

## North-East Research Conclave 2022



## Highlights

- A **Road show** was initiated from IIT Guwahati on 7<sup>th</sup> May, 2022 in order to reach all the partnering academic institutes and making them an integral part of the mega event.
- **Presence of dignitaries** from important Ministries was observed such as Shri Dharmendra Pradhan, Hon'ble Union Minister of Education and Minister of Skill Development and Entrepreneurship, GOI; Dr. Himanta Biswa Sarma, Hon'ble Chief Minister of Assam State; Dr. Ranaj Pegu, Hon'ble Minister of Education, Govt. of Assam; Dr. Rajkumar Ranjan Singh, Hon'ble Minister of State for Education, GOI; Dr. Subhas Sarkar, Hon'ble Minister of State for Education, GOI; Shri Keshab Mahanta, Hon'ble Minister of Science Technology & Climate Change, Govt. of Assam and many more.
- The inauguration ceremony of the conclave was followed by the signing of a MoU between IIT Guwahati and the Government of Assam to establish '*The Assam Advanced Health Innovation Institute (AAHII)*'.
- The third edition of Assam Biotech Conclave 2022 was also held as part of NERC 2022. It brought together the Biotech Entrepreneurs, industry leaders, researchers, academicians, Government Representatives, policy makers, innovators and investors together on one platform to explore the possibilities of Biotechnology in North East India and to discuss the new opportunities in the transition.
- A talk on "Atmanirbhar Bharat – Indian Army Initiatives towards Self Reliance" was delivered by Lt. Gen. D.S. Rana AVSM, YSM, SM General Officer Commanding, Gajraj Corps. This further led to the signing of an **MoU between Indian Army Eastern Command and IIT Guwahati** on 7<sup>th</sup> July 2022 during EastTech 2022. This provided further impetus to Indigenisation and Raksha Atmanirbharta.
- "**The Guwahati Declaration**" was launched at the valedictory ceremony of the conclave by Shri Lok Ranjan, Secretary, Ministry of Development of North Eastern Region (DoNER), in the presence of Shri Kailash Karthik, Deputy Commissioner, Kamrup.

# NERC 2022

A huge response was received by participants from throughout the country. The total no. of Participating institutions in this conclave included 7 IITs, 10 NITs, 5 IIITs and other CFTIs, 23 Research Labs, 17 Central Funded Universities, 47 other Universities/Institutes, various industries and agencies, government offices across India along with about 100 schools. Eminent personalities from industries, start-ups, research councils and PSUs also joined in.

The MoU between Govt. of Assam and IIT Guwahati would prove to be a unique partnership between the Government of Assam and IIT Guwahati in order to set up a Research Institution to leverage advanced technologies to transform medical science. This joint venture company will be able to invite participation from intending parties including corporates/ businesses/ research institutions and philanthropic organizations.

Science, education, research and innovation are the four pillars on which the development as well as the work culture of a nation rests. This was well articulated by the promising number of Exhibitors being seen participating from all across the NE states in the NERC 2022. All the NITs, CFTIs and CFIs were allocated two stalls each, where the delegates showcased the working models of their inventions. Distinctive pavilions were arranged for IIT, NIT, CFIs and CFTIs. Excellent response was obtained from the Start-Ups all across the NE states. Federation of Industry Commerce of North Eastern Region (FINER) had partnered with NERC-2022 as an Industry Partner and they showcased 50 start-ups as a part of the Exhibition under the FINER Pavilion.

Royal society of Chemistry, Global battery experiment was performed by more than 1300 students in three sessions starting from 20<sup>th</sup> May to 22<sup>nd</sup> May at IIT Guwahati. Along with Global Battery Experiment, Creating Skilful Educators (Teacher training programme) was also conducted in parallel sessions. Students had arrived from various schools across Assam and other North-Eastern states.

Guwahati BioNEST facility was inaugurated on 21<sup>st</sup> May 2022 during NERC at IIT Guwahati Research Park by Honorable Sh. K. Sanjay Murthy in the presence of Honorable Director, IITG, Prof. T.G. Sitharam. The Guests of Honour during the inauguration were Dr. Manish Diwan, Head Strategic Partnerships, BIRAC, Govt. of India and Dr. Taslimarif Saiyed, CEO & Director, CCAMP, Bangalore.

