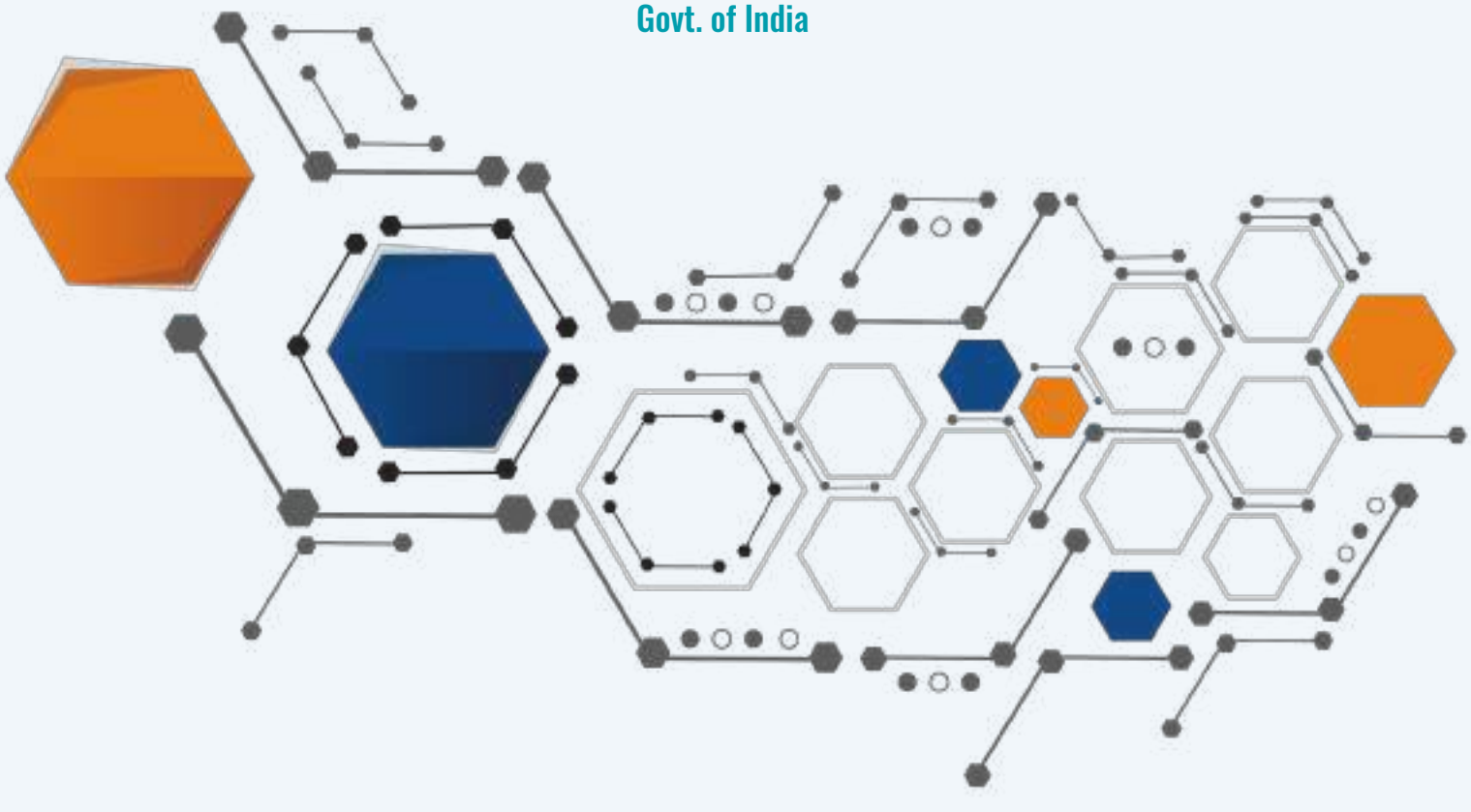
ANNUAL REPORT 2022-23

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

An Autonomous Institute Under Department of Science & Technology

Govt. of India



CONTENTS

FOREWORD

I am delighted to write the forward for the Annual Report of the Institute of Advanced Study in Science and Technology (IASST) for the period April 2022 to March 2023. During the past couple of years, India has made significant progress in different domains of Science and technology, resulting in it being counted as one of the leading scientific countries in the world. The recent developments and emergence of novel technologies, and the inevitability of establishing sound networking and a connection between R&D activities among the Institutes/Universities to promote betterment for the community have necessitated us to thrive on some significant scientific ideas to fulfil the national needs. IASST, an autonomous research institute under the Department of Science and Technology (DST), Ministry of Science and Technology, Govt. of India, has been blossoming incessantly in the frontline areas of advanced fundamental and applied research. One of its mandates is to produce quality human resources to cater to the scientific and technological requirements of the country. The report herein highlights the achievements and progress made from 2022 to 2023.

A substantial number of Ph.D. students, including 47 female and 49 male students, and 32 project students, were doing research under the guidance of 19 motivated and dedicated faculty members. The students were admitted through the All India Competitive Examination of IASST. The JRFs are allowed to enrol for AcSIR Ph.D. Programme by following the guidelines. 70 administrative, technical and contractual staff were working at IASST during this period. The faculty members have 86 research publications with a cumulative impact factor of 411.944 in peer-reviewed national and international journals. Notably, the citations and quality of research papers have increased significantly during this period. In addition, they also published Books and Book chapters. IASST has produced 12 Ph.D.s and trained 16 project students, including Masters and B.Tech interns. The Institute has signed memorandum of Agreement (MoA) with several educational Institutes to expand its academic and research activities. The faculty members also succeeded in bringing extramural research projects, 28 projects amounting to Rupees 1,99,67,013 were operational. Further, to protect their intellectual property and commitment to self-reliant India (*Atmanirbhar Bharat*), the faculty members of the Institute have

developed numerous technologies and filed 8 patents, and three patents were granted during this period, thus showing our obligations to the protection of intellectual property.

