major crop in Sikkim, Himalayan region of North East India.

Funding Agency: DST.

Principal Investigator: Dr. Manish Kumar Goyal.

Title: Evaluation of Health risk assessment of consuming rice irrigated with contaminated groundwater in Brahmaputra Flood Plains.

Funding Agency: SERB.

Principal Investigator: Dr. Nilotpal Das, Mentor: Dr. Manish Kumar Goyal.

DESIGN

Title: A Mobile-based Virtual Reality Platform for Training and Educating Community Health Workers (CHWs).

Funding Agency: MHRD.

Principal Investigator: Dr. Keyur Sorathia.

Title: A web and mobile phone based service for health administrators, medical officers and health workers to track/monitor progress of Tuberculosis (TB) patients in real-time.

Funding Agency: MHRD.

Principal Investigator: Dr. Keyur Sorathia.

MECHANICAL

Title: Coupled Modelling and Analysis of Gas Foil Bearings with Active Bearing Seating.

Funding Agency: SERB.

Principal Investigator: Prof. S. K. Kakoty.

Title: Investigations on hydrodynamics, flow regimes and heat transfer characteristics of flow boiling in mini- and microchannels.

Funding Agency: SERB.

Principal Investigator: Dr. Manmohan Pandey.

Title: Analytical solution for boundary layer stresses in piezoelectric plates with longitudinally functionally graded materials.

Funding Agency: SERB.

Principal Investigator: Dr. Poonam Kumari.

Title: Preservation of residual hearing by localized delivery of nanoceria based solid solution and composite as an antioxidant in cochlear implants.

Funding Agency: DBT.

Principal Investigator: Dr. S. Kanagaraj.

Title: Thermo-hydrodynamics of evaporating meniscus of conventional fluid and ferrofluids under externally imposed magnetic field inside heated mini-channels.

Funding Agency: SERB.

Principal Investigator: Dr. Balkrishna Mehta.

CLST

Title: NASOSPEECH: Development of Diagnostic system for Severity Assessment of the Disordered Speech.

Funding Agency: DBT.

Principal Investigator: Prof. S. R. M. Prasanna.

Title: ARTICULATE+: A system for automated assessment and rehabilitation of persons with articulation disorders.

Funding Agency: MHRD.

Principal Investigator: Prof. S. R. M. Prasanna.

ENERGY

Title: Experimental investigation of co-gasification of biomass with coal in circulating fluidized bed gasifier for sustainable energy solution.

Funding Agency: SERB.

Principal Investigator: Dr. Kuntal Jana; Mentor: Prof. Pinakeswar Mahanta.

Title: Development of renewable energy technology package for clean power generation in remote utility.

Funding Agency: SERB.

Principal Investigator: Dr. Pankaj Kalita.

RTC

Title: Assessing the bio-availability of nutrients and reduction of heavy metals in soils amended with inorganic and organic wastes in the presence of AM fungi and biochar.

Funding Agency: DBT.

Principal Investigator: Dr. Sudip Mitra.



Night view of the Administrative Building

Photo Credit: Prasanta Deka

Late Professor Subhash C. Mishra completed his PhD in 1997 from IIT Kanpur in Mechanical Engineering). Prof. Mishra joined IIT Guwahati as a Senior Lecturer in December 1996. He became Assistant Professor in April 1997, Associate Professor in May 2000, Professor in October 2004 and Professor (HAG) on 1 November 2010. From April 2003 - April 2005, he was the Faculty In-charge, Training and Placement, from 31 March 2006 to 6 July 2008, he was the Dean of Academic Affairs, and from 1 April 2014 to 30 June 2015, he was the Dean of Alumni Affairs and External Relations of IIT Guwahati.

Prof. Mishra has about 280 research publications in peer reviewed journals and conferences. He was a man of heat transfer with specialization in thermal radiation. Apart from his main research in the area of radiative heat transfer, his research also involved porous media combustion for cheap and clean combustion and use of transient radiative transfer analysis for defect/disease diagnosis. Since 2005, he worked on applications of the lattice Boltzmann method to thermal problems, and in this area, his research group has made notable contributions.

