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The Monthly Newsletter of IIT Guwahati

Volume IV, Issue III, March 2022

Inaugural ceremony of 100 days Yoga Festival from March 28, 2022 to June 21, 2022 on the Occasion of 8th International Yoga Day (IDY), June 21, 2022 at IIT Guwahati

IIT Guwahati Researchers developing 'Speech Technologies for North Eastern Languages'

Indian Institute of Technology Guwahati is developing 'Speech Technologies for North Eastern Languages' to develop Speech Technology Tools for Healthcare Information Dissemination. The tools will enable retrieval of healthcare related information with the help of spoken keyword spotting (KWS) in seven North East Indian languages.

As part of the project a database of health-related information in seven languages spoken in North East India will also be created. This project is expected to facilitate the access of healthcare related information by the people in the far flung areas of North East India in their own native languages.

The Centre for Linguistic Science and Technology (CLST at IIT Guwahati has got funding for this project from the Ministry of Electronics and Information Technology, Government of India, under its 'National Language Translation Mission (NLTM): BHASHINI' initiative.

Highlighting the unique aspects of this Project, Prof. T.G. Sitharam, Director, IIT Guwahati, said, "This work embodies IIT Guwahati's commitment to work for the local languages and ethnicities of North East India. The interdisciplinary nature of the project and the focus on local languages reflect the spirit envisaged in the National Education Policy, 2020."

This project involves building speech technology tools for healthcare information dissemination in Hindi, English, Assamese, Bangla, Bodo, Manipuri, Khasi, Mizo, Nagamese, and Nepali.

Elaborating on this project, Prof. Rohit Sinha, Principal Investigator of project, and Head, Department of Electronics and Electrical Engineering, IIT Guwahati, said, "The Institute is committed to developing tools that will facilitate last-mile connectivity and information dissemination to the various communities living in the NE area, in their own languages. This project will be a step towards achieving that aim."

Prof. Sinha also mentioned that the Centre for Linguistic Science and Technology (CLST) was a unique and truly interdisciplinary centre that is devoted to the analysis and technology development in the languages of North East India, through research projects and its PhD programme.

The Spoken Keyword Spotting (KWS) systems developed in the project will be able to detect a list of predefined words in a given speech signal of one of the target languages of the project. The efforts will involve modelling speech with the deep neural network based state-of-the-art techniques.

The interdisciplinary team of CLST team comprises of Prof. Rohit Sinha, Prof. Priyankoo Sarmah, Sanasam Ranbir Singh and Ashish Anand from CLST, IIT Guwahati. This project is part of a larger consortium project titled Speech Technologies for Indian Languages, led by IIT Madras as the consortium leader.

For the North East specific project, the IIT Guwahati team will work together with research teams from CDAC-Kolkata, IIIT Sri City, and NIT Manipur.

Vigyan Prasar recognises IIT Guwahati's Prof. Biman Mandal among 75 Scientists shaping Today's India

Indian Institute of Technology Guwahati's Prof. Biman B. Mandal a DST SwarnaJayanti Fellow has been recognized by Vigyan Prasar among 75 Scientists Shaping Today's India. Hon'ble Union Minister Dr. Jitendra Singh released the coffee-table book published by Vigyan Prasar titled "75 under 50: Scientists Shaping Today's India" on National Science Day. This book explores the personal lives and professional accomplishments of 75 scientists, providing an in-depth look at the diversity surrounding them, such as their differing backgrounds, reasons for becoming scientists, obstacles they faced, and their work in different disciplines.

Prof. Biman B. Mandal has been working in the domain of 'regenerative medicine and tissue engineering which is s a highly interdisciplinary translational research domain, which deals with the body's ability to repair, heal and regenerate. This field has tremendous applicability being directly associated with human health, welfare and has the potential to contribute towards addressing an unmet world problem related to 'organ shortages'. His team has so far published 160 highly cited high-impact research articles in prestigious journals, filed 23 patents, and licensed 3 technologies with 01 product in the market. The book has featured some of the research works of Prof. Mandal as mentioned below:

- 'Non-mulberry Silk Based Ink for Fabricating Mechanically Robust Cardiac Patches and Endothelialized Myocardium-on-a-chip Application'. Advanced Functional Materials (2020)
- '3D printed silk-based biomimetic tri-layered meniscus for potential patient-specific implantation'. Biofabrication (2020)
- 'Silk-based multilayered angle-ply annulus fibrosus construct to recapitulate form and function of the intervertebral disc'. PNAS (2018)
- 'Immunomodulatory injectable silk hydrogels maintaining functional islets and promoting anti-inflammatory M2 macrophage polarization'. Biomaterials (2018)

Born in Purulia district of West Bengal Prof. Mandal graduated from Presidency College, Kolkata, and completed his master's from the Department of Biotechnology, HP University, Shimla. He obtained his Ph.D. from IIT Kharagpur and post-doctorate from the Department of Biomedical Engineering, Tufts University, Boston, USA. Currently, Prof. Mandal is a Professor at the Department of Biosciences & Bioengineering, School of Health Sciences and Technology and Centre for Nanotechnology, IIT Guwahati and he also holds the Associate Dean, Academics (Undergraduate) position.

