R&D NEWSLETTER

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INDIAN INSTITUTE OF TECHNOLOGY, GUWAHATI

Director's Vision towards evolution of R&D at IIT Guwahati

Prof. T. G. Sitharam
(Hon'ble Director, IITG)

"***In order to achieve impeccable success, indulging in continuous R&D is a must***"

IIT Guwahati, the sixth member of IIT fraternity, was established in the year 1994 and has completed 28 years of its glorious existence. It is a matter of extreme pride for IIT Guwahati to have achieved the position of being the only academic institution from India to occupy a place among the top 100 world universities, under 50 years of age, published by London based Times Higher Education (THE) in the year 2014. As per the QS World University Rankings 2023, IIT Guwahati is the only technical institute from the North-Eastern region to be placed among the top 10 engineering institutes of the country in NIRF rankings. It has ranked 7th in the engineering category by NIRF 2022 and 8th in the overall category. The institute has been ranked at the same position (7th) by Outlook India too. IIT Guwahati has been also ranked 2nd in the 'Swachhata Ranking' conducted by the Govt. of India. Recently in October 2022, a total of 21 researchers and faculty members from the Indian Institute of Technology, Guwahati featured in the list of the world's top two percent of scientists' according to the list created by US' Stanford University.

At present, the Institute has eleven Departments, seven inter-disciplinary Academic Centers, five Extramural Centers and five Schools covering all major engineering, science, healthcare, management and humanities disciplines, offering B.Tech., B.Des., M.A., M.Des., M.Tech., M.Sc., MBA and Ph.D. programmes. IIT Guwahati has been able to witness a rapid expansion in terms of building up of world class infrastructure for carrying out advanced research and equipping with state-of-the-art scientific and engineering instruments.

The vision of IITG is to become a preferred destination of seeking best science, engineering and technology education and to be recognized internationally for excellence in research, pursuit for developmental activities and deep concern for students' care. An important feature of academic excellence is the continuous replenishment of ideas and creation of new areas of research and innovation, attracting organizations seeking collaboration in education, research and development as well as product development. In a fast changing world, keeping pace with the ever-increasing number of areas of research and application poses a major challenge to this Institute. IIT Guwahati is trying to augment the research initiatives in all the areas of Sciences and Technology in general and in Nano-science & technology, Bioengineering and Data sciences in particular. Initiation of research in some of the cutting edge areas of Biological sciences namely Genomics, Developmental Biology, Health Care and Bioinformatics, Flexible Electronics, Advanced Functional Materials, Sustainable Polymers, Water Resources and Management is a testament to the aspiration of IIT Guwahati to excel in research. The Scope of Environmental Science and Data science is inherently interdisciplinary and expanding rapidly. Recognizing the challenges for environmentally sustainable development, IIT Guwahati emphasizes an interdisciplinary research paradigm in Energy and Environment to solve problems that have important societal impact. It is indeed a challenging task to match the ever-increasing need for funds and providing infrastructure for these emerging and futuristic research areas, and IIT Guwahati has resolutely taken this challenge in its stride.

Post the COVID-19 scenario, there is a pressing need to shift to Translational Research. Applying basic science techniques for answering healthcare and clinically relevant questions is important. The Research and Development Office is the wing of the Institute which facilitates, channelizes, records, and regulates as per the Institute rules all the sponsored research projects and consultancy works in the Institute. For IIT Guwahati, 2020 has been a year of innovations related to the Covid-19 pandemic, realigning the way the Institute functions according to the new normal and serving the nation at large. IIT Guwahati had put in every effort to overcome all unprecedented challenges of 2020: From virtual lessons to ensure continuity of learning for students, to virtual-reality based convocation addressed by Prime Minister Modi wherein 1803 students graduated. The institute conducted all its activities and functions online this year, which included virtual learning, virtual convocation, and virtual placements and internship programmes at the time of a pandemic. The institute also introduced some new courses such as MS (Research) in E-mobility and a course on Sustainable Development Goals (SDGs) 2030 in the Bachelor of Technology (B.Tech) curriculum from the academic year 2020-2021.

IIT Guwahati has been in the forefront in the fight to stop the spread of novel coronavirus and has been providing scientific and technological support, an extension of sophisticated instrument facilities as well as involved in the immediate development of life-saving equipment to Assam State and Guwahati Medical College and Hospital.

IIT Guwahati joined hands with RR Animal Healthcare and supplied lakhs of ICMR approved VTM kits, RNA isolation kits to National Health Mission, Assam, and across the country and had also developed RT-PCR kits. Rapid antigen kits have also been developed by the institute to help the cause of Atmanirbhar Bharat Abhiyaan, a first for any educational institute. So, the Pandemic in fact provided several R&D opportunities to this ever learning, evolving and growing Institute.