Prof. Mishra is a recipient of the research fellowship of the Alexander von Humboldt Foundation, Germany and a Fellowship by Invitation of the Japan Society for Promotion of Science (JSPS). He is the reviewer of about 50 journals and many conferences in the area of heat transfer. Post PhD, on fellowships/invitations, for about 3 years, he has worked in premier academic institutions in Germany, Japan and Italy, and has done collaborative research. Starting January 2010, Prof. Mishra was one of the four vice presidents of the Indian Society for Heat and Mass Transfer during January 2010 - December 2013. He is a fellow of the Indian National Academy of Engineering, the American Society of Mechanical Engineers and the Institution of Engineers' India. Since 1 April 2014, Prof. Mishra was the INAE Chair Professor.

Prof. Mishra has remained actively involved with the organization of many conferences/symposia/workshops. Prominent among such events have been the 18th National & 7th ISHMT-ASME Heat and Mass Transfer Conference held at IIT Guwahati during 4-6 January 2006 and Indo-German (European) Winter Academies in December 2003, 2007 and 2013. He is one of the Coordinating Professors of the Indo-German (European) Winter Academy series which is held in India every year since December 2002. For the holistic growth of the young generation by understanding science and spirituality in proper perspectives and to see a harmonious society through synthesis of science and spirituality, since 2007, Prof. Mishra is also actively involved with the organization of the conference series - All India Students' Conference on Science and Spiritual Quest.

Prof. Mishra's sad and untimely demise on 8th February 2017 has left a void not only in this Institute, but also in the field of Mechanical Engineering all over the world. He is survived by his wife, one son and a daughter. A condolence meeting was organized on 9 February 2017 in the foyer of the Administrative Building to pray for his departed soul.



Late Joy Ram Deka joined IIT Guwahati on 16th October 1995. He was one of the initial group of employees of this Institute who aided in building this Institute. Through his dedicated and selfless service he secured two promotions to the post of Senior Driver within his seventeen years of service in this Institute. At the time of this untimely demise on 5 March 2017, he is survived by his wife and a son. A condolence meeting was organized on 6 March 2017 in the foyer of the Administrative Building to pray for eternal peace for his departed soul.

May his soul rest in peace.

The Research Conclave is organized by the Student Academic Board (SAB) primarily as an annual celebration of the research activities undertaken at IIT Guwahati. It was first held in 2015, but this year it was on a larger scale with participation by famous acclaimed academicians, entrepreneurs, enthusiasts and scholars from our institutes and all over India.

The objectives of this Research Conclave was to showcase ongoing research activities at IITG as well as other research institutes nearby through posters, model exhibition by research groups from IITG and other institutes from various parts of India, Industry-academia interaction with industrial delegates highlighting their technological requirement, expectations from research institutes, interactive sessions with entrepreneurs to identify the avenues through which IITG can contribute to local firms, businesses and other intermediaries through innovation and research. Further it aimed at creating a prestigious platform to start-ups for exhibiting their products and ideas to industries and academia, technological implementation towards sustainable development, mapping of real-time industrial problems to mitigate them through panel discussion and laboratory visits.

The Research Conclave also aspires to reach out to the younger students from colleges of the region so that they can get an opportunity to experience the academic facilities and ambiance of the institute. The Research Conclave further aimed to bring together the scholars of various institutes of the region by proving a platform for scientific exchanges through poster & model presentations, discussions, workshops and technical sessions. The institute has been very supportive in organizing this event.

The wholehearted support of Prof Gautam Biswas, Director of IIT Guwahati motivated and encouraged the organizing team immensely. The whole team hugely benefitted from the guidance and active involvement of Prof. M. G. P. Prasad, Dean of Academic Affairs and Prof. Anupam Saikia, Associate Dean of Academic Affairs and Chairperson, Students' Academic Board. The organizing team was very admirably led by Dr. A. Kunnumakkara, Faculty Convener and Dr. P. Khanikar, Faculty Co-convener for Research Conclave 2017. Mr. Arup Jyoti Bora, General Secretary of SAB and Student Convener of Research Conclave 2017 was instrumental in working out the detailed planning and implementation besides ensuring involvement of a large number of students in the organizing the event. It is heartening to note that research scholars, cutting across all the disciplines, have joined hands and whole-heartedly participated in the organization of the event. This coming together of the scholars itself can be considered a success.

The conclave this time pulled a crowd of more than 5000 people including students and faculty members from our



institute and almost 45 institutes participating all over India including other IITs, NITs, IISER, regional colleges, research labs. It reached new heights at national level. 500+ posters and 80+ models showcased together to integrate the greatness of science, humanity, technology brought an admirable ground to look through. Few noted speakers include Prof. Amitabh Chattopadhyay who spoke on *How to Write a Scientific Manuscript: Excitements, Challenges and Reality*, Dr. Ganesh Bagler on *Leveraging food for Better Health through Data-driven Approaches*, Mr. S.P. Dhalon *Life Cycle of a Currency*, Prof. M.S. Ananthan *Introduction to Research*, Prof. P. Ganguly who conducted a hands-on workshop on *How to Draft a Patent*. The interaction with the Dabbawalas of Mumbai attracted a huge number of students. Numerous other workshops like Aero-modelling, LaTeX and MATLAB in collaboration with MESA were a great success in the fully-packed rooms of Conference Centre. Delegates from Bhutan embraced the events by presenting their research as well.

Further support from Dean of Outreach Education Program, Prof. Saurabh Basu made sure that the local colleges and schools get inspired by attending the event. The Gymkhana Council, IIT Guwahati offered their support in making arrangements all around the campus. Teams from technical clubs of IIT Guwahati demonstrated models that amazed visitors. The awards includes cash, e-book coupons, souvenir, medals etc, and they were sponsored by noted industries of research. Few of them are Aurea Biolabs, ThermoFisher Scientific, Molbiogen, Springer, ZwickRoell, NRL, ONGC, Zaloni and Central bank of India.

This year the Research Conclave was organised with greater experience, energy, vigour and ambition of making it bigger than the previous editions. We hope that the support of all the faculty members, staff and students will make the Research Conclave planned for 2018 even more successful. The Students' Academic Board is looking forward to the campus community for more collaboration and participation.



Patent

Inventor: Naresh Mohan, Senthil Kumar Sivaprakasam, and R. Shankaramurthy; **Title:** Design and Development of Temperature Control strategy in Fermentation Calorimeter to reduce disturbances due to ambient temperature fluctuations over heat flow signal.

Inventor: Senthil Kumar Sivaprakasam, B. Anand, Katla Srikanth and Yoganand K. N. R.; **Title:** Production of

glycosylated human interferon alpha2b in glycoengineered Pichiapastoris.

Inventor: Manish Kumar and Karukriti Kaushik Ghosh; **Title:** Host-restricted Protein LP46 of Leptospira interrogans is a potential candidate for leptospirosis diagnosis in humans and bovines.



Prof. Anil K. Saikia, Dept. of Chemistry receiving the CRSI Bronze Medal from Dr. Sourav Pal, President, CRSI.

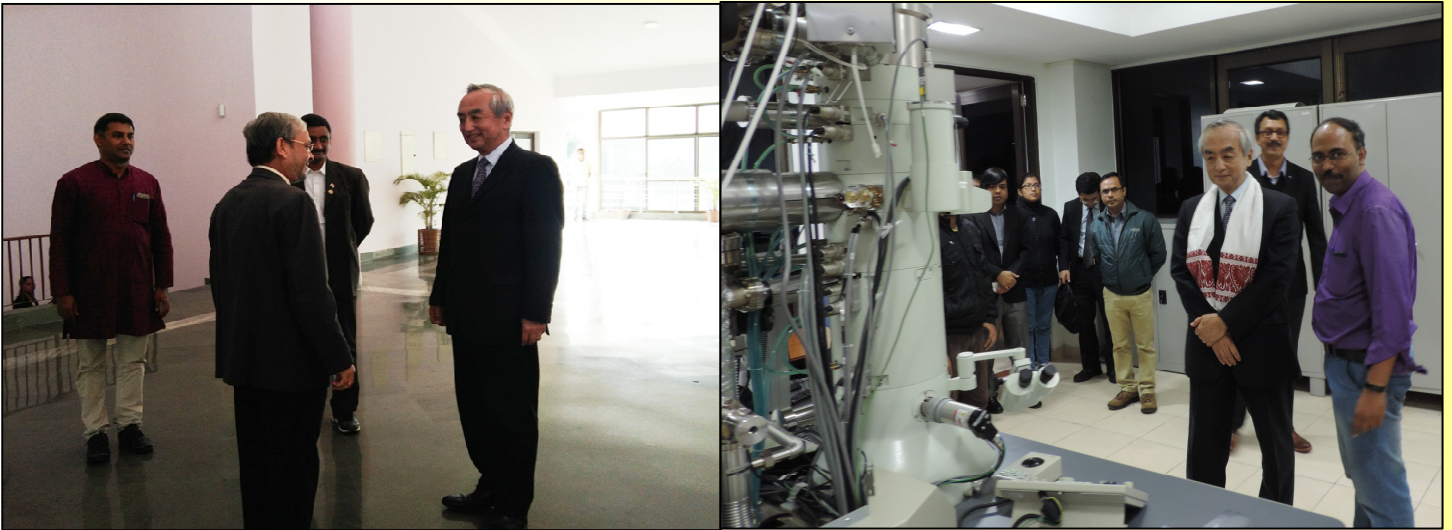
An industry-academia research partnership was launched under the aegis of IIT Guwahati to provide state-of-the-art facilities in areas of cognitive computing, statistical machine learning and artificial intelligence.

The IIT-G-based R&D unit “Kovid Labs” of the Kovid Group of Hyderabad would promote collaboration with faculty members and research scholars leveraging the resources and expertise of the institute towards development of an advanced cognitive computing platform.

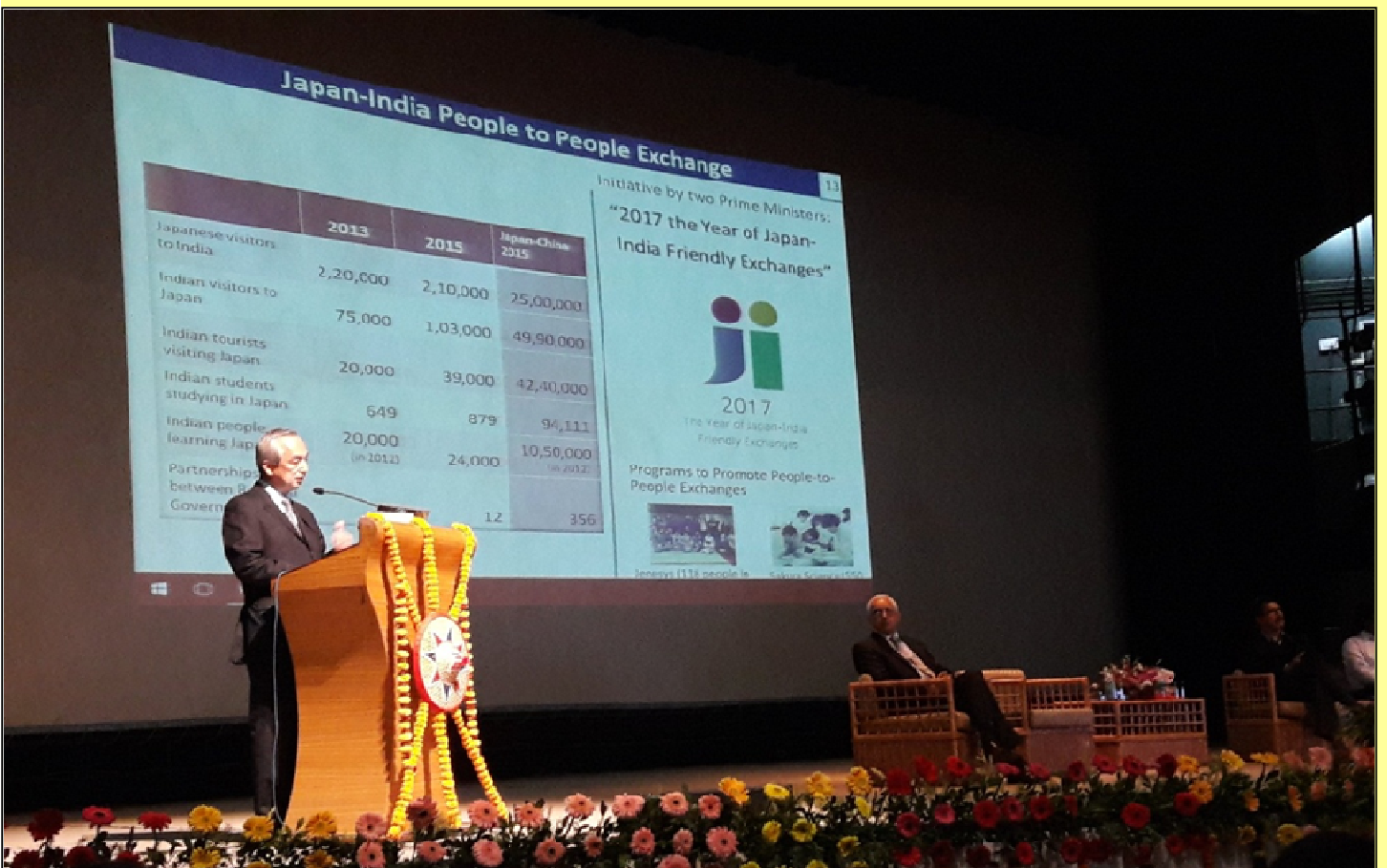
Kovid Labs was inaugurated recently by IIT-Guwahati Director Prof Gautam in the presence of Prof S R M Prasanna, Dean R&D of the Institute and Global CEO of Kovid Group Nixon Patel.



Visit of the Japanese Ambassador



His Excellency, Mr. Kenji Hiramatsu, the honorable Ambassador of Japan to India being welcomed by Prof. Gautam-Biuswas, Director IIT Guwahati on his visit to the Campus on 21 January, 2017. Mr. Kenji Hiramatsu, the Ambassador Extraordinary & Plenipotentiary, Embassy of Japan visited the Central Instruments Facility (CIF) of IIT Guwahati.



On the occasion, His Excellency, Mr. Kenji Hiramatsu, the honorable Ambassador of Japan to India addressed students and faculty of IIT Guwahati on Indo-Japanese bilateral relations and the prospects of academic and research collaborations between India and Japan.

20th CRSI National Symposium in Chemistry 2017

The 20th CRSI National Symposium in Chemistry 2017 was jointly co-organized by the Gauhati University, Indian Institute of Technology Guwahati and Tezpur University from 2-5 February 2017. CRSI National Symposium in Chemistry (CRSI-NSC) is a series of highly successful and one of the best attended symposia in chemistry that started in 1999 at IISC, Bangalore. The symposium has grown in size over the years and has attracted over 1000 partici-



pants in recent years, thus transforming itself into the most important annual Chemistry Symposium in India. The American Chemical Society and Royal Society of Chemistry were active partners in this conference and they encouraged students by presenting various awards.

