

Project Title: Soil investigation work for LPG mounded bullets at NRL

Project No: CNP-470

Funding Agency: Numaligarh Refinery Limited, Golaghat

PI & Members: Mr Sanjay Deori (PI), Mr D Basumatari (Co-PI), Mrs A Bharali, Mr N P Borah, Mr R Das

Objective:

- ❖ To compute safe bearing capacity of foundation soil.

Salient Achievements:

- ❖ Field work and field test at the proposed location.
- ❖ Collection of soil samples from site and laboratory tests.
- ❖ Computation of safe bearing capacity of foundation soil.
- ❖ Preparation and submission of interim as well as final report.

Project Title: Rural entrepreneurship and skill development through demonstration and training of appropriate technologies of CSIR-NEIST

Project No: RSP-4052

PI & Members: Dr Tridip Goswami (Coordinator), Mr D Neog (Co-PI), Dr S P Saikia (Co-PI), Dr Dipul Kalita, Dr D Das

Objective:

Providing appropriate training to the selected rural youth in the areas of:

- ❖ Some selected industrial trades with the potential of employment and entrepreneurship development.
- ❖ Some selected micro level technologies developed by CSIR-NEIST.
- ❖ For enhancement of rural livelihood and employment / entrepreneurship development

Salient Achievements:

- ❖ Total 532 nos have been trained for skill development and 209 nos of entrepreneurs have been provided entrepreneurship development training. The successful trainees are linked with the existing scheme of Department of Industries and Commerce Center (DICC). In this process, they can form some groups under some legal binding and can formally register the group with DICC for make them eligible for the existing schemes

GEO SCIENCES & TECHNOLOGY DIVISION

The North East India has a complex structural framework with changing behaviors of Seismic activity in different tectonic domains controlled by ancient Plate margin. It occupies a distinct position in the World Seismicity. The division is fully focused on real-time monitoring of active faults along plate margin to assess the seismic hazard potential, dissemination of scientific knowledge in public decision making and to create mass awareness to mitigate the adverse effects of earthquakes by reducing the vulnerability.

A seismic network of 27 (twenty seven) unmanned VSAT based online / real-time high resolution seismic broadband stations covering entire 8 (eight) states of North East India called North East Wide Area Seismic Network (NEWSN) is under operation to intensify seismic monitoring on a real-time basis to observe the present seismicity and to understand the geodynamics of the region.

Seismic vulnerability assessment of the populated cities & urban areas in NE India is a major program of the division. The division has initiated work for hazard-risk-vulnerability assessment of Shillong City, Meghalaya on priority basis.

In association with NDMA and SDMA's the division also tries to assess multi – state earthquake disaster preparedness and evaluate the State/District Disaster Management Plans with an aim to identify gaps and generate the greater level of awareness in community about the seismic vulnerability of the region pertaining to high magnitude earthquake for risk reduction.

HIGHLIGHTS OF IMPORTANT WORK DONE DURING 2016-17

- ❖ A Multiparametric Geophysical Observatories (MPGO) station has been set up in Tezpur, Assam, a suitable site over the giant active Kopili fault in Shillong Plateau that bears a potential source of large scale magnitude earthquake and therefore is idle site for earthquake precursory studies.
- ❖ Estimation of strong ground motion parameters for important cities of NE India
- ❖ Morphometric analysis of Belt of Schuppen and Dauki Fault reveals that presently the state of tectonic activity is not uniform within the same regional structure and the Belt of Schuppen is relatively more active as compared to the Dauki fault.
- ❖ Crustal anisotropy observations are made by shear wave splitting analysis using local earthquakes recorded by 17 broadband seismic stations in the Shillong plateau and Assam valley area, North East India (NE India) region. Our results indicate the presence of several active E-W and N-S trending faults also play a dominant role in the observed pattern of crustal anisotropy.
- ❖ Fault plane solutions of the September 18, 2011 Sikkim Himalaya earthquake of Mw 6.9 and its four aftershocks (Mw>4.0) are studied by waveform inversion using the local broadband network data. Further, analysis of ground acceleration spectra were also analysed which reveals low stress drop (14-38 bars) in agreement with the relatively long source duration and small co-seismic slip of the main shock as well as the aftershocks.
- ❖ Determined tectonic stress pattern of Gulf of Guinea.
- ❖ Estimated shear wave velocity structure of different Shillong city and characterization of materials according to NEHRP classification based on average shear wave velocity.

- ❖ Estimated the site amplification factor for different geomorphological units of Shillong city.
- ❖ Lg wave attenuation studies indicates that the entire NE India is highly attenuating.

ACHIEVEMENTS OF THE DIVISION DURING 2016-17

- ❖ Setting up of Multiparametric Geophysical Observatory for monitoring of earthquake precursor in Mikir Hills plateau Assam.
- ❖ Seismic Vulnerability Assessment of Shillong city in North Eastern India.
- ❖ Site Characterization of Greater Shillong city accomplished.
- ❖ Estimation of Ground Motion Parameters in Shillong Mikir Hills Plateau from Acceleration time histories.
- ❖ Crustal Anisotropy Studies for Shillong-Mikir plateau with subsequent determination of velocity structure of North East India
- ❖ Tectonic evolution of the Mishmi Thrust in the Mishmi Metamorphic complex achieved

FUTURE PLANS OF THE DIVISION

- ❖ Real-time Seismic Monitoring
- ❖ Multi-institutional projects for seismic microzonation of important cities through active collaboration with govt. departments and other premier institutes/organizations of the region
- ❖ State-of-art seismic precursory studies with a view to identify seismic precursory phenomena
- ❖ Site specific seismic investigation for mega engineering projects from govt. agencies, industries and estimation of ground motion parameters.
- ❖ Collaborative projects for river basin studies, climate change and other geoenvironmental problems.
- ❖ Understanding NE India geodynamics through seismology and geology.
- ❖ Generating a Knowledge Base on different aspects of Geosciences to provide Geoscientific Services in NE India.

A) National Collaboration

I. In-house, Grant in aid & Consultancy Projects

Project Title: Seismic vulnerability assessment of major cities in North-Eastern India

Project No: GPP-275

Funding Agency: North Eastern Council, Shillong

PI & Members: Dr Saurabh Baruah (PI), Dr S Sharma (Co-PI), Dr S Baruah (Co-PI), Mr S Deori (Co-PI)

Objectives:

- ❖ To develop earthquake damage scenario which describes the consequences of possible earthquake
- ❖ **Seismic hazard assessment:** To select the hypothetical earthquake to be adopted for use in the project and to estimate the distribution of seismic intensities for the adopted earthquake.
- ❖ **Seismic vulnerability and risk assessment:** The objective of the vulnerability assessment is to prepare vulnerability functions and recovery functions that are applicable to local conditions.

Salient Achievements:

- ❖ The framework of vulnerability aims at a holistic concept taking physical, environmental or socio-economic components into account. The study focuses on the physical dimension of vulnerability for the complex urban system of capital city Shillong, as an initial test bed. Most importantly more than 30 vulnerability factors pertaining to geomorphology, geology, ambient noise survey, Rapid Visual Survey of buildings, census of stay of population during day and night time, drainage map, fault/lineament map besides seismotectonic features pertaining to the parts of city are established. An urban land cover classification based on high resolution satellite data is mapped to analyze the spatial distribution of different types of buildings, the carrying capacity of the street network or the identification of open spaces. In addition, a DEM (Digital Elevation Model) has been carried out to calculate slope map that enables localization of potential landslide areas. Integration of these attributes has helped to identify the physical dimension of vulnerability in parts of Shillong city besides estimation of degree of vulnerability and the vulnerability-determining factors. This assessment of vulnerability provides a broad spatial information basis for decision-makers to develop mitigation strategies. In addition, an atlas of open space of Shillong has been prepared.

Project Title: Setting up of multiparametric geophysical observatory in Mikir Hills, North Eastern India for earthquake precursory research

Project No: GPP-294

Funding Agency: Ministry of Earth Sciences, New Delhi

PI & Members: Dr Saurabh Baruah (PI), Dr S Sharma (Co-PI), Dr M K Phukon (Co-PI), Dr S Baruah (Co-PI)

Objectives:

- ❖ To establish multi-parametric geophysical observatory in Mikir Hills Plateau, Assam with number of state-of-the-art geophysical/seismological equipments.
- ❖ To create high quality geophysical database for earthquake precursory studies.
- ❖ To develop physical models of earthquake processes/sources and evaluating the potential of multi-parametric precursors in practical earthquake prediction programs.
- ❖ Numerical modeling of Total Electron Content and its temporal perturbations in Ionosphere as a possible indicator of earthquake.

Salient Achievements:

- ❖ A Multiparametric Geophysical Observatories(MPGO) station has been set up in Tezpur, Assam, in a suitable site over the giant active Kopili fault in Shillong Plateau that bears a potential source of large scale magnitude earthquake and therefore is ideal site for earthquake precursory studies. A proper understanding of the earthquake generation process, its mechanism, its prediction in the form of precursory signal studies need to be carried out, considering that in case of preparation period for a future large earthquake, certain precursory activities can be expected. The MPGO is equipped with highly sophisticated, sensitive geophysical and seismological instruments for monitoring and identification of the precursory signals. The MPGO is designed to record precursory signals resulting from stress-induced changes in density, magnetization, resistivity, seismic wave velocity; fracture propagation, crustal

deformation, electromagnetic and radon gas emission as well as fluctuations in hydrological parameters. Following figures depicts the same.



(a) Broadband Seismograph



(b) Strong motion accelerometer



(c) Resistivity meter



(d) Global positioning receiver



(e) ULF/VLF recorder



(f) Overhauser magnetometer

Project Title: Estimation of ground motion parameters in Shillong Mikir hills plateau from acceleration time history of earthquake events originated in North East India

Project No: GPP-300

Funding Agency: Ministry of Earth Sciences, New Delhi

PI & Members: Dr Sangeeta Sharma (PI), Dr S Baruah (Co-PI)

Objective:

- ❖ Collection and Parameterization of seismic records within the studied area.
- ❖ Correlations of ground motion parameters, characteristics of source and media.
- ❖ Estimation of peak ground acceleration due to maximal credible earthquake and the attenuation relation.
- ❖ Computation of three dimensional Q structure of the region

Salient Achievements:

- ❖ 33 ground motion parameters have been ascertained for three components of 11 events for each station. Necessary Fourier power spectra, response spectra, Fourier amplitude versus frequency plot, power amplitude versus frequency plot and Response acceleration versus

frequency plot have been plotted for all the components for each of the recorded stations each of these events. Contour plots of maximum acceleration and predominant period are determined for 11-08-2009 Mw5.6 earthquake to identify the characteristic of the source and the media. For estimation of site response, the horizontal component of shear wave spectra at each site of one event (15-02-2009; Mw4.4) is divided by the vertical component spectra observed simultaneously at that site. Moreover, the sediment-to-bedrock ratio is determined by dividing the Fourier spectrum of a site by that of a nearby reference (rock).

Project Title: Crustal anisotropy studies for Shillong-Mikir plateau and subsequent determination of velocity structure of NE India

Project No: GPP-302

Funding Agency: SERB -Department of Science and Technology (DST), Govt. of India

PI & Members: Dr Santanu Baruah (PI)

Objective:

- ❖ A systematic mapping of S-wave birefringence from earthquakes.
- ❖ To study the polarization obtained from source mechanism of earthquakes and to correlate the observed polarization with the polarization obtained from source mechanism
- ❖ To make an effort to image 3D seismic structures by local earthquake tomography

Salient Achievements:

State of Tectonic Stress in Shillong Plateau of Northeast India

- ❖ The stress inversion results shed a new light on the stress regime in the Shillong plateau and its implications to seismo-tectonics. GPR derived stress associated stress has got clear influence on the total stress field of the Shillong plateau, which is found to vary from the western edge due to higher topography and density heterogeneities to that of eastern edge. We examined first and second order stress contributors in the study region. It is ascertained that the tectonic loading from the Himalaya, seismic and GPE stresses collectively govern the stress pattern in the Shillong plateau region.

Project Title: Site characterization and seismic vulnerability studies of greater Shillong

Project No: GPP-308

Funding Agency: Meghalaya State Disaster Management Authority, Shillong

PI & Members: Dr Manoj Kumar Phukan (PI), Mr M Borkotoky (Co-PI), Mr K C Deuri, Mr P Kalita, Mr S M Bhattacharyya, Mr A K Hazarika and Mr A Saikia

Objective:

- ❖ Preparation of base map and thematic maps such as geology & geomorphology, lithology, soil & rock types, seismicity & seismotectonics, groundwater & hydrogeology, land use/ land cover, forest type, habit & habitat and population density.
- ❖ Preparation of a seismotectonic map covering 350-500 km radius of Shillong city and using local/global seismic network data. Identification of active tectonic lineaments.

- ❖ Geotechnical investigation, using available SPT borehole data and n value up to 30m depth using empirical relations.
- ❖ Determination of predominant frequency from the ratio between Fourier spectra of horizontal and vertical component of noise survey (Nakamura's method).
- ❖ Integration of data to generate Seismic Site Amplification Map for Shillong.

Salient Achievements:

- ❖ Completed seismotectonic study of the city and adjoining region. Acquisition of seismic ambient noise data in a grid pattern covering greater Shillong city. Total 114 points covered in three field sessions.

Project Title: Tectonic evolution of the Mishmi Thrust in the Mishmi Metamorphic complex

Project No: GPP-311

Funding Agency: Department of Science and Technology (DST), Govt. of India

PI & Members: Dr R K M Devi (PI)

Objective:

- ❖ Role of transverse faults in the tectonic evolution of Mishmi Thrust Belt.
- ❖ Studies on the tectonic movements associated with the evolution of Mishmi Thrust and reactivations along the Mishmi Metamorphic complex.
- ❖ Studies on Neotectonics & Active faults of the study area with reference to Structural mapping & Tectonic Geomorphology.
- ❖ Studies on abutment of the Eastern Himalaya along the Tidding Suture zone and its structural complexities.

Salient Achievements:

- ❖ In Arunachal Himalaya, major tectonic units show a bend of their regional bedding and foliation strike from ENE–WSW to NW–SE, known as the Eastern Syntaxis. It represents a major antiformal structure i.e. the Siang Antiform. In the Eastern Syntaxis, active deformations are also found to be concentrated in the frontal region. Transverse fault activities are observed along (a) the **Lohit River Exit** at Parsuramkund with Neotectonic evolution of 5 (Five) level terraces and dextral fault movement associated with oblique sinistral fault movement (b) the **Roing-New Chidu road** with a scarp plane showing foliated hard marble and quartzite bands exhibiting a series of chevron folds due to the presence of regional/local compressive force caused by the Mishmi Thrusting.

Project Title: Seismic microzonation of greater Dimapur, Nagaland

Project No: GPP-326

Funding Agency: Nagaland State Disaster Management Authority, Govt of Nagaland

PI & Members: Dr Manoj Kumar Phukan (PI), Mr M Borkotoky (Co-PI), Mr K C Deuri, Mr P Kalita, Mr S M Bhattacharyya, Mr A K Hazarika and Mr A Saikia

Objective:

- ❖ Seismotectonic study of Dimapur city and adjoining region. Identification of major active faults and lineaments.
- ❖ Spatial Distribution of Shear Wave Velocity from available geotechnical data
- ❖ Acquisition and processing of seismic ambient noise data in a grid of 0.5-1.0 km covering the entire city
- ❖ Determination of predominant frequency and preparation of seismic site amplification map.

Salient Achievements:

- ❖ Initiation of seismotectonic study of the city using existing seismic database.

Project Title: Advanced research in engineering & earth sciences (ARiEES): Data intensive modelling and crowd sourcing approach

Project No: ISC-301

Funding Agency: CSIR, New Delhi

PI & Members: Dr Manoj Kumar Phukan (PI), Dr S Baruah, Mr M Borkotoky, Mr K C Deuri, Mr S M Bhattacharyya and Mr A Hazarika

Objectives:

- ❖ Setting up of GPS/GNSS Network to monitor Crustal plate movement
- ❖ Rate & direction of Plate movement to correlate crustal deformation
- ❖ Quantify slip movements related to large earthquakes
- ❖ Modeling of time-dependent co-seismic/post-seismic deformation
- ❖ Earthquake rupture mechanism, fault dynamics and precursory signatures
- ❖ Probable timing and locations of major crustal deformation

Salient Achievements:

- ❖ Installation and Continued operation of 6 GPS/GNSS observatories
- ❖ Continuous data acquisition & retrieval of data from all observatories.
- ❖ GPS data processing and analysis
- ❖ Estimation of rate & trend of crustal plate movement & correlation with seismic events. Data from all the GPS stations shows that the dominant movement of the Indian plate is due ENE at an average rate of about 2-2.5 cm/year.

Material Sciences & Technology Division

Materials Sciences and Technology Division (MSTD) comprises of three groups, namely Advanced Materials, Cellulose Pulp and Paper and Polymer Petroleum and Coal Chemistry.

Advanced Materials group formerly Materials Science has been working on different aspects since its inception. The contribution ranges from Vertical Shaft Kiln (VSK) technology, silicate materials, cement and building materials, ore beneficiation and palletization, oil field chemicals, zeolites, catalysts and other inorganic chemicals. Later the department added new and exciting research areas like ores and minerals of North Eastern region, adsorption, clay chemistry, organometallic and coordination compounds, supported nanometals, nanostructured materials, layered materials, homogeneous and heterogeneous catalysts. The group has taken up research in the fields of nanocomposite materials, metal organic frameworks, catalysis, small molecules activation and nano oxidic membranes for water and gas purification etc.

Cellulose Pulp and Paper Group of CSIR-NEIST is the only laboratory in the whole CSIR carrying out R&D on cellulose, pulp, paper, board and natural fibres. The major R&D area of this Group is utilization of natural resources of North- Eastern region of India for value added process and product development. Based on naturally available biomass of this region a number of technologies have already been developed and some of them have been transferred to different places of the country. The technology developed e.g.; Carbonless copypaper, Thermographic paper, Direct copy paper, ECG paper brought name and fame to this institute. Handmade paper, paper slate, plastic slate, particle boards, gummed paper, gum paste are some of the rural/cottage scale technology developed by this Group. In recent years the technologies e.g.; low dust technology, liquid deodorant cleaner and banana fibre have been transferred in the country and abroad (Sri Lanka). In societal activities the Group has been organizing seminar, workshop, training programme to attract the young entrepreneurs and for skill development and entrepreneurship in the region.

Polymer Petroleum and Coal Chemistry Group (PPCC) is working on coal and petroleum sciences in India and abroad. The group has been engaged in the resource quality assessment and the development of indigenous processes for the rational utilization of NER low-grade coals to value added products like carbon dot, humic acid etc. The groups contributed significantly in the development of tailor made polymeric additives for use in the petroleum and allied industries. Research area are focused on modification of polymers by introduction of functional groups, grafting, thermal and light stabilization of polymers, on mechanism of high conversion and living radical polymerization systems (ATRP), preparation of polymeric materials based on renewable natural resources. The group is also working on different aspects of coal and environmental issues including national emission inventories for coal-based industries.

HIGHLIGHTS OF THE IMPORTANT WORK DONE BY THE DIVISION.