As a part of our responsibility to disseminate the knowledge, IASST has organized several workshops, seminars, virtual talks, key events, and awareness programmes. Faculty members and research scholars from various Institutes attended these programmes. IASST fraternity has also shown a keen interest and enthusiasm in observing several significant Days such as Independence Day, Republic Day, Technology Day, IASST Foundation Day, Science Day, and DST Foundation Day, and also conducted laboratory visits for the school and college students etc. under the banner of Azadi Ka Amrit Mahotsav (75 years of India's Independence). The IASST fraternity, through their expertise, always tries to address the challenges like improvement of the weaker and unprivileged section of society, Women's empowerment, awareness of sanitation and health care, and prevention of gender inequality and pollution. During this period, the research scholars and faculty members have been bestowed numerous awards and accolades, which are explicitly mentioned in this report. Further, several developmental works, for example, the construction of a Women's Hostel, Grocery Store, installation of a solar power system, and renovation of an Eco Park and hostel, have been initiated and undertaken during this period.

I also take this opportunity to thank the Department of Science and Technology, Govt. of India, Secretary, DST, members of the Governing Council (GC), Scientific Advisory Committee (SAC), Head of the AI division, and the Finance Office of DST, and all the academic and administrative committee members for their kind cooperation for helping the successful running of the Institute. With the colossal untiring input and commitment of all the members of IASST, we could achieve the mission, vision, and objectives of the Institute.

Ashis K. Mukherjee, Ph.D., D. Sc., FASc
Director

RESEARCH OUTPUT AT A GLANCE

The scientific community of IASST tremendously emphasis on publishing quality scientific research covering thrust areas of science and technology. The results of scientific research output can be distributed through number of publication of papers in peer-reviewed journals, patents filed, technology transfer and so on. During the period 2022-23, a total number of 86 (eighty six) research papers with a cumulative impact factor of 411.94 were published in peer-reviewed journals collectively from both the life sciences and physical sciences division of IASST (Fig. 1).

Fig 1. Year wise number of publications with impact factor for last 4 years.

The researcher of IASST constantly engage to resolve real world challenges in order to keep pace with expanding frontiers of knowledge and global developments. IASST's pre-eminent position at the cutting-edge of research is reflected in its remarkable list of research output during the period. In individual division level, the Physical Sciences Division of IASST published quality research papers with an average impact factor per paper increased from 3.59 to 4.64 and similarly for Life Sciences Division an average impact factor per paper also increases from 4.22 to 4.92 in the last year (Fig 2). The data clearly shows considerable improvement in impact factor per paper in last 4 years.

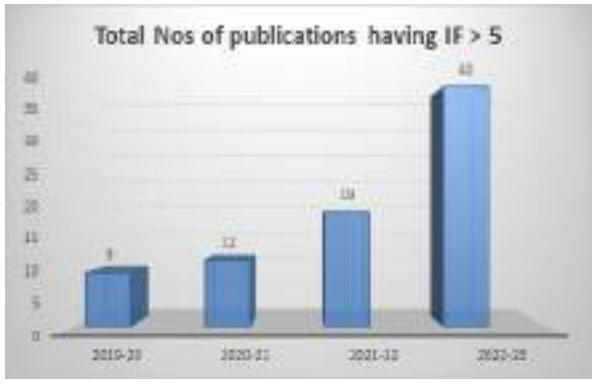


Fig 3. Year-wise number of publications having impact factor: >5.

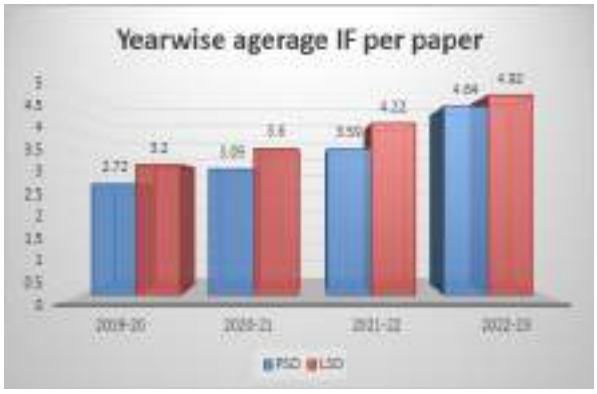


Fig 2. Year-wise average impact factor per paper of two divisions of IASST.

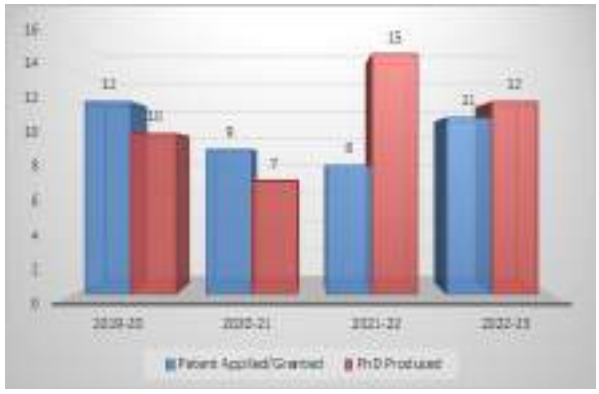


Fig 4. Year wise number of patents granted/ applied and Ph.Ds produced.

IASST as a premier research institute from North-East region of India is always intend to publish quality research in a journal of repute consistently over a significant period of time. As compared to the previous year, the breakthrough progress of IAAST research is witnessed in this year when the publication list having impact factor greater than 5 is rising constantly covering all the major research domains (Fig 3). Additionally, the numbers of patent filling with granted list, and Ph.D. produced during the years are presented in Fig 4.