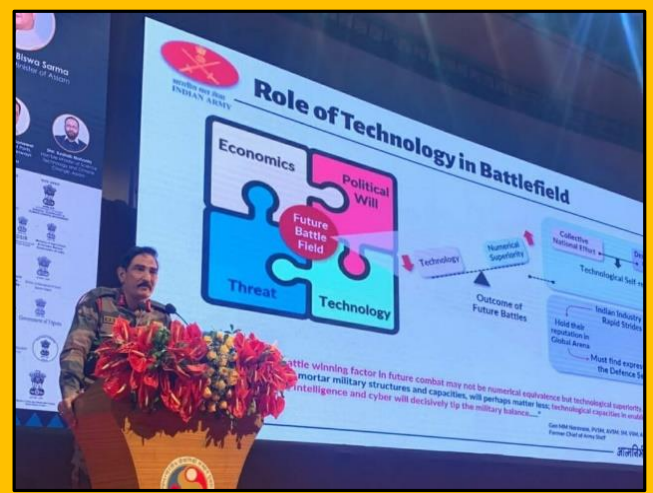




# NERC 2022

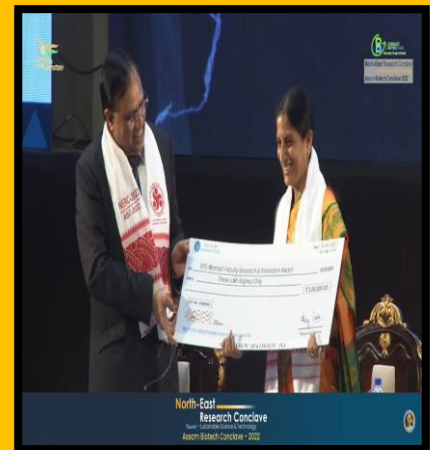


The Guwahati Declaration is intended to create a set of guidelines, through which individual as well as a collective responsibility to promote and encourage innovation at the grass-root level and strive to stimulate and execute indigenization and entrepreneurship, can be taken up.



NERC also led to the signing of an **MoU between Indian Army Headquarters Eastern Command, Kolkata and IIT Guwahati** on 7th July 2022 during EastTech 2022. The objective is to leverage the academic and technological prowess of IIT Guwahati and domain knowledge/ expertise of Eastern Command in development of defence technology solutions and to take up joint projects for innovative solutions to weapon systems and equipment related problems in Eastern Command.

Government of India has taken various steps to encourage women in the field of science and technology. In this line, the IIT Guwahati Woman Researcher Award has been approved to recognize the contribution of women Faculty member of IIT fraternity. This prestigious award was conferred to **Dr. Latha Rangan** who is a Senior Professor in the Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati, India. Her areas of research are Applied Biodiversity using an integrative approach that has helped in tapping bio-resources from wilderness to mining 'omics'. Prof. Rangan has played a key role in Plant Biotechnology and Sustainable development and especially in the areas of energy security, food security and medicinal crops.



## Outcomes and Key Takeaways

- Mass Awareness was created on Research and Innovation for Sustainable Society
- Knowledge exchange and dissemination leading to establishing centers of Excellences in Research and Innovation.
- Bridging the gap between Industry-Academia and Creating Hand holding Pathways for Setting up long-term collaboration for R&D innovations towards the goal of establishing sustainable NE India.
- The Conclave brought together over 5000 participants with a footfall of more than 15000 participants.
- The Conclave was graced by Hon'ble Ministers, Official Bureaucrats, Eminent Professors, Scientists, Renowned Industrialist, School Children/Teachers and Others delegates.
- The conclave 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.