IIT Guwahati's Professor of Biosciences and Bioengineering among 75 Indian Women in fields of Science, Technology, Engineering, Applied Arts and Mathematics

Indian Institute of Technology Guwahati's Prof. Rakhi Chaturvedi has been recognised by the Office of the Principal Scientific Advisor, Government of India and British High Commission, New Delhi among the top 75 Indian Women in STEAM (fields of Science, Technology, Engineering, Applied Arts and Mathematics).

On being selected as one of the 75 women in STEAM, Prof. Chaturvedi will be featured in 'She Is -75 Women in STEAM', the second edition of the book series 'She Is'. The announcement was made on 3rd March 2022 by Principal Scientific Advisor Prof. K. Vijay Raghavan and His Excellency British High Commissioner Mr. Alex Ellis. The aim of the 'She Is' book series is to showcase more women role models for youth, make visible the leadership of women and generate interest in the STEAM and Sustainable Development Goals (SDGs). Some articles featuring the first book are in the Times of India and India Together.

Currently, Dr. Rakhi Chaturvedi is a Professor at the Department of Biosciences and Bioengineering, Indian Institute of Technology Guwahati (IIT Guwahati), Assam, India (https://www.iitg.ac.in/rakhi_chaturvedi/). Born in Prayagraj (earlier Allahabad), Uttar Pradesh, Dr. Chaturvedi received her B.Sc. degree from Ewing Christian College, Allahabad, and M.Sc. degree from University of Allahabad, Uttar Pradesh, India. She moved to Delhi and pursued her M.Phil. and Ph.D. degree from the University of Delhi, Delhi, India. She did her post-doctoral studies at Jawaharlal Nehru University (JNU), New Delhi, India. After joining IIT Guwahati in 2004, Dr. Rakhi Chaturvedi has been involved in a wide range of research and academic activities. Her high-impact research findings have been published in peer-reviewed prestigious national/international journals. She has presented her work in many international and national. Prof. Rakhi is presently the Head of the Department of Biosciences and Bioengineering and has contributed extensively in various administrative positions at IIT Guwahati for more than ten years and has been actively involved in promoting partnership/collaborations with national/international institutions leading to an International joint degree program.

Dr. Rakhi Chaturvedi has contributed immensely to the research field of Plant Cell Tissue Culture and Agrobiotechnology.

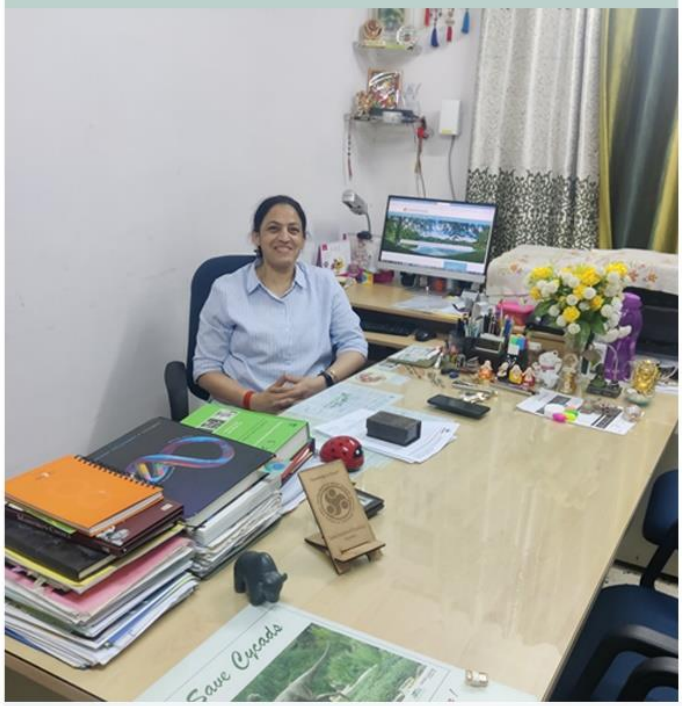
Firstly, for her commendable work on two complex tree species where she developed, for the first time, in vitro triploids (seedless) of Neem, and haploids and doubled-haploids (homozygous diploid (Pure) lines) of Neem and Tea making them amenable for generating hybrid vigour (superior plants) in these tree species. The genetic improvement of these plants is very challenging and mostly impossible using the conventional methods that employ repeated selfing, which doesn't work as these trees are mostly cross-pollinating with a long growth cycle. Her group has filed two patents, (1) A method for in vitro production of haploids & doubled-haploids in Azadirachta indica A. Juss, (Neem) and (2) A method for in vitro production of pure line doubled-haploids in Camellia ssp. (Tea).

Secondly, for developing a process for the production of commercial compounds of medicinal value by employing in vitro Plant Cell Culture Technology as an alternative and complementary tool to whole-plant extraction. Although these compounds can also be isolated from naturally grown whole plants, the continued destruction of plants for the purpose may pose a major threat to plant species getting extinct, and moreover some of the plants are endemic.

Thirdly, for creating sizeable cultivation of top quality Banana, Giloy and Stevia plants (a natural sweetener), using in vitro micropropagation methods. The Stevia plants with higher glycosides and disease-free Banana plants are made available to the farmers, women and entrepreneurs as a source of earning by cultivating quality plantations.