Another major support by IIT G for research is in terms of its Central Instrumentation Facility. Highly sophisticated instrument facilities are made available on paid basis to outsiders in order to cater the need for cutting edge research. Institute dedicatedly established a North Eastern Centre for biological Sciences and Healthcare Engineering facility with the mission to raise the quality of research in biological sciences and healthcare engineering in the entire North-Eastern (NE) India. The outreach program intends to provide an exposure and training to the researchers in NE region to the latest advances in modern day biological research and healthcare engineering. This initiative will have a positive impact on the future research in North East. The endeavours for a High performance-computing centre, a research centre for Computer Security are the other goals in this direction. IIT Guwahati also plans to retain its excellence and reputation in the area of Sustainable Polymers. The Centre of Excellence in Sustainable Polymers integrates sustainability issues that focus on the science and technology of polymeric materials into research, education, and products. High performance computing and Computer Security are also areas under focus. Such initiatives will take IIT Guwahati to greater heights similar to that enjoyed by the top Universities in the world. The new initiatives in the Biological Sciences, Experimental Physics, Environmental Studies, Computational Mechanics, Quantum Computing, Nano-Technology, Theranostics augur well for this spirit of excellence in this Institute. In the years to come, IIT Guwahati, we hope, would become the ultimate destination of scholars and scientists from the world over.

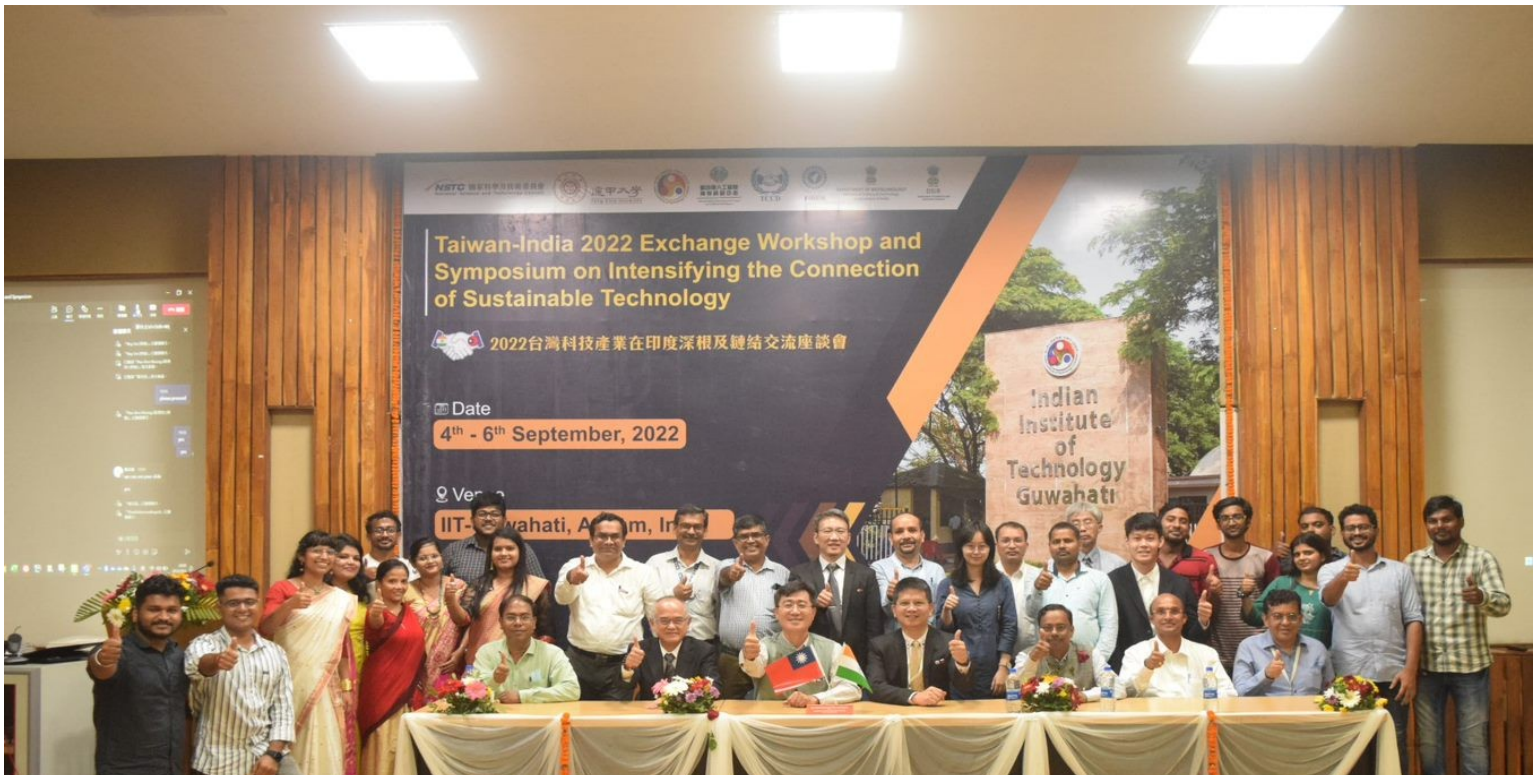
As India marked 75 years of independence and celebrated Azadi Ka Amrit Mahotsav, Indian Institute of Technology Guwahati organized “The North-Eastern Research Conclave” from 20-22nd May 2022. In this, mass awareness was created on Research and Innovation for Sustainable Society. There was knowledge exchange and dissemination leading to establishing centres of Excellences in Research and Innovation. The Conclave brought together over 5000 participants with a footfall of more than 15000 participants. It revolutionized the R&D road map of all the NE states through various dissemination of policies which will benefit the sustainable development of all NE states. Multiple collaborations have been established for the benefit of the Institute in particular and the North East in general.