# MoU/ MoA

- MoU between Central Power Research Institute (CPRI) and Indian Institute of Technology Guwahati: signed on 11.01.2022 for the project on "AI and IoT based Attack Detection and Authentication Scheme for Cyber Security in Grid Connected Power Electronic Converters" for 1 year. Initiated by Dr. Manas Khatua, Dept. of CSE, IITG.
- MoU between I-Hub Foundation for Cobotics (IHFC) and Indian Institute of Technology Guwahati: Signed on 09.02.2022 for investment in research and development of the innovation being developed by the students, faculty and start-ups etc. under the aegis of the Second Party for 3 years. Initiated by Dr. Shyamanta Moni Hazarika, Dept. of Mechanical Engineering, IITG.
- General/ Tripartite Agreement between Indo-German Science & Technology Centre (IGSTC), M/s Ace Manufacturing Systems Ltd., Indian Institute of Technology Kanpur and Indian Institute of Technology Guwahati: signed on 16.02.2022 for 3 years for Design and analysis of a new robot - cell configuration consisted of two 6 -axis robotic arms mounted on two curved tracks. Initiated by Dr. Sajan Kapil, Dept. of Mechanical Engineering, IITG.
- Memorandum of Understanding between Centre for Cellular and Molecular Platforms – C – CAMP and Indian Institute of Technology Guwahati -IITG: Signed on 26.02.2022 for a period of 5 years for Setting up "IIT-G C-CAMP Centre for Bio-entrepreneurship (ICCB)" at IITG to build an entrepreneurship ecosystem at IITG to nurture and promote Entrepreneurship and Entrepreneurs in the field of life sciences. Initiated by Dr. Dipankar Bandyopadhyay, IIT Guwahati.
- Memorandum of Understanding between Indian Institute of Technology Guwahati and Indian Institute of Technology Dharwad and Signoff Semiconductor Pvt Limited: Signed on 28.02.2022 for a period of 5 years to promote interaction between IIT Guwahati, IITDh and SignOffsemi in execution of SMDP C2S proposal. Initiated by Dr. Mahima Arrawatia, Dept of Electronics & Electrical Engg.
- Memorandum of Agreement between DBT and IIT Guwahati: Signed on 21.03.2022 for a period of 1 year for monitoring and other matters related to the "DNA Aptasensor-Nanomaterial based product development and commercialization for application in Diagnostics and Environment Monitoring". Initiated by Dr. Dipankar Bandyopadhyay, Centre for Nanotechnology, IIT Guwahati.
- Agreement between Wageningen University and IIT Guwahati: signed on 23.03.2022 for a period of 2 months to facilitate a research internship as part of a new collaborative research initiative on river management and infrastructural policies around the world, entitled "Engineered land: terrestrial imaginaries and realities. Initiated by Dr. Anamika Barua, Dept. of Humanities and Social Sciences, IIT Guwahati.
- Memorandum of Understanding between Mission Director Samagra Shiksha Assam Kahilipara and Indian Institute of Technology Guwahati: Signed on 31.03.2022 for a period of 11 months to strengthen the activities related to Rashtriya Avishkar Abhiyan to promote science and technology at both elementary and secondary level schools of Assam both the parties will collaborate for conducting various activities under Rashtriya Avishkar Abhiyan. Initiated by Dr. Parameswar K. Iyer, IIT Guwahati.