- ❖ Stabilized Fe₃O₄ magnetic nanoparticles into nanopores of modified montmorillonite clay: A highly efficient catalyst for Baeyer-Villiger oxidation under solvent free condition
- ❖ Metal nanoparticles on graphene, h-BN and low dimensional (2D) transition metal chalcogenides
- ❖ Small Community Level Low Cost Process From Local Biomass For Iron And Fluoride Removal From Bore Well Water Of Assam

- ❖ Cationic carbonyl complexes of Rhodium and Iridium for catalytic Hydroformylation
- ❖ Gold nanoparticles supported on nanoscale amine-functionalized MIL-101(Cr) as a highly active catalyst for epoxidation of styrene
- ❖ Sulfonic acid-functionalized MIL-101(Cr) as a highly efficient heterogeneous catalyst for one-pot synthesis of 2-amino-4H-chromenes in aqueous medium
- ❖ Reduced graphene oxide (rGO) nanosheets were decorated with Au NPs, Pd NPs/rGO, and Au-Pd NPs/rGO
- ❖ Development a microbial formulation for lignin degradation in bamboo
- ❖ Manufacturing flexible leather composite from leather waste and natural fiber
- ❖ Nanominerals, fullerene aggregates, and hazardous elements in coal and coal combustion-generated aerosols: An environmental and toxicological assessment
- ❖ Polycyclic aromatic hydrocarbons (PAHs) around tea processing industries using high sulfur coals
- ❖ Formation of onion-like fullerene and chemically converted graphene-like nano-sheets from low-quality coals: application in photocatalytic degradation of 2-nitrophenol
- ❖ Controlled Radical polymerization (CRP) (R-ATRP, Concurrent ATRP-RAFT) of acrylates with olefins
- ❖ Synthesis of Biolubricants Via Transesterification of Linseed Oil for Automotive Applications
- ❖ Synthesis of biopolyester from Castor Oil, characterization and its use as biolubricants

ACHIEVEMENTS OF THE DIVISION DURING 2016-17

- ❖ **Dr B K Saikia, Scientist**, CSIR-NEIST, has been awarded the “**R P Bhatnagar Award 2015-16**” on 20 Sept, 2016 by the Mining, Geological and Metallurgical Institute of India, Kolkata, for his outstanding contribution in mineral beneficiation during last five years including the current year of award.
- ❖ **Ms Gitashree Darabdhara, SRF, DST-INSPIRE** attended 9th HOPE Meeting with Nobel Laureates held at Tokyo International Forum, Tokyo, Japan from February 26 to March 2, 2017 and organized by Japan Society for the Promotion of Science (JSPS)
- ❖ **Dr. Lakshi Saikia**, Scientist was awarded the Best Oral Presentation in International Conference APCAT-7 held at hotel the Lalit, Mumbai organized by ICT, Mumbai and Catalysis Society of India during 17-21 January, 2017 for the paper entitled “Propylamine Modified Mesoporous SBA-15: A Pd²⁺ Scavenger and Leach-Resistant Support for Synthesis of Pd⁰ Nanocatalyst for Hydrogenation Reactions”
- ❖ **Publications with Impact Factor above 6**
 1. Stabilized Fe₃O₄ magnetic nanoparticles into nanopores of modified montmorillonite clay: a highly efficient catalyst for the BaeyerVilliger oxidation under solvent free conditions by Pallab Kumar Saikia, Lakshi Saikia, Kokil Saikia, Dipak Kumar Dutta, *Green Chemistry*, **2016**, *18*, 843-2850 (IF-9.125)
 2. Reduced graphene oxide nanosheets decorated with Au-Pd bimetallic alloy nanoparticles towards efficient photocatalytic degradation of phenolic compounds in water by G Darabdhara, P K Boruah, P Borthakur, N Hussain, M R Das, T Ahamad, S M Alshehri, V Malgras, Wu, K C W, Y Yamauchi, *Nanoscale*, **2016**, *08*, 8276-8287 (IF-7.760)
 3. Aluminum Titania Nanoparticle Composites as Nonprecious Catalysts for Efficient Electrochemical Generation of H₂ by Gitashree Darabdhara, A M Amin, Mersal Gaber A M, Emad M Ahmed, M R Das, Mohamed B Zakaria, Victor Malgras, Saad M Alshehri,

Yusuke Yamauchi, Szunerits, Boukherroub Rabah, *ACS Applied Materials Interfaces*, **2016**, *8*, 23655-23667 (IF-7.145)

FUTURE PLANS OF THE DIVISION

- ❖ Low cost material/process for treatment of flouride/arsenic bearing water
- ❖ Catalyst for specialty chemicals, value added products and energy production
- ❖ Graphene nanocomposite materials for catalytic and biological application
- ❖ Carbon quantum dot and other high value materials from NER Coal
- ❖ MSME scale technologies based on natural resources
- ❖ Polymers & polymeric composite materials
- ❖ Contribution to S&T through providing advanced analytical service like HRTEM, XPS< FESEM
- ❖ Entrepreneurship and societal development
- ❖ Testing and Evaluation services

A) International Collaboration

Project Title: Metal nanoparticles on graphene, h-BN and low dimensional (2D) transition metal chalcogenides

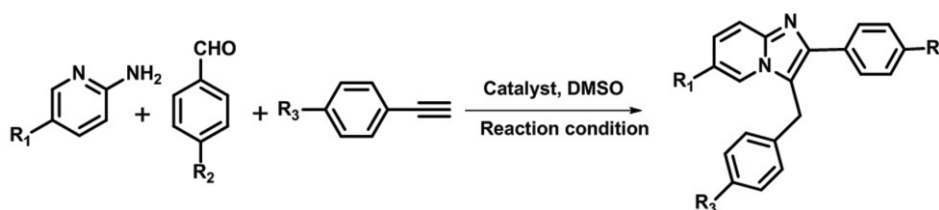
Project No: GPP-301

Funding Agency: Department of Science and Technology (DST), Govt. of India and Russian Foundation for Basic Research (RFBR)

PI & Members: Dr Manash Ranjab Das (Indian PI), Prof Vladimir E. Fedorov, Nikolaev Institute of Inorganic Chemistry, Novosibirsk, Russia, Dr P Sengupta

Salient Achievements:

Development of novel efficient 2D nanocomposite catalyst towards the three-component coupling reaction for the synthesis of imidazo[1,2-*a*]pyridines: Two dimensional (2D) materials such as graphene and functionalized hexagonal boron nitride (h-BN) supported copper catalysts (CuO/rGO, CuO/h-BN, Cu(0)/rGO, Cu(0)/h-BN, CuS/rGO and CuS/h-BN) were prepared, characterized and evaluated their catalytic activity for the synthesis of imidazo[1,2-*a*]pyridines *via* one pot three component reaction of 2-aminopyridine, aldehyde and terminal alkynes (shown Scheme 1). The TEM images of CuO/rGO nanocomposite materials as shown in **Fig. 3** revealed that the average size of the CuO NPs ~ 5 nm are decorated on the rGO sheets and the average size of the CuO NPs on to h-BN sheets is found to be ~ 9 nm which is larger than that onto rGO sheets. The imidazo[1,2-*a*]pyridines are an imperative class of nitrogen ring containing heterocyclic compounds which has wide range of applications in medicinal chemistry and drug molecule production. The reported synthetic protocol provides a rapid access to substituted imidazo[1,2-*a*]pyridines with excellent yields. CuO/rGO nanocomposite material was found to be highly active catalyst for the aforementioned reaction. The advantages of our protocol for the preparation of imidazo[1,2-*a*]pyridines over other previously reported includes shorter reaction times, functional group tolerance, recyclable catalyst and additive-free.



Scheme: Imidazo[1,2-*a*]pyridines *via* one pot three component reaction of 2-aminopyridine, aldehyde and terminal alkynes

A) National Collaboration

(i) Network Projects

Project Title: Nanomaterials: Applications and impact on safety, health and environment (NanoSHE)

Project No: BSC-112

Funding Agency: CSIR, New Delhi

PI & Members: Dr Dipak Kumar Dutta (PI, Nodal Scientist, Activity-I), Dr L Saikia, Dr P Sengupta, Dr R Saikia, Dr Montu Bhuyan (PI, Activity-II), Dr P R Bhattacharyya

Objectives:

- ❖ To synthesis nanoparticles of metals (Activity: I)
- ❖ To evaluate the toxicity of the nanoparticles of metals and metal oxides. (Activity: I)
- ❖ Identification of route entry of selected nanoparticles into silkworm and impact. (Activity: II)

Salient Achievements:

- ❖ **Activity-I:** Multifunctional Phosphine based ligands have been introduced to stabilize PtO₂-nanoparticles. The PtO₂- nanoparticles were synthesized by reducing K₂PtCl₄ with NaBH₄ in presence of P4 or P4S₄ using two phases single step reaction at room temperature. The size of the stabilized PtO₂- nanoparticles (>60 and 3.5 nm) using P4 and P4S₄ respectively were confirmed by Transmission Electron Microscope (TEM). It was found that the sulphur functionalized ligand is more efficient in synthesizing smaller sized nanoparticles. The synthesized PtO₂- nanoparticles stabilized by P4S₄ showed higher antibacterial activity against Mycobacterium smegmatis. PtO₂- nanoparticles were found negligible cytotoxicity against human leukemia monocytic cells i.e. Tamm-Horsfall Protein 1 (THP-1) monocytic cell lines.
- ❖ **Activity-II:** Studied the effect of Gold-nanoparticles on Eri Silkworm Philosamia ricini.

Project Title: Zero emission research initiative for solid waste (ZERIS)

Work Component at NEIST, Jorhat: New composite materials for apparel and goods from leather waste of EI shaving, buffing dust and dyed trimmings. (WP 22)

Project No: CSC-103

Funding Agency: CSIR, New Delhi

PI & Members: Dr Tridip Goswami (PI), Dr D Kalita, Dr D Dutta, Ms Puspa K Das

Objectives:

- ❖ Characterization and determination of the physico-chemical properties of certain leather waste materials viz El Shaving, Buffing Dust and Dyed Trimmings from leather processing industries.
- ❖ Mechano-chemical treatment of solid wastes for better processing by adopting different methodology.
- ❖ Development of suitable process for converting the solid wastes to composite materials alone or in combination with natural fibre or natural polymeric materials suitable to use for Apparel and Goods.
- ❖ Evaluation of physico-chemical and engineering properties of developed composite products.

Salient Achievements:

- ❖ The process/technology for manufacturing Flexible composite substitute to leather sheets has been optimised at 10 kg level and the samples were tested as per IS specification.



Diferent stages of board making from the mixture of El shaving and natural fibre

Fig. Insole board samples made from tannery wastes

- ❖ The process for manufacturing pressure gaskets boards using El shaving and dyed Trimmings has been optimized in lab scale. The properties of the gaskets have been tested and found encouraging result.
- ❖ Some apparels & good items of day to day use were made from these board samples at Footwear Training-cum-Production Centre, Tezpur, Assam
- ❖ **Patent Filed:** A patent entitled “A biochemical process for manufacture of flexible leather substitute composite from dyed trimmings of tannery waste” under ZERIS project (NF No: 0149NF2016) (India) Inventors: Pallav Saikia, Niren Kumar Dutta and Tridip Goswami
- ❖ **Development of Technology package:** A technology package entitled “Flexible Composite Sheet from tannery wastes/ leather wastes” of 200 sheets/ day capacity has been prepared. The technology is ready for commercialization

Project Title: Membrane and adsorbent technology platform for effective separation of gases and liquids (MATES)

Work Component at NEIST, Jorhat: Nano oxidic membrane reactors by green chemical approach

Project No: CSC-104

Funding Agency: CSIR, New Delhi

PI & Members: Dr Rajib Lochan Goswamee (PI), Dr Mrs A Goswami

Objectives:

- ❖ Design of mixed metal oxide nano sheet based Inorganic Membrane Reactors for environmentally / industrially important applications having following S&T Elements.
- ❖ Synthesis of nano oxide dispersions
- ❖ Coating of dispersions over suitable performs to form thin films having catalytic and membrane properties
- ❖ Design and Fabrication of Catalytic Membrane Reactor for Conversion of CH_4 and N_2O

Salient Achievements:

- ❖ Derivation of mesoporous holey nanosheets suitable as CO_2 to CH_4 conversion catalyst by selective soft chemical etching of mixed hydroxidic superlattices.
- ❖ Deposition of crack free films over preforms suitable to fabricate nanoporous catalytic membrane reactors for partial oxidation CH_4 to 'syn-gas' using alcogels of SiO_2 -oxide core-shells through differential hydrolysis of metal organic precursors.
- ❖ Synthesis of sublimable single precursor metal-organic complexes of some first row transition elements; their single crystal structure determination and study of formation of thin films over honeycomb preforms by Chemical Vapour Deposition.
- ❖ Study of hybrid nano-sheet bearing composite gels as controlled release vehicle of antibiotics.

Project Title: New generation lubricants and additives (Genlube)

Project No: CSC-118

Funding Agency: CSIR, New Delhi

PI & Members: Mr Arvind Gautam (PI), Mr N C Laskar, Mr R C Bohra, Mr L Phukan

Objectives:

- ❖ Development of environmental friendly biodegradable base oils stock from non-edible vegetable oils for industrial use
- ❖ Development of epoxidized vegetable oil based high temperature lubricants

Salient Achievements:

- ❖ Development of lubricants based on epoxidized vegetable oil
- ❖ Developed lubricants have low pour point, high viscosity index and high flash point.

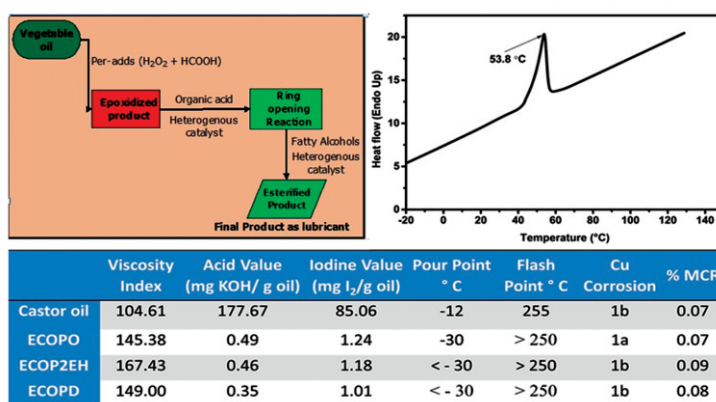


Fig.

Project Title: Catalyst for speciality chemicals

Project No: CSC-125

Funding Agency: CSIR, New Delhi

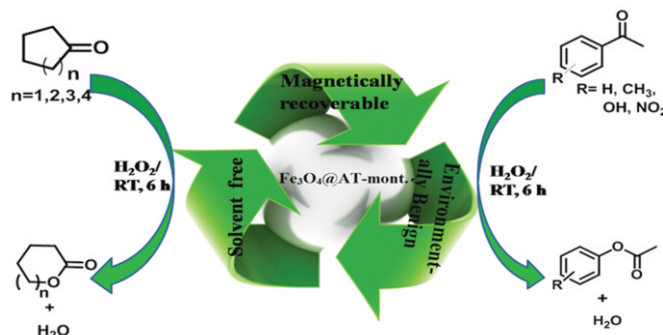
PI & Members: Dr Lakshi Saikia(PI), Dr P Sengupta, Dr D K Dutta, Dr D Konwar

Objectives:

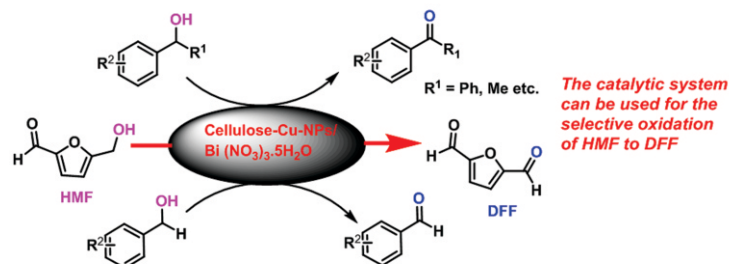
- ❖ Development of magnetically separable iron oxide waste nanopowder containing titanium dioxide nanoparticles with tailored surface properties for the removal of harmful toxic ions, bacteria and protozoa from water. To develop Nanostructured (0.1-100 nm) (nanoparticles and nanoporous) catalysts based on metals and metal oxides and their evaluation in important industrial organic reactions.
- ❖ Development of cellulose templates (pores 10-30 nm) based novel nanoparticles for heterogeneous catalysts for organic synthesis.
- ❖ Development of some cheaper and efficient homogeneous catalysts or catalytic processes for hydrogenation of organic compounds based on non-precious metals.

Salient Achievements:

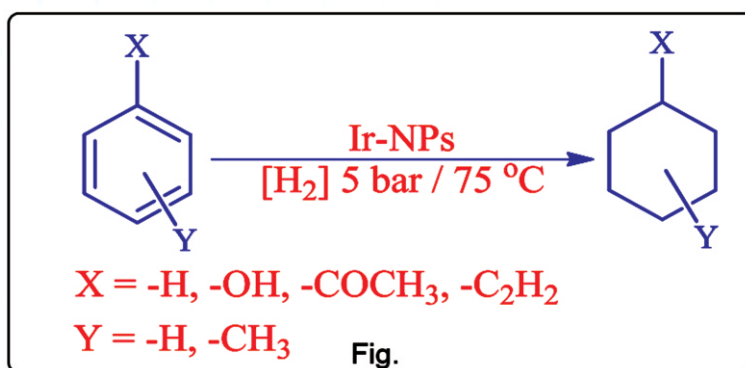
- ❖ **Stabilized Fe₃O₄ magnetic nanoparticles into nanopores of modified montmorillonite clay: A highly efficient catalyst for Baeyer-Villiger oxidation under solvent free condition:** Fe₃O₄ magnetic nanoparticles (Fe₃O₄@AT-mont.) into the nanopores of modified montmorillonite clay has synthesized. Fe₃O₄@AT-mont. Showed efficient catalytic activity for Baeyer–Villiger oxidation of various cyclic and aromatic ketones at room temperature and exhibited conversion of up to 98 %.



- ❖ Cellulose supported Cu-NPs for aerobic oxidation of secondary alcohols to carbonyls in presence of Bismuth nitrate



- ❖ Aromatic ring hydrogenation catalysed by nanoporous montmorillonite supported Ir(0)-nanoparticles composite under solvent free condition



Project Title: Environmental research initiative for paper and process industry (ERIPP)

Work Component at NEIST, Jorhat: Clean technology for pulp processing (WP).

Project No: CSC-131 (A)

Funding Agency: CSIR, New Delhi

PI & Members: Dr Tridip Goswami (PI), Dr D Kalita, Dr D Dutta, Ms Puspa K Das, Dr A Goswami, Dr P Pahari

Objectives:

- ❖ Survey and collection of ligno cellulosic materials and microbial strain from various locations.
- ❖ Evaluation of physicochemical and mechanical properties of lignocellulosic materials.
- ❖ Isolation, screening and identification of microbial strains and optimization of their enzyme production parameters.
- ❖ Application of microbial enzyme for bio-chemical pulping and bleaching.
- ❖ Development of synthetic membrane and study on membrane based process for separation of degraded lignin and other constituents.
- ❖ Green oxidative reactions on the degraded lignin obtained from the lignocellulosic materials after microbial/chemical extraction in order to isolate value added products.