IIT Guwahati had recently hosted the first Ayushman Bharat Digital Mission (ABDM) workshop with other north-eastern states to understand the challenges faced by the states and support them to prepare a future roadmap. The state mission directors and their representatives from Assam, Meghalaya, Manipur, Mizoram, Arunachal Pradesh, Nagaland, Tripura and Sikkim participated in this workshop and showcased their way forward and support required from the National Health Authority, Government of India.

The challenge for the Institute is to create the optimum research eco system and enhance the ambiance where each individual would be encouraged for performing cutting edge research and development. In particular, to promote quality research, the Institute is planning to identify and reward excellence in research where active participation of majority of the faculty members to attract research funding would improve research accomplishments. The patents and publications, technology transfers, encouraging entrepreneurship would be valued most while taking a stock of the human inventory. While IIT Guwahati embarks on the next phase of its journey, the society has greater expectations from this institute of higher learning. Aligning with its vision and mission, IIT Guwahati would always remain committed to student growth, social upliftment and generate knowledge and resources for the benefit of future generations while instilling a sense of pride and belongingness while fulfilling the aspirations of all stake holders.

Since its inception and focusing on arranging the basic Infrastructure facilities, IIT Guwahati has come a long way forward with several sponsored projects and MoUs/ MoAs to its credit. The Industries and other academic institutes are looking forward to working with us on several forefronts. I hope, that the continuous and meticulous efforts of Faculty and Researchers are ever rewarded and the Institute gains much acknowledged fame all through.

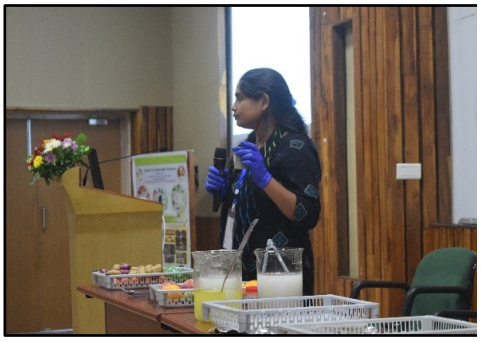
Taiwan-India 2022 Exchange Workshop and Symposium on intensifying the connection of Sustainable Technology (TIEWS 2022)