Speaking about this recognition, Prof. Rakhi Chaturvedi mentioned that this honour is a great motivation for her and her research group. It will encourage her and her students to carry out their research and development with more passion as the research area on plant tissue culture requires lots of dedication, patience, and perseverance to achieve breakthrough research output that has societal impact. These tissue culture techniques can have a tremendous impact on agricultural production by generating disease-free quality plantations at a large scale with the added advantage of value addition to the farm yields (crops, fruits, vegetables, trees, etc.) in a very short time throughout the year, irrespective of season and region.

Prof. Rakhi is also a Visiting Professor at Gifu University, Gifu, Japan, and is a recipient of "Prof. F.C. Steward Memorial Award 2021" Instituted by Plant Tissue Culture Association-India (PTCA-I); "Newton-Bhabha Leading Women Scientist Award" in Crop and Agricultural Sciences 2016 instituted by Department of Biotechnology (DBT), New Delhi, India, Cambridge University, UK; "Prof. Y. S. Murty Gold Medal 2011" by Indian Botanical Society (IBS); and also selected for UNESCO "one-month lab revisit" program at OSAKA University, Japan 2012, an elected member of the National Academy of Sciences, India (NASI) and Plant Tissue Culture Association-India (PTCA-I); and International Plant Propagators' Society (IPPS).



Mr. Ikko Watanabe, First Secretary to Embassy of Japan in India visited IIT Guwahati for possible research collaboration in the area of Agriculture, Food, and allied sector and also visited Incubation facility at IITG.

A French delegation led by Dr Fabien Chareix, Attaché for university and scientific cooperation, French Institute in India visited IIT Guwahati on 25.03.2022. He was accompanied by Miss Noémie GICQUELET, Attachée for the French language promotion, French Institute in India, Mr Sourav Bhowmik, Manager, Campus France-Kolkata, French Institute in India,Mr Amitava Das, In-charge of university and scientific cooperation, Miss Leah Paul, In-charge of university and scientific cooperation.

IIT Guwahati and IDT ONGC sign Technology Licensing Agreement with Softdrill Solutions Pvt. Ltd. to create an Advanced Real-Time Operational Solution for Oil and Gas Well Drilling Operations

Indian Institute of Technology Guwahati's team of researchers has developed a novel Decision Support System for Oil & Gas Drilling under a collaborative R&D project funded by the Institute of Drilling Technology, Oil and Natural Gas Corporation Limited. The system based on the application of Artificial Intelligence/Machine Learning and hybrid model-based diagnostics and data analytics algorithms will significantly reduce the non-productive time during exploration and drilling projects in the Oil & Gas industry.

The team led by Dr. Senthilmuruan Subbiah, Professor from the Chemical Engineering Department, IIT Guwahati has developed and demonstrated a real-time well drilling monitoring and Decision Support System tool, which will make use of existing data to enable real-time multi-objective optimization (MOO) of drilling parameters and operators choosing a feasible and optimal solution in real-time. This project was executed during 2019-2020. The team has also developed optimal preventive maintenance schedules for drilling units using AI/ML techniques for making complicated decisions. Under this project, energy and carbon audit methods for drilling operation to benchmark rig performance have also been developed. The team has filed an application for an Indian patent protecting the novelty and utility of the innovations from this project.

The Technology Licensing Agreement signing ceremony was carried out in virtual mode, Prof Krishnamoorthy, Dean Industrial Interaction and Special Initiatives IIT Guwahati welcomed the dignitaries from IDT-ONGC, IITG, and Softdrill Solutions. He set the context highlighting the history of the previous collaborative R&D project between IITG and IDT-ONGC that led to the current TLA with Softdrill Solutions for industry use. He also mentioned that IITG has been leading and is very active in R&D partnerships with industry and technology transfers for commercial use.

Prof Vimal Katiyar, Dean R&D, IIT Guwahati highlighted the fact that IIT Guwahati has been the Centre of Excellence in R&D for the Oil & Gas industry, being funded on many projects by ONGC, OIL, and other Indian oil companies. By virtue of its research leadership, IIT Guwahati has been globally ranked 41 in QS Ranking for research in Petroleum Industry. He further said that IIT Guwahati has the necessary expertise in various domains in different Departments and Centres to cater to the need of the oil and gas industry. IIT Guwahati is also indulging very much in indigenous technology development, not only for drilling but for other areas as well. Congratulating the IDT-ONGC team and IITG research team led by Prof Senthilmurugan, he appreciated that the TLA signed is a very important milestone and will be useful for the oil industry.

Mr. Venkateswaran G, HOI IDT-ONGC brought out the importance being given by IDT-ONGC for Industry-Academia relationship and developing technologies through collaborative R&D projects funded by IDT-ONGC. He mentioned that the project Decision Support System for Drilling Operations that led to this new TLA was initially funded by IDT-ONGC as a part of the 'Make in India' campaign. The aim of the R&D project was to develop well monitoring for drilling supervisors and provide a timely prediction of the 'well-behaviour' and 'well-complications' so that corrective steps are taken to minimize the downtime of drilling operations. He also appreciated that a joint IITG-ONGC patent was filed out of this technology development project and this is one of the first patents going for commercialization through a Startup company. He also noted that Softdrill Solutions was found fit and qualified for funding under the ONGC Startup funding scheme, to take up the commercialization of the R&D outcome.