IASST COMMITTEES

The Governing Council (GC)

Dr. Srivari Chandrasekhar, Secretary, DST, GoI, New Delhi	Chairperson
Dr. Arun Kumar Sarma, DG, NECTAR, Shillong	Member
Prof. Pulok Kumar Mukherjee, Director, IBSD, Imphal	Member
Prof. Pratap J. Handique, VC, Gauhati University, Guwahati	Member
Shri Vishvajit Sahay, AS&FA, DST, GoI, New Delhi	Member
Prof. Tanusri Saha-Dasgupta, Director, S. N. Bose National Centre for Basic Sciences, Kolkata	Member
Ms. Laya Madduri, IAS, Secretary to the Govt. of Assam, Science, Technology and Climate Change Department, Guwahati	Member
Prof. Ashis K. Mukherjee, Director, IASST, Guwahati	Member Secretary

Scientific Advisory Council (SAC)

Prof. Sayed E. Hasnain, IIT Delhi, New Delhi	Chairman
Prof. Avinash Khare, VC, Sikkim University, Sikkim	Member
Dr. Arun Sharma, DG, NECTAR, Shillong	Member
Prof. Pulok Mukherjee, Director, IBSD, Imphal	Member
Prof. Amalendu Chandra, IIT, Kanpur	Member
Prof. Parameswar K. Iyer, IIT, Guwahati	Member
Prof. B.N. Goswami, Cotton University, Guwahati	Member
Prof. Mahan Maharaj, TIFR, Mumbai	Member
Prof. Neela Natraj, IIT Bombay, Mumbai	Member
Prof. Dhruba K. Bhattacharyya, Tezpur University, Tezpur	Member
Prof. Ashis K. Mukherjee, Director, IASST, Guwahati	Member
Dr. Rajlakhsmi Devi, IASST, Guwahati	Member
Prof. Neelotpal Sen Sarma, IASST, Guwahati	Member Secretary

Finance Committee (FC)

Director, IASST, Guwahati	Chairperson (ex-officio)
Shri Vishvajit Sahay, AS&FA, DST, GoI, New Delhi	Member (ex-officio)
Head (AI Division), DST, Govt. of India, New Delhi	Member (ex-officio)
Prof. Neelotpal Sen Sarma, IASST, Guwahati	Member
Mr. Ashit Biswas, Finance and Accounts Officer, NIPER, Guwahati	Member
Mr. Pradyut Borkataki, Finance & Accounts Officer, IASST, Guwahati	Member Secretary (ex-officio)

Building works committee (BWC)

Prof. A.K Mukherjee Director, IASST, Guwahati	Chairman (Ex-officio)
Chief Engineer CPWD Gwahati or his nominee (Ex-officio)	Member
Prof. Anjan Dutta, Dept. of Civil Engineering, IITG	Member
Dr. Arup Ratan Pal, Assoc. Prof. II, IASST	Member
Dr. D. Goswami, Registrar, IASST	Member Secretary

Institutional Biosafety Committee (IBSC)

The current Institutional Biosafety Committee (IBSC) of IASST is registered (Registration No. RS/4219) under RCGM Secretariat, Department of Biotechnology, Ministry of Science & Technology, Govt. of India. The committee is constituted of the following members.

Prof. Ashis K. Mukherjee Director, IASST, Guwahati	Chairman
Prof. M. C. Kalita, Department of Biotechnology, Gauhati University, Guwahati	DBT Nominee
Dr. Probodh Borah, Professor & Head, Department of Animal Biotechnology, College of Veterinary Science, Assam Agricultural University, Guwahati	Outside Expert
Dr. Pranita Saikia, Chief Consultant (Pathology & Microbiology), Department of Microbiology, GNRCH, Dispur	Biosafety Officer
Dr. M. R. Khan, Associate Professor, Life Sciences Division, IASST, Guwahati	Internal Member
Dr. Rajlakshmi Devi, Associate Professor, Life Sciences Division, IASST, Guwahati	Internal Member
Dr. Jagat Borah, Associate Professor, Life Sciences Division, IASST, Guwahati	Internal Member
Dr. Debajit Thakur, Associate Professor, Life Sciences Division, IASST, Guwahati	Member Secretary

Institutional Ethics Committee (Human Studies)

Dr. R.C. Deka, MBBS, MS (ENT) Distinguished Honorary Professor, Delhi Pharmaceutical Sciences and Research University	Chairman
Dr. Ena Dowerah, MBBS, MD (Pathology) Professor, Guwahati Medical College and Hospital	Member
Dr. Anup Kumar Das, MBBS, MD (Pathology) Pathologist, Ayursundra Private Healthcare Ltd.	Member

Dr. Krishna Gogoi, MBBS, MD (Microbiology) Senior Consultant (Microbiologist), Sri Sankaradeva Nethralaya	Member
Dr. Gunabhi Ram Sarma, MBBS, MS (General Surgery) Retd. Doctor, ESI Hospital	Member
Dr. Bhabesh Das, MD, PhD Principal, Govt. Ayurvedic College & Hospital, Guwahati	Member
Prof. M. C. Kalita, PhD Department of Biotechnology, Gauhati University	Member
Dr. Jagat C. Borah, PhD Associate Professor, Life Science Division, IASST	Member
Mr. Diganta Gogoi, LLB Advocate, Guwahati High Court, Guwahati	Member
Prof. Indrani Dutta, PhD Omeo Kumar Das Institute of Social Change and Development	Member
Ms Sabita Das Ahom Gaon, Garchuk, Guwahati	Member
Dr. M. R. Khan, PhD Associate Professor, Life Science Division, IASST	Member Secretary

Institutional Animal Ethics Committee of IASST

Internal IAEC Member:	
Dr. A.K. Mukherjee	Chairperson
Dr. J. C. Borah	Member Secretary
Dr. Mojibur R. Khan	Scientist from different biological discipline
Dr. R. Devi	In charge
Dr. Momi Sarma	Veterinarian
CPCSEA nominees:	
Dr. Birendra Nath Bhattacharyya	Main Nominee
Dr. Amit Alexander Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India Guwahati,	Link Nominee
Dr. Dipankar Saha Academics Assistant Professor and Head, Dept of Pharmacology, Girijananda Chowdhury Institute of Pharmaceutical Science (GIPS, Guwahati, Assam	Scientists from outside the Institute
Dr. Jithendar Reddy Mandhadi Assistant Professor, Department of Pharmaceutical Chemistry Assam Down Town University, Guwahati, Assam	Socially Aware Nominee