- ❖ Bioreactor optimization of microbial production, biochemical pulping, bleaching and pilot plant study.
- ❖ Development of an integrated process for production of pulp through bio- chemical approach and value added materials from by-product.

Salient Achievements:

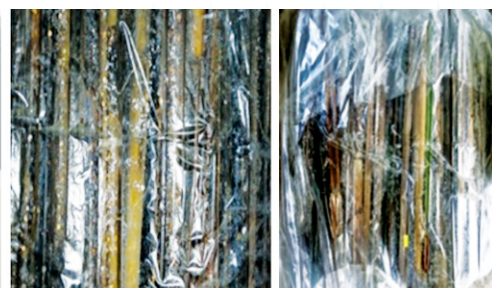
- ❖ 4 potential microbial strains were isolated, screened and identified from Assam and determined the kinds of enzyme produced and the quantities. The enzyme production have been optimized under shake flask & bioreactor conditions
- ❖ Development of eco-friendly processes for pulping and bleaching.
- ❖ Developed a microbial formulation (MF I) useful for chipping and pulping of bamboo, reduces lignin content by 29-24%, chemical saving 30-40% with 40% less energy consumption



Microbial formulation preparation under bioreactor



Microbial formulation



30 days 60 days
Microbial formulation on bamboo

- ❖ Development of a microbial formulation (MF II) for bamboo pulp bleaching, which can eliminate the use of chlorine in the conventional bleaching process.
- ❖ Development of an eco-friendly pulping of bamboo using polyol as pulping solvent which gives pulp yield 51% with pulp viscosity 14. It separates the lignin easily under pressure free condition

Project Title (Process part): Metal and metal oxide based nanoparticle assembled on iron oxide and oxy (hydroxide) for water purification

Project No: CSC-131(B)

Funding Agency: CSIR, New Delhi

PI & Members: Dr Manash Ranjan Das (PI), Mr T Das, Mr O P Sahu, Ms A Yadav

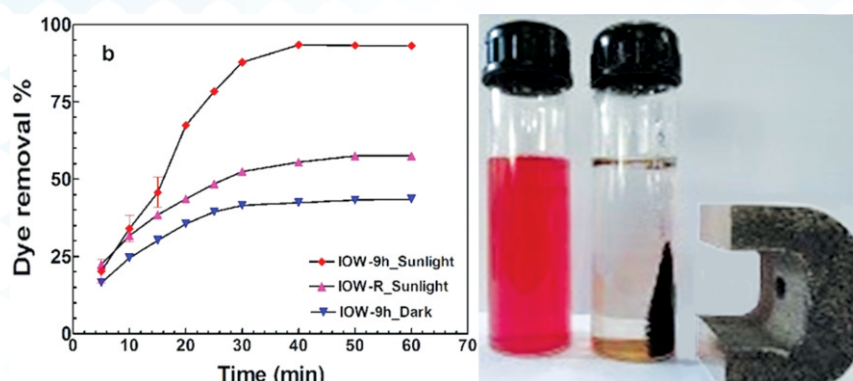
Objectives:

- ❖ Development of magnetically separable iron oxide waste nanopowder containing titanium dioxide nanoparticles with tailored surface properties for the removal of harmful toxic ions, bacteria and protozoa from water.

Salient Achievements:

- ❖ Metal and metal oxide based nanoparticle assembled on iron oxide and oxy(hydroxide) for water purification.

Dye-containing wastewater sample has been collected from the Sualkuchi Pat-Muga cottage industry, Assam, India. Photocatalytic degradation of this dye-containing wastewater sample was investigated in the presence of natural sunlight sources using IOW-9h nanopowder. Around 40 min sunlight irradiation, the red colour of the wastewater solution changed to the colourless solution (IWO-9h loading amount 1 gL⁻¹ and pH 5. More than 90% dye degradation was investigated within 40 min sunlight irradiation.



Project Title: Development of layered indigenous Montmorillonite clay based composites for adsorption and catalysis

Project No: CSC-135

Funding Agency: CSIR, New Delhi

PI & Members: Dr Lakshi Saikia (PI), Dr P Sengupta, Dr D K Dutta (Retd)

Objectives:

- ❖ Development of supported/intercalated/intercalated Montmorillonite clay based layered composites.
- ❖ Development of non-layered nanoporous (micro- and mesoporous) Montmorillonite clay matrix.
- ❖ Application of modified Montmorillonite clay as catalyst supports, catalyst for important industrial organic reactions such as Esterification, Alkylation, Isomerization, Diels-Alder reactions, Coupling reactions and for adsorption study

Salient Achievements:

- ❖ **Pd nanoparticles supported on modified montmorillonite using aqueous *Ocimum sanctum* leaf extract: a sustainable catalyst for hydrodechlorination of 4-chlorophenol:** A green synthesis process in water has been developed with the aid of Ocimum sanctum (tulsi) leaf extract for the production of Pd nanoparticles (NPs) supported on modified montmorillonite. The leaf extract serves as a mild, natural and non-toxic reducing agent for converting the K₂[PdCl₄] to Pd NPs. The synthesized Pd NPs were characterized by using PXRD, SEM, TEM, EDX, XPS, H₂-TPR and surface area analysis. TEM analysis reveals that particle sizes of the Pd NPs lie between a minimum of 10 nm and a maximum of 80 nm. The supported Pd NPs are used in the catalytic hydrodechlorination of toxic pollutant, 4-chlorophenol in water under base free conditions and showed conversion up to 98%. The catalyst is recoverable by filtration and could be recycled for several runs without any significant loss of catalytic efficiency.

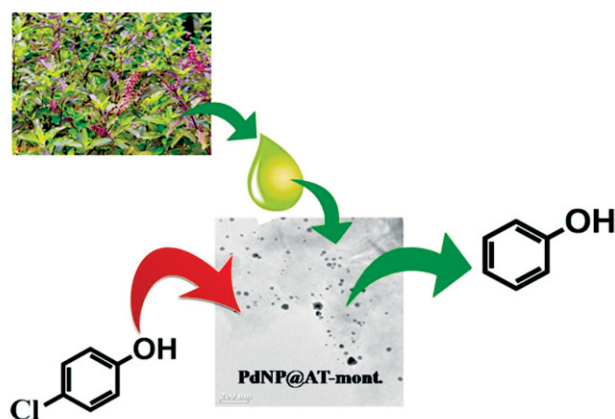


Fig.

Project Title: Advanced Polyolefins (SPIRIT)

Project No: CSC-206

Funding Agency: CSIR, New Delhi

PI & Members: Mr Arvind Gautam (PI), Mr S D Baruah (Retd)

Objectives:

- ❖ Development of degradable polyolefins to achieve new properties, facilitate processing and precise control of heterogeneity of polymer systems

Salient Achievements:

PCL Microspheres using well-defined Polymeric Stabilizers:

- ❖ Successful functionalization of ethylene with alkyl methacrylate.
- ❖ Molecular weights of the synthesized copolymers are well controlled with or without controlled radical polymerization method.
- ❖ Degradation study of the synthesized copolymers are carried out using soil burial method and are showing positive result as analyzed from thermogravimetry and gel permeation chromatography.
- ❖ Synthesized copolymer is well compatible with banana fiber reinforced composite having a good tensile and flexural strength.

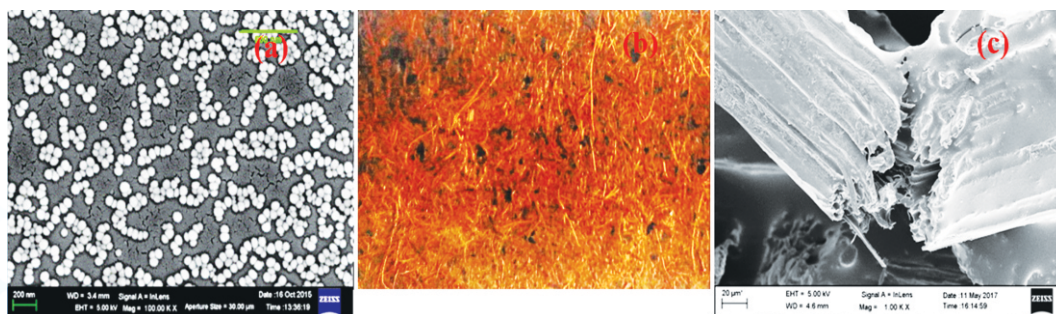


Fig.(a) Nanosized copolymer particles. (b) Synthesized banana fiber reinforced copolymer composite (c) Fracture surface of the composite.

Project Title: Probing the changing atmosphere and its Impact in Indo-Gangetic Plains (IGP) And Himalayan Regions (Acronym: AIM-IGP-Him)

Project No: PSC-112

Funding Agency: CSIR, New Delhi

PI & Members: Dr Prasenjit Saikia (PI), Dr B K Saikia, Dr U N Gupta, Mr T Das

Objectives:

- ❖ Chemical characterization of aerosol and their seasonal variability.
- ❖ Development of emission inventories of trace gas and aerosol.
- ❖ Source apportionment study for aerosol.
- ❖ Capacity building activities to strengthen the scientific through national and international collaboration.

Salient Achievements:

- ❖ The project has been successfully completed. In this project, major outcome achieved are the the evaluation of emission factors of coal based industries such as coke oven, tea and brick kiln industries, which will contribute to the National Emission Inventory. The results revealed that particulate matters (such as PM_{2.5}, PM₁₀ and SPM) have a significant contribution towards the aerosol chemistry of the atmosphere from the region. Apart from the above studies, presence of polyaromatic hydrocarbons (PAHs) constituents were also investigated and interestingly 15 no.s of promising toxic hydrocarbons were found to be present in the particulate matter with significant quantity (such as fluoranthene, perylene, benzo[a]pyrene, benzo[a]anthracene, dibenz[a,h]anthracene, benzo[g,h,i] pyrene and chrysene etc.).

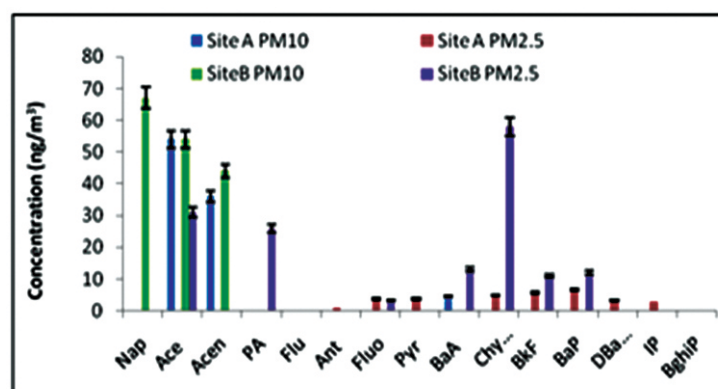


Fig. Mean concentrations of PAHs in dust samples at the two tea industrial sites

- ❖ Moreover, a National Aerosol Campaign was conducted both in the winter and summer with CSIR-NPL as the co-ordinating lab. The results found during the campaign were very interesting regarding the climatic change in the indo-gangetic Himalayan region. The deteriorating air quality over this region, particularly during winters, is a cause for major concern since the pollutants undergo long range transport from their source regions to the Indo-Himalayan Range (IHR) and surrounding oceans during winters, polluting their otherwise pristine background atmospheric conditions. Seasonal reversal in winds over the Indian mainland leads to an outflow of continental pollutants into the Bay of Bengal (BoB) during winters and a net

advection of desert dust aerosols into the IGP from south-west Asia (SW-Asia) and north-west India (NW India) during summers.

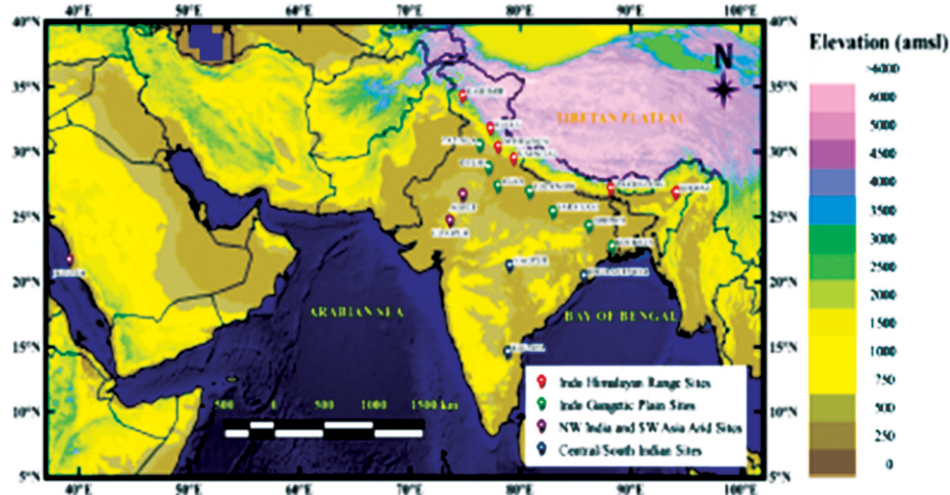


Fig. Elevation map of the study area containing the locations of the various sampling sites

Project Title: Development of a bio-based formulation for control of common pests in agricultural crops and for soil treatment is in progress

Project No: RSP-4052, CSIR-800

Funding Agency: CSIR, New Delhi

PI & Members: Dr T Goswami (PI), Dr D Kalita, Dr D Dutta, Ms Puspa K Das

Objectives:

To provide appropriate training to the selected rural youth in the areas of:

- ❖ Some selected industrial trades with the potential of employment and entrepreneurship development.
- ❖ Some selected MSME scale technologies developed by CSIR-NEIST for employment / entrepreneurship development and better livelihood in rural areas

Salient Achievements:

Enhancement of Rural Employment / Entrepreneurship through MSME Technologies and Industrial Trades Training

Five training programmes were organized under CSIR-800 (Project RSP-4052) on production of **Low dust Chalk pencil, Banana fibre, Liquid Deodorant cleaner, Solid Deodorant** and **wood care formulation** for the benefit of entrepreneurs from five different locations of Assam and NE states.

- ❖ First programme was organized at CSIR-NEIST, branch laboratory, Itanagar during February 20-21, 2017. 65 rural entrepreneurs were trained up in the above technologies and a detailed discussion was held with the entrepreneurs on chemicals, machineries & equipments required for the above MSME scale technologies.



CSIR-800 programme at CSIR-NEIST, Branch Laboratory. Itanagar

- ❖ Second programme was organized at Tihu, Nalbari Dist on March 02, 2017, where 65 Nos of rural entrepreneurs were trained up on above technologies. The products developed by CSIR-NEIST were displayed during the programme for the benefit of the entrepreneurs



CSIR-800 programme at Tihu, Nalbari Dist

- ❖ Third programme was held at Gayan Gaon, Majuli Dist on March 09, 2017. Hands-on training was given on the above technologies to 50 nos of representative from different NGO/SHG. Various products developed by CSIR-NEIST were also displayed in the training for the benefit of the entrepreneurs



CSIR-800 programme at Gayan Gaon, Majuli Dist

- ❖ Forth programme was organized at CSIR-NEIST, branch laboratory Imphal during March 22-23, 2017. Approximately, 100 entrepreneurs were trained up on above technologies. Interactions were also held with the participants on various MSME scale technologies developed by CSIR-NEIST. CSIR-NEIST products were displayed in the training for the benefit of the entrepreneurs
- ❖ Fifth programme on "Post training intervention for initial financial assistance and business link-up" under the CSIR 800 programme was organized at CSIR-NEIST, branch laboratory Itanagar on March 28th March 2017. A number of financial organizations, entrepreneurs and the scientists

from CSIR-NEIST were discussed thoroughly on commercialization of CSIR-NEIST technologies at Arunachal Pradesh.

(i) **In-house, Grant in aid & Consultancy Projects**

Project Title: Development of efficient and benign catalysts and catalysis

Project No: MLP-6000/1

Funding Agency: CSIR, New Delhi

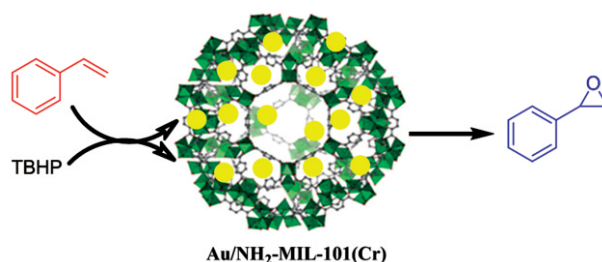
PI & Members: Dr Lakshi Saikia (PI), Dr D K Dutta (retd)

Objectives:

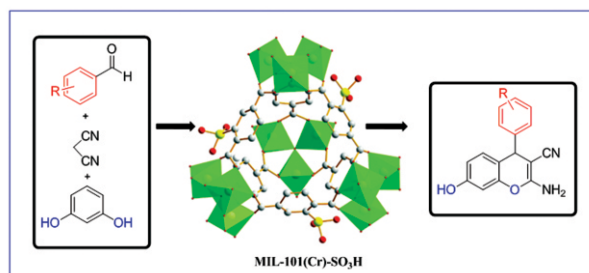
- ❖ To synthesize and characterize potential ruthenium, palladium, nickel, copper etc. complexes of functionalized phosphine and nitrogen donor ligands.
- ❖ To evaluate the efficacy of the metal complexes in catalytic hydrogenation, oxidation, coupling reactions for the production of commercially important organic intermediates and products.
- ❖ To develop Nanostructured (0.1 – 100 nm) catalysts based on metals and metal oxides and their evaluation in important industrial organic reactions like hydrogenation, oxidation, various coupling reactions etc.

Salient Achievements:

- ❖ **Gold nanoparticles supported on nanoscale amine-functionalized MIL-101(Cr) as a highly active catalyst for epoxidation of styrene:** Gold nanoparticles can effectively be incorporated on to the matrix of NH_2 -MIL-101(Cr) by a facile solution approach. The resulting nanocatalyst acts as efficient heterogeneous catalyst for epoxidation of styrene.



- ❖ **Sulfonic acid-functionalized MIL-101(Cr) as a highly efficient heterogeneous catalyst for one-pot synthesis of 2-amino-4H-chromenes in aqueous medium:** Sulfonic acid-functionalized MIL-101(Cr) was found to be an active heterogeneous catalyst for one-pot synthesis of 2-amino-4H-chromenes through multicomponent condensation reaction between resorcinol, malononitrile and aromatic aldehydes in aqueous medium.



Project Title: Bacterial adhesion on the metal oxides surfaces

Project No: MLP-6000/2

Funding Agency: CSIR, New Delhi

PI & Members: Dr Manash Ranjan Das (PI)

Objectives:

- ❖ Modification of natural iron oxide, aluminium oxide and silica surface
- ❖ Preparation small particles of iron oxide, aluminium oxide and silica.
- ❖ Studies of interaction of the bacterial cell onto iron oxide-, aluminium oxide- and silica-water interface

Salient Achievements

- ❖ α -Al₂O₃ nanoparticles with average particle size ~8.6 nm were synthesized adopting top down (mechanical ball milling) approach. In the present study we mainly focus on the variation of surface morphology, size and the surface charge of α -Al₂O₃ nanoparticles synthesized at different time interval of ball milling and the adsorption capacity towards gram negative E. coli bacterium. It was observed that the adsorption capacity of the synthesized α -Al₂O₃ nanoparticles towards E. coli is depended on the size of nanoparticles and adsorption capacity was increased with decrease in the size of NPs. The interaction mechanism between the α -Al₂O₃ nanoparticles and bacteria cells were investigated in terms of surface charge and functional groups present on both adsorbent and adsorbate. This work could provide new insights into the removal of the pathogenic bacteria using α -Al₂O₃ nanoparticles and facilitate their practical application in environmental remediation issues.