Highlighting the value of the developed decision support system, Prof Senthilmurugan Subbiah said, "Most of the existing Oil & Gas exploration and drilling projects use low automation / rudimentary & ad-hoc control room solutions. They are largely human/operator dependent for monitoring, diagnostics, and troubleshooting of downhole complexities and maintenance issues. Drilling takes place at sub-optimal conditions based on previous driller experience and/or anecdotal rules. There is no existing automated auditing platform to report energy efficiency and benchmarking metrics for the drilling process. The net impacts are - increasing downtime of drilling operations, project schedule slippages, delays in commencement of good production, and compromised safety issues. Our R&D project has addressed these challenges and developed and demonstrated a prototype solution in a practical rig system with expert support from IDT/ONGC".

Exhibiting confidence and looking forward to further innovating, developing, and commercially exploiting the R&D outcome through this TLA, Mr. Jaimin Patel, Director of Softdrill Solutions presented briefly on their commercialization plans and said that traditional DCS systems are large platforms with decades-old technologies which are increasingly difficult to maintain or upgrade due to rapid obsolescence. Hence, Softdrill would like to bring out AI/ML and IoT / cloud-based Smart Control Room solutions for drilling projects. The proposed product/solution is expected to significantly reduce the non-productive downtime and improve the overall profitability. Softdrill will focus initially on Indian Oil & Gas majors and in the future, other oil companies across the globe. Mr. Jaimin firmly believes that this TLA is a huge opportunity for 'Make in India & Go Global' and for value creation across all segments of Oil & Gas industry drilling and also production operations in future". He further requested closer cooperation and help in terms of field data and expert inputs from IDT-ONGC and IITG during the early phase of commercialization by Softdrill Solutions.

Softdrill Solutions Pvt Ltd., Udaipur, is an innovative Start-up company focused on bringing out intelligent solutions for Oil & Gas industry. The company also established its R&D center in IIT Guwahati, to leverage the expertise from faculty, research scholars, and also its various lab facilities for their projects. Their aim is to develop and commercialize AI/ML, data analytics, and cloud-based smart control room solutions to positively impact Oil & Gas industry by providing intelligent and optimal Oil-well drilling operations monitoring, diagnostics, and predictive management.

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IIT Guwahati signs MOU with India Japan Lab, Keio University, Japan for multiple mutual collaborations

Indian Institute of Technology Guwahati has signed a Memorandum of Understanding (MoU) with the India Japan Lab (IJL) of Keio University on 15th March 2022 to collaborate on research projects, Joint student Supervision, developing new certificate courses, students and faculty exchange visits, etc.

According to the MoU, IIT Guwahati and India Japan Lab of Keio University will encourage faculty and students to work jointly for various capacity building activities for mainstreaming disaster risk resilience as part of training courses; developing new certificate courses on specific topics related to disaster risk reduction; joint student supervision; students and faculty exchange visit for knowledge sharing; undertaking research projects; joint publication of articles/educational books.

Under this MoU, the Centre for Disaster Management and Research (CDMR) of IIT Guwahati will act as the nodal Centre from IITG. CDMR has been established at IIT Guwahati in November 2020 and the formal activities of this Centre started in January 2021. The India Japan Lab of Keio University was established in 2019. Keio University is one of the oldest and largest private universities in Japan, established in 1858.

CDMR of IIT Guwahati will be the partner for various IJL training programs/ workshops for the North East Region. This partnership would pave the path for a closer relationship with Japan, the country which is known for its expertise in managing disasters and developing technologies in reducing risks from various kinds of disasters.

The MoU was signed by Prof. T. G. Sitharam, Director, IIT Guwahati, and Prof. Rajib Shaw, Director, India Japan Lab, Keio University, in the presence of Dr. Sudip Mitra, Head, Centre for Disaster Management and Research (CDMR), IIT Guwahati.

Prof. T. G. Sitharam, Director, IIT Guwahati in his speech mentioned the collaboration between Keio University and the Indian Institute of Technology, Guwahati will not only be a technical one but a social one too. He also suggested initiating the scope for a joint Master's program by Keio University and IITG. He also mentioned the potential role that CDMR and Keio University could play in generating awareness about disaster risk reduction among school children.

Dr. Sudip Mitra, Head, CDMR, IIT Guwahati welcomed the dignitaries and mentioned the background of this MoU signing. He also stated the importance of this MoU for CDMR's future growth and international footprint.

Prof. Rajib Shaw, Director, India Japan Lab, Keio University and the winner of Pravasi Bharatiya Samman Award of 2021, emphasized the several key aspects of collaboration between these two institutions e.g. exchange program, certification courses, internship, and summer school. He highlighted that this MoU will provide exposure to the young IITG students to get to various Japanese companies and learn the essence of entrepreneurship. He also mentioned the importance of technology and social innovation where IITG students could play an important role.

On this occasion, CDMR's logo has been launched by Prof TG Sitharam and Prof Rajib Shaw. Head, CDMR explained the significance of this logo, which expresses the various forms of disaster and its impact on society and the protection that is provided by disaster management and risk reduction.

As the year 2022 marks the 70th anniversary of India Japan diplomatic relationship, this MOU is a step towards further strengthening mutual relationships and collaborating in the domain of research and academics. This MoU signing event was attended by the Dean, Alumni and External Relations; Dean, Public Relations, Branding and Ranking, and faculty members of CDMR.