Editorial Board for Annual Report 2022-23

Prof. Rajlakshmi Devi	Chief Coordinator
Dr. Sarathi Kundu	Deputy Coordinator
Dr. Biswajit Choudhury	Coordinator
Dr. Debajit Thakur	Coordinator
Dr. Anamika Kalita	Coordinator
Dr. T. D. Goswami	Coordinator
Mr. Niranjan Bhagobaty	Coordinator
Dr. Santu Das	Coordinator
Dr. Nirab Ch. Adhikary	Coordinator
Mr. Bijuphukan Bhagabati	Coordinator
Mrs. Juri Pathak	Coordinator
Mrs. Nirmali Devi	Coordinator

Other Officials of IASST

Shri Sunil Kumar Joint Secretary, DST, New Delhi	Chief Vigilance Officer, DST, Govt. of India
Prof. D. Chowdhury Prof., IASST	Vigilance Officer IASST
Prof. A. K. Mukherjee Director, IASST	Appellate Authoriy (RTI) IASST
Dr. Diganta Goswami Registrar, IASST	Central Public Information Officer (CPIO), IASST
Dr. A. Devi Assoc. Prof. II, IASST	Chairwomen IASST
Dr. Jagat C. Borah Officer Assoc. Prof. II, IASST	Nodal Public Grievance IASST

Institutional Manpower

Prof. Ashis Kumar Mukherjee	Director
Physical Sciences Division	
Basic and Applied Plasma Physics	
Prof. Heremba Bailung (on lien)	Professor II (upto Dec. 2021)
Prof. Joyanti Chutia	PI DST Project
Dr. Subir Biswas	Asstt. Prof.-II
Dr. Kamatshi S.	Asstt. Prof.-II
Dr. Nirab Chandra Adhikary	Technical Officer –B
Rakesh Rushel Khanikar	SRF (DST-INSPIRE)
Ibnul Farid	SRF (DST-INSPIRE)
Bidyut Chutia	SRF (DST-INSPIRE
Palash J. Baruah	SRF (DST INSPIRE)
Parismita Kalita	JRF
Paragjyoti Sut	JRF
Prathana Gogoi	JRF
Dibyajyoti Bora	JRF
Adarsh Thapa	JRF
Punam Talukdar	JRF
Reetesh Borpatra Gohain	JRF
Aritra Tarafder	JRF
Deepjyoti Basumatary	JRF
Kaberi Kalita	JRF
Reema	UGC-JRF
Krishna Kanta Swargiary	Technician
Binoy Kr. Choudhury	MTS
Advanced Material Sciences	
Prof. Neelotpal Sen Sarma	Professor I & Head PSD
Prof. Devasish Chowdhury	Professor I (Vigilance officer)
Dr. Arup Ratan Pal	Assoc. Prof.-II & Head SAIC
Dr. Sarathi Kundu	Assoc. Prof.-II & AcSIR Coordinator-IASST
Dr. Munima B. Sahariah	Assoc. Prof.-II & Head R&D
Dr. Biswajit Choudhury	Asstt. Prof.-II
Dr. Anamika Kalita	DST INSPIRE Faculty
Dr. Aditi Saikia	IPDF
Dr. Mritunjoy Prasad Ghosh	IPDF
Dr. Bably Khatun	IPDF
Jayanta Sharma Boruah	SRF
Santanu Podder	SRF

Samiran Upadhyay	SRF
Ankita Deb	SRF
Jahnabi Gogoi	SRF
Raktim Jyoti Sarmah	SRF
Trishamoni Kashyap	SRF
Jyotisman Bora	SRF
Gautomi Gogoi	CSIR-SRF
Kabyashree Phukan	CSIR-SRF
Sanu Sarkar	CSIR-SRF
Subhankar Pandit	SRF (DST-INSPIRE)
Purbajyoti Bhagowati	SRF (DST-INSPIRE)
Bablu Basumatary	SRF (NFST Fellowship)
Sazzadur Rahman	SRF (DST INSPIRE)
Sanjib Sau	SRF (DST INSPIRE)
Sweety Biswasi	SRF (DST INSPIRE)
Payal Saha	JRF
Kangkan Jyoti Goswami	JRF
Dhrubanka Sarma	JRF
Suvankar Deka	JRF
Manju K. Jaiswal	JRF (DST INSPIRE)
Nasrin Sultana	JRF (DST INSPIRE)
Manash P. Nath	CSIR-JRF
Nur Jalal Mandal	CSIR-JRF
Rahul Sorkar	UGC-JRF
Nikesh Kumar	UGC-JRF
Himadri Nath	UGC-JRF
Shakya Deep Bora	JRF
Khomdram Bijoy Kr. Singh	JRF
Sadikul Alom	JRF
Debamoy Pegu	JRF
Saiyad Akhirul Ali	JRF
Bhargab Kakati	Project Fellow
Hridoy Jyoti Bora	Project Associate-II
Nabajit Barman	JRF
Polash Medhi	JRF
Babul Ch. Deka	MTS
Mathematical and Computational Sciences	
Dr. Gautam Choudhury	Assoc. Prof.-II
Dr. (Mrs.) Lipi B. Mahanta	Assoc. Prof.-II
Dr. Santu Das	Asstt. Prof.-II
Dr. Animesh Roy	IPDF