- Research Collaboration Agreement between National University of Singapore (NUS) and Indian Institute of Technology Guwahati: Signed on 06.04.2022 for a period of 2 months for the project entitled "Designing Incentives to Improve Tuberculosis Treatment Adherence in Resource Constrained Settings". Initiated by Dr. Keyur Sorathia, Dept. of Design, IIT Guwahati.
- Hiring of Services for Collaboration R&D with IIT Guwahati on "Effect of Hydrogen Blending in Natural Gas": Signed on 24.04.2022 for a period of 13 months for Hiring of Services for Collaboration R&D with IIT Guwahati on "Effect of Hydrogen Blending in Natural Gas". Initiated by Dr. Senthil Murugan Subbiah, Dept. of Chemical Engineering, IITG.
- Memorandum of Agreement between DBT and IITG: Signed on 20.04.2022 for 3 years for monitoring and other matters related to the "Development of diagnostic Kits for quick detection of CTV, HLB and Phytophthora rot diseases in Citrus of North East India". Initiated by Dr. Lingaraj Sahoo, Department of Biosciences and Bioengineering, IITG.
- Memorandum of Agreement between DBT and IITG: Signed on 21.04.2022 for 3 years for monitoring and other matters related to the "Development of sustainable agriculture practices for biotic and abiotic stress management in conventional and organic tea plantations". Initiated by Dr. Uttam Manna, Dept. of Chemistry, IITG.
- Agreement between Ritimo Network and Vasundhara Jairath: signed on 02.05.2021 to result in the publication of a dossier on Land and Development: trends in Assam. Initiated by Dr. Vasundhara Jairath.
- Memorandum of Agreement between DBT and IITG: signed on 23.05.2022 for 3 years for monitoring and other matters related to the "Design and Development of Biogas Driven Hybrid Solar Dryer for North Eastern Climate Condition". Initiated by Dr. Muthukumar P, Dept. of Mechanical Engineering, IIT Guwahati.
- Research proposal and grant between DBT and IIT Guwahati: Signed on 30.05.2022 for 3 years for monitoring and other matters related to the "Development of diagnostic Kits for quick detection of CTV, HLB and Phytophthora rot diseases in Citrus of North East India". Initiated by Dr. Lingaraj Sahoo, Dept. of Biosciences and Bioengineering, IIT Guwahati.
- Memorandum of Agreement between DBT and IITG: signed on 06.06.2022 for 3 years for monitoring and other matters related to the "Mechanistic Investigation on EMT targeted nanotherapeutics for drug-resistant triple-negative breast cancer cells". Initiated by Dr. Siddhartha Sankar Ghosh, Dept. of Biosciences and Bioengineering, IIT Guwahati.
- Memorandum of Agreement between DBT and IITG: signed on 06.06.2022 for 3 years for monitoring and other matters related to the "Translational Programme for Developing Diagnostics and Nano-based Sensors". Initiated by Dr. Pranab Goswami, Dept. of Biosciences and Bioengineering, IIT Guwahati.
- Memorandum of Understanding between IIT Guwahati and NEIGRIHMS: Effective from 01.07.2022 for 5 years for collecting prospective data from patients undergoing Coronary Computed Tomography Angiographic (CTA) at the Institution. Signed informed consent in the prescribed form will be collected from the patients after complete explanation of the study and rights of the patients. Initiated by Dr. Raghavendra Gupta.