IIT Guwahati in collaboration with DGIST South Korea, develops triboelectrification for biomechanical energy harvesting device applications by breathing

Researchers from the Indian Institute of Technology Guwahati, and Daegu Gyeongbuk Institute of Science and Technology (DGIST), South Korea, have developed ferromagnetic nanocomposites to be utilized as a positive triboelectric layer in triboelectric nanogenerator (TENG) suitable for energy harvesting device applications to harvest biomechanical energy from breathing (inhale and exhale) during standing, sitting, and bending positions.

Considering the abundant biomechanical energy in our daily life and its ubiquitous nature produced during human activities, the fabricated TENG device helps harvest the biomechanical energy to power up low-power electronics. The results of such novel approach work have recently been published in Nano Energy (https://doi.org/10.1016/j.nanoen.2021.106662) and Materials Letters (https://doi.org/10.1016/j.matlet.2021.131644), highly reputed journals in the area of materials science, and a few more exciting results are under communication.

The limited recycling process of batteries used in various electronic devices in today's world causes a severe disbalance in the ecosystem due to the release of toxic materials and waste disposals, which eventually leads to global warming. Thus, it is essential to develop clean, green, and sustainable power resources befitting suitable alternatives to reduce the damage caused by batteries.

With this connection, the energy conversion devices like nanogenerators could effectively harness idle energy from wind, water waves, and biomechanical energy. The nanogenerators are generally categorized into electromagnetic, piezoelectric, pyroelectric, triboelectric, etc., depending on the energy conversion functionality and functionality with many applications like bio-robotics, defense, wearable electronics, micro-electro-mechanical systems, nano-electro-mechanical systems, etc. Among these systems, the triboelectric nanogenerator has emerged as an eco-friendly energy harvester for self-powered applications, in which the triboelectrification is responsible for generating the surface charges when two surfaces exhibiting different work functions come in contact or friction with each other. Typically, the materials generating surface charges are synthesized using a metal or polymer counterpart as the matrix component. These materials are also expensive and require obscured synthesis routes. Therefore, the alternative method of using the composites directly, as a triboelectric layer synthesized via a cost-effective fabrication route, can essentially extend the application.

In this work, the researchers have developed ferromagnetic metal and metal-oxide nanocomposites using a cost-effective mechanochemical reduction process in a high-energy planetary ball mill technique, and the biomechanical energy harvesting is demonstrated with the nanocomposites as positive triboelectric layers to elucidate the usage of the fabricated TENG in real-time applications its application. The high-energy planetary ball milling technique helps synthesize the ferromagnetic nanocomposites using the mechanochemical reduction process by highly reactive metals, leading to the thermodynamically favored solid-state reduction at the stoichiometric conditions (Figure 1). The original antiferromagnetic NiO was reduced into Ni-rich ferromagnetic nanosized metals dispersed in resulting oxide phases depending on the choice of the reactive metals. These nanocomposites provide excellent thermal and chemical stability, extreme sensitivity to change in the composition and structure, accessible mode of fabrication, and multifunctional behaviors. Interestingly, the oxygen vacancy in the nanosized oxides is electrically positively charged, which is an essential factor that could contribute to the exchange and trapping of electrons when driving a TENG. As the active area of TENG devices increases, there is an increase in the surface area contact between two triboelectric layers during the contact and separation, leading to an increase in the charges developed on the triboelectric surface (Figure 1). The extracted voltage and current outputs demonstrate the harvesting of accessible electrical energy from biomechanical activities, which could effectively power the low-power electronic devices such as wristwatches and LEDs, etc.

Prof. Perumal Alagarsamy, Department of Physics, IIT Guwahati says, "The above results confirm the exploitation of ferromagnetic nanocomposites as positive triboelectric layers and the extension of triboelectric series. Furthermore, considering the large change in the magnetic properties of the nanocomposite upon applying the applied magnetic field may improve the TENG power output performance, which is currently under investigation for further improvement."

