

ESTEC-2020 Culminated in CSIR-NEIST

An international conference on Engineering Sciences & Technologies for Environmental Care (ESTEC-2020) commenced from 20 February at CSIR-North East Institute of Science & Technology (CSIR-NEIST), Jorhat and closed on 22 February, 2020. The conference had a grand start with stalwarts and think tanks from diverse areas of science and technology (S&T) from different area of the country and abroad congregated at CSIR-NEIST. Apart from a host of dignitaries, participants from academic and research institutes the event was also attended by some industry heavy weights. The director of CSIR-NEIST Dr G. Narahari Sastry inaugurated the conference along with the Chief Guest Prof. T.G. Sitaram, Director IIT Guwahati and Guest of Honour Dr KSMS Raghava Rao, Director, CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysuru and Dr Arup Kumar Mishra, Director ASTEC, Guwahati. In his welcome address Dr Sastry congratulated Mr S.C. Kalita, Chief scientist of CSIR-NEIST who will be superannuating by the end of this month and the conference had been organized in his honour. He highlighted on the CSIR-NEIST theme for the year 2020 “Revitalizing NEIST for Strengthening Northeast” and the thrust areas of research will be Environmental Care, Herbal Formulation and Knowledge of Empowerment and this conference is also a step in this direction. He also mentioned that to give a fillip to the niche areas of research and live up to the theme of the year some new divisions and centres viz. Advanced Computation and Data Sciences Division (ACDS), Agrotechnology and Rural Development Division, Centre for Petroleum Studies, Centre for Instrumentation and Quality Control, Centre for Knowledge Resource and Information Sciences, have been created for catering the needs of northeast India in particular and the country in general better. Dr Sitaram stressed that to achieve the goal of becoming 5 trillion economy, we need to look beyond mundane research problem and focus on real issues which is the crux of the matter. He delved upon the fact that India is the third largest dam building nation and sustainable water is of paramount importance to our economy. In his keynote address Dr KSMS Raghava Rao recalled the contribution of

CSIR in the country's growth and development and the pivotal role played by CSIR-CFTRI in spray drying buffalo milk to produce the baby food Amulspray. He highlighted the importance of process engineering in augmenting the productivity. Dr A.K. Mishra in his key note address elaborated upon concepts such as environmental care and protection, circular economy, eco-footprint and environment care is a part and parcel of our day-to-day life and basically it starts from our home. He further pitched in that producing lofty ideas is not just important but such scientific forum will make a real sense if it churns out at least a few entrepreneurs, research scholars ecologists, environmental activists of tomorrow. The invited dignitaries later released the "Book of Abstracts" of ESTEC-2020.

In this 3-day conference, a total of 11 technical sessions which covered 7 plenary lectures, 26 invited lectures, 19 oral and 179 poster presentations were held apart from an industry session covering 4 lectures and 3 business talks from the petrochemical industries of north eastern region. Dr G. Narahari Sastry informed that the themes of the conference revolved around renewable energy/materials, climate changes, waste management, catalysis, membranes, green processes, green buildings, process intensification, risk and hazard assessment, polymers and composites, energy storage, mathematical modeling and simulation, artificial intelligence and data sciences, pollution abatement, bioremediation and building materials and structural engineering apart from a special dinner session on the first day called "Food for Thought" where 8 different groups brainstormed on topics such as petroleum research, coal and energy, process engineering, machine learning, food engineering and agro technology, urban development and pollution, environmental care and water.

Among the speakers from abroad Dr D.B Das, an Associate Professor the Loughborough University spoke about carbon dioxide sequestration by dynamic capillary pressure and application of membrane based system to arrest the excess carbon dioxide in the atmosphere and converted into supercritical carbon dioxide which can be stored in geological systems such as oil reservoirs as dry ice. He also opined naturally rock types such as basalt, limestone and silica has the capacity to entrap carbon dioxide. This technique not helps to contain green house gas like carbon dioxide and reduce global warming but is also handy in enhanced oil recovery from

the old matured oil fields. Dr Sebastiano D'Amico, Coordinator, Geophysics Laboratory, Department of Geoscience, University of Malta and the Vice-President of the European Seismological Commission spoke on the challenge of computing seismic hazard maps and seismic scenarios incorporating also site effects. He pointed out that this kind of studies helps to understand how ground motion from the repeat occurrence of historically recorded earthquakes coupled with existing geological conditions and building types has the potential to cause significant structural damage. Dr Rabah Boukherroub, research director National Centre for Scientific Research (CNRS) and Group Leader at the Institute of Electronics, Microelectronics and Nanotechnology (IEMN), University Lille, France spoke about grapheme-based nanocomposites for biomedical, environmental and energy storage applications. He said that that this wonder material is a "hot topic" of research in interdisciplinary sciences with potential applications in several fields such as nano-electronics, organic catalysis, environmental remediation, drug delivery systems. As result of their low cost of production, large specific surface area and abundant surface chemistry they have shown great promise in the development of novel composites, biosensors, photocatalysts, electrocatalysts etc.

The industry delegates include Dr Neeraj Mathur, CGM-R&D, Oil India Limited, Duliajan, Assam; Mr Bhaskar Jyoti Phukan Director (Technical), Numaligarh Refinery Limited (NRL), Assam; Mr Pranjal Changmai, GM (Operation) Brahmaputra Cracker and Polymer (BCPL) Ltd. Dibrugarh. They gave a profile of their respective areas of operation and functioning and showed keen interest to collaborate with CSIR-NEIST in industrial R&D. Prof. (Dr) J R Kayal, Retd. Dy Director General (Head Geophysics), Geological Survey of India, Kolkata highlighted on the non intrusive seismological techniques which does not interfere with the environment such as seismic tomography for passive seismic survey which may be employed for oil and mineral resource exploration. Ms Sonmoni Choudhury and Ms Mayuri Deka from Assam Petrochemicals Ltd (APL), Namrup gave a presentation on methanol and methanol based stoves. They said that methanol has emerged as an alternative green and clean fuel in household cooking and for the tea industry.

As informed by Dr Jatin Kalita, Head, Research Planning and Business Development Division, CSIR-North East Institute of Science and Technology developed a Formulation namely “Herbal Lipstick with Lip Care” and transferred it to M/S Atithya, Guwahati Assam during the 2018-19. The herbal lipstick with lip care formulation was specially aimed at individuals suffering from dry and chapped lips. It can both be used as a cosmetic as well as remedial lip care product. The remedial lip care series with a hint of colour will make the lips soft, supple solving a number of problems like dryness, chapped lips, discolouration, cracking, pain, sunburn and numbness. M/s Atithya is ready with the product for commercialization and launched their marketable products in the conference.

The valedictory ceremony was held on 22 February wherein Mr S.C. Kalita was felicitated for his forthcoming superannuation from service by Dr Sastry and special invitee Dr VS Ravishankar, Director, National Institute of Design (NID), Jorhat. The prizes won in the poster and oral presentations in the conferences were presented to the winners at the end.

Prepared by Bijit Kumar Choudhury
Scientist, GSTD,
CSIR-NEIST, Jorhat

With some inputs from Dr Jatin Kalita