# Research Projects

- Development of a Higher Order Nonlinear MDOF Stability Model for a 5-Axis High-Speed Micromilling of Difficult-to-Cut Materials  
PI: Dr. Rinku Kumar Mittal  
Funding Agency: DBT  
Scheme: DST Inspire Faculty
- Online Health Monitoring and Point-of-use Testing for Batteries Using Chirp Signals  
PI: Dr. Resmi Suresh M.P.  
Funding Agency: SERB  
Scheme: SERB CRG
- Development of Novel Ternary Composite Membrane with High Selectivity for Direct Methanol Fuel Cell Applications  
PI: Prof. Bishnupada Mandal  
Funding Agency: SERB  
Scheme: SERB CRG
- Utilization of CO<sub>2</sub> by Electrocatalytic Conversion to Value-Added Products  
PI: Dr. Chandan Mukherjee  
Funding Agency: SERB  
Scheme: SERB CRG
- Applicability of Group-7 Transition Metals (Mn and Re) for the Utilization of Carbon Dioxide in Organic Synthesis  
PI: Dr. Dipankar Srimani  
Funding Agency: SERB  
Scheme: SERB CRG
- Systematic Investigation of Oil/Water Separation Performances of a Family of Superhydrophobic Metal-Organic Framework (MOF) Based Composites  
PI: Dr. Shyam Prosad Biswas  
Funding Agency: SERB  
Scheme: SERB CRG
- Investigating the role of UTF1 in the generation of human induced pluripotent stem cells  
PI: Dr. Rajkumar Parshottambhai Thummer  
Funding Agency: DBT  
Scheme: DBT-CRG
- Integrated approach for extraction of valuable chemicals using Subcritical water extraction, followed by production of biobutanol from *Scenedesmus* sp. using genetically engineered *Clostridium* strain  
PI: Dr. Vaibhav Vasant Goud  
Funding Agency: DST/ GITA  
Scheme: DST India-Taiwan S&T Cooperation Programme
- On feedback controllers for LQR control of multi-input index-1 DAE systems  
PI: Dr. Chayan Bhawal  
Funding Agency: SERB  
Scheme: SERB Start-up Research Grant
- Bio-surfactant mediated enhanced oil recovery for Assam oil reservoirs  
PI: Dr. Lalit Mohan Pandey  
Funding Agency: DBT  
Scheme: DBT
- A STUDY OF RANDIC MATRIX AND ABC MATRIX OF GRAPHS  
PI: Dr. Bikash Bhattacharjya  
Funding Agency: SERB  
Scheme: TARE
- Development of liquid crystal based microfluidic device for particle manipulation  
PI: Dr. Shubhadeep Mandal  
Funding Agency: SERB  
Scheme: SERB-SRG
- Design and development of a microfluidic device for particle fractionation from concentrated suspensions  
PI: Dr. Anugrah Singh  
Funding Agency: SERB
- Development of a novel dual fluidized bed gasification technology package for effective utilization of biomass and NE coal for efficient energy harvesting  
PI: Dr. Pankaj Kalita  
Funding Agency: SERB  
Scheme: SERB-CRG
- Experimental and Numerical Appraisal of Heat Transfer Enhancement and Deterioration in Double-cooled Supercritical Forced-flow Channels  
PI: Dr. Amaresh Dalal  
Funding Agency: SERB  
Scheme: SERB-CRG
- Intelligent Reflecting Surface Enabled Simultaneous Wireless Energy and Information Transfer in Next Generation IoT Networks: System Design, Optimization and Performance Analysis  
PI: Dr. Salil Kashyap  
Funding Agency: SERB  
Scheme: SERB-CRG
- Development of a viscoelastic quasi-zero-stiffness mechanism using graphite particles/graphene filled rubber composites for low-frequency vibration isolation  
PI: Dr. Satyajit Panda  
Funding Agency: SERB  
Scheme: SERB-CRG
- Machine learning augmented minimum miscibility pressure (MMP) prediction for CO<sub>2</sub>-EOR  
PI: Dr. Sumit Kumar  
Funding Agency: IIT Guwahati  
Scheme: IITG Start-up Research Grant
- Attenuation Ability of Municipal Solid Waste Landfill Liners for Viral Pathogens  
PI: Dr. Tadikonda Venkata Bharat  
Funding Agency: SERB  
Scheme: SERB-CRG
- Development of hybrid higher-order continuum-rarefied computational framework for space propulsion applications  
PI: Dr. Tapan Krishnakumar Mankodi  
Funding Agency: SERB  
Scheme: SERB-SRG
- AI/ML for Beamforming in 6G  
PI: Dr. Kuntal Deka  
Funding Agency: Opetushallitus  
Scheme: TKF 2021, Team Finland Knowledge Program
- Development of Fe and Zn co-doped Hydroxyapatite for the Treatment of Osteomyelitis  
PI: Dr. Lalit Mohan Pandey  
Funding Agency: DBT  
Scheme: DBT-CRG
- Technology development of vinegar production from indigenous fruits Leteku (*Baccaurea motleyana*), Kordoio (*Averrhoa carambola*), Poniyal (*Flacourtia jangomas*) of Assam  
PI: Dr. Utpal Bora  
Funding Agency: ASTEC  
Scheme: Call for Concept notes on technology generation
- Design, fabrication, and installation of raw MSW to charcoal conversion system at NTPC Ramagundam township  
PI: Dr. Senthilmurugan Subbiah  
Funding Agency: NTPC Ramaguntam  
Scheme: NTPC Technology Demonstration
- Robust Computational Methods for 2D Singularly Perturbed Parabolic Differential Equations  
PI: Dr. Natesan Srinivasan  
Funding Agency: SERB  
Scheme: Teachers Associateship for Research Excellence