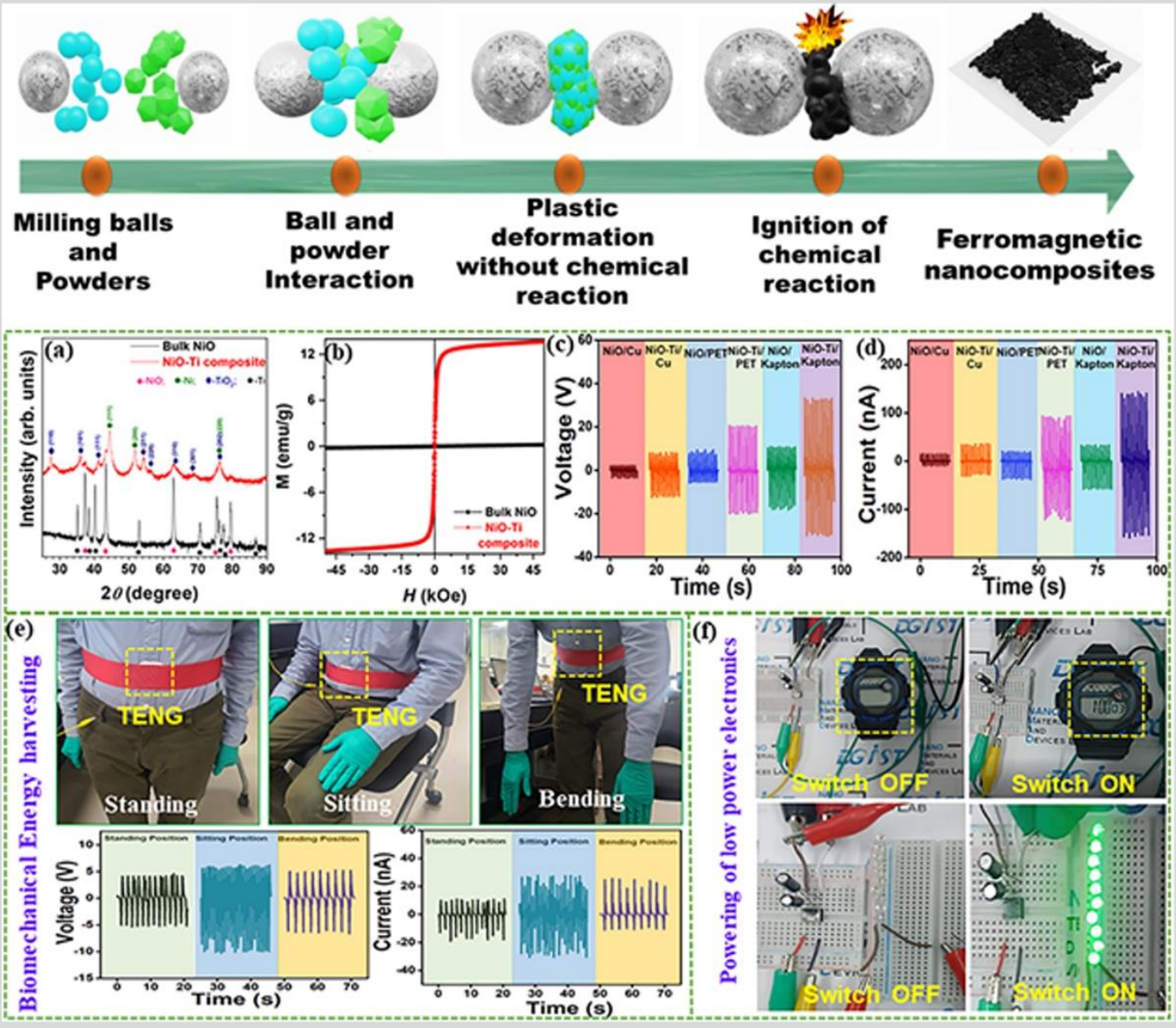

Figure: The development of ferromagnetic nanocomposites using mechanochemical process by high energy planetary ball mill. (a) room-temperature XRD patterns and magnetic hysteresis (M-H) loops; (c-d) voltage-current for the bulk NiO and NiO-Ti as positive layers and copper, PET sheet, and Kapton as negative layers; (e) biomechanical energy harvesting during human motions; (f) powering of wristwatch and green LEDs.

Alcheringa 2022

Alcheringa 2022-Voyage To Neoterra was the 26 edition of IIT Guwahati's Annual Cultural Festival. Conducted on 11 -13 March 2022, Alcheringa 2022 was the first Hybrid Cultural festival of all the IITs. Alcheringa 2022 had both the online and offline modules this year.

The event was inaugurated by Professor U. S. N. Murty, Director, NIPER Guwahati. He was also accompanied by Professor T.G. Sitharam, Director, IIT Guwahati, Dean of Student Affairs Professor V. Venkata Dasu and Chairman, Cultural Board Professor Ashwini Kumar Sharma.

Online mode consisted of :

- 22 Competitions under eight modules for which we had a participation of around more than 4000.
- Creators' Camp in which Content Creators from various fields interacted with the audience and guided the budding youtubers and Content Creators.
- Proshows had International Artists from over more than ten countries performing for Alcheringa 2022.

Online Module had a total viewership of around 15,000 for the 3 days of the festival.

Offline module of Alcheringa 2022 was organised exclusively for the campus fraternity due to the ongoing pandemic situations. Offline module consisted of the following events:

- **Saaz-** the Classical Night: Alcheringa hosted Grammy Award winner Vikku Vinayakram and his three generations along with his band for its Classical Night-Saaz.

Takahiro on the Santoor, and Zuheb on the Tabla, also performed on the musical night Saaz. Takahiro, the Japanese artiste who is a disciple of Pandit Shiv Kumar Sharma, is known to win the audience over with his performance and his simplicity. Zuheb Ahmed Khan is one of the leading torchbearers of the famous Ajrada Gharana and a rising star of Hindustani classical music.

- **Pronites**: This time Alcheringa 2022 had two pronites, Crescendo (Day 1) and Juggernaut (Day 2). On day 1 the Campus Fraternity witnessed the mesmerising performance of renowned Musician and Composer Amaal Malik. The last day of Alcheringa had enchanting performances of the popular band, Underground Authority and an electrifying performance of DJ Paranox.

IIT Guwahati signed MoU with ICAR-National Research Centre on Pig, Guwahati

IIT Guwahati hosts Chair of 'Jal Jeevan Mission' for Water Treatment Technology

Indian Institute of Technology Guwahati has established the 'Chair of Jal Jeevan Mission for Water Treatment Technology. The Jal Jeevan Mission (JJM) was launched by Shri Narendra Modi, Hon'ble Prime Minister on 15th August 2019 from the ramparts of the Red Fort. It aims to enable every rural household to have a Functional Household Tap Connection (FHTC) by 2024.