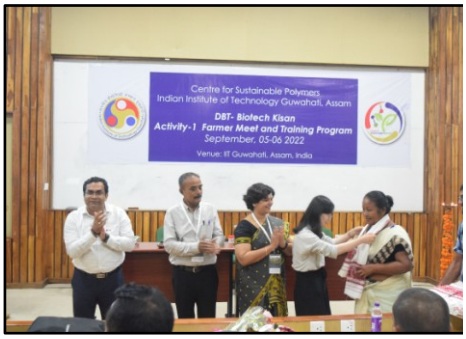


Highlights

1. **Inaugural Ceremony:** The Chief guest for the event held on September 5th-6th, 2022 was Honourable Director, IIT Guwahati, Prof. T.G. Sitharam and the Guest of Honour for the event was Shri. Lakshmanan S., IAS, Secretary to the Govt. of Assam, Industries, Commerce & Public Enterprises Department, Assam. The other dignitaries present on the dais were Prof. Chin-Tsan Wang, Counsellor & Director, Science and Technology Division, Taipei Economic and Cultural Centre in India, National Science and Technology Council, R.O.C. (Taiwan); Dr. Sivaji Chadaram, Vice Chancellor, Saveetha Institute of Medical and Technical Sciences, India; Prof. Mihir Kumar Purkait, Dean, Alumni and External Relations, IIT Guwahati, India and Prof. Vimal Katiyar, Dean, Research and Development, IIT Guwahati and Convenor for the event.
2. **Brainstorming Session & Panel Discussion on Sustainable Manufacturing (Role of IITG-CRTDH for Industries):** Around 30-40 delegates from industries came for this Brainstorming session. The main idea behind conducting this session was the need for setting up a Centre for possible interaction between academia, industries and government agencies. This Centre would lead to industrial productivity by understanding the needs of the manufacturing industries and would improve their R&D infrastructure. This would also create an ecosystem for sustainable manufacturing in Assam. Some skill development programs for industries can also be started.
3. **Special farmer education session on role of sustainable polymers:** a special 2-day training session was organized for farmers from different regions of rural Guwahati. This session was conducted under the aegis of DBT-Biotech Kisan Hub at IIT Guwahati. Prof. Vimal Katiyar explained the importance of edible coating and encouraged farmers to involve sustainable biodegradable polymers in their farming practice. Dr. Dhirendra Nath Kalita also talked about biopolymer coating on fresh produce. He also laid emphasis on opting the use of sustainable and advanced technology that can help farmers economically. Dr. Madhusmita Kataky introduced farmers with various government schemes and the role of Krishi Vigyan Kendra in nurturing and providing training to farmers in different agricultural aspects. Live demonstration was performed by Ms. Mandavi Goswami, Research Scholar, and Centre for Sustainable Polymers, IIT Guwahati on method of Biopolymer based edible coating on fruits and vegetables.

Taiwan-India 2022 Exchange Workshop and Symposium on intensifying the connection of Sustainable Technology (TIEWS 2022)

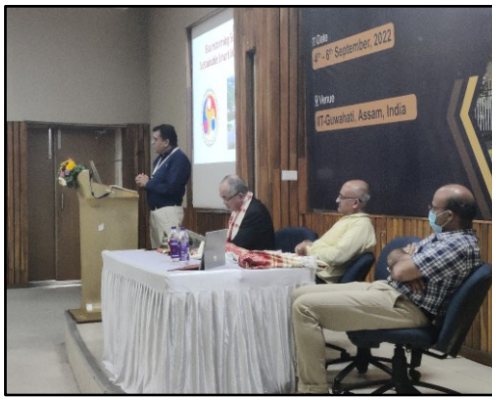




Special farmer education session on role of sustainable polymers

On Day 1, Chief Guest Ms. Ellie Chiang, Assistant Director, Taipei Economic & Cultural Centre, Taiwan delivered an interesting talk for farmers on the edible coating materials for the improvement of shelf-life of the vegetables and fruits. In the opening ceremony of Farmers Education Activity, noted dignitaries from industry and academia were witnessed. The major highlight of the event was presence of 60 farmers from different regions of Rural Guwahati. Eminent speakers such as Prof. Pralay Maiti, School of Material Science and Technology, IIT BHU, India, Dr. Tabli Ghosh, Assistant Professor, Tezpur University were invited to give talk on Introduction to polymer, Edible food packaging, and Introduction to edible coating of food and vegetables respectively. Live demonstration was performed by Ms. Mandavi Goswami, Research Scholar, and Centre for Sustainable Polymers, IIT Guwahati on method of Biopolymer based edible coating on fruits and vegetables.

On Day 2, the opening of session was initiated by Prof. Vimal Katiyar, convener Kisan-Biotech Program and Dean (R&D), IIT Guwahati, Assam. The Chair Person for the session was Dr. Dhirendra Nath Kalita, KVK, Kamrup, Guwahati who addressed and enlightened the farmers about the mushroom cultivation and ensured them to provide practical knowledge of mushroom cultivation at KVK, Kamrup. Two external expert speakers Prof. Ram Sharan Singh, Chemical Engineering Department, IIT- BHU, Varanasi, India and Dr. Madhusmita Kataky, Mushroom Specialist, KVK, Kamrup also delivered their talk on mushroom waste management. Replacement of PP bags by biodegradable bags was focused and methods of spawn production to cultivation of various varieties of mushroom, value addition of mushroom, compost preparation from mushroom waste, preservation and shelf-life enhancement of mushroom respectively were discussed. Live demonstration of mushroom cultivation and biodegradable bag prepared by Centre for Sustainable Polymers was carried out by Research Scholar from Centre for Sustainable Polymers, IIT Guwahati, and Assam. All farmer delegates were then felicitated by Phulam Gamosa and were provided Travelling Allowance by the Project Biotech-Kisan, Department of Biotechnology, and Government of India.