# Research Projects

- **AI and IoT based Attack Detection and Authentication Scheme for Cyber Security in Grid Connected Power Electronic Converters**  
PI: Dr. Manas Khatua  
Funding Agency: CPRI  
Scheme: Research Scheme on Power of CPRI
- **Transient Analysis of Hydrodynamic Coefficients Connected to Cylindrical Breakwaters**  
PI: Dr. Swaroop Nandan Bora  
Funding Agency: SERB  
Scheme: SERB-TARE
- **Games and Controller Synthesis**  
PI: Dr. Purandar Bhaduri  
Funding Agency: SERB  
Scheme: MATRICS
- **Radial solution to the wave equation and spherical mean operator on symmetric spaces**  
PI: Dr. Pratyooosh Kumar  
Funding Agency: SERB  
Scheme: MATRICS
- **Contraction Analysis and Resilient Control Design for Nonlinear Cyber-physical Systems under Denial-of-Service**  
PI: Dr. Indrani Kar  
Funding Agency: SERB  
Scheme: MATRICS
- **AI and IoT based Attack Detection and Authentication Scheme for Cyber Security in Grid Connected Power Electronic Converters**  
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Funding Agency: CPRI  
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Funding Agency: SERB  
Scheme: MATRICS
- **Contraction Analysis and Resilient Control Design for Nonlinear Cyber-physical Systems under Denial-of-Service**  
PI: Dr. Indrani Kar  
Funding Agency: SERB  
Scheme: MATRICS
- **Assessment of Stability, Accuracy and Convergence of an Immersed Boundary Lattice Boltzmann Solver for Moving Boundary Problems**  
PI: Dr. Dipankar Narayan Basu  
Funding Agency: SERB  
Scheme: MATRICS
- **Computing Multiplicities for Tensor Products on Special Linear Groups**  
PI: Dr. Vinay Vilas Wagh  
Funding Agency: SERB  
Scheme: MATRICS
- **Collective neutrino flavor conversion in astrophysics and cosmology**  
PI: Dr. Sovan Chakraborty  
Funding Agency: DBT  
Scheme: MATRICS
- **Biomimetic Grasp Analysis in Multi-Fingered Robotic Hands as Bilinear Matrix Inequality Problems**  
PI: Dr. Shayamanta Moni Hazarika  
Funding Agency: SERB  
Scheme: MATRICS
- **Electroweak baryogenesis as a portal to neutrino and dark matter**  
PI: Dr. Arunansu Sil  
Funding Agency: SERB  
Scheme: MATRICS
- **State Transfer on Graphs of Groups, Rings and Partial Cartesian Products**  
PI: Dr. Bikash Bhattacharjya  
Funding Agency: SERB  
Scheme: MATRICS
- **Weak Galerkin Finite Element Method for Westervelt's Equation**  
PI: Dr. Bhupen Deka  
Funding Agency: SERB  
Scheme: MATRICS
- **Comprehensive Exploration of Water-Stable, Functionalized Metal-Organic Frameworks for Fluorometric Detection of Heavy Metal Ions**  
PI: Dr. Shyam Prosad Biswas  
Funding Agency: SERB  
Scheme: SERB EMEQ
- **Risk-sensitive stochastic games for continuous-time stochastic processes**  
PI: Dr. Chandan Pal  
Funding Agency: SERB  
Scheme: MATRICS
- **DEVELOPMENT OF LOW-COST PORTABLE DEVICE FOR PUDAM/ PUTA-Traditional Medicine Manufacturing**  
PI: Dr. Senthilvelan Selvaraj  
Funding Agency: DBT  
Scheme: CRG
- **Enhancing Security Features of On-hip Networks in Modern Multicore Processors**  
PI: Dr. John Jose  
Funding Agency: SERB  
Scheme: SERB-CRG
- **3D printed patient specific meniscus implants with autologous biological cues for total and partial meniscus regeneration**  
PI: Dr. Biman Behari Mandal  
Funding Agency: SERB  
Scheme: SERB-EEQ
- **Collective dynamics of self-propelled droplets in complex microfluidic environments**  
PI: Dr. Shubhadeep Mandal  
Funding Agency: SERB  
Scheme: Empowerment & Equity Opportunities for Excellence in Science
- **Distribution of certain partition functions**  
PI: Dr. Rupam Barman  
Funding Agency: SERB  
Scheme: SERB-CRG
- **Synthesis and Characterization of novel Dinuclear Metal Complexes for peroxidic epoxidation**  
PI: Dr. Chivukula Vasudeva Sastri  
Funding Agency: SERB  
Scheme: SERB TARE
- **Generalization of Cartwright's Theorem**  
PI: Dr. Rajesh Kumar Srivastava  
Funding Agency: SERB  
Scheme: MATRICS