The Institute has appointed Prof. Mihir Kumar Purkait, Department of Chemical Engineering, IIT Guwahati as the first occupant of this Chair. The tenure of the Professor Chair will be five years.

Prof. Mihir Kumar Purkait has a portfolio of diverse innovations and developments in basic and applied research. He has the credit for industrializing various technologies for up and downstream operation of water and wastewater treatment technologies, waste to wealth generation, separation of value-added product from a plant source, and electrochemical reduction of CO2 to various products.

The National Jal Jeevan Mission (NJJM), Department of Drinking Water and Sanitation, Government of India, is responsible for, inter alia, implementation of Jal Jeevan Mission (JJM) across the country, providing policy guidance, and building partnerships with State Governments to achieve the goals of JJM.

The Jal Jeevan Mission - Professor Chairs are established by the Ministry of Jal Shakti, Department of Drinking Water and Sanitation, National Jal Jeevan mission (NJJM), New Delhi in reputed academic institutions to carry out high-quality empirical and applied research in the rural drinking water and sanitation sector. The objective is to address sectoral challenges and facilitate the achievement of 'Har Ghar Jal' and 'ODF Plus' in rural India.

It is intended to establish five Jal Jeevan Mission (JJM)-Professor Chairs in Institutions of repute such as Indian Institutes of Technology/ Indian Institutes of Management/ social sciences academic-cum-research institutions and national institutions having research experience relevant to the needs of the water and sanitation sector.

Highlighting IIT Guwahati's track record on water-related research and its capabilities, Prof. T.G. Sitharam, Director, IIT Guwahati, said, "The supply of contaminant-free drinking water to rural areas is a priority for Central and all State Governments, including Assam. The technology adopted here might be useful to the citizens both in rural and urban areas for getting contaminant-free drinking water. I am very glad that NJJM has established a Professor Chair on water treatment technology at IIT Guwahati."

The JJM-Professor Chair will work in coordination with the State Water and Sanitation/ Rural Water Supply/ PHE Departments and the State and District Water and Sanitation Missions. It will focus on capacity building and maintaining a balance among capacity building, outreach, academic program, and educational activity, and research in-focus areas of the institute.

Explaining the scope of NJJM Professor Chairs on water treatment technology, Prof. Mihir Kumar Purkait, Department of Chemical Engineering, IIT Guwahati, said, "The Initiatives taken by NJJM will definitely bridge the gap between academic institutions like IIT Guwahati with the State Water and Sanitation, JJM, Rural Water Supply, PHED, PNRD, and the State and District Water and Sanitation Missions of state and or central government. My expertise gained since last 22 years on the fundamental and applied research on water treatment technologies will be useful to the concerned government authorities to make a strategy for implementing more efficient, economical and sustainable technology beneficial to the society."

The Chair will also be responsible for conducting high-quality empirical and applied research in the rural drinking water sector that is aligned to the objectives and priorities of Jal Jeevan Mission.

The Chair will serve in an advisory capacity to NJJM in matters of policy or technology and will function as a think-tank in the selected focus area, in particular, and the rural water supply sector in general. The Chair will also conduct a Ph.D. programme and related course work in the selected focus area.

Prof. Mihir Kumar Purkait has developed and demonstrated several prototypes to provide iron, arsenic, fluoride, and other contaminants-free drinking water to the rural people of Assam with the help of his patented innovative water treatment technologies.

Arsenic and fluoride contamination in drinking water is a foremost and growing concern among rural people not only in Assam but also in major parts of the country and IIT Guwahati's technology will succour and assist the Government of India in providing contaminant-free drinking water to the people to fulfill the 6th Sustainable Development Goal (SDG-6).

Prof Mihir Kumar Purkait has developed various water treatment technologies based on membrane technology, nanotechnology, adsorption, electrocoagulation/coagulation followed by flocculation-sedimentation-filtration for the treatment of contaminated drinking water and industrial wastewater as well. He has also developed and installed many water treatment plants in temples and schools and rural villages where pipe water supply is not available as a project deliverable funded by DST, DRDO, DBT, and Govt. of Assam.

Prof. Mihir Kumar Purkait, Dept of Chemical Engineering, IIT Guwahati, who has been appointed as First Occupant of Chair of Jal Jeevan Mission for Water Treatment Technology

Awards & honours

Prof. Mohammad Qureshi, Department of Chemistry, IIT Guwahati has been admitted as a Fellow of The Royal Society of Chemistry.

Dr. Ankita Gaur, Ramanujan Fellow at School of Energy Science & Engineering, has received the best oral presentation award at the recently held International Conference on Photovoltaic Materials and Electronic Devices, 2022 during 03-04 March 2022 in Bangkok, Thailand.

Shubham Maurya

Debdut Sengupta

Shubham Maurya and Debdut Sengupta, MS(R) students of Centre for Disaster Management (CDMR), IIT Guwahati participated and secured 3rd place in the INNOVATION CHALLENGE under GRAMOTTHAN_2022 for transforming Rural India, in line with 'Aatmanirbhar Bharat Abhiyan'(Self -reliant India Campaign) for their project titled 'Development of a monitoring application used for systematic Pre-Disaster Management to develop a Self-Sustaining Disaster Resilient Community' with a cash prize of Rs 10,000/- (ten thousands).