Elima Hussain	SRF
Snigdha Mahanta	JRF
Silpisikha Goswami	JRF
Devabrat Sharma	JRF
Anjana Begum	JRF
Taibur Rahman	JRF
Ritika Das	JRF
Lokender Singh	JRF
Deva Raj Mahanta	JRF
Tapabrat Thakuria	JRF
Injamamul Haque Ahmed	JRF
Gautam Gogoi	JRF
Bolin Das	MTS
Life Sciences Division	
Traditional and Modern Drug Discovery and Disease Diagnosis	
Prof. Ashis K. Mukherjee	Director
Dr. (Mrs.) Rajlakshmi Devi	Head, LSD
Dr. Jagat Ch. Borah	Assoc. Prof.-II
Dr. Asis Bala	Assoc. Prof.-I
Dr. Suman Kumar Samanta	CSIR Pool Scientist
Dr. Asim Kumar Dutta	Research Scientist
Dr. Yunus Sheikh	Research Associate
Dr. Aparup Patra	Institutional PDF
Sagar Ramrao Barge	SRF
Paramita Choudhury	SRF
Swarnali Bhattacharjee	SRF
Barsha Deka	SRF
Nonibala Gurumayum	UGC-SRF
Himangshu Sarma	SRF
Partha Pratim Sarma	SRF
Puspanjali Khound	ICMR-SRF
Deepsikha Swargiary	JRF
Pranamika Sharma	JRF
Semim Akhtar Ahmed	JRF
Gurumayum Shalini Devi	JRF (DST-INSPIRE)
Devi Basumatary	CSIR-JRF
Neeraj Sarma	Project Scientist-I
Sumi Pait	Project Associate-I
Dipu Barman	Technical Assistant
Plabita Baruah	Technical Assistant
Tarun Talukdar	MTS

Sabin Kalita	MTS
Haren Medhi	MTS
Biodiversity and Ecosystem Research	
Dr. (Mrs.) Arundhuti Devi	Assoc. Prof.-II
Dr. Mojibur Rahman Khan	Assoc. Prof.-II
Dr. Debajit Thakur	Assoc. Prof.-II
Anupam Bhattacharya	Sr. Research Associate
Dr. Rupsikha Patowary	Institutional-PDF
Madhurankhi Goswami	SRF
Barsha Deka	CSIR-SRF
Chandana Malakar	DBT-SRF
Rictika Das	DST Women Scientist
Manisha Goswami	Women Scientist-A
Dibyajyoti Koiri	JRF
Bhaswati Devi	JRF
Nimisha Sarma	JRF
Suprakash Rabha	JRF
Emee Das	JRF
Anusuya Bharadwaj	JRF
Shabiha Nudrat Hazarika	JRF
Monalisa Kalita	JRF
Surajit Basak	JRF
Pranami Bharadwaj	JRF
Aditya Narayan Knowar	JRF
Arun Kumar	DBT-JRF
Juri Saikia	JRF (RGNF)
Bidyarani Devi	CSIR JRF
Chingakham Juliya Devi	CSIR-UGC-JRF
Tomali Sinha	CSIR- JRF
Somarani Dash	DBT/CSIR-JRF
Thanil Chingtham	DBT-JRF
Kaushik Paul	Project Assistant
Subrata Goswami	Technical Assistant
Manomohan Huzuri	Technical Assistant
Dipankar Kalita	Technical Assistant
Rajkumari Mazumdar	Technical Assistant
Lakshmi Kanta Soud	MTS
Srikanta Baishya	MTS
Interdisciplinary Research	
Prof. Ashis K. Mukherjee	Director
Prof. Neelotpal Sen Sarma	Professor I

Prof. Devasish Chowdhury	Professor I
Dr. (Mrs.) Arundhuti Devi	Assoc. Prof.-II
Dr. (Mrs.) Lipi B. Mahanta	Assoc. Prof.-II
Dr. Kamatchi S.	Asstt. Prof.-II
Administration and Accounts	
Dr. Diganta Goswami	Registrar
Pradyut Barkataky	FAO
Rajesh Sharma	PRO
Niranjan Bhagaboty	Technical Officer-B
Rabin Ch. Kalita	Section Officer (Admin.)
Suresh Ch. Sarma	Section Officer (Accounts)
Ramen Mahanta	Superintendent
Dwijendra Deka	Superintendent
Lelin Gogoi	Superintendent
Diganta Das	Assistant
Prabhat Ch. Barma	Assistant
Kumud Baishya	Assistant
Hemanta Sarma	Assistant
Indrajit Sarma	Assistant
Nimai Hazam	Driver
Lachman Thapa	Driver
Lakshmi Kanta Soud	MTS
Madhabi Das	MTS
Satish Ch. Das	MTS
Niren Sarma	MTS
Bipul Kr. Das	MTS
Pradip Das	MTS
Madhu Ram Kalita	MTS
Balabhadra Pathak	MTS
Dinesh Deka	MTS
Munna Basfor	MTS
Temporarily Engaged Persons (Contractual Staff)	
Dr. Dhruba Sharma	Deputy Registrar (Academic)
Dr. Momee Sarma	Veterinary Doctor
Mr. Amlesh Medhi	Security Officer
Dr. Parimal Ch. Ray	Scientific and Technical Asstt.
Nabajyoti Choudhury	Programme Manager
Sanjubi Sharma	Account Assistant
Nirmali Devi	Hindi Assistant
Pinky Taye	Assistant
Moonmee Deka	Assistant (Accounts)

Rabindra Kalita	Assistant (Accounts)
Ksh. Sharmina Devi	Receptionist
Pranab Talukdar	Driver
Bimal Das	Driver
Prakash Kr. Kachari	Field Supervisor
Madan Kr. Das	MTS
Manindra Deka	MTS
Engineering and Estate Management	
Montu Deka	Assistant Engineer
Temporarily Engaged Persons	
Md. Mahammad	JE (Civil)
Bikash Jyoti Das	JE (Elect)
Muktaram Kumar	Work Supervisor
Kumud Patgiri	Electrician
Uddipta Deka	Resident Electrician
Dijoraj Roy Choudhury	Plumber
Anima Baishya	Cleaner
Ajay Baishya	Mali
Sophisticated Analytical Instrument Centre (SAIC)	
Dr. Arup Ratan Pal	Assoc. Prof.-II & Head SAIC
Dr. Nirab Chandra Adhikary	Technical Officer-B
Ms. Juri Pathak	Technical Officer-A
Ms. Julie Bordoloi	Technical Assistant-II
Mr. Subrata Goswami	Technical Assistant-I
Mr. Manomohan Huzuri	Technical Assistant-I
Mr. Dipankar Kalita	Technical Assistant-I
Temporarily Engaged Persons	
Mr. Nayan Talukdar	Technical Officer (Instrumentation)
Knowledge Resource Centre	
Dr. Tarini Dev. Goswami	Assistant Librarian & i/c KRC
Ratul Baishya	MTS
Sarala Deka	MTS
Temporarily Engaged Person	
Subhrajit Sengupta	Technical Assistant
Information Technology Cell	
Bijuphukan Bhagabati	Technical Officer-A and i/c IT Cell
Temporarily Engaged Person	
Debajit Deka	Jr. Network Administrator
IASST Consultants	
Dr. Anjali Verma	Consultant Medical Officer