# Research Projects

- Structural and functional studies of a putative membrane protein complex of Mycobacterium tuberculosis involved in invasion and cholesterol transport  
PI: Dr. Shankar Prasad Kanaujia  
Funding Agency: SERB  
Scheme: SERB-EMEQ
- Investigating the post-inflationary era with axions and ALPs  
PI: Dr. Arunansu Sil  
Funding Agency: SERB  
Scheme: SERB-CRG
- Precision studies for processes at present and future collider experiments  
PI: Dr. Meduri Charavartula Kumar  
Funding Agency: DBT  
Scheme: SERB-CRG
- Health Impacts of Exposure to Particulate Pollution from High-sulfur Coal Mines located in Assam of Northeast India  
PI: Dr. Sharad Bhaurao Gokhale  
Funding Agency: SERB  
Scheme: SERB-EMEQ
- Development of multi-material wire arc additive manufacturing process including the effect of multi-physics problem of droplet interaction, metallurgical model and free surface profile using phase field method  
PI: Dr. Swarup Bag  
Funding Agency: SERB  
Scheme: SUPRA
- Speech Technologies for North Eastern Languages  
PI: Dr. Rohit Sinha  
Funding Agency: DEITY  
Scheme: NLTM
- Development of high-performance flexible photodetector array through plasmonic hot-carrier engineering in two-dimensional perovskites  
PI: Dr. Pravat Kumar Giri  
Funding Agency: DBT  
Scheme: DBT-CRG
- "Engineered land: terrestrial imaginaries and realities"  
PI: Dr. Anamika Barua  
Funding Agency: Wageningen University  
Scheme: Wageningen Research Project
- Study on the effect of H<sub>2</sub> blending in Natural Gas  
PI: Dr. Senthilmurugan Subbiah  
Funding Agency: Oil India Ltd.  
Scheme: OIL R&D Project
- Nanofilled natural ester impregnated surface modified pressboards for suppressing partial discharges in transformers  
PI: Dr. Sisir Kumar Nayak  
Funding Agency: SERB  
Scheme: SERB-CRG
- Indigenous design and development of wideband tunable dosimeters for UV exposed environment  
PI: Dr. Ankush Bag  
Funding Agency: SERB  
Scheme: SERB-CRG
- Exploring tunable electromagnetic induced transparency effect using exotic materials in terahertz metamaterials  
PI: Dr. Gagan Kumar  
Funding Agency: SERB  
Scheme: SERB-CRG
- Development of sustainable agriculture practices for biotic and abiotic stress management in conventional and organic tea plantations  
PI: Dr. Uttam Manna  
Funding Agency: DBT  
Scheme: DBT R&D Project
- Analysis of Nonstationary Queues  
PI: Dr. N. Selvaraju  
Funding Agency: SERB  
Scheme: MATRICS
- Multi-Axis Multi-Material Wire Arc Additive Manufacturing  
PI: Dr. Sajan Kapil  
Funding Agency: DBT  
Scheme: DBT-IGSTC 2+2 Call
- Mechanistic investigation on EMT targeted nanotherapeutics for drug-resistant triple-negative breast cancer cells  
PI: Dr. Siddhartha Sankar Ghosh  
Funding Agency: DBT  
Scheme: R&D DBT NER
- Recycling of fiber reinforced polymer composite  
PI: Dr. Pankaj Tiwari  
Funding agency: Tata Steel  
Scheme: Tata Steel Material Next 3.0
- Non-Conventional Bio-Engineering Measures to Mitigate River Bank Erosion by Applying EMP Concept for 500m length at Kordoiguri  
PI: Dr. Arup Kumar Sarma  
Funding Agency: Brahmaputra Board Guwahati  
Scheme: Brahmaputra Board Guwahati Project
- SWASTHA Smart Wearable Advanced nanoSensing Technologies in Healthcare ASICS  
PI: Head of Centre, Centre for Nanotechnology  
Funding Agency: DEITY  
Scheme: MEITY
- Neutrino Astrophysics with next generation Water Cherenkov Detectors  
PI: Dr. Sovan Chakraborty  
Funding Agency: SERB  
Scheme: SERB-CRG
- Political Economy of Land and Development in Assam  
PI: Dr. Vasundhara Jairath  
Funding Agency: ICSSR  
Scheme: ICSSR
- Extraction of Electrical Energy from Hydrological Cycle through Two-dimensional Nanofluidic Channels  
PI: Dr. Kalyan Raidonga  
Funding Agency: SERB  
Scheme: SERB-TARE
- Evaluating the feasibility and efficacy of integrated catchment-scale Nature-based solutions for Climate Change adaptation in India  
PI: Dr. Subhashisa Dutta  
Funding Agency: Loughborough University  
Scheme: NERC
- Exploration of Underutilized Amaranthus species for Sustainable Livelihood, Nutritional Security and Climate Resilience of Western Himalayan Region  
PI: Dr. Sudip Mitra  
Funding Agency: DBT  
Scheme: DBT
- JJM Chair Professor  
PI: Dr. Mihir Kumar Purkait  
Funding Agency: Govt. of India  
Scheme: Jal Jeewan Mission
- Collaborative Research for Accelerated Development of Materials & devices for Energy harvesting and conservation Technologies  
PI: Dr. Ankush Bag  
Funding Agency: DST DAAD  
Scheme: ICMAP