Superannuation

Lakhyan Mandal
Sr. Attendant
Department of Design
DoR: 31.03.2022

Visit of National Defence College Contingent including Joint Secretary to the Govt. of India, Brigadier equivalent in the Armed Force/ Senior Officer of Armed Force of other nations to IIT Guwahati on 22 March 2022.

Visit of Col Sanjeev Narula, CO, EME Battalion and Brig Deepak Gaur, Dy. General-Officer-Commanding Red Horns Division to IIT Gauhati. They briefly interacted with the Director, IIT Guwahati Prof. T G Sitharam and Dean PRBR Prof. Parameswar Iyer.

International Women's day 2022

The celebrations were inaugurated with the 'lighting of the lamp', which was followed by the playing of the institute anthem. On this women's day, an impressive number of students, staff and faculty members were in attendance. The Chairperson of the Internal Committee, Shakuntala Mahanta welcomed the gathering. This was followed by the opening remarks from the Deputy Director, Prof. S.K Kakoty who said how empowerment and equality starts from the family. He also exemplified various research projects that he has conducted through which he has helped in the empowerment of the disadvantaged and indigent women in Assam. This was followed by the address by Prof. A. Srinivasan, Department of Physics (also interim Registrar, IIT Guwahati) who

discussed the influence of the women in his family in shaping him as a person. He thereby threw light on how, even though often ignored, women contribute significantly to society by giving a strong foundation to individual worth and self-respect. He also talked about the industriousness of his sister who managed an industrial unit in the most challenging circumstances.

The invited speaker, Dr. Hemjyoti Medhi, discussed extensively about the formation and extension of the Assam Mahila Samiti (1926) and the work of the Mahila samiti and its contribution to the Assamese public life. She discussed how the Mahila Samiti served a legal notice to a prospective groom Durgeswar Bujarbarua citing the Child Marriage Restraint Act (popularly known as the Sarda Act) in February 1934 which invited disparaging remarks on the Mahila Samiti as 'marriage breaking committee' and also 'poharir mel' which means a fishseller's market. She also showed a short video on the women who were active in the Mahila Samiti and participated in the cultural sphere of Assam even though they were aware that their activities were not viewed in a charitable manner by most members of the public. Her talk threw a lot of light on the earliest women's organization in Assam and their relevance in the social movements of Assam.

The invited speaker Mr. Harish Sadani, activist and director of the organisation 'Men aganst Voilence an Abuse' explained how societal and patrirachal structures not only deny women of their rights but also puts unhealthy burden on men to succeed and accomplish without showing any signs of weakness. He explained how adolescent and young boys have to go through pressures from both society as well as dealing with emotional and biological changes. He showed that patrirachy is the root cause of a lot of suffering that boys also go through.

This was followed by a play 'Mard ko dard hota hai' by the youth leaders of Maanush project and 'Men Against Vilence and Abuse' which also exemplified the themes of a patriarchal society's unrealistic expectations from men at the same time subjugating women to a lesser role in society.

SPIC MACAY 2022

Virasat 2022, the annual Indian cultural extravaganza by SPIC MACAY IIT Guwahati was organised from 8 to 10 March, 2022. Dr. Bhupen Hazarika Auditorium and Swimming Pool Area. The event hosted performances of highly reputed artists.

The event was inaugurated by Professor S. K. Kakoty, Deputy Director IIT Guwahati on 8 March, 2022.

Carnatic Vocalist, Shri Abhishek Raghuram (Sangeet Natak Academy Yuva Awardee), one of the most-heard Carnatic vocalists in India was accompanied by internationally reputed violinist HN Bhaskar, a Sangeeth Natak Academy Awardee and 'Mridanga Naada Mani' Dr. Patri Satish Kumar.

One of India's most innovative musicians, a Grammy Award-winning Hindustani classical instrumentalist, Pt. Vishwa Mohan Bhatt is credited for the invention of the Mohan Veena, a Hawaiian guitar (or slide guitar) made in a way that it resonates a sound that blends the sitar, sarod and veena in one melody. He was accompanied by his son, Tantree-Samrat Pt. Salil Bhatt, who is credited for the invention of another slide guitar called the Satwik Veena, and the renowned Tabla player Shri Kaushik Konwar.

Pt. Vishwa Mohan Bhatt was felicitated by Professor T. G. Sitharam, Director IIT Guwahati.

Rajasthani folk artist, Bhutte Khan Manganiyar and his troupe, was accompanied by Kalbeliya dancers. Recognised by UNESCO as 'Intangible Cultural Heritage', the fast-paced dance of Kalbeliyas is known for their flexibility, swirling dance moves and exquisite facial features.

The final performance of SPIC MACAY was a Bharatanatyam performance by the first Transgender Padma Shri Awardee Dr. Narthaki Nataraj. Specialised in the Tanjore based Nayaki Bhava Tradition, Nartaki Ji was honoured with a Sangeet Natak Akademi Award in 2011. Besides being an exceptional artist, her contributions to the transgender community in India have also been widely appreciated. Her life and journey has been included as a lesson in the 11th standard Tamil textbook by the Tamil Nadu government in 2018.

List of Top GATE 2022 qualified candidates who have listed IIT Guwahati as their qualifying college in their application

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Assam, India

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