RESEARCH ACTIVITIES

PHYSICAL SCIENCES DIVISION

Physical sciences are, in a nutshell, those academic fields that focus on nonliving materials in the natural sciences. The subjects covered include physics, chemistry, earth, geology, space, astronomy, materials science, etc. IASST's Physical Sciences Division, PSD, is further organized into three distinct research areas: Basic and Applied Plasma Physics (BAPP), Advanced Material Sciences (AMS), and Mathematical and Computational Sciences (MCS). Research on waves and instabilities in multicomponent plasma and dusty plasma, the synthesis of nanomaterials using plasma-based processes with the specific goal of creating materials suitable for advanced electronic, optoelectronic, and bioelectronics applications, cold atmospheric plasma for biophysics and biomedical applications, and other topics are all actively being studied in basic and applied plasma physics.

The Advanced Materials Sciences group of IASST is actively engaged in the fields of the synthesis and characterization of polyelectrolytes, liquid crystalline polymers, hydro and polymer gels, the study of ionic conductivity including electronic, magnetic, and optical properties of metallic and semiconductors bulk and low dimensions using a computational approach, metal and semiconductor nanostructures for photovoltaic and photocatalytic applications, and so forth. The creation of nanomaterial systems that can be utilized as chemo-sensors for various emerging pollutants and as biosensors for detecting disease biomarkers is another activity they are engaged in. These nanomaterial systems are made using usable nanomaterials with useful features.

The group is also working on structural morphology, 2 dimensional (2D) behaviors of monolayer and ultra-thin biomolecule, protein, and other film formations, as well as biopolymer nanocomposite for food packaging applications. In the same way, research is being done in the fields of mathematical and computational sciences on queueing theory, medical image processing and pattern recognition, hydro elasticity, and wave structure interaction, including the prediction of Indian Summer Monsoon Rainfall (ISMR) using Artificial Intelegence (AI) and Machine Learning (ML), as well as mathematical models of surface water wave propagation caused by ocean floor movement and atmospheric pressure fluctuation.

PHYSICAL SCIENCES DIVISION

PSD-1

ADVANCED MATERIAL SCIENCES

The Advanced Materials Sciences group of IASST is actively involved in the experimental design and computational study of materials for a wide range of applications in various capacities, including sensors, optoelectronic, bioelectronics devices, polymer nanocomposites with specific applications, organic thin films and membranes, functional properties of Heusler alloys, plasmonics and fluorescent nanomaterials. Following are the brief accounts of the activities that have been carried out during the reporting year.

A. Advanced Materials

Coordinator: Prof. N. Sen Sarma

A.1 Reduced Phosphorene Quantum Dot Incorporated Flexible Bio-Electronic Device for Detection of Uric Acid in Real Media

In this work, we have adopted an easy one-pot synthetic procedure to develop a reduced phosphorene (rPh) quantum dot from black phosphorus (BP) using ethylene diamine via the hydrothermal method. It was then characterized with the help of UV-Vis spectroscopy, FT-IR spectroscopy, XRD, TEM, and XPS analysis and blended with a polymer matrix of polyvinyl alcohol (PVA) through in situ addition. This rPh/PVA composite shows good flexibility irrespective of bending angles towards the interaction with Uric acid (UA) present in actual samples. The corresponding current-voltage characteristic values were determined concerning the increasing concentration of UA. The dependency of spiked UA concentration with sensing efficiency follows a linear relationship from where the detection limits were calculated and found to be 0.809 µM, 1.065 µM, and 0.5292 µM for deionized water, artificial urine, and human blood serum in the linear range of 1 µM to 5 µM respectively. Moreover, the proposed sensor system shows recyclability for up to three consecutive cycles where the sensor can be repeatedly used three times to detect UA.

The device fabrication and their effective interaction with the UA led to the development of a selective and sensitive device for detecting the bio-molecule UA with a limit of about 0.809 µM (**Fig. 5**).

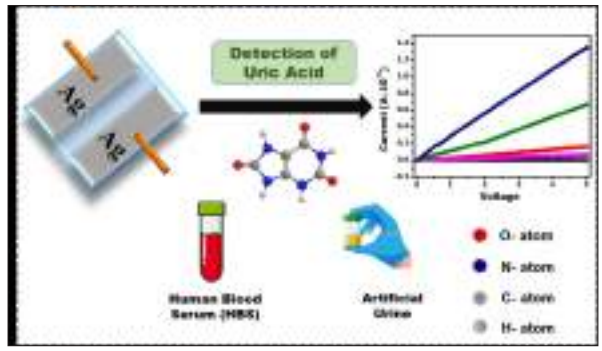


Fig. 5 Synthesized reduced phosphorene quantum dot (rPhQD) with PVA to make rPh/PVA a solid and flexible platform for detecting uric acid in aqueous media and real samples.

A.2 Duel phase selective inner filter effect-based luminescent sensing for the detection of para-nitrophenol and picric acid

This work has followed a simple synthesis route to develop a reduced graphene oxide-based highly fluorescent sensor. Here, a simple IFE-based fluorescence quenching approach was introduced to detect p-NP and PA in the duel phase, viz aqueous media and gas phase. The proposed strategy is highly stable, cost-effective, and extremely selective towards detecting analytes. In the liquid state, the practical applicability of the sensor was tested towards

the determination of p-NP and PA spiked real media in the linear range of 0 to 20μM and 0 to 6 μM with a limit of detection 11.465 nM and 7.839 nM, respectively. On the other hand, the proposed sensor system can also be used as a solid sensing platform for selective detection of p-NP and PA vapour with the limit of detection 37.44 ppt and 116 ppt, respectively, in the presence of NAC vapours. We hope that this novel dual-phase detectability with a simple synthesis approach inaugurates a potential NAC sensor in environmental surveillance (**Fig. 6**).