# Research Projects

- Temperature dependent Micro-Raman Spectroscopy of MnTa<sub>2</sub>O<sub>6</sub> and Mn<sub>4</sub>Nb<sub>2</sub>O<sub>9</sub> systems  
PI: Dr. Subhash Thota  
Funding Agency: DAE  
Scheme: CRS
- Development of a pilot plant for production of high value, flaked/powder and stabilized liquid or infusion type products from wide variety of plants with exotic flavour aroma, bioactivity or functionality from indigenous plants of Hailakandi district  
PI: Dr. Siddhartha Singha  
Funding Agency: DBT  
Scheme: DBT Societal Project
- 14 days training of 02 Argentinian trainers at IIT on AR/VR under Ministry of External Affairs, DPA II Division  
PI: Dr. Manas Kamal Bhuyan  
Funding Agency: Ministry of External Affairs  
Scheme: Ministry of External Affairs
- Design and Development of Next Generation Cost Effective Reconfigurable On-Board Battery Charger with Health and Fault Monitoring  
PI: Dr. Ravindranath Adda  
Funding Agency: DEITY  
Scheme: MEITY EV subsystems
- Life-Like Systems: Fuel-Driven Temporal Control Over Self-Assemblies Utilizing Ternary Complexation of Cucurbituril  
PI: Dr. Debapratim Das  
Funding Agency: BRNS  
Scheme: BRNS
- Development of a cost-effective device for oxygen separation from air: a strategic technological solution to control the food spoilage  
PI: Dr. Tapas Kumar Mandal  
Funding Agency: DBT  
Scheme: Indo-SriLanka Joint Research Programme
- 2022 Gordon Research Conference (GRC) on Oscillations and Dynamic Instabilities in Chemical Systems" from 17.07.2022 to 22.07.2022 at Stonehill College, Massachusetts, USA Title of invited talk: Control of excitation waves using external gradients  
PI: Dr. Sumana Dutta  
Funding Agency: SERB  
Scheme: SERB-International Travel Scheme

## Awards/ Achievements

Dr. Sarvendranath Rimalapudi, an Assistant Professor in the EEE department has been awarded the DST INSPIRE Faculty Research Grant of Rs. 35 lakhs for five years.