Project Title: Clean coal initiatives for North East Indian coals (WP-III)

Project No: MLP-6000/03

Funding Agency: CSIR, New Delhi

PI & Members: Dr Binoy Kumar Saikia (PI), Dr U N Gupta, Dr P Saikia, Mr T Das, Mr P Handique, Mr H C Dutta, Mr P K Bora

Objectives:

- ❖ Resource quality assessment
- ❖ Utilization potential of NE Coals
- ❖ Studies on heterogeneous minerals matters
- ❖ Study of Environmental issues related to coal based industries

Salient Achievements:

- ❖ **Carbon Dots from NER low-grade coals:** The blue-fluorescence emitting carbon dots (CDTs) comprising carbon quantum dots and graphene quantum dots were synthesized from sub-bituminous tertiary high sulfur Indian coals by an ultrasonic-assisted wet-chemical method. The formed carbon dots have diameter ranging from 1-6 nm, 2-5nm, 10-30nm, and 1-4nm.

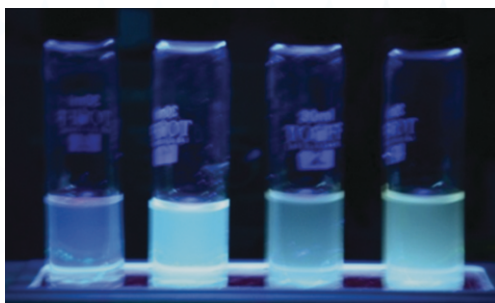


Fig. Blue-emitting carbon quantum dots from coal (Indian patent Application No 201711007354)

- ❖ **Carbon nanosheet-based supercapacitor electrode materials from low-grade coals:** The low-grade coals were chemically converted to thermally stable graphene-like carbon nanosheets (GCNSs). The GCNSs were found as promising electrode materials for supercapacitor demonstrating novel charge storage characteristics. The specific capacitance value of ~ 125 , 84 and 95 $F\ g^{-1}$ with high rate capability over 1000 cycles were observed in an acidic electrolyte ($H_2SO_4\ 1M$) with considerably high power density and energy density.
- ❖ Fe_3O_4 nanocomposites supported on low-quality coal-derived humic acid and their catalytic performance in reduction of nitrophenols.
- ❖ Environmental assessment and nano-mineralogical characterization of coal, overburden and sediment from Indian coal mining acid drainage

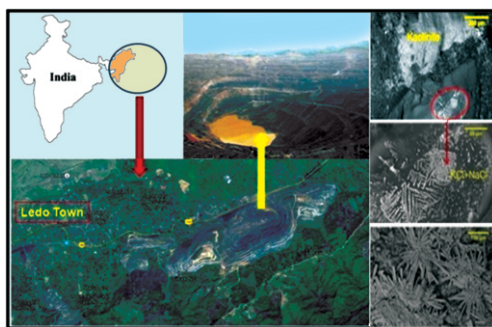


Fig. Environmental assessment and nano-mineralogical characterization of Indian coal mining acid drainage (Dutta et al., 2016, <https://doi.org/10.1016/j.gsf.2016.11.014>)

Project Title: Sustainable development of high valued products and processes from lignocellulosic bio resources of North East India

Project No: MLP- 6000/04

Funding Agency: CSIR, New Delhi

PI & Members: Dr Tridip Goswami (PI), Dr D Kalita, Dr D Dutta, Ms Puspa K Das

Objectives:

- ❖ Development of suitable process for treatment of bamboo, wood, cane etc. available in NE India for enhancement of durability in commercially important product.
- ❖ Evaluation of non-conventional bio resources materials for extraction of fibres suitable for handmade paper and fibre based industries.
- ❖ Development of suitable process for setting up industries in rural sector.

- ❖ Eco friendly process and product development from lignocellulosic bio-waste materials.

Salient Achievements:

- ❖ Optimized the process for making composites from the stem of certain forest weeds (*Hibiscus cannabinus* and *H. asculantus*) using natural & synthetic resins suitable for partition panel, table top, ceiling board etc substitute to wood. The physico chemical properties of the composites were tested as per IS specification
- ❖ An automatic machine for making solid deodorant & freshener (capacity 10,000 tab / day) has been designed & developed by CSIR-NEIST, Jorhat and fabricated in CIPET, Guwahati.



Fig. Automatic machine for making solid deodorant

- ❖ **Technology Transfer:** The technology for production of Liquid deodorant cleaner has been transferred to M/s DSP Agro Food & Chemical Industries, Bhubaneswar during August 3-5, 2016 and process demonstration has been given to the entrepreneur.



Fig. Technology demonstration & transferred (Liquid deodorant cleaner) M/s DSP Agro Food & Chemical Industries, Bhubaneswar

- ❖ The technology for manufacturing Solid deodorant & freshener has been transferred to M/s DSP Agro Food & Chemical Industries, Bhubaneswar during Dec, 2016 and process demonstration/training was given to the entrepreneur.



Fig. Technology demonstration & transferred (Solid deodorant & freshener) M/s DSP Agro Food & Chemical Industries, Bhubaneswar

- ❖ Production of wood care formulation in 200L level has been optimized. The technology was transferred to M/s DSP Agro Food & Chemical Industries, Bhubaneswar during Dec 2016.



Fig. Technology demonstration & transferred (wood care formulation) M/s DSP Agro Food & Chemical Industries, Bhubaneswar

Project Title: Small community level low cost process from local biomass for iron and fluoride removal from bore well water of Assam (LOCAL- MASS)

Project No: GPP-296

Funding Agency: Department of Science and Technology (DST), Govt. of India

PI & Members: Dr Rajib Lochan Goswamee (PI), Mr JJ Bora (Co-PI), Mr D Bordoloi, Mr T H Ahmed, Mrs P Bordoloi

Objectives:

- ❖ Development of a process for a small community for fluoride removal from bore well water of affected regions of Assam using locally available cheap bio-materials
- ❖ Introduction of novelty in toxic sludge handling through economic reactions.
- ❖ Integration of affected people in the technology development process in a spirit of shared responsibilities

Salient Achievements:

- ❖ A simpler process using cheap raw material available in the rural areas which can be processed by community itself and can operate without even power.
- ❖ The process would encourage community enthusiasms in the technology absorption by increasing self-dependency on consumables production
- ❖ Reduction of the fluoride level below the IS permissible level is possible in pH range 6.5-7.0.
- ❖ The generated sludge can be safely disposed off through simpler processes having commercial value
- ❖ The overall process is expected to create job opportunities in the rural areas.

Project Title: Catalytic evaluation of cooperative and red-ox non-innocent metal-complex in organic transformations

Project No: GPP-315

Funding Agency: Department of Science and Technology (DST), Govt. of India

PI & Members: Dr Biswajit Saha (PI)

Objectives:

- ❖ Synthesis of first row transition metal complexes and their application in industrial important organic reactions

Salient Achievements:

- ❖ Progress: Ligands syntheses are done and preparations of metal complexes are on the way

Project Title: Novel magnetically separable 2D graphitic carbon nitride nanocomposite for photocatalytic degradation of dyes for environmental remediation of textile industry effluent

Project No: GPP-321

Funding Agency: Department of Science and Technology (DST), Govt. of India

PI & Members: Dr Lakshi Saikia (PI)

Salient Achievements:

- ❖ Graphitic carbon nitride is a 2-D material synthesized by pyrolysis at moderately high temperature. The material can be exfoliated to sheet type and used as support for generation of metal/ metal oxide nanoparticles. TiO₂ nanoparticles of different concentration was prepared on the support and characterized by various techniques like PXRD, FT-IR, FESEM with EDS etc.

Project Title: NCAP-WGIII: Carbonaceous aerosol emissions, source apportionment and climate effects

Project No: GPP-325

Funding Agency: Ministry of Environment, Forests and Climate Change, New Delhi

PI & Members: Dr Binoy Kumar Saikia (PI), Dr P Saikia (Co-PI), Mr T Das

Objectives:

- ❖ Identification of a regionally representative location for particle sampling for BC source apportionment.
- ❖ Particle sampling for a two year period, including QA/QC protocol development and implementation. Filters are to be passed on to the associate institution for full chemical analysis and source apportionment modelling.
- ❖ Analysis of seasonal variations in source contributions to PM_{2.5} as related to meteorology and emissions. Data generation for final receptor modeling results for North-Eastern India site. Detailed activity timeline charts and budget are given in the following section.

Salient Achievements:

- ❖ Newly sanctioned: Work in Progress

BRANCH LABORATORY IMPHAL & BRANCH LABORATORY ITANAGAR

The CSIR-NEIST, Substation, Imphal was established in 1973 with the main aim to undergo research and development of oil yielding plants. After renaming the RRL to NEIST, the Substation has been upgraded to the status of **Branch Laboratory, Imphal** in 2012 with many more activities and research areas such as Biodiversity, Bioprospection, Designing and development of products based on ethnic designs and materials, Seismic observatory, Weather monitoring station, etc. The Branch Laboratory will be focusing more on motivation and transfer of technology of CSIR to NGOs, Organizations, Entrepreneurs, etc. The **Branch Laboratory, Itanagar** was established in the year of 1981 and started to functioning in 1983. The mission of the Branch Laboratory-Itanagar (BLIT), Arunachal Pradesh is to promote advances in plant and microbial research for the benefit of society and people of Arunachal Pradesh and North East India. The branch will accomplish this through research, educational, and societal activities that foster a multi-disciplinary interchange of ideas and cutting-edge technologies and their applications. Activities of the Branch Laboratory-Itanagar will contribute to the basic research and the translation of basic research for applications to the health care, agriculture, environment, and livelihood of the people.

HIGHLIGHTS OF IMPORTANT WORK DONE DURING 2016-17

- ❖ Under various societal programmes of CSIR, Branch Laboratory-Itanagar organized 11 training programmes on cultivation of mushroom in different localities in Papumpare district of Arunachal Pradesh and North Lakhimpur districts of Assam. Total 326 trainees were participated in the training programmes.
- ❖ Under CSIR-800 programme Training on mushroom spawn production and cultivation technology, Training on vermicomposting and commercial production of vermicompost, Training on liquid deodorant cleaner; banana fibre extraction; solid deodorant & freshener; and wood care technology and Training on cultivation of aromatic plants and distillation technology were provided.
- ❖ Under societal programme NEIST Branch Itanagar actively engaged in awareness programme on organic fertilizer and production of vermicompost. Three training programme on vermiculture and production of vermicompost was organized at Branch Laboratory-Itanagar. A total of 76 trainees were participated in the training programme. Necessary technical guidance has provided to the existing farmers.
- ❖ To popularize the science among school students, Branch Laboratory-Itanagar organized three science motivation programmes.
- ❖ Branch Laboratory-Itanagar organized a two days teacher training workshop in collaboration with Royal Society of Chemistry-India Foundation (RCIF), New Delhi.
- ❖ As part of our endeavour to discover new spirooxindoles of biocidal interest and guided by the observation that the presence of two or more different heterocyclic moieties in a single molecule often enhances the biocidal profile remarkably.

ACHIEVEMENTS OF THE DIVISION DURING 2016-17

- ❖ Under technical guidance of Branch Laboratory-Itanagar, some beneficiaries have started commercial cultivation of mushroom. Among them, some of the most successful beneficiaries are:

- a) Sri Nishan Flago, Seepa, West Kameng District of Arunachal Pradesh. Sri Flago has produced 410 kg of fresh mushroom with earning of Rs. 1,20,000/-.
- b) "ASHWASH-the ray of hope" earned Rs.1,35,000/- by producing and selling of 675 kg mushroom.
- ❖ Some of the most successful vermicompost beneficiaries are:
 - a) Sri Tadar Tajik, Nirjuli earned Rs.1,20,000/- by producing 6.0 tons in his composite vermipits.
 - b) The ASHWASH-the ray of hope", Azad, North Lakhimpur, Assam has earned Rs.72,000/- by producing 3.0 tons vermicompost.
 - c) Smt. Rina Nishing, Naharlagun earned an amount of Rs.48,000/- by producing 2.4 tons vermicompost in her vermin pit at Naharlagun.
- ❖ An Iris species locally called "Kombirei" which is associated with legends & culture of Manipuri Society (traditionally been offered in Manipuri New year and songs and films in the name of this plant) was misidentified and has been citing as Iris bakeri in all official and non-official records but it has been established its scientific identity as Iris laevigata Fisch (also authenticated through Royal Botanic Garden, Kew, London which is a new addition to the Flora of India.

FUTURE PLANS OF THE BRANCH LABORATORIES

- ❖ To accomplish the goals, the Branch Laboratory-Itanagar dedicated to the development of plants and microbial resources for the benefits of the people of Arunachal Pradesh and North East India.
- ❖ The Branch Laboratory-Itanagar will continue its expansion activities in mushroom cultivation and vermicompost production.
- ❖ As part of CSIR Mission "Aroma and Phytochemicals", the Branch Laboratory- Itanagar will actively implement the cultivation of various aromatic, medicinal and economically important plants in various areas of Arunachal Pradesh, at large-scale volume.
- ❖ Exploration and phytochemical investigation of ethno-medicinal plants and locally available wild mushroom from Arunachal Pradesh for nutraceutical and therapeutic potential.
- ❖ Development of improved and value added vermicompost by biotechnological approaches
- ❖ Development and bioengineering of endophytes and microalgae for the production of beneficial products, related to externally funded projects.
- ❖ Dissemination of technologies like Banana Fiber Technology, Liquid Deodorant Technology, Solid Deodorant Technology, Low Dust Chalk Pencil Technology, Insect Repellent Incense Stick Technology, Insect Repellent Candle Technology etc. in the Arunachal Pradesh for livelihood generation that has been developed by CSIR-NEIST, Assam.
- ❖ Organizing science motivational and skill development programmes for students, youth, potential entrepreneurs and farmers of Arunachal Pradesh.
- ❖ Bioprospection – development of various useful and commerceable products mainly based on biological materials leading to employment opportunity
- ❖ Skill development/Technology Transfer/Societal – Regular training program based on the technologies/knowledge developed by CSIR Laboratories will be imparted to youths of Northeast. Will be instrumental for transfer of relevant technologies of CSIR to entrepreneurs / GNOs/ Individuals

- ❖ Educational programs – Creation of awareness, dissemination of knowledge and technologies mostly developed by CSIR Laboratories to students/teachers

A) National Collaboration

(i) In-house, Grant in aid & Consultancy Projects

Project Title: Sustainable Utilization of medicinal, aromatic, aquatic and economic plants: b) Development of agro-technology & chemical investigation of selected medicinal, aromatic and edible plant of Arunachal Pradesh

Project No: MLP-8000(B)

Funding Agency: CSIR, New Delhi

PI & Members: Dr Jagat C Borah (PI), Dr C Tamuly, Dr N. Velmurugam, Dr B C Baruah, Mr J Bora, Mrs M Hazarika

Objectives:

- ❖ To introduce various medicinal, aromatic and edible plants.
- ❖ To develop new/better strain of medicinal/ aromatic plants.
- ❖ Development of agro technology for commercial cultivation.
- ❖ Chemical investigation of unexplored medicinal, aromatic and wild edible plant of Arunachal Pradesh and its value addition..
- ❖ Evaluation of antioxidant activities, phenolic content, flavonoids content of selected medicinal/edible plant and parts thereof.
- ❖ Evaluation of nutraceuticals and mineral content of selective medicinal/edible plant species.
- ❖ To generate knowledge, enhance the value of knowledge and its application for agro based industrial development in the rural sector.
- ❖ To generate employment opportunities for socio economic uplift in the rural sector

Salient Achievements:

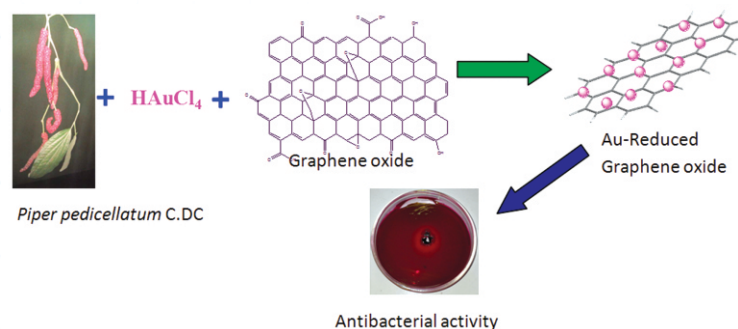
- ❖ A new strain of lemon grass (BLI-ARUN) developed About 25-35% increase of essential oil content has been achieved having 1.2-1.5 % of essential oil.
- ❖ Twenty nos. of training programme on 'cultivation of mushroom' and 'production of vermicompost' was organized.
- ❖ Nutritional value was evaluated for the five nos. of edible plants from Arunachal Pradesh.
- ❖ The beneficiaries earned more than 1, 50,000/- by selling mushroom and 2,00,000/- by selling vermicompost.
- ❖ Two nos. of training programme on “cultivation of medicinal, aromatic and economic plants” were organized

I. Establishment of marketing linkage for selling vermicompost product.

A market linkage was established for commercialization of vermicompost. Marketing is a major issue for the product. We surveyed the market regarding selling of organic fertilizer i.e. Vermicompost. Accordingly, three entrepreneur/parties were selected for selling the product of beneficiaries of NEIST Branch Itanagar. Three marketing partners have started selling the vermicompost product. These are:

- a) PAHARI Organic Fertilizer Centre, Barapani Market, Naharlagun
- b) Hari OM Organic Fertilizer Agency, Near Post Office, Naharlagun
- c) OMMI Enterprises, Papu Nallah, Naharlagun.

II. **Biosynthesis of gold decorated reduced graphene oxide and evaluation of its cyto-toxicity and microbial activities:** Au-rGO nanoparticles were synthesized using the fruit of *piper pedicellatum* and cytotoxicity and anti-bacterial activities was evaluated.



Project Title: Development of bioprocessing and metabolic engineering of haptophycean microalgae for the direct production of C18-hydrocarbons as jet fuels

Project No: GAP-742

Funding Agency: Department of Science and Technology, DST-INSPIRE-Faculty Project

PI & Members: Dr Natarajan Velmurugan (PI)

Objectives:

- ❖ The main purpose of this project related to analyzing the intracellular lipid accumulation of biomass, examining, and monitoring cellular activity and cell viability, isolating cells that over producing target compounds and developing transformation and metabolic engineering techniques suitable for haptophycean microalgae
- ❖ We are developing the biotechnology processing, transformation and metabolic engineering technologies for the direct production of C18-hydrocarbons in haptophycean microalgae which can be directly useful for jet fuels

Salient Achievements:

- ❖ The haptophycean strain Isochrysis was obtained from National Institute of Ocean Technology (NIOT), Chennai. We have developed bioprocessing technology to screen and isolate high-lipid content haptophycean using Fluorescence Activated Cell Sorter (FACS). For this purpose, we have optimized conditions for efficient staining of intracellular lipid bodies in Isochrysis using fluorescent dye. The FACS analysis was validated using GC-FID. GC-FID results shown that the strains are able to accumulate high content of C18 hydrocarbons at mid-stationary phase. Further, the haptophycean strain Isochrysis was cultivated in 6 different media, and phenotypic characterizations and lipid biosynthesis were documented.

Project Title: Establishment of green campus in schools of Manipur, NE India

Project No: GPP-310

Collaborating University/Institute: GB Pant Institute of Himalayan Environment & Development, Almora, Ministry of Environment, Forest & Climate Change

Funding Agency: Department of Biotechnology (DBT), Govt. of India

PI & Members : Dr H B Singh (PI), Dr S P Saikia

Objectives:

- ❖ Cultivation of at least 20 biologically & economically significant plants in the campus of 5 selected schools of Manipur.
- ❖ Creation of awareness amongst students & teachers about the importance & conservation of biodiversity.
- ❖ Providing sheds, enhance aesthetic look of campus & checking noise pollution & available the fruits of the trees to the students & teachers for consumption.

Salient Achievements:

- ❖ Cultivated a total of 1685 saplings under 19 species of economically important plants in the campus of 5 selected schools of Manipur.
- ❖ Organized 1-day awareness program on cultivation of trees in school campus on March 7, 2017 where principals, coordinating teachers and students of the 5 selected schools attended the program.

Project Title: Expanding endophytes of *Paris polyphylla* as a model to study co-evolution relationships with emphasis on functional metabolites production

Project No: GPP-323

Funding Agency: SERB-Department of Science and Technology (DST), Govt. of India

PI & Members: Dr Natarajan Velmurugan (PI), Dr B C Baruah

Objectives:

- ❖ Collection and identification of *Paris polyphylla* from high-altitude mountain forests of Arunachal Pradesh
- ❖ Isolation and characterization of endophytes from *P. polyphylla*
- ❖ Screening of endophytes for the production of saponins and other bioactive compounds along with phytochemical investigation of *P. polyphylla*
- ❖ Transcriptomics analysis-Understanding the molecular mechanisms of co-evolution relationships with emphasis on functional metabolites production
- ❖ Effect of selective endophytes on bioactive compounds production in *P. polyphylla*

Salient Achievements:

- ❖ The first installment of research grant received on 23.03.2017, and we have successfully initiated the project at BLIT.

Research Planning & Business Development Division

Earlier, Management Sciences consisted of three major divisions namely, Human Resource Development Division, Information & Business Development Division and Planning & Project Monitoring Division. Each division had individual core activities to support the R&D fraternity of the Institute as well as to support the Director and Administration. Later, the three divisions were merged to form a new division named, Research Planning & Business Development Division (RPBD) with an aim to bring synergism in overall activities and objectives of the division. The divisional activities are being streamlined to ensure better performance with optimum use of resources.

RPBD will continue to work in areas focused at developing business of the Institute, human resources, planning & allocation of resources and evaluation of outcomes of R&D projects. The division will continue to serve as a window to the outside world and maintain liaison with public, industrial houses, government & private agencies, entrepreneurs, etc.

In addition to that the Knowledge Resource Centre (KRC) and Information Communication technology division also provide significant and regular support to the Director and administration.

Information and Business Development Activities

Information & Business Development group continued to serve as a window of the Institute to the outside world and coordinated the overall business development activities. The group discharged the dual responsibility of maintaining liaison activities with industrial houses, entrepreneurs, govt. departments, private and public sector institutes etc., on the one side and disseminating the Institute's services, expertise and capabilities for economic and societal benefits of clients, customers and users on the other side. The group also made efforts to consolidate the gains of Institute's R&D in order to meet the needs and requirements of the entrepreneurs/users/clients who seek assistance from the Institute from time to time.

Exhibitions/workshop organised:

The Information & Business Development (I&BD) group disseminated information regarding institutional technologies by its products display & posters, banners etc on different exhibitions and invitation by the entrepreneurs on various occasions. The group also organised workshops/seminar etc. During the year 2016-17, the group organized/participated in 4 nos. of exhibitions on various occasions.

Students' Visits Organised:

❖ Gyanjyoti program

Under the Hon'ble Chief Minister's Gyanjyoti Program, Govt. of Assam, CSIR-NEIST organized students' visit to the Institute on 25 October, 2016. Around 380 students of class VIII and IX along with 8 teacher guides visited various divisions and interacted with the scientists.

Moreover more than 2,600 Students from different Universities, Colleges, Technical Institutes & Schools of North Eastern Region visited CSIR-NEIST along with more than 280 teacher guides as a part of their educational tour.



Mr Probin Baruah, Principal Technical Officer, interacting with students and guide teachers of Gyanjyoti program

Publications:

During the period the division brought out the following regular and need based publications on different occasions.

- ❖ **Annual Report 2015-16** - Annual report of the institute was brought out and released on the National Technology Day on 11 May, 2016.
- ❖ **Highlights 2016-2017** - Highlights 2016-17 of the institute (which is compilation of institute's activities) was brought out and released on the CSIR-NEIST Foundation Day celebration on 20 March 2017.
- ❖ **NEIST News** (Four-Monthly newsletter)
- ❖ **INFOWATCH** (Monthly Bulletin)
- ❖ **CSIR-NEIST Diary 2017**
- ❖ **Calendar 2017**
- ❖ **Season's Greetings Cards**

Filing Patent Application:

The group is responsible for processing of the Institute's patent application for filing in India and abroad and for this is continuously coordinating with IPU, CSIR, New Delhi.

Processing of New Project Proposals:

The group is also responsible for processing of new project proposals. The proposals so received are forwarded to the respective committee for scrutiny. During the year 2016-17, the group processed 46 nos of Project Proposals of all the divisions.

Technology Transfer:

The group is also responsible for licensing of the technologies developed by the institute. It is responsible for drafting of technology/knowhow transfer agreement and acts as bridge between the clients and the technology teams responsible for demonstrating the knowhow package. Five (5) nos of technologies were transferred to 4 industries during the year.

Testing & Analysis:

The group is also responsible for processing of samples received by the Institute for testing and analysis. On completion of the analysis, the reports are issued by the group to the respective parties.

MoU/Agreement:

The group processed and executed the MoU/Agreements with various organization/universities on different occasions as given below:

Sl No.	MoA/MoU/ Agreement	Purpose	Party	Date of Signing
1	Assignment Deed	For commercial exploitation of knowhow on, 'Herbal Anti-Arthritis formulation'	National Research Development Corporation (NRDC), New Delhi	03.05.2016
2	Technology Transfer Agreement	For transfer of knowhow on, 'Liquid Deodorant & Cleaner'	M/s DSP Agrofoods & Chemical Industries, Bhubaneswar	03.08.2016
3	Technology Transfer Agreement	For transfer of knowhow on, 'Solid Deodorant & Cleaner'	M/s DSP Agrofoods & Chemical Industries, Bhubaneswar	05.08.2016
4	Tri-Partite MoU	For transfer of knowhow on, 'Anti Arthritis Herbal Formulation'	CSIR-NEIST, M/s Kudos Laboratories, New Delhi and NRDC	09.09.16
5	MoU	For Academic Collaboration	Dibrugarh University	17.08.2016
6	Agreement	For implementation of a new project	National Medicinal Plants Board (NMPB), New Delhi	31.08.2016
7	Tri-Partite MoU	Transfer of Knowhow on, 'Herbal Anti-Arthritis formulation'	CSIR-NEIST, M/s Altis Life Sciences, Himachal Pradesh and NRDC	08.12.2016
8	Tri-Partite MoU	Transfer of Knowhow on, 'Herbal Anti-Arthritis formulation'	CSIR-NEIST, M/s Multani Pharmaceutical Ltd., New Delhi and NRDC	08.12.2016
9	Technology Transfer Agreement	For transfer of knowhow on, 'Herbal Mosquito Repellant Wax Candle'	M/s DSP Agrofoods & Chemical Industries, Bhubaneswar	15.12.2016
10	Technology Transfer Agreement	For transfer of knowhow on, 'Wood Care Formulation'	M/s DSP Agrofoods & Chemical Industries, Bhubaneswar	15.12.2016

11	MoU	For cultivation of medicinal and aromatic plants in 500 ha in Mizoram & training to the farmers of the state	All Mizoram Farmers Union (AMFU), Aizawl	13.02.2017
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Human Resource Development Activities

The Human Resource Development (HRD) group provides human resources and knowledge management solutions of the institute to realize the R&D output. To enhance the competencies of existing human resources of the institute the **group** imparts the training in and outside the country, organizes workshops / lecture seminars, etc. The **group** imparts training and motivates students of the NE region in particular and the country in general. The **group** undertakes extensive recordkeeping of the employee and researchers, competency development through need based training, strive for collaborative projects, etc.

Research Workers / Project Fellow:

The **group** encourages young talent for joining in the fellowships under various national and international schemes of CSIR and other funding bodies to carry out basic research in frontier areas of science from the country and from abroad. Presently, a few of them are working in various capacity under such schemes viz., Women Scientist Scheme (WSS) of DST, Senior Research Fellow and Junior Research Fellow of CSIR, UGC and other funding bodies, DST Inspire faculty, CSIR-TWAS Fellow, DBT Ramalingaswami Re-entry fellow, DST Ramanujan fellow and NPDF. The group also arranges to engage a few lecturers / teachers of nearby colleges and other Institutes as Guest Workers for their research work leading to PhD. The number of such research workers under various capacity during the periods are enlisted viz., 12 Senior Research Fellow, 18 Junior Research Fellow, 01 DBT-Research Associate, 03 Young Scientist Scheme (YSS), 01 Principal Investigator, DST Women Scientist Scheme, 04 CSIR-TWAS Fellow, 01 DST Inspire Faculty and 01 DBT Ramalingaswami Re-entry fellow, 01 DST Ramanujan fellow, 02 NPDF, 06 Guest worker and 157 Project workers. Based on review of their progress of research work a few of them were registered to pursue Ph D degree from Dibrugarh University, Gauhati University, Assam University and our own Academy of Scientific and Innovative Research (AcSIR).

Academy of Scientific and Innovative Research (AcSIR): The group is the functionary unit of AcSIR in the Institute and has formulated and structured the activities of AcSIR.

Database Management:

The group maintains different databases on manpower of the institute viz., research workers, Ph D recipients, manpower, apprentice trainees, etc. The group provides information of Group IV scientist to RAB, to CSIR, visits of scientist abroad to ISTAD, CSIR.

Infrastructure Management:

The group manages different activities of the Boys' hostels, of the institute.

Project/dissertation to students:

The group arranges facilities for multi-theme and multi-level training programme viz., summer training, industrial training, practical training, dissertation, etc. for the selected students from different

universities, colleges and institutes of the country up to a maximum period of six months. During this period 201 Student Trainee (summer & winter Season) completed their training in different division.

Apprenticeship Training Programme:

The group conducted the training programme for Graduate degree holders (Chemical & Mechanical), Laboratory Assistant (Chemical Plant) and ITI trade certificate holders in different trades like Fitter, Welder, Plumber, Draughtsman (Mechanical), Electrician and COPA. During this period 25 Apprentice trainees engaged under Apprenticeship training programme.

Cash Award to Bright SC/ST Students:

The group organized a programme to motivate the Bright SC/ST Students from North Eastern States. In this year 13 Students were awarded.

Planning and Project Monitoring Activities

Planning and Project Monitoring (PPM) group involves in the R&D management in terms of planning and allocation of resources and monitoring the outcomes of R&D projects. The Planning and Project Monitoring (PPM) group serve as the main centre for appropriate dissemination of information regarding Network projects (BSCs, CSCs, ESCs, ISCs, OSCs, PSCs, etc), Other Lab Projects (OLPs), Headquarter Controlled Projects (HCPs), Technology Leadership Projects (TLPs) and In-House projects (MLP, STS) as well as the other externally funded projects like (GAP, CNP, CLP and SSP) to the management and as well as the concerned scientists. The group provides proper logistic support to the management in respect of successful implementation and completion of the projects which reflects in the growth of the institute. The group also prepares the annual performance target of the projects and the laboratory as a whole by focusing the R&D thrust areas which are in accordance with the CSIR vision and National mission. The group also acts as a link between CSIR HQ and the Institute with respect to formulation of Planned Projects & their execution & regular monitoring and reporting of progress. The group is also entrusted with preparation of various documents such as Man-month distribution of projects, Task Assignment of staff, Manpower Profile, etc. The group updates the information of various projects and reports were prepared regularly for management support and other purposes. Processing of purchase indents and maintenance of Lab Notebooks are other activities of Planning and Project Monitoring (PPM) group.

Planning and Project Monitoring (PPM) group is actively involved on the following activities:

External Cash Flow (ECF): The Institute undertakes projects funded by various external agencies. The details of funds received from these agencies were regularly recorded and monitored. Monthly statements of department wise ECF positions of the institute were prepared highlighting receipts from Govt Departments, Public and Private Organizations. Total ECF generated during 2016-17 was 608.01 lakhs which comprised receipts from Govt Deptts/ Ministries, Public Sector Industries and Private Sector organizations to the extent of 73.54%, 22.77% and 3.69% respectively. ECF of the institute from different projects and services are shown below:

EXTERNAL CASH FLOW (ECF) (Including Service Tax)

Sl No	Category	Govt	Indian Industry	*CPSE	**SPSE	Foreign Company	Foreign Agency	Others	(Rs. In Lakhs)
									Total
									01/04/2016 To 31/03/2017
1	Collaborative	14.835	10.147	0.000	0.000	0.000	0.000	0.000	24.982
2	R&D Consultancy	0.000	0.000	0.000	9.865	0.000	0.000	0.000	9.865
3	Grant-in-aid	426.850	0.000	119.680	0.000	0.000	0.000	0.000	546.530
4	Premia	0.000	2.300	0.000	0.000	0.000	0.000	0.000	2.300
5	Royalty	0.000	0.111	0.000	0.000	0.000	0.000	0.000	0.111
6	Sponsored R&D	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
7	Technical Service	5.445	9.863	6.061	2.861	0.000	0.000	0.000	24.230
Total:		447.130	22.421	125.741	12.726	0.000	0.000	0.000	608.018
* CPSE : Central Public Sector Enterprise									
**SPSE : State Public Sector Enterprise									

The Division wise ECF are as follows

Division	ECF(in Lakh)
Chemical Science and Technology	152.07
Geo-Science Science and Technology	72.48
Bio-logical Science and Technology	197.96
Material Science and Technology	110.94
Engineering Science and Technology	31.97
Extension Centres (Branch Laboratory Itanagar & Branch Laboratory Imphal)	39.93
Research Planning and Business Development	2.67
Total	608.02

Expenditure Monitoring: The expenditure of all the projects were monitored as per the budget allocation and uploaded the details of receipt & expenditure in PPM portal so that the fund position of a given project is readily accessible by concerned PI and management for effective management. Planning and Project Monitoring (PPM) group facilitates in preparing Utilization Certificate and Statement of Expenditure of the externally funded projects.

Service Tax: The Planning and Project Monitoring (PPM) group regularly carries out activities for the payment of service tax accrued from the various services rendered by the institute on monthly basis. Total Service Tax realized during the year 2016-2017 is Rs. 7.90 Lakhs.

Project Status: Status of Project Contracted and Completed during 2016-2017 are as follows:

Sl No.	Sources	Project Contracted		Project Completed	
	Project	Contract Value (Rs. in Lakh)	No. of Projects	Contract Value (Rs. in Lakh)	No. of Projects
1.	Grants-in-Aid	528.085	14	172.56	7
2.	Collaborative	19.42	1	0.00	0
3.	Consultancy	0.00	0	35.01	1
Total		547.51	15	207.57	8

Audit Queries: The group responds to various audit queries (ISO, Internal & External), Parliament queries and Rajya Sabha queries in relation to all type of projects.

Contribution to Lab Reserve Fund: The group has taken initiative to transfer the overhead and Non-Refundable Balance amount of Rs 16.25 Lakhs from ongoing as well as closed Externally Funded Projects to LRF in the financial year 2016-2017.

Research Utilization Data: Research Utilization Data deals with the revenue generated from the projects and other activities funded by external funding agencies undertaken by the institute. Yearly and quarterly reports were furnished to CSIR Headquarters regularly.

PPM Portal: PPM group division hosted and maintained a portal for display of all the project related reports on-line. The website is linked to the NEIST Intranet and at present displays reports on Projects- (Completed, on-going, in proposal stage), Research Utilization Data, External Cash Flow, Expenditure details of all ongoing funded and network projects, Service Tax, Employee List, Central Plan Scheme Monitoring System etc. Principal Investigators of projects can access and monitor on-line the expenditure incurred in their projects. For analysis of outcome of funded projects, the on-line form has been designed and the Principal Investigators are to fill it on completion of their projects. The reports available on-line have proved to be efficient technical support for the management and scientists.

Human Resource Portal: The PPM group also hosted and maintained a portal to keep track of the manpower position in order to facilitate the top management to formulate the policy on human resource requirement.

ERP System: CSIR has taken initiative to adopt Enterprise Resource Planning (ERP) system across all 38 CSIR institutes. CSIR-NEIST has constituted an ERP implementation team for successful implementation of ERP in the institute. PPM group is mainly involved in updating project related data and mapping of NEIST staff with the roles of the staff, in CSIR Enterprise Transformation Portal.

Monthly/ Quarterly Performance Report: Monthly/ Quarterly Performance Report of NEIST contains information about the performance of the Institute on various parameters like papers, patents, development of technology, awards & appreciations received by scientists & staff members. Reports are regularly sent to CSIR Hq for their perusal. These reports also help the management in reviewing its

own performance as a monitoring tool.

Man-month distribution of projects: The manpower deployment in Network, in-house, Grant- in-aid, Sponsored and consultancy projects were analyzed and reviewed by PPM group. Resource requirements and utilization were reviewed. “Manpower profile of CSIR-NEIST” document was brought out for management purpose.

Miscellaneous activities:

- The PPM group maintains the CSIR-NESIT Website and involved in regular updation as and when required.
- Form-16 for all income tax assesses were generated.
- The PPM group actively associated with the celebration of the CSIR Foundation Day on 26 September, 2016 and organized an essay and quiz competition on science topics among the staff of CSIR-NEIST & their wards.
- The PPM group also involved in organizing the CSIR-NEIST Foundation Day celebration on 18th March 2016.
- Compiled the Task Assignment of staff members for the year 2016-2017.

Knowledge Resource Centre

The Knowledge Resource Centre (KRC) continued to provide library and information services to R&D divisions, Research Fellows, outside students and individuals like from universities of NE region and R&D institutes. During the period, the KRC added 123 numbers of scientific books, 313 numbers of Hindi Books to its stock and subscribed to 18 numbers of Indian print journals apart from subscription to Scifinder, ACS journals, ASTM DL through NKRC. Also subscribed BIS packs for one year which can be access through Intranet. The KRC also collected Annual and other reports from various R&D and academic institutions.

The KRC continues to maintain a database on publications and presentation of papers from the laboratory on the basis of which various reports with Bibliometrics analysis of laboratory's publications were carried out as and when required by the management. KRC also introduced the *Online Public Access Catalogue (OPAC)* with the help of ICT members which is now available in intranet.

संस्थान में राजभाषा गतिविधियां RAJBHASHA HINDI ACTIVITIES IN THE INSTITUTE

हिन्दी दिवस समारोह का आयोजन

प्रत्येक वर्ष के भांति इस वर्ष भी सीएसआईआर-उत्तर-पूर्व विज्ञान तथा प्रौद्योगिकी संस्थान, जोरहाट ने राजभाषा हिंदी को कार्यालयीन कार्य में उत्तरोत्तर वृद्धि करने के लिए संस्थान में राजभाषा हिंदी सप्ताह का आयोजन किया एवं संस्थान के विशाल सभागार में विभिन्न कार्यक्रमों के साथ **14** सितम्बर को हिंदी दिवस समारोह भव्य रूप से मनाया गया ।

हिन्दी सप्ताह का शुभारंभ **5** सितम्बर **2016** को असमियाँ मूल की हिन्दी कवियित्री एवं रचनाकार श्रीमति रेणु बरुआ के कर कमलों से हुआ । उन्होंने शुभारंभ के अवसर पर उपस्थित निस्ट के अधिकारियों एवं कर्मचारियों को हिन्दी में काम करने के लिए प्रोत्साहित किया, हिन्दी व्याकरण के सामान्य भूल को सुधारने के तरीके की व्याख्या करते हुए सभी का ध्यान केन्द्रित किया । राजभाषा सप्ताह के दौरान प्रतिदिन हिन्दी में कार्य करने के प्रति लगाव बढ़ाने के लिए कई प्रकार के प्रतियोगिताओं का आयोजन किया गया । हिन्दी कार्यशालाएँ आयोजित की गयी ।

सप्ताह का समापन **14** सितम्बर **2016** को हिन्दी दिवस समारोह के रूप में किया गया । निर्धारित समय के अनुरूप इस कार्यक्रम का शुभारंभ राजभाषा प्रभारी श्री अजय कुमार ने भारत सरकार के गृह मंत्री के हिन्दी दिवस संदेश पढ़कर किया । समारोह के मुख्य अतिथि के रूप में ओएनजीसी, जोरहाट के उप-महाप्रबंधक (मानव संसाधन) श्री ई. हसनैन ने अपने व्याख्यान में कार्यालय में हिन्दी के प्रचालन पर बल दिया । हिन्दी को राष्ट्रीय एकता का प्रतीक बताते हुए उन्होंने सीखने का अपील किया, हिन्दी के सरल एवं सहज स्वरूप को अपनाते हुए प्रयोग को बढ़ाएँ ।



मुख्य अतिथि के रूप में बोलते हुए ओएनजीसी, जोरहाट के उप-महाप्रबंधक (मानव संसाधन) श्री ई. हसनैन एवं (दायें से) निस्ट, जोरहाट के मुख्य वैज्ञानिक डॉ पिनाकी सेनगुप्ता एवं संस्थान के प्रशासनिक अधिकारी श्री विक्रम सिंह

निस्ट, जोरहाट के मुख्य वैज्ञानिक डॉ पिनाकी सेनगुप्ता ने अपने सम्बोधन में सभी कार्मिकों को हिन्दी दिवस की शुभकामना दी एवं कार्यालय में राजभाषा हिन्दी के प्रचार-प्रसार पर बल दिया । उन्होंने खास तौर पर हिन्दी भाषी अधिकारियों/कर्मचारियों से कहा कि कम से कम वे अपना प्रशासनिक काम हिन्दी में ही करें । ऐसा करने से हिंदीतरभाषी स्टाफ भी काम करने को प्रोत्साहित होंगे । राजभाषा नियम के अनुसरण में संस्थान में राजभाषा हिंदी गतिविधियों एवं सुविधाओं का उल्लेख किया । संस्थान में चल रहे हिन्दी कार्यक्रम का ब्योरा भी प्रस्तुत किया । इस अवसर पर संस्थान के प्रशासनिक अधिकारी श्री विक्रम सिंह भी मंच पर मौजूद थे ।

कार्यक्रम के अंत में पुरस्कार वितरण समारोह का संचालन श्री अजय कुमार, प्रभारी राजभाषा ने किया। उन्होंने संस्थान में 5 से 14 सितम्बर के दौरान आयोजित राजभाषा हिंदी सप्ताह के अंतर्गत विभिन्न प्रकार के हिंदी प्रतियोगिताओं हिंदी श्रुत लेखन, हिंदी प्रश्नोत्तरी के विजेताओं के नामों की घोषणा की और मुख्य अतिथि महोदय के कर कमलों से उन्हें पुरस्कार एवं प्रमाणपत्र से सम्मानित किया गया। हिंदी शिक्षण योजना भारत सरकार के अंतर्गत प्रबोध/प्रवीण/प्राज्ञ हिंदी भाषा पाठ्यक्रम पास स्टाफ सदस्यों को प्रमाण पत्र प्रदान किया गया। अंत में श्रीमति रश्मि प्रकाश ने धन्यवाद ज्ञापित किया।

संस्थान में राजभाषा हिंदी सप्ताह का आयोजन

विगत वर्ष के भांति इस वर्ष भी संस्थान में राजभाषा हिंदी सप्ताह मनाया का शुभारंभ असमियाँ मूल के प्रसिद्ध हिन्दी कवियित्री एवं रचनाकार श्रीमति रेणु बरुआ के कर कमलों से किया गया। हिन्दी सप्ताह के दौरान अधिकारियों/कर्मचारियों के प्रोत्साहन हेतु प्रत्येक कार्यदिवस में निम्नलिखित प्रतियोगिताएं एवं कार्यशालाएँ आदि आयोजित की गयी ताकि उनमें एक प्रेरणा और उत्साह की उत्पत्ति हो सके :

5/9/2016 : प्रथम सत्र में हिन्दी सप्ताह का शुभारंभ कार्यक्रम आयोजित हुआ जिसमें संस्थान के प्रत्येक वैज्ञानिक प्रभागों के नामित राजभाषा प्रतिनिधियों ने भाग लिया। द्वितीय सत्र में हिन्दी कार्यशाला का आयोजन किया गया।

6/9/2016 : “कंप्यूटर पर हिंदी यूनिकोड एवं गूगल हिंदी का प्रयोग” विषय पर हिन्दी कार्यशाला का आयोजन किया गया।

7/9/2016: “सामान्य जन-जीवन के विकास में विज्ञान की भूमिका” विषय पर हिन्दी लेख लेखन प्रतियोगिता आयोजित किया गया।

8/9/2016 : हिन्दी के ज्ञान को केन्द्रित करते हुए हिन्दी विज (प्रश्नोत्तरी) प्रतियोगिता आयोजित की गयी। रुचिपूर्ण एवं ज्ञानवर्धक आयोजन के कारण इसमें काफी प्रतिभागी भाग लेते हैं। इस साल भी आयोजन ज्ञानवर्धक एवं आनंददायक रहा। भारतीय स्टेट बैंक के प्रबन्धक (राजभाषा), श्री अजय कुमार सिन्हा ने ‘कौन बनेगा करोड़पति’ के तर्ज पर विज का संचालन किया। प्रतिभागी मुग्ध हो गए।

9/9/2016 : हिन्दी श्रुतलेखन प्रतियोगिता आयोजित किया गया। अतिथि निर्णायक की भूमिका श्री प्रवीर कुमार घोष, प्रबंधक (राजभाषा) यूको बैंक, आंचलिक कार्यालय, जोरहाट ने निभाया।



हिन्दी सप्ताह शुभारंभ पर अपना मन्तव्य रखती हुई हिन्दी कवियित्री एवं रचनाकार श्रीमति रेणु बरुआ : हिन्दी विज कार्यक्रम का संचालन करते अतिथि भारतीय स्टेट बैंक के प्रबन्धक (राजभाषा), श्री अजय कुमार सिन्हा

संस्थान में हिंदी कार्यशालाओं का नियमित आयोजन

राजभाषा नियम एवं सी एस आई आर मुख्यालय के दिशानिर्देश में संस्थान के वैज्ञानिकों, तकनीकी अधिकारियों, तकनीशियनों, प्रशासन के अधिकारियों एवं कर्मचारियों के लिए तिमाही हिंदी कार्यशाला का आयोजन किया जाता है। प्रभावी कार्यान्वयन की दृष्टि से समय – समय पर कार्य एवं पद की एकरूपता को ध्यान में रखकर समूह बनाकर कार्यशाला में प्रशिक्षण दिया जाता है। वर्ष के दौरान निम्नलिखित प्रमुख कार्यशालाएँ आयोजित की गयी :

6 एवं 7 अप्रैल 2016: संस्थान के सभी तकनीकी सहायकों के लिए हिंदी कार्यशाला सह टेबुल वर्कशॉप का आयोजन किया गया । इस आयोजन में एक समान पदधारी को एक साथ रखा गया ताकि उनके समरूप समस्याओं का समाधान किया जा सके । कंप्यूटर पर सरलता से हिन्दी में कार्य करने की विधि बताया गया ।

7 एवं 8 जुलाई 2016 : नव नियुक्त सभी वैज्ञानिक, तकनीकी एवं सहायक जो हिन्दी परीक्षा में भाग ले रहे हैं के लिए परीक्षा पूर्व आयोजित हिंदी कार्यशाला/प्रशिक्षण आयोजन किया गया । मुख्य विषय राजभाषा हिंदी का महत्व एवं कार्यालय में कार्यान्वयन एवं कंप्यूटर पर यूनिकोड हिंदी अनुकूलता एवं गूगल हिंदी का प्रयोग था ।

3 एवं 4 नवम्बर 2016 : नव नियुक्त सभी वैज्ञानिक एवं सहायक (प्रशासन) के लिए असीमा चटर्जी सभा कक्ष (प्राकृतिक उत्पाद रसायन) में हिंदी कार्यशाला सह टेबुल वर्कशॉप का आयोजन किया गया । मुख्य विषय राजभाषा प्रस्तावना एवं प्रवीण पाठ्यक्रम का विश्लेषण

एवं प्रवीण पाठ्यपुस्तक आधारित प्रश्नों का हल था ।

संस्थान को पुरस्कार/ सम्मान :

नराकास (निस्ट), जोरहाट भारत सरकार द्वारा श्रेष्ठ कार्य सम्पादन के लिए पुरस्कृत

भारत सरकार, गृह मंत्रालय, राजभाषा विभाग ने नगर राजभाषा कार्यान्वयन समिति (नराकास), जोरहाट कार्यालय सीएसआईआर-उत्तर पूर्व विज्ञान तथा प्रौद्योगिकी संस्थान को पूर्वोत्तर भारत में श्रेष्ठ राजभाषा कार्यान्वयन कार्य निष्पादन के लिए पुरस्कार प्रदान किया गया एवं समिति के सदस्य सचिव श्री अजय कुमार को विशेष योगदान के लिए सचिव भारत सरकार द्वारा जारी प्रशस्ति पत्र प्रदान किया गया ।



यह पुरस्कार 12 नवम्बर 2016 को सिक्किम, गंगटोक में गृह मंत्रालय राजभाषा विभाग, भारत सरकार द्वारा आयोजित पूर्व एवं पूर्वोत्तर क्षेत्रीय राजभाषा सम्मेलन कार्यक्रम में सिक्किम के महामहिम राज्यपाल श्रीनिवास पाटिल एवं भारत सरकार के माननीय गृह राज्य मंत्री श्री किरन रेजुजू के कर कमलों द्वारा सदस्य-सचिव, जोरहाट श्री अजय कुमार प्रशस्ति पत्र के साथ प्रदान क्या गया । ध्यातव्य हो कि समिति के गठन का मूल उद्देश्य है जोरहाट में अवस्थित सभी केंद्रीय कार्यालयों यथा सेना, अर्ध सैनिक बल एवं उपक्रमों, बैंक आदि के कार्यालयों में राजभाषा नियमानुसार राजभाषा हिन्दी के प्रचालन में सहयोग करना एवं अनुपालन पर निगरानी करना है । समय-समय पर सभी कार्यालयों की बैठक की जाती है एवं कार्य की समीक्षा की जाती है, साथ ही आवश्यकतानुसार कार्यालय का निरीक्षण भी किया जाता है ।

व्याख्यान/ संगोष्ठी में सहभागिता, अन्य संस्थाओं/ कार्यालयों के हिन्दी कार्यशाला में विशेषज्ञ

श्री अजय कुमार, हिन्दी अधिकारी एवं सचिव, नगर राजभाषा कार्यान्वयन समिति, जोरहाट को निम्नलिखित केंद्र सरकार के कार्यालयों में राजभाषा हिन्दी के विशेषज्ञ/ संकाय सदस्य/ मुख्य अतिथि के रूप में उल्लेखित तिथि को आमंत्रित किया गया एवं उन्होंने तदनुसार प्रस्तुति दी:

ऑयल एवं नेचुरल गैस कारपोरेशन लि., असम एवं असम अराकान बेसिन, जोरहाट : 13 जून 2016 को उनके द्वारा प्रकाशित “लोहित वाणी” हिन्दी पत्रिका के विमोचन के अवसर पर अतिथि के रूप में आमंत्रित किया गया । 15 सितम्बर 2016 को हिन्दी पखवाड़ा समापन समारोह में मुख्य अतिथि के रूप में आमंत्रित किया गया । 30 मार्च 2017 को आयोजित हिन्दी में तकनीकी संगोष्ठी के अवसर पर विशिष्ट अतिथि के रूप में आमंत्रित किया गया ।

केन्द्रीय विद्यालय, निस्ट, जोरहाट : 20 जून 2016 को हिन्दी शिक्षकों की संविदा पर नियुक्ति हेतु विषय विशेषज्ञ के रूप में साक्षात्कार लेने हेतु आमंत्रित किया गया ।

केन्द्रीय विद्यालय, ओएनजीसी, जोरहाट : 2 सितम्बर 2016 को क्लस्टर लेवल सोशल साइंस प्रदर्शनी 2016-17 में स्कीट एंड डिबेट प्रतियोगिता के निर्णायक की भूमिका के लिए आमंत्रण ।

ऑयल इंडिया लिमिटेड, जोरहाट: 9 सितम्बर 2016 को हिन्दी माह समापन के अवसर मुख्य अतिथि के रूप में आमंत्रित किया ।

सेंट्रल बैंक ऑफ इंडिया, क्षेत्रीय कार्यालय, नेहरू पार्क रोड, जोरहाट : 23 अगस्त 2016 को बैंक स्तर पर अखिल भारतीय हिन्दी गीत गायन प्रतियोगिता में निर्णायक की भूमिका हेतु आमंत्रित किया गया ।

राष्ट्रीय मृदा सर्वेक्षण एवं भूमि उपयोग नियोजन ब्यूरो , भारतीय कृषि अनुसंधान परिषद, जोरहाट : 28 सितम्बर 2016 को राजभाषा हिन्दी सप्ताह समापन समारोह के अवसर पर मुख्य अतिथि के रूप में व्याख्यान हेतु आमंत्रित किया गया ।

केंद्रीय मृगा एवं एरी अनुसंधान एवं प्रशिक्षण संस्थान, जोरहाट : 30 जून 2016 को हिन्दी कार्यशाला में व्याख्यान हेतु आमंत्रित किया गया ।

केंद्रीय हिन्दी भारत सरकार, राजभाषा विभाग, नई दिल्ली : विभाग ने राजभाषा पुरस्कार के लिए दो केंद्रीय कार्यालय ‘मृगा कच्चा माल बैंक, केंद्रीय रेशम बोर्ड, शिवसागर एवं सेंट्रल बैंक ऑफ इंडिया, क्षेत्रीय कार्यालय, जोरहाट को निरीक्षण की ज़िम्मेदारी दी, तदनुसार क्रमशः 18 एवं 19 अक्टूबर 2016 को निरीक्षण किया ।

भारतीय विमानपत्तन प्राधिकरण, ररैया, जोरहाट : 30 सितंबर 2016 को हिन्दी पखवाड़ा समापन के अवसर पर मुख्य अतिथि के रूप में व्याख्यान के लिए आमंत्रित किया गया । 29 मार्च 2017 को “राजभाषा कार्यान्वयन में आई टी टूल्स का विवरण” विषय पर आयोजित कार्यशाला में व्याख्यान के लिए आमंत्रित किया गया ।

क्षेत्रीय रेशम अनुसंधान केंद्र, केंद्रीय रेशम बोर्ड, जोरहाट : 28 जून 2016, 20 अगस्त 2016 को हिन्दी कार्यशाला में “हिन्दी टिप्पण एवं मसौदा” विषय पर व्याख्यान हेतु आमंत्रित किया गया ।

हिंदी शिक्षण योजना द्वारा हिंदी भाषा प्रशिक्षण पाठ्यक्रम केंद्र का संचालन

हिंदीतर भाषी अधिकारियों/ कर्मचारियों के लिए निर्धारित स्तर के हिंदी भाषा पाठ्यक्रम प्रबोध/ प्रवीण / प्राज्ञ परीक्षा पास करना अनिवार्य होता है । संस्थान में उक्त पाठ्यक्रम के प्रशिक्षण के लिए वर्ष 1997 में भारत सरकार, गृह मंत्रालय, राजभाषा विभाग, हिंदी शिक्षण योजना द्वारा संस्थान प्रबंधन के अधीन अंशकालिक हिंदी भाषा प्रशिक्षण केंद्र स्थापित किया । विभाग द्वारा यह केंद्र स्थानीय सभी केंद्र सरकार के कार्यालयों के प्रशिक्षण हेतु भी संचालित किया गया । तदनुसार यह केंद्र सरकार के कार्यालय, स्वायत्तशासी संस्थानों, राष्ट्रीयकृत बैंकों द्वारा नामित अधिकारियों / कर्मचारियों को वर्ष में दो सत्र के अंतर्गत नियमित /प्राइवेट तौर पर प्रशिक्षण हेतु नामांकित करते हैं । प्रशिक्षण के साथ – साथ उप-निदेशक (परीक्षा), नई दिल्ली के नियंत्रण में उक्त पाठ्यक्रमों के परीक्षा को भी संस्थान द्वारा संचालित किया जाता है । वर्ष के दौरान निम्नलिखित सत्र एवं परीक्षा आयोजित हुआ :

जनवरी 2016 सत्र : हमारे संस्थान के अलावा केन्द्री मुगा एवं एरी अनुसंधान संस्थान, सेंटरल बैंक, यूको बैंक, जवाहर नवोदय विद्यालय, इग्नू, जोरहाट एवं नेशनल इन्शुरेंस, जोरहाट से प्रशिक्षण हेतु नियमित / प्राइवेट नामित किए गए तथा मई 2016 को आयोजित परीक्षा में भाग लिया । कुल प्रशिक्षित आकड़े दर्शाए गए हैं ।

	परीक्षा फॉर्म भरे	परीक्षा में बैठे	परीक्षा में उत्तीर्ण	पुरुस्कृत परीक्षार्थी
प्रबोध	18	06	06	05
प्रवीण	19	12	12	01
प्राज्ञ	29	16	16	16

जुलाई 2016 सत्र : हमारे संस्थान के अलावा सेंटरल बैंक, यूको बैंक, इग्नू, जोरहाट, रबर बोर्ड, ओ.एन.जी.सी., वर्षा वन अनुसंधान संस्थान एवं नेशनल इन्शुरेंस, जोरहाट से प्रशिक्षण हेतु नियमित / प्राइवेट नामित किए गए तथा नवम्बर 2016 को आयोजित परीक्षा में भाग लिया । कुल प्रशिक्षित आकड़े दर्शाए गए हैं ।

	परीक्षा फॉर्म भरे	परीक्षा में बैठे	परीक्षा में उत्तीर्ण	पुरुस्कृत परीक्षार्थी
प्रबोध	12	06	06	06
प्रवीण	35	19	19	15
प्राज्ञ	20	11	11	11

निस्ट, जोरहाट में गठित राजभाषा कार्यान्वयन समिति (राकास) की बैठकें :

प्रावधान के अनुसार संस्थान में प्रभावी राजभाषा कार्यान्वयन के लिए राजभाषा कार्यान्वयन समिति गठित है । नियमानुसार प्रत्येक तीन माह में बैठक आयोजित की जाती है एवं कार्यान्वयन की मोनिटरिंग भी की जाती है । इस वित्तीय वर्ष में उल्लेखित तिथि 08/06/2016, 17/08/2016, 09/11/2016 एवं 07/03/2017 को बैठक आयोजित की गई एवं महत्वपूर्ण निर्णय लिए गए ।

नगर राजभाषा कार्यान्वयन समिति (नराकास), जोरहाट की बैठकें

नगर राजभाषा कार्यान्वयन समिति (नराकास), जोरहाट भारत सरकार, गृह मंत्रालय, राजभाषा विभाग, नई दिल्ली द्वारा बड़े बड़े शहरों में अवस्थित केंद्र सरकार के कार्यालयों में राजभाषा हिंदी के प्रयोग को सुनिश्चित करने के उद्देश्य नगर राजभाषा कार्यान्वयन समिति की स्थापना की जाती है । बड़े एवं सक्षम कार्यालय के प्रधान को अध्यक्ष नामित किया जाता है । स्थानीय सभी केंद्रीय कार्यालय इसके सदस्य होते हैं एवं प्रत्येक वर्ष दो बार इसकी बैठक आयोजित की जाती है ।

वर्ष 2009 में भारत सरकार ने नगर राजभाषा कार्यान्वयन समिति, जोरहाट का कार्यभार निदेशक, निस्ट, जोरहाट को सौंपा तथा सचिवीय कार्य हेतु श्री अजय कुमार, हिन्दी अधिकारी, निस्ट, जोरहाट को नामित किया। स्थानीय केंद्रीय कार्यालय, सैन्य संगठन, वायु सेना, राष्ट्रीयकृत बैंक, स्वायत्तसेवी संस्थान, प्रतिष्ठान, परिषद समिति के सदस्य हैं जो नियमित आयोजित बैठक में राजभाषा हिन्दी पर चर्चा के लिए भाग लेते हैं।

समिति की 31 वीं बैठक : नगर राजभाषा कार्यान्वयन समिति, जोरहाट की 31 वीं बैठक शनिवार 30 अप्रैल 2016 को संपन्न हुआ। भारत सरकार, राजभाषा विभाग (कार्यान्वयन) के अनुसंधान अधिकारी श्री बदरी यादव की उपस्थिति में बैठक की अध्यक्षता डा. डी रामाय्या, निदेशक, निस्ट, जोरहाट ने किया।

कार्यक्रम का संचालन समिति के सचिव श्री अजय कुमार ने किया। उपस्थित कार्यालयों के प्रधान एवं प्रतिनिधियों ने अपना परिचय दिया। तत्पश्चात् समिति के अध्यक्ष ने उपस्थित कार्यालय प्रधान एवं प्रतिनिधियों का हार्दिक स्वागत किया एवं समिति के लक्ष्य को दोहराया। राजभाषा हिन्दी का कार्यालयों में प्रगति पर चर्चा के दौरान सभी कार्यालयों ने अपने-अपने प्रयास, प्रोत्साहन गतिविधियां एवं आने वाली समस्याओं को समिति के सामने रखा। प्रगति एवं समस्या दोनों की समीक्षा की गयी। समिति द्वारा नियमित रूप से प्रकाशित राजभाषा हिन्दी पत्रिका “अनुनाद” का प्रिंट एवं वेब वर्जन का विमोचन किया गया। वर्ष 2016 में प्रकाशित यह पत्रिका का चतुर्थ अंक है। इस पत्रिका में हिंदीतर भाषी के हिन्दी रचनाओं को प्राथमिकता दी जाती है, इनके प्रयास को प्रदर्शित किया जाता है। पत्रिका की प्रति सभी कार्यालयों को वितरित किया गया। केंद्रीय कार्यालयों में राजभाषा हिन्दी के विकास में भारत सरकार द्वारा निर्धारित वार्षिक लक्ष्य 2015-16 की प्रति सभी सदस्यों को प्रदान किया गया एवं इस पर चर्चा की गयी।



वर्ष 2015-16 के लिए राजभाषा विभाग द्वारा निर्धारित मानदंडों के आधार पर सदस्य कार्यालयों (बैंक) के बीच उत्कृष्ट राजभाषा कार्यान्वयन करने वाले तीन बैंक को शील्ड एवं प्रशस्ति पत्र से पुरस्कृत किया गया। यूको बैंक, अंचल कार्यालय, जोरहाट की ओर से श्री शुभजित बसु, आंचलिक प्रबन्धक एवं श्री प्रवीर कुमार घोष, वरिष्ठ प्रबन्धक (राजभाषा) ने पुरस्कार ग्रहण किया; सेंट्रल बैंक ऑफ इंडिया, क्षेत्रीय कार्यालय, जोरहाट की ओर से श्री आलोक कुमार चंदा, क्षेत्रीय प्रबन्धक एवं श्री रेवती कुमार, राजभाषा अधिकारी ने एवं भारतीय स्टेट बैंक, प्रशासनिक कार्यालय, जोरहाट की ओर से श्री प्रवीण कुमार चौधुरी, मुख्य प्रबन्धक एवं श्री अजय कुमार सिन्हा, राजभाषा अधिकारी ने पुरस्कार प्राप्त किया। पुरुस्कृत कार्यालय ने राजभाषा हिन्दी के विकास के लिए अपने उल्लेखनीय कार्य को प्रस्तुत किया ताकि अन्य कार्यालय अनुकरण कर सकें। इस प्रकार के अन्य कार्यालयों ने भी अपने प्रयास को रखा। अपने अध्यक्षीय सम्बोधन में डॉ रामाय्या ने सभी कार्यालयों से अपील किया कि वे राजभाषा हिन्दी के कार्यान्वयन में समुचित ध्यान दें एवं किसी प्रकार के सहयोग के लिए सचिव नराकास से संपर्क करें। अपने समीक्षा सम्बोधन में श्री यादव ने बैठक के सफल आयोजन की बधाई दी एवं अशानुकूल उपस्थिति को देखकर हर्ष एवं उद्गार व्यक्त किया।

समिति की 32 वीं बैठक : नगर राजभाषा कार्यान्वयन समिति, जोरहाट की 32 वीं बैठक शुक्रवार 17 फरवरी 2017 को संपन्न हो गया। बैठक की अध्यक्षता डा. डी रामाय्या, निदेशक, उत्तर पूर्व विज्ञान तथा प्रौद्योगिकी संस्थान, जोरहाट ने किया। ओ एन जी सी जोरहाट के परिसंपत्ति प्रबन्धक डॉ राकेश कुमार विज भी बैठक में मौजूद थे।

पूर्व निर्धारित तय कार्यक्रम के अनुसार बैठक अपराह्न 3.00 बजे आरंभ हुआ। कार्यक्रम का संचालन समिति के सचिव श्री अजय कुमार ने किया। उपस्थित कार्यालयों के प्रधान एवं प्रतिनिधियों ने अपना परिचय दिया। तत्पश्चात समिति के अध्यक्ष ने उपस्थित कार्यालय प्रधान एवं प्रतिनिधियों का हार्दिक स्वागत किया एवं समिति के लक्ष्य को दोहराया। राजभाषा हिंदी का कार्यालयों में प्रगति पर चर्चा के दौरान सभी कार्यालयों ने अपने-अपने प्रयास, प्रोत्साहन गतिविधियां एवं आने वाली समस्याओं को समिति के सामने रखा। प्रगति एवं समस्या दोनों की समीक्षा की गयी। समिति के सचिव ने सरकार के त्रिभाषा सूत्र संबंधी दिशानिर्देश को पटल पर रखा। किसी भी केंद्रीय सरकार के कार्यालयों के बाहर स्थित बोर्ड तीन भाषाओं अर्थात् सबसे ऊपर असमियाँ, हिन्दी और अंत में अङ्गरेज़ी लिखा होना चाहिए। यहाँ तक कि अक्षर के आकार में भी भिन्नता नहीं होनी चाहिए। तीनों भाषा के आकार समान एवं उपयुक्त क्रम में ही होना चाहिए। सरकारी कार्यालय मूलतः जन सेवक है, अतएव जन साधारण को समझने में आसानी हो। खासकर बैंक को अपने कार्यालय के अंदर भी क्षेत्रीय भाषा अर्थात् असमियाँ एवं हिन्दी का प्रयोग करना चाहिए ताकि सामान्य जन को सुविधा हो। बैठक में लगभग सभी कार्यालयों के प्रधान एवं प्रतिनिधि उपस्थित थे।



वर्ष 2015-16 के लिए राजभाषा विभाग द्वारा निर्धारित मानदंडों के आधार पर सदस्य कार्यालयों के बीच उत्कृष्ट राजभाषा कार्यान्वयन करने वाले चार कार्यालय को शील्ड एवं प्रशस्ति पत्र से पुरस्कृत किया गया। पुरस्कृत कार्यालयों में ओ एन जी सी, भारतीय विमानपत्तन प्राधिकरण, केंद्रीय सिल्क बोर्ड, क्षेत्रीय कार्यालय एवं नेशनल ब्यूरो ऑफ सॉयल सर्वे एण्ड लेण्ड यूज प्लानिंग सम्मिलित है। अध्यक्ष डॉ डी रामाय्या ने ओ एन जी सी, जोरहाट के प्रधान डॉ राकेश कुमार विज्ज एवं राजभाषा अधिकारी श्री जय कुमार पांडे को पुरस्कार प्रदान किया। इस प्रकार पुरस्कार भारतीय विमानपत्तन प्राधिकरण की ओर से जोरहाट हवाई अड्डा निदेशक श्री जमील खालिफ़ ने, केंद्रीय सिल्क बोर्ड, क्षेत्रीय कार्यालय की ओर से कार्यालय प्रधान वैज्ञानिक “डी” डॉ एस एन गोगोई ने एवं नेशनल ब्यूरो ऑफ सॉयल सर्वे एण्ड लेण्ड यूज प्लानिंग की ओर से डॉ रमेश कुमार जेना ने प्राप्त किया। पुरस्कृत कार्यालय ने राजभाषा हिन्दी के विकास के लिए अपने उल्लेखनीय कार्य को प्रस्तुत किया ताकि अन्य कार्यालय अनुकरण कर सकें। इस प्रकार के अन्य कार्यालयों ने भी अपने प्रयास को रखा। अपने अध्यक्षीय सम्बोधन में डॉ रामाय्या ने सभी कार्यालयों से अपील किया कि वे राजभाषा हिन्दी के कार्यान्वयन में समुचित ध्यान दें एवं किसी प्रकार के सहयोग के लिए सचिव नराकास से संपर्क करें।

S&T Services & Facilities Installed

Centre for Advanced Civil Engineering Research



Foundation Stone Laying of 'Centre for Advanced Civil Engineering Research' by Padma Bhushan Dr T Ramasami, former Secretary, Department of Science & Technology, Ministry of Science & Technology, Govt. of India and former DG-CSIR at CSIR-NEIST during 56th CSIR-NEIST Foundation Day celebration on 20 March, 2017.

Rural Technology Demonstration Centre (RTDC) established at CSIR-NEIST

A Rural Technology Demonstration Centre (RTDC) has been set up at CSIR-NEIST which was inaugurated by Bharat Ratna Prof. C. N. R. Rao on 21 December 2016, with an aim to promote entrepreneurship and self-employment avenues in rural areas. At the RTDC several MSME scale technologies developed by CSIR-NEIST has been demonstrated. In the RTDC training to the entrepreneurs where provided on some selected technologies. In case of some of the technologies, apart from demonstration, any interested entrepreneurs can start their incubation as start-ups.



Rural Technology Demonstration Centre (RTDC) inaugurated by Bharat Ratna Prof. C. N. R. Rao on 21 December, 2016

Experimental Animal House established at CSIR-NEIST



Prof Goverdhan Mehta inaugurating the Experimental Animal House at CSIR-NEIST on 24 September, 2016 in presence of the Director, Dr D Ramaiah, and other officials from the Institute.

High End Equipments for Analytical Services

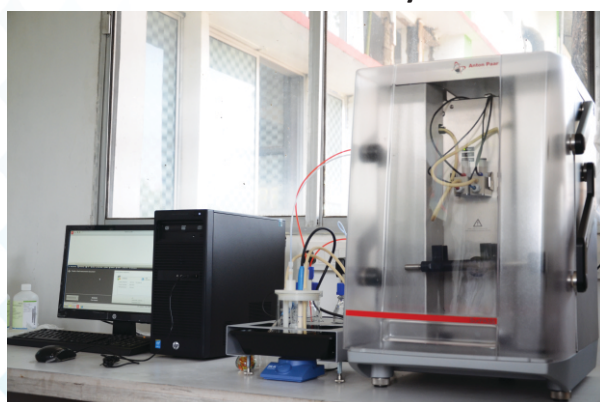
High Resolution Mass spectrometer



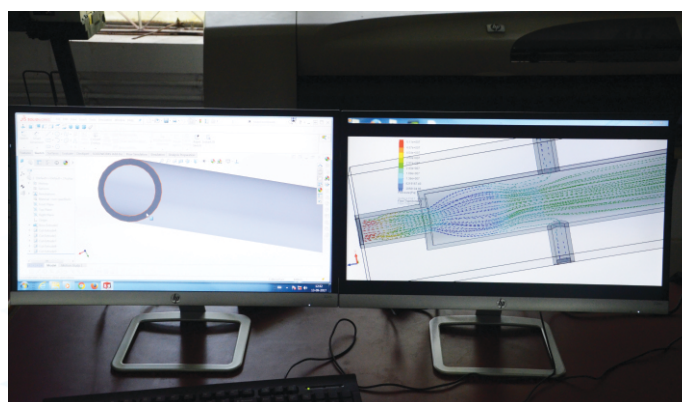
High Resolution Transmission Electron Microscope (HRTEM)



Electrokinetic Analyzer



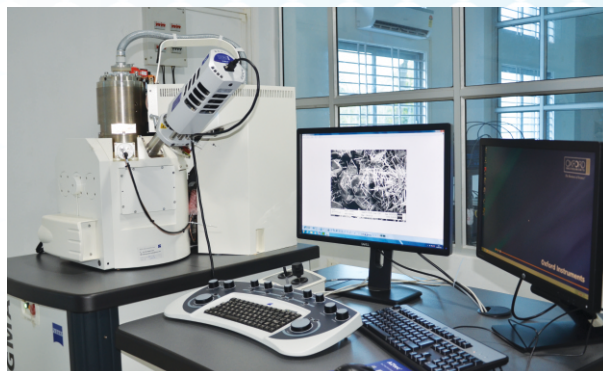
Solid Work Flow Simulation



**Atomic Force Microscope
(Nanomagnetics, hpAFM)**



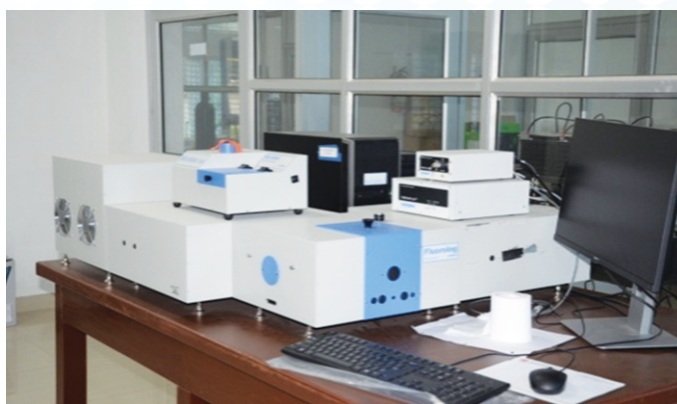
**Field Emission Scanning Electron
Microscope (FE-SEM)**



Confocal Microscopy



Fluorescence Spectrophotometer



Pressurisable Glove Box



Automatic Deodorant Making Machine:



Horizontal Packaging Machine



WORKSHOPS/SEMINARS ORGANIZED

Residential Salters' Chemistry Camp and Teachers' Training Workshop

The Royal Society of Chemistry India (RSC) in association with CSIR-NEIST and Kaziranga University, Jorhat organized Teachers' Training Workshop and Residential Salters' Chemistry Camps in July, 2016 at CSIR-NEIST campus. The Salters' Chemistry Camp was held during 11-13 July, 2016 wherein 67 students of std IX from 17 government/less-privileged schools of Jorhat participated. The programs were coordinated by Mr Partha Paul, Scientist, CSIR-NEIST and Ms Bhakti Dhamdhare and Mr Ershad Abubacker from the RSC.



Student participants of the Salters' Chemistry Camp held at CSIR-NEIST

This was followed by a two-day Teachers' Training workshop held during 14-15 July, 2016 for government school teachers at CSIR-NEIST. The teachers' training program was also held at CSIR-NEIST branch labs in Itanagar and Imphal during 18-19 July, 2016 and 21-22 July, 2016 respectively. Altogether 33 teachers from 25 different schools of Jorhat participated at the program at CSIR-NEIST while 30 teachers from 27 schools and 33 teachers from 31 schools participated at the programs held at Itanagar and Imphal respectively.



Participants of the Teachers' training program held at CSIR-NEIST



Participants of the Teachers' training program held at NEIST Branch Lab, Itanagar

Bio-Botanical Sustainable Approach for the Agricultural Pest Management Workshop

CSIR-NEIST in association with the Institute of Pesticide Formulation Technology (IPFT), Gurgaon organized a workshop on "Bio-botanical sustainable approach for the agricultural pest management in

North-East India" during 10-11 November, 2016 at its premise. A total of 58 participants comprising of progressive farmers, small tea growers, academicians and personnel from Biopesticide industries in Assam participated in the workshop. In the two days workshop, Dr P K Patanjali, Chief Formulator & Scientist H, IPFT, Gurgaon, Dr Pinki Bhandari, Deputy Chief & Head, Bioscience Division, IPFT, Gurgaon, Dr LK Hazarika, Prof & Head, Department of Entomology, AAU, Jorhat, Dr A Babu, Dy. Director (Research) & Senior Principal Scientist, TRA Nagrakata, Dr Mantu Bhuyan, Senior Scientist, CSIR-NEIST, Jorhat and Mr Samir Bordoloi, Farm to Food Foundation Jorhat discussed on different aspect of biopesticides for crop protection.



Participants of the workshop along with the organizers and resource persons.

Workshop-cum training on Biological data analysis using R-package

A two-day workshop-cum-training on "*Biological data analysis Using R-Package*" was organized by CSIR-NEIST during 5-6 January, 2017 supported by DBT, Govt. of India. Dr Santanu Dutta, Associate Professor in Mathematics, Tezpur University and Dr Rajal Debnath, Scientist, CMER&TI, Jorhat attended as resource persons. A hands-on training on QIIME and R-package was held further wherein the participants were trained with demo session by microbial gene sequenced datasets. Altogether 35 nos. of participants from different institutes/organizations like IIT-Guwhati, NIT-Silchar, Tezpur University, Mizoram University, Guwahati University, Assam Agricultural University, Dibrugarh University, TRA-Tocklai, CMER&TI-Jorhat, RFRI-Jorhat and various colleges joined in the workshop.



(Left) Dr D Ramaiah, Director, CSIR-NEIST addressing the participants in the inaugural session. (Right) A section of participants attending the programme.

Scientist from Millan Italy visited CSIR-NEIST Branch Itanagar

Dr Sergio Mapelli, Scientist, CNR Institute of Agricultural Biology and Biotechnology Millan, Italy visited CSIR-North East Institute of Science & Technology Branch Lab Itanagar G-Sector, Naharlagun to deliver an invited lecture on “Industrially Important Crops”. A total 45 nos of students along with their teachers from Dept. of Life Science, Rajiv Gandhi University, Dept. of Forestry, NERIST, Dept. of Botany, DN College, Itanagar and Dept. of Biotechnology and Bioengineering, NIT, Yupia attended the programme.



Dr Sergio Mapelli, Scientist, CNR Institute of Agricultural Biology and Biotechnology Millan, Italy Delivering the Speech

Lecture Programmes under IIME-NE Chapter held

CSIR-NEIST organized two Lecture Programmes at its premise under Indian Institute of Mineral Engineers– North East Chapter (IIME-NE chapter) on 9 February, 2017 and 22 February, 2017. Dr B N Sahoo, Dy. General Manager, Oil India Limited, Duliajan delivered the Lecture entitled, “Climate change—a threat to Mother Earth” on 9 February, 2017 while Dr Pratik Swarup Dash, Head, Tata Steel, Coal Group, Jamshedpur delivered the Lecture on 22 February, 2017 on the topic, “Current research activities and future prospects in Tata Steel”. The programmes were coordinated under the Presidentship of Dr P Sengupta, Head–MSTD Division and Dr B K Saikia, Sr Scientist & Joint Secretary, IIME-NE Chapter.

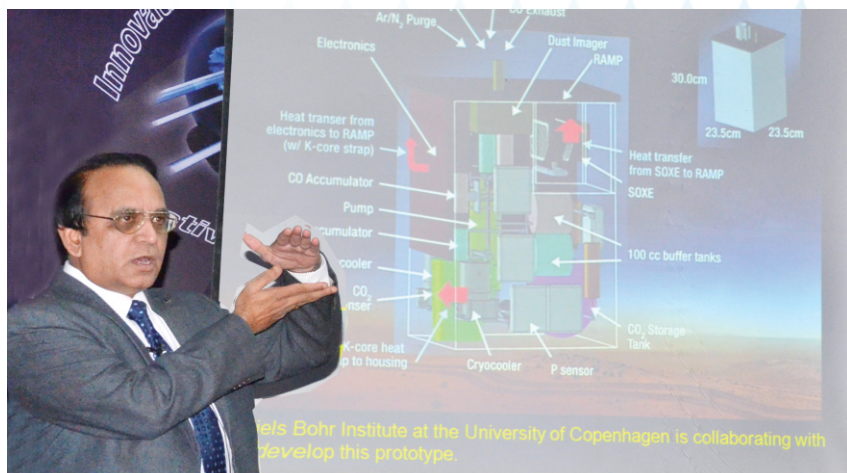
CSIR-NEIST conducted first Entrance Test for India International Earth Science Olympiad (IESO) 2017 in Jorhat

An Entrance Test of the Geological Society of India INTERNATIONAL EARTH SCIENCE OLYMPIAD (IESO) 2017, which is scheduled to be held in France for the year 2017, was successfully conducted by CSIR-NEIST for the first time in Jorhat held at KV-NEIST on 22 January, 2017. Dr R K Mrinalinee Devi, Women Scientist, Geoscience & Technology Division (GSTD), conducted the examination as Centre In-charge of the Jorhat Centre where altogether 62 students from different schools of in & around Jorhat participated.

EVENTS ORGANISED

CSIR-NEIST celebrated National Technology Day 2016

CSIR-NEIST celebrated National Technology Day 2016 with a special program held at Dr J N Baruah Auditorium on 11 May, 2016. Dr Ch Mohan Rao, Former Director, CSIR-Centre for Cellular and Molecular Biology, Hyderabad graced the occasion as Chief Guest and delivered the Technology Day Lecture.



Dr Ch Mohan Rao, Former Director, CSIR-Centre for Cellular & Molecular Biology, Hyderabad, delivering Technology Day Lecture 2016 at CSIR-NEIST.

CSIR-NEIST celebrated country's 70th Independence Day

CSIR-NEIST celebrated 70th Independence Day of the country with great joy and enthusiasm on 15 August, 2016. A flag hoisting ceremony was held in front of the administrative block wherein CSIR-NEIST family members, students and teachers from Kendriya Vidyalaya-NEIST attended in large number. Dr D Ramaiah, Director, CSIR-NEIST inspected the guard of honour and gave ceremonial salute to the National Flag after hoisting it.

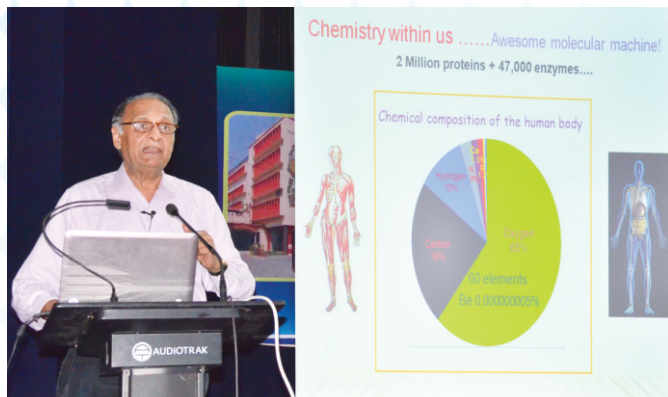


Dr D Ramaiah, Director, CSIR-NEIST delivering his address on the occasion of the nation's 70th Independence Day celebration at CSIR-NEIST.

CSIR-NEIST celebrated CSIR Platinum Jubilee Foundation Day 2016

CSIR-NEIST celebrated the 75th Foundation Day of its apex body, CSIR with a 3-day program at its premise during 24-26 September, 2016. Established in 1942, the Council of Scientific & Industrial Research today has a pan-India presence with 38 constituent laboratories spread across the country. This year, the event carried a special significance as it marked the beginning of the year-long Platinum

Jubilee celebration of CSIR. At CSIR-NEIST, an 'Open Day' was observed on 24 September, 2016 wherein about 150 students and general public visited the Institute and interacted with the scientists. Later during the day, Padma Shri Prof Goverdhan Mehta, FNA, FRS, President of International Union of Pure and Applied Chemistry who was on his maiden visit to the institute to grace the Foundation Day function had inaugurated the Experimental Animal House and modernized RRL Nursery School.



Padma Shri Prof Goverdhan Mehta, FNA, FRS, President of International Union of Pure and Applied Chemistry delivering CSIR Foundation Day Lecture at CSIR-NEIST.



Prof Goverdhan Mehta inaugurating the Experimental Animal House at CSIR-NEIST in presence of the Director, Dr D Ramaiah, and other officials from the Institute.

Kisan Mela

On 26 September, a 'Kisan Mela' was organized at experimental farm, CSIR-NEIST, as a part of the main CSIR Platinum Jubilee Foundation Day program held at Vigyan Bhawan, New Delhi. Jor-Lab-C-5 & Jor-Lab-L-8 released to the nation by PM Narendra Modi on 26th September 2016.



Left: Dr K M Bujarbaruah, Vice Chancellor, Assam Agricultural University, Jorhat handing over the saplings of Citronella and Lemon grass to the farmers. Right: Farmers attending the Kisan Mela and interactive program with Hon'ble PM on 26.09.2016.

CSIR-NEIST organized outreach program under India International Science Festival– 2016 (IISF-2016)

A one-day outreach program as a precursor to the 2nd India International Science Festival was organized at CSIR-NEIST on 22 November, 2016. The program was attended by 175 students guided by

their 17 teachers, besides grass root innovators, entrepreneurs and members from various NGOs.



(Left): Inauguration of the exhibition by Dr D Ramaiah, Director, CSIR-NEIST. (Right): Face-to-face interaction of the students with scientists. Dignitaries seated on the dais during technical session (from left), Dr Sunil Rai, Vice Chancellor, Kaziranga University, Jorhat & Chief Guest; Dr D Ramaiah, Director, CSIR-NEIST and Dr Uddhab Kr Bharali, a renowned innovator & Guest of Honour.

CSIR-NEIST Observed Vigilance Awareness Week

CSIR-NEIST observed vigilance awareness week during 31 October, 2016 to 7 November, 2016 at its premise.



Dr D Prajapati, Director-in-charge, CSIR-NEIST addressing the staff members in valedictory function. Mr Vikram Singh, Administrative and Vigilance Officer and Mr J L Khongsai, Section Officer, Vigilance, are seen seated on the dais (from left).

Director, CSIR-NEIST extends New Year's Day Greetings to the staff

Dr D Ramaiah, Director, CSIR-NEIST addressed the staff members on 2 January, 2017 and extended New Year's greetings to all. He said that New Year is the best time to look ahead and think where we want to make headway.

उत्तर-पूर्व विज्ञान तथा प्रौद्योगिकी संस्थान (निस्ट), जोरहाट में हिंदी सप्ताह/दिवस समारोह



मुख्य अतिथि के रूप में बोलते हुए ओएनजीसी, जोरहाट के उप-महाप्रबंधक (मानव संसाधन) श्री ई. हसनैन एवं (दायें से) निस्ट, जोरहाट के मुख्य वैज्ञानिक डॉ पिनाकी सेनगुप्ता एवं संस्थान के प्रशासनिक अधिकारी श्री विक्रम सिंह



(Left) Dr D Ramaiah (center), Director, CSIR-NEIST delivering his New Year's Day speech. Mrs A Sengupta, Head-RPBD Division and Mr Ajay Kumar, Hindi Officer, are seen delivering the same in Assamese and Hindi respectively. (Right) A section of staff members attending the address.

CSIR-NEIST Celebrated National Science Day on 28 February, 2017

CSIR-NEIST celebrated National Science Day with a special function held at Dr J N Baruah auditorium on 28 February, 2017. The programme was presided over by Dr P Sengupta, Director-in-charge, CSIR-NEIST. Dr P G Rao, Vice Chancellor, University of Science & Technology, Meghalaya (USTM) graced the occasion as Chief Guest while Dr R Ravi, Air Commodore, Air Force Hospital, Jorhat was present as Guest of Honour.



(Left) On the dais (left to right), Dr P G Rao, Vice Chancellor, USTM & Chief Guest of the function; Dr P Sengupta, Director-in-charge, CSIR-NEIST and Dr R Ravi, Air Commodore, Air Force Hospital, Jorhat & Guest of Honour. (Right) Dr R Ravi delivering his lecture as Guest of Honour

CSIR-NEIST Celebrated 56TH Foundation Day

CSIR-NEIST celebrated its 56th Foundation Day with a special function at Dr J N Baruah Auditorium on 20 March, 2017. Padma Bhushan Dr T Ramasami, former Secretary, Department of Science & Technology, Ministry of Science & Technology, Govt. of India and former DG-CSIR graced the occasion as Chief Guest.



(Right) Release of NEIST 'Highlights 2016-17' by the Chief Guest, Dr T Ramasami, during the function. Dr D Ramaiah (left), Director, CSIR-NEIST and Dr P Sengupta (right), Chief Scientist are also seen in the dais.

CSIR-NEIST celebrated International Women's Day 2017

CSIR-NEIST celebrated International Women's Day 2017 on 6 March, 2017 with a day-long programme at its premise Mrs Bandana Dutta Tamuli, District Development Commissioner, Jorhat graced the occasion as Chief Guest while Dr Usha Rani Pegu, Professor, Jorhat Medical College Hospital was present as Guest of Honour.



(Left) Mrs Bandana Dutta Tamuli, District Development Commissioner, Jorhat delivering her speech as Chief Guest. (Right) Dr Usha Rani Pegu, Professor, Jorhat Medical College Hospital & Guest of Honour delivering her talk.

Exhibitions Organised/Participated

CSIR Platinum Jubilee Foundation Day Exhibition 2016, at Vigyan Bhawan New Delhi

CSIR-NEIST participated in the CSIR Platinum Jubilee Foundation Day Exhibition 2016 held during 26 September, 2016 at Vigyan Bhawan, New Delhi.



(Left) CSIR-NEIST's Exhibition stall with products developed by CSIR Institutes. (Right) Dr D Ramaiah, Director CSIR-NEIST visiting Exhibition stall

CSIR Platinum Jubilee Technofest under India International Trade Fair– 2016 (IITF-2016)

CSIR-NEIST participated in the CSIR Platinum Jubilee Technofest held during 14-27 November, 2016 at Pragati Maidan, New Delhi under India International Trade Fair (IISF)-2016. CSIR-NEIST participated in the theme area, "CSIR 800: Societal Interventions" along with other CSIR Institutes. The Institute exhibited its contributions through posters and sample materials of healthcare products and other

rural technologies in the theme pavilion.



Left: CSIR-NEIST's Anti-Arthritis product on display at the Technofest along with other healthcare products developed by CSIR Institutes. Right: Dr. S. P. Saikia, Senior Scientist & Group Leader, MAEP Group delivered a lecture on "Entrepreneurship development in North East" on 21st November 2016 at the India International Trade Fair 2016 (IITF 2016) on the theme area presentation "CSIR for Societal Interventions".

Arunachal Pradesh Statehood Day at Itanagar

CSIR-NEIST Jorhat and NEIST Branch Itanagar participated the 31st statehood day of Arunachal Pradesh during the period of 20-22 February, 2017. NEIST team installed an exhibition stall & showcased the CSIR-NEIST technologies to the public through posters and sample materials.



NEIST Branch Itanagar participated in the Arunachal Statehood day exhibition during 20-22 February 2017

National Vendor Development Program

CSIR-NEIST participated in the "National Vendor Development Program" held during 21-22 February, 2017 at Bitsuram Baruah Hall, Jorhat, Assam organized by MSME Development Institute, Guwahati, Ministry of MSME, Govt of India in association with NESSIA. CSIR-NEIST showcased its developed small scale technologies to the enterprises and general public during the exhibition successfully.



From right: Dr D Ramaiah, Director, CSIR-NEIST Jorhat, Sri Faizur Rahman, founder of NESSIA & Shri Prabin Baruah, PTO, CSIR-NEIST Jorhat in front of CSIR-NEIST Exhibition stall.

Assam Science Festival 2017 at Kalakshetra, Guwahati, Assam

CSIR-NEIST participated in the “Assam Science Festival 2017” held during 27-28 February, 2017 at Kalakshetra, Guwahati, Assam. In order to strengthen science, technology & innovative activities in the state, the Assam Science Technology & Environment Council, organized “Assam Science Festival 2017 where Scientific Organizations showcased their innovative technologies successfully.



Mr Keshab Mahanta, Hon'ble S&T & Water Resource Ministers, Govt. of Assam visited the stall

MSME Trade Fair 2017 at Bhubaneswar, Odisha

CSIR-NEIST participated in the “Odisha MSME Trade Fair 2017” held at IDCO ground, Bhubaneswar during 5-10 March, 2017. Various technologies and products developed by the Institute were showcased and displayed in the exhibition through sample materials and posters. It is worth mentioning that besides the publicity in various local print media, a documentary on CSIR laboratories was telecasted by Doordarshan Odia on 25.03.2017 and 26.03.2017 wherein Mr Madhurja Saikia, Technical Officer, CSIR-NEIST spoke about CSIR-NEIST participation.



Mr Balabhadra Majhi, Hon'ble MP, Nabarangpur, Odisha at CSIR-NEIST stall

Societal Activities

CSIR-NEIST organized Motivational program for school students

CSIR-NEIST organized a week-long motivational program during 7-12 April, 2016 at its premise. A total of 43 students of class XII (science stream) along with 9 teachers from different schools of Assam, Mizoram and Nagaland participated in the program



(Left) Dr D Ramaiah, Director, CSIR-NEIST addressing the student in the inaugural session. Seated on the dais are (from left Dr B K Sarmah, Director, DBT centre, AAU-Jorhat and Dr P Sengupta Chief Scientist, CSIR-NEIST present as Guests of Honour. (Right) Student participants with their teachers seen with Director, CSIR-NEIST and organizers of the program.



Glimpses of program

Motivational program for school students held at CSIR-NEIST branch lab, Itanagar

CSIR-NEIST branch lab, Itanagar, organized one-day Motivational program for school students on 19 August, 2016 at its premise. About 50 nos. of students of classes XI and XII along with 2 teachers from New Galaxy Public School, Nirjuli participated and interacted in the day long programme.



Student participants of the program along with staff members of CSIR-NEIST branch lab.

Training on Mushroom Cultivation

A series of training program on Mushroom Cultivation was organized on various occasions under CSIR-800 project, 'Rural Entrepreneurship and Skill Development through Demonstration and Training of Appropriate Technologies of CSIR-NEIST' for the benefit of unemployed youths, women entrepreneurs, etc. The programs were coordinated by Dr S P Saikia, Senior Scientist.



Training on Mushroom Cultivation on 3 May, 2016 at CSIR-NEIST, Jorhat to 13 personnel of 5 Air Force Hospital, Jorhat



Training on Mushroom Cultivation on 10th May 2016 at CSIR-NEIST, Jorhat to 9 Nos of Academy of Scientific and Innovative Research (AcSIR) students as a part of their project concerned



Training on Mushroom Cultivation on 9 February, 2017 at CSIR-NEIST branch lab., Itanagar to about 60 nos. of farmers/villagers/beneficiaries from different Arunachal Pradesh and North Lakhimpur Assam.

Health Camp organized by CSIR-NEIST

A Health Camp was organized at the CSIR-800 Techvil at Bokajan, Tezpur under CSIR-800 project "S&T interventions to combat malnutrition in women and children" during 4-5 June, 2016 where consultation and free checkup on BP, blood sugar and eye were provided to 180 people (targeted malnourished population). Blood samples were collected for clinical examination and biochemical

testing and medicines were distributed free to the people. The program was coordinated by Dr S P Saikia, PI of the project.



Left: Dr P K Baruah, Medical Officer & Head, Clinical Centre, CSIR-NEIST examining a beneficiary from the targeted malnourished population. Right: Beneficiaries at the health camp.

Skill development trainings held under CSIR 800 program with post training intervention

A. Basic Welding

The skill development training program on basic welding was provided in two batches and at two rural places of Jorhat district, namely Baghchung and Borbamchungi. A total of 51 numbers of rural women weaver were trained.



Trainees undergoing welding practice

B. Basic Fitting

The skill development training program on basic fitting practices was provided in two batches and at Mariani of Jorhat district.



Trainees of basic fitting trade

C. Basic Plumbing

The skill development training program on basic plumbing practices was provided in two batches and at two rural places of Jorhat district, namely Silikhabari and Borbamchungi.



Trainees of basic plumbing

D. Basic weaving using jacquard looms

The skilled development training program on basic weaving using jacquard looms was provided in two batches and at Titabor of Jorhat district. A total of 55 numbers of rural women weaver were trained.



Trainees undergoing weaving practice with jacquard looms