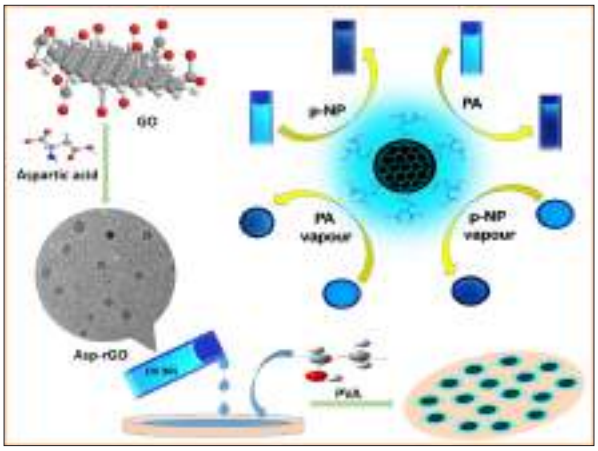


Fig. 6 Schematic representation of the simple IFE-based fluorescence quenching approach to detect p-nitrophenol (p-NP) and picric acid (PA) in aqueous media and gas phase.

B. Materials Nanochemistry

Coordinator: Dr. D. Chowdhury

B.1 Guar Gum-Sodium Alginate nanocomposite film as an intelligent fluorescence-based humidity sensor: An innovative packaging material

The change in relative humidity easily damages perishable packed foods. In this work, we demonstrate that guar gum- sodium alginate blending with glucose-glycerol carbon dots nanocomposite film can be used to detect relative humidity (**Fig. 7**). The fabricated nanocomposite film was an excellent smart sensor based on the fluorescence '*on-off*' mechanisms against humidity. The study demonstrates that at different relative humidity conditions, such as 11%, 33%, 75.30%, 84%, and 97%, there is a change in the fluorescence of biocomposite films under UV light. The practical feasibility of the biocomposite-developed film was tested in real conditions by placing a piece of bread with high humidity conditions wrapped with the developed nanocomposite film. It was observed that under such conditions, marked quenching of fluorescence was observed, and hence, humidity detection was possible. Hence, the fabricated nanocomposite film can use a UV light source to monitor the packed food's freshness. Such biopolymer nanocomposites are potential materials and may be applied as smart packaging materials, especially food packaging materials.

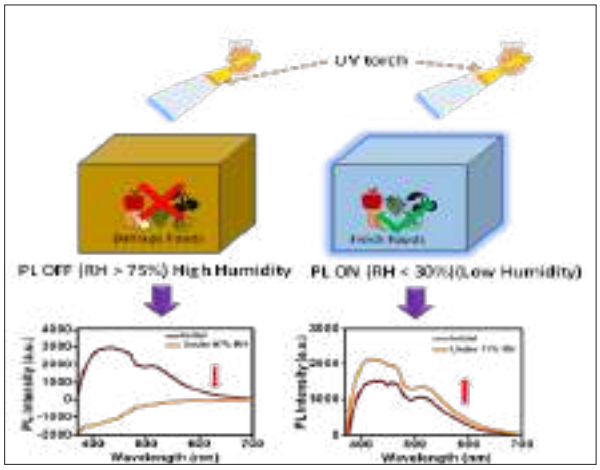


Fig. 7 A schematic representation of the idea of fluorescence-based humidity sensor packaging material.

B.2 Unraveling the Origin of Photoluminescence in Dual Emissive Biogenic Carbon Dot

There has been considerable interest in dual-emissive carbon quantum dots because of their exciting photoluminescence properties for varied applications. This work demonstrates a dual emissive system derived from a biogenic source, betalain extracted from beetroot. Different betalain carbon dots were prepared to utilize varying temperatures and time. The photoluminescence properties of BT - CD_5^{160}

(betalain carbon dots prepared at 160 °C for 5 min) and BT - CD_{10}^{180} (betalain carbon dots prepared at 180 °C for 10 min) were investigated in detail using photoluminescence (PL) spectroscopy and time-resolved PL decay studies. Interestingly the emission spectra are different and possess multi-emissive nature owing to the involvement of varying surface states on the CDs. Further, the PL response of BT - CD_5^{160} and, BT - CD_{10}^{180} in the presence of different amines was found to be different when studied for both λ_{ext} <400 nm and >400 nm. While the emission obtained from BT - CD_5^{160} emerges from the aromatic carbon core and also from the functional groups attached to the carbon dots' surface, the emission in BT - CD_{10}^{180} is entirely governed by the surface traps and defects obtained from the functionalities present (Fig. 8). Hence, such investigated photoluminescence studies of the origin of emission will help exploit the dual emissive behaviour of biogenic carbon dots.

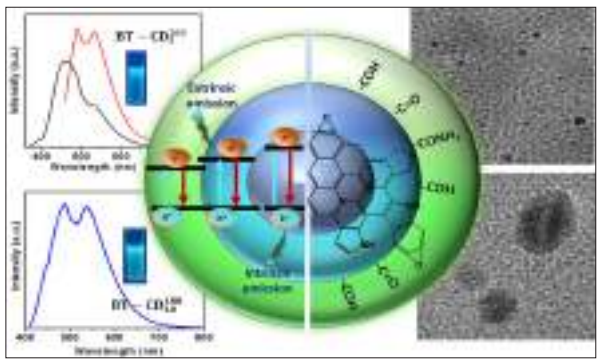


Fig. 8 A schematic representation showing the transmission electron microscope images of biogenic carbon dots prepared from betalain extracted from beetroot and the origin of the dual emission in such carbon dots.