Gauhati University hosted this CRSI National Symposium for the first time in North-East region of India. The scientific program consisting of plenary lectures, various medal lectures, invited lectures and poster presentations was attended by large number chemistry fraternity across the nation and abroad as well. Chemical Research Society of India (CRSI) established in 1999 as part of the 50th Anniversary of the Country's Independence has been actively promoting



Chemistry across the country by organizing these meetings annually. Presently, the CRSI represents around 1800 lifetime members, who participate in the study, practice, teaching and promotion of chemistry. The main objectives of the CRSI is to recognize, promote and foster talent in chemistry and chemical sciences and to improve the quality of chemical education at all levels. For this purpose, the CRSI organizes conferences, seminars, workshops, symposia and other related programs to facilitate and promote research in all branches of chemistry.



Awards in 20th CRSI National Symposium in Chemistry 2017 from IITG



Niranjan Meher, Research Scholar with Dr. Deeksha Gupta, ACS Omega

Mohammad Shaad Ansari

Journal of Chemical Sciences, Springer Best Poster Award

Title: Rational design of hierarchical ZnO superstructures for efficient charge transfer: mechanistic and photovoltaic studies of hollow, mesoporous, cage-like nanostructures with compacted 1D building blocks.

Niranjan Meher

ACS Omega Best Poster Award

Title: Aggregation induced emission enhancement and growth of naphthalimide nanoribbons via J-aggregation: insight into disaggregation induced unfolding and detection of ferritin at the nanomolar level.

Prof. V. S. Moholkar, Chemical Engineering, and his research team comprising of Mr. Sushobhan Pradhan, Mr. Arup Jyoti Borah, Mr. Pritam Dikshit and Mr. Maneesh Poddar have won the 7th National Technology Innovation Awards 2016-17 in the Award Category - "Innovation in Polymeric Material" and the Innovation Title - "Production and Characterization of Biopolymer Polyhydroxybutyrate (PHB) from Terrestrial Invasive Weeds". The award comprises of a citation, plaque and cash prize of Rs. 2 lakh.

In the picture seen here, Prof. Moholkar receiving the award from Shri Ananth kumar, hon'ble Union Minister for Chemical and Fertilizers, Govt. of India, at a function held at Vigyan Bhawan in New Delhi on 1 March, 2017.



Dr. Manish Kumar Goyal, Dept. of Civil Engineering, was awarded the ISTE-SGSITS National Award for "Best Research Work by the Young Teachers of Engineering Colleges-2016".

Prof. Arupjyoti Saikia, Dept. of Humanities and Social Sciences, IIT Guwahati, has been awarded the prestigious New India Foundation Fellowship for 2017.

Dr. Debasish Borah, Dept. of Physics won the first ever State Science Award, Assam in the segment "Young Scientist/Innovator" for remarkable contributions in his field of study.

Dr. Shyam P. Biswas, Dept. of Chemistry, received Young Scientist Award by Chemical Research Society of India (CRSI) in February 2017



A thumb imprint is all that is required for detecting hyper bilirubinemia, a condition in which the amount of bilirubin in the blood is in excess and turns the sclera of the eye, urine and even the skin yellow. Hyper bilirubinemia is commonly seen in people with jaundice and newborns; a person is said to have jaundice when the bilirubin concentration in the blood typically exceeds 12 ppm in adults and 50 ppm in a newborn.

Researchers at the IIT Guwahati have tested the sensitivity and specificity of a simple, quick, point-of-care test for detecting excess bilirubin in patients with jaundice.

While visual observation of yellow colour of the sclera and/or urine is routine for detecting jaundice, it is confirmed by a blood test. A team led by Prof. Arun Chattopadhyay from the Department of Chemistry and Centre for Nanotechnology, IIT Guwahati used thumb imprints to detect hyper bilirubinemia. The results were published in the journal *Scientific Reports*.

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