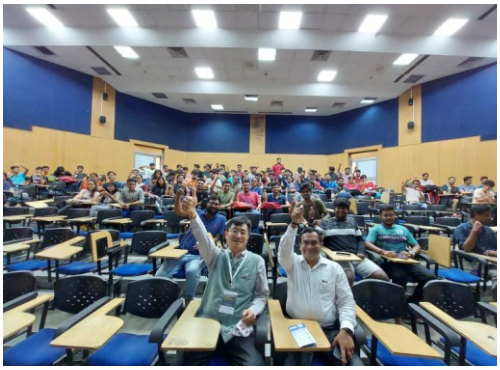


Brainstorming Session & Panel Discussion on Sustainable Manufacturing (Role of IITG-CRTDH for Industries)

Points of Discussion in context of North-Eastern Region of India were:

- Identification of prominent manufacturing areas
- Requirement of manufacturing facilities for industries
- Type of testing and certification requirement from the industries
- Industries in which automation, internet of things is needed
- Kind of maintenance services required for the industries

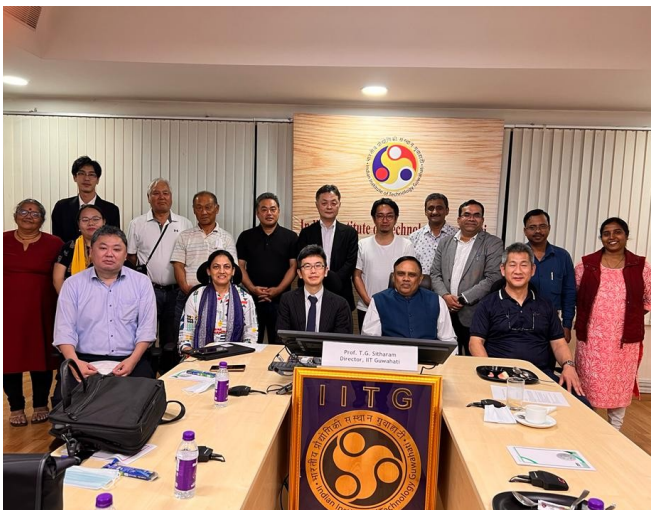
It was discussed that there should be a delegation to visit industries by IIT Team of experts so that they can help them for their problems. Multi-industry collaborations should be promoted and there should be one common pool where all industries can use the facility.



On-Site Visiting Session

Visiting session was organized to Centre for Sustainable Polymers and Nano Technology Centre. There was also a visit to one of the classrooms where Prof. Chin-Tsan Wang conducted a session with students regarding career opportunities in Taiwan and also invited them to study and work in Taiwan.

Other Important Events



Special Meeting with Japanese Food & Agriculture Delegation

The agenda behind the meeting held on November 21st, 2022 was to identify potential of human resource and agricultural practice in North East Region of India. Faculty and representative from School of Agro & Rural Technology, Chemistry and R&D participated in the meeting.

The Japanese delegation members were:

1. Mr. Sakaue Takashi - Managing Director - Sakaue Pvt. Ltd.
2. Mr. Hayakawa Shogo - Director General - Yokohama Farm Pvt. Ltd.
3. Mr. Uemura Kotaro - Managing Director - Passios Pvt. Ltd.
4. Mr. Seki Haruo - Managing Director - Act Farm Pvt. Ltd.
5. Mr. Takemura Masayoshi - Managing Director - Sanwa Agribusiness Pvt. Ltd.
6. Mr. Takasu Atsutoshi - Director - Japan Agricultural Corporation Association
7. Mr. Kurotani Shin - Director - National Chamber of Agriculture
8. Mr. Yasumiya Ryo - Official, MAFF

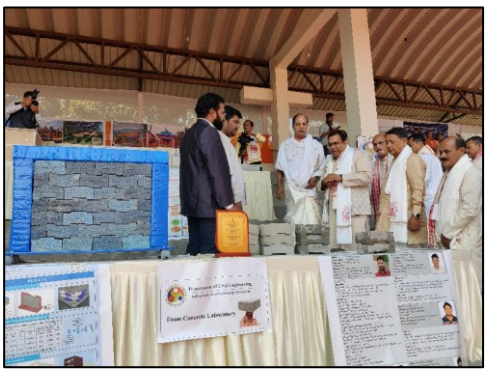
Participation in IInvenTiv 2022 (An All-IIT R&D Fair)

IInvenTiv 2022, an all-IIT R&D Fair was organized on October 14-15th, 2022 at IIT Delhi under the guidance of Ministry of Education with Honorable Union Minister of Education, Skill Development and Entrepreneurship, Shri Dharmendra Pradhan as Patron-in-Chief. Four PIs from IIT Guwahati were selected to participate in the event.

The PIs whose projects were presented at the fair were:

1. Prof. S. Kanagaraj- Deptt. of Mechanical Engg. (Affordable Lower Limb Prosthesis)
2. Prof. R. Swaminathan- Deptt. of Biosciences & Bioengineering (Low-cost indigenous Fluorometer for Bio-Analytical laboratories)
3. Prof. P.K. Iyer- Deptt. of Chemistry (Low-cost hand-held device to detect bacteria)
4. Prof. Vimal Katiyar- Deptt. of Chemical Engg. (Development of India's First Biodegradable Plastic)

This was first-of-its-kind event that showcased 75 indigenous research, development, and innovations projects of IITs to commemorate 75 years of India's Independence. The aim was to inculcate "innovation-driven" outlook and encouraging development of affordable technologies in line with Make-in-India initiatives.



R&D Exhibition at Namghar Samaroh- Auni Ati Satra 2022

- Namghar Samaroh, a three-day Socio-Cultural Programme was organized at Auni Ati Satra, North Guwahati from December 02 to 04, 2022 under the leadership of Dr. Sri Pitambar Dev Goswami, the Satradhikar
- IIT Guwahati was invited for organizing an R&D Exhibition at the Samaroh
- Five Departments/ Centres from IIT G presented their research activities at the Exhibition:
  - Civil Engineering Materials & Construction Management from Department of Civil Engineering
  - Centre for Sustainable Polymers
  - 3D Printing from Department of Mechanical Engineering
  - Water treatment and Membrane technologies from Department of Chemical Engineering
  - Robotics Club
- Prof. Vimal Katiyar, Dean, R&D was invited as the Chief Guest to inaugurate the Exhibition

Signing of MoU with Industry under Common Research & Technology Development Hub (CRTDH)

CRTDH at IIT Guwahati is dedicated for development of Biodegradable Plastics and related downstream Technologies for MSME's Industrial Commercialization in Sustainable Packaging; Healthcare Products; to Incubate innovative entrepreneurs to Promote Sustainable Materials and Eco-friendly processes for MSMEs.

To fulfil the goal to empower Industries with sustainable solutions in the area of biodegradable polymers, CRTDH at IITG exchanged an MoU in presence of DG, CSIR with various industries on November 17th, 2022 at IITR, Lucknow during CRTDH Conclave organized by DSIR. Seven Industries with different portfolios that exchanged the MoU with CRTDH at IIT Guwahati were:

1. Deep Polymers Limited, Ahmedabad, Gujarat, India

Company Profile: Deep Polymers Private limited, is currently engaged in manufacturing and suppling a whole range of products like conventional polymer Masterbatches compatible with any plastic material and any process. i.e. injection moulding, blow moulding, extrusion, rotation moulding etc. These polymers act as anti-fibrillating, anti-blocks, anti-slip agents.

2. Pilon Engineering Pvt Ltd from Pune Maharashtra

Pilon Engg. is committed to deliver a state-of-the-art Turnkey solution for the research and development needs along with specific process system as per customer requirements. From pilot plants to fully scalable modular systems, oil and engineering promotes the best solutions to enhance your process technology to market for commercialisation within your budgeted framework.

3. Biojagat Private Limited from Uttar Pradesh, India.

Biojagat Private Limited Company is currently engaged in cultivation of mushroom and its value-added products.

4. DECCO WW, a subsidiary of UPL Limited from Vapi, Gujarat, India.

India's largest agriculture solutions provider and also provide products and services across the world from preharvest to postharvest covering the entire agri value chain. Company's focus on speciality applications and locally tailored applications in high-growth agricultural regions provide us with a higher competitive advantage while maintaining lower exposure to commodity grain prices. Speciality applications include crop protection solutions for niche and speciality crops; products for underserved or hard-to-control pests; alternative application methods like seed and soil applied technologies; and bio-based products.

5. TechnoClean engineers Pvt. Ltd. From New Delhi

Company has entered to develop biodegradable solutions for the eco-friendly society.

6. Baracudda Technologies from Haryana

Barracuda Technologies Private Limited is involved in Growing of crops; market gardening; horticulture

7. Life Essentials Personal Care Private Limited, Mumbai

Company has many portfolios mainly on Healthcare.

MoU/ MoA

- **MoU between International Academy of Environmental Sanitation and Public Health (IAESPH) and Indian Institute of Technology Guwahati: signed on 23.08.2022 for the project from various funding agencies including National Jal Jeevan Mission, drinking and wastewater, WASH, Swachh Bharat Mission (SBM) and renewable energy etc. and for providing better informed and skilled human resource for managing water, waste water, bio energy generation from waste and waste water for 5 years. Initiated by Dr. Mihir Kumar Purkait, Dept. of Chemical Engineering, IITG.**
- **MoA between Belarusian State University of Informatics and Radioelectronics and Indian Institute of Technology Guwahati: signed on 02.09.2022 on Cooperation, Protection and use of Intellectual Property Rights for the project titled "Design and Development of Metal Oxide – semiconductor heterojunction photoelectrochemical systems for green hydrogen productions". Initiated by Dr. P.K. Iyer, Dept. of Chemistry, IITG.**
- **MoU between Saveetha Institute of Medical and Technical Sciences (SIMATS) and Centre for Nanotechnology, IIT Guwahati: signed on 07.09.2022 for the project titled "Smart Wearable Advanced Nanosensing Technologies in Health ASICs". Initiated by Dr. Akshai Kumar Alape Seetharam, Centre for Nanotechnology, IITG.**
- **MoA between Department of Biotechnology (DBT) and IIT Guwahati: signed on 18.10.2022 for the project titled "Establising Efficient Platform for Genetic Engineering in India Tea" for 2 years. Initiated by Dr. Lingaraj Sahoo, Dept. of Bioscience and Bioengineering, IITG.**
- **Sponsored Research Agreement between Ekaterra Research and Development India Private Limited and Indian Institute of Technology Guwahati: signed on 14.11.2022 for the project titled "Process development for tea Aroma recovery and concentration". Initiated by Dr. Senthilmurugan Subbiah, Dept. of Chemical Engineering, IITG.**
- **MoA between Oil India Limited and Indian Institute of Technology Guwahati: signed on 12.10.2022 for the project titled "To develop a simulation model of the drilling rigs of OIL and verify using the data collected from drilling rigs of OIL". Initiated by Dr. Shabari Nath, Dept. of Electronics & Electrical Engineering, IITG.**
- **MoA between DBT and IIT Guwahati: signed on 18.10.2022 for the project titled "DBT pan IIT Centre for Bioenergy Phase II" for 5 years. Initiated by Dr. Arun Goyal and Dr. Debasis Das, Dept. of Biosciences and Bioengineering, IITG.**
- **MoU between Guwahati Planetarium Management Society, Department of Science & Technology, Govt. of Assam and Indian Institute of Technology Guwahati: signed on 04.11.2022 for the project titled "Development of an Educational Metaverse, in line with existing VR Zone at the Guwahati Planetarium" for 18 months. Initiated by Dr. Keyur Sorathia, Dept. of Design, IITG.**

Research Projects

- **3D Printed Guard room**
  PI: Dr. Biranchi Narayan Panda
  Duration: 1 month

- **Development of pigmented rice based antioxidant-rich traditional and innovative food products as adaptogens for reducing oxidative stress**
  PI: Dr. Siddhartha Singha
  Duration: 36 months
- **Development of animal feed products from Eri Silkworm**
  PI: Dr. Utpal Bora
  Duration: 36 months

- **Developing Next-generation High Energy Density Sodium Metal Batteries using Dendrite Free and Safer Sodium Metal Anode**
  PI: Dr. Ranjith Thangavel
  Duration: 24 months
- **Development of High molecular weight Aqueous Viscoelastic Polymer composites for enhanced oil recovery from matured Indian reservoir**
  PI: Dr. Abhijit Kakati
  Funding Agency: SERB
  Duration: 24 months
- **Experimental and Numerical Investigation for Miscible Carbon Dioxide-Enhanced Oil Recovery (CO_2-EOR) and Simultaneous Geo-Sequestration in North-East India**
  PI: Dr. Sumit Kumar
  Funding Agency: SERB
  Duration: 24 months
- **Inter-organelle communications: deciphering their physiological relevance in Parkinson's disease model**
  PI: Dr. Shirisha Nagotu
  Funding Agency: SERB
  Duration: 36 months
- **Generation of non-diverging circular airy orbital angular momentum beams for next generation wireless communication technology**
  PI: Dr. Ashwini Sawant
  Duration: 24 months
- **Understanding multiphase flow in curved tubular reactors in the presence of diffusion and reaction**
  PI: Dr. Raghvendra Gupta
  Duration: 36 months
- **Mathematical modelling of flow and transport in porous media: A homogenization approach**
  PI: Dr. Satyajit Pramanik
  Duration: 24 months
- **Advanced imaging methods for fatty liver diagnosis with ultrasound elastography**
  PI: Dr. Manish Bhatt
  Duration: 24 months
- **Characterizing the functional role of the novel dopaminergic transmembrane protein p20MANI (Myelin-Associated Neurite Inhibitor)**
  PI: Dr. Subrata Pramanik
  Duration: 24 months
- **Edge Computing Enabled Active Distribution Network Monitoring Considering Cyber-Threats**
  PI: Dr. Sreenath J.G.
  Duration: 24 months
- **Secure and Reliable Techniques for Deep Learning-based 5G and Beyond Wireless Systems**
  PI: Dr. Manoj B.R.
  Duration: 24 months
- **Understanding the anatomy of an aseismically creeping fault: A case study from the Churachandpur-Mao fault in the Indo-Burma Wedge**
  PI: Dr. Sayantan Chakraborty
  Duration: 24 months
- **Internet-of-Things Network Scheduling in a Reinforcement Learning-aided Mobile Edge Computing System**
  PI: Dr. Arghyadip Roy
  Duration: 24 months
- **Low-Cost Scalable Manufacturing of High-Aspect Ratio Microneedles for Minimally Invasive Transdermal Drug Delivery Applications**
  PI: Dr. Rinku Kumar Mittal
  Duration: 24 months
- **Synthesis of therapeutically beneficial peptides with expanded genetic codes via a cell-free translation based approach**
  PI: Dr. Subhendu Sekhar Bag
  Duration: 9 months

Research Projects

- **Intelligent Wearable Hand Exoskeleton for Robotic Neurorehabilitation**
  PI: Dr. Shyamanta Moni Hazarika
  Duration: 36 months

- **Design of Various Algorithms for Terahertz Communication in 6G and Beyond**
  PI: Dr. Kuntal Deka
  Duration: 24 months
- **Study of quantum noise control techniques using Low Density Parity Check codes**
  PI: Dr. Arun B. Aloshious
  Duration: 24 months
- **DNA Aptasensor-Nanomaterial based product development and commercialization for application in Diagnostics and Environment Monitoring**
  PI: Dr. Dipankar Bandyopadhyay
  Duration: 12 months
- **School of Innovations in Biomedical Devices and Systems and Inter-institutional Biodesign Center (SIBDS-IIBC)**
  PI: Dr. Subramani Kanagaraj
  Duration: 36 months
- **Establishing Efficient Platform for Genetic Engineering and Precise Genome Editing in Tea**
  PI: Dr. Lingaraj Sahoo
  Duration: 36 months
- **Elucidating structural aspects of antimicrobial peptide transporter in Escherichia coli: a study for structure-based drug designing**
  PI: Dr. Shankar Prasad Kanaujia
  Duration: 36 months

- **Circular Economy Solution for Microplastics: Indo-Finnish Scientific Collaboration**
  PI: Dr. Sudip Mitra
  Funding Agency: Finland
  Duration: 12 months

- **Research and Development Program for Promotion of Handloom in North-Eastern Region (Assam)**
  PI: Dr. Sougata Karmakar
  Duration: 36 months

- **Development of advanced biofuels and bio lubricants from high lipid producing microalgal strain through HTL and Co-HTL process**
  PI: Dr. Kaustubha Mohanty
  Duration: 36 months

- **Techno-Economic study - Removal of CO_2 & N_2 from Natural gas produced from Dandewala field of OIL Rajasthan**
  PI: Dr. Senthilmurugan Subbiah
  Duration: 4 months

- **Development and performance evaluation of Ready mix thermal insulation foam plasters for energy efficient structures**
  PI: Dr. Indu Siva Ranjani Gandhi
  Duration: 3 years

Awards/ Achievements

Prof. Shyamanta Moni Hazarika (Deptt. of Mechanical Engineering)

Selected as **INAE Abdul Kalam Technology Innovation National Fellow** in recognition of "outstanding contributions in the area of Rehabilitation Robotics - Robotic Neurorehabilitation and Artificial Intelligence"

Dr. Vipul Dutta (Deptt. of Humanities and Social Sciences)

His recent book "**Making Officers out of Gentlemen: Military Institution-building in India**, c.1900-1960" (Oxford University Press India, 2021) was shortlisted for the 2021 Society for Army Historical Research Prize (UK) in the "Best First Book" Prize category announced in 2022.

Prof. Sachin Kumar (Deptt. of Biosciences and Bioengineering)

Has been awarded as "**Fellow of Indian Virological Society (FIVS) 2022**".

Dr. Poonam Kumari (Deptt. of Mechanical Engineering)

Has secured First position in Prototype stage of the "**National Bamboo Innovation Challenge 2022**" conducted by the Foundation of MSME Clusters (FMC)

Dr. Indu Siva Ranjani G. (Deptt. of Civil Engineering)

For being the recipient of first place in poster competition on theme of "**Future of Affordable Housing in India**" organized under Indian Urban Housing Conclave 2022 (October 2022) by Ministry of Housing and Urban Affairs at Ahmedabad.

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