C. Plasma-Based Synthesis of Nanomaterials

Coordinator: Dr. A.R. Pal

C.1 Plasma-based Synthesis of Organic Materials and Fabrication of Organic Pyroelectric Nanogenerator by Pyrophototronic Effect

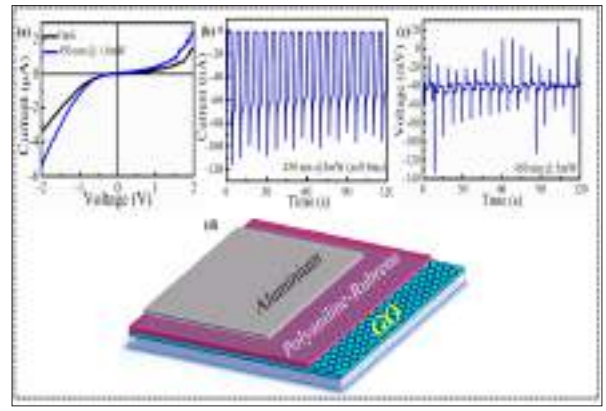


Fig. 9 (a) IV Characteristic curve of OPyNG device, (b) Temporal response for current generation, (c) Temporal response for voltage generation and (d) Structural layout of OPyNG device.

Nanogenerators convert mechanical or thermal energy into electricity as produced by minute physical changes. A pyroelectric nanogenerator converts thermal energy into electricity due to small-scale changes in the temperature of a material in a short duration. This work focuses on fabricating an organic pyroelectric nanogenerator (OPyNG) by pyrophototronic effect. Material characterizations confirm the formation of graphene oxide (GO) and polyaniline-rubrene. The as-grown GO fabricates an organic pyroelectric nanogenerator where polyaniline-rubrene works as photoactive material. A rectifying junction is created with polycrystalline graphene-based material and crystalline polyaniline-rubrene thin-film, which belongs to an aromatic class of organic materials where light-induced surface layer polarization helps the device to achieve pyroelectric behaviour. The study of charge driven π-conjugated hetero-system and associated pyrophototronic effect is carried out in detail in this work. The fabricated device is self-sustainable and can generate current and voltage in self-powered mode. This work reveals the viable alternatives for harnessing power from the organic materials to realise organic pyroelectric nanogenerators (**Fig. 9**).

C.2 Single-step Synthesis of Carbon Nanotubes by Atmospheric Pressure PECVD

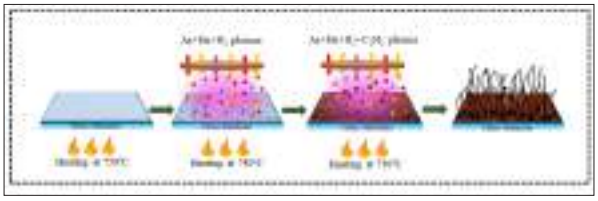


Fig. 10 Step-by-step growth mechanism of CNT on the glass substrate by Atmospheric pressure PECVD

This work demonstrates the growth of carbon nanotubes (CNTs) on glass substrates without incorporating any external catalyst. These results are obtained from experimentation on hollow cathode atmospheric pressure plasma enhanced chemical vapour deposition (PECVD) process. Here, the hollow-cathode generates high-density plasma, and continuously bombards the glass substrate, producing a highly rough top surface. It has been observed that after the plasma treatment, the concentration of glass constituents abruptly increases at the surface of the substrate. In this case, some of these glass constituents behave as catalysts and initiate the CNT growth. This cost-effective synthetic route produced homogeneous CNTs over the entire substrate, which may be suitable for applications like touch screens, supercapacitors, and transparent electrodes. It has also been observed that by simply washing the as-grown CNTs with deionized water, the catalyst can be easily removed from the CNTs. So, the clean CNTs collected after the post-processing can be directly used in biomedical and energy applications (Fig. 10).

D. Materials Modelling and Simulation

Coordinator: Dr. M.B. Sahariah

D.1 A first-principles study on the optical properties of titanium nitride nanoclusters

Titanium nitride (TiN) exhibits high hardness, conductivity and structural stability. With easily tunable optical properties, TiN is now considered an alternative to some conventional materials like gold and silver in plasmonics. Compared to the bulk system, the nanoclusters of TiN are less explored. In this work, we have calculated the optical properties of small TiN nanoclusters using density functional perturbation theory. The optical properties like complex dielectric function, refractive index, extinction coefficient, loss function, reflectivity spectra and absorption spectra have been calculated. The imaginary part of the dielectric function tends to zero at high energetic regions, while the real part tends to unity. These features imply that the systems will become transparent in the UV-region. The refractive index and the extinction coefficient show a decreasing nature while going from low to high energy regions. The reflectivity spectra also decrease while going from IR to UV regions. In the absorption spectra, blue-shift and broadening in the peaks are observed while going from the smaller to the larger cluster, a known phenomenon in the case of nanoclusters. The UV transparency promises to use these nanoclusters as protecting layers of solar cells (Fig. 11).

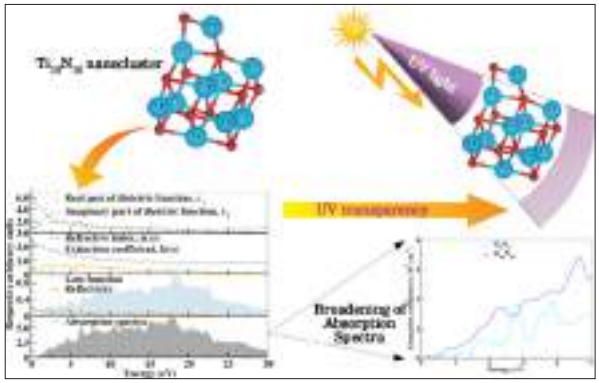


Fig. 11 Optical properties of $Ti_{10}N_{10}$ nanocluster showing UV transparency.

D.2 He clustering and role of vacancy in CuZr system

Helium-induced degradation of structural materials poses a severe risk to those exposed to high radiation conditions over a lengthy period. It is essential to understand how

helium interacts with the host material and with itself inside that environment to avoid degradation. Defects like vacancies may act as sources for helium nucleation. This study is to analyze the behaviour of helium inside the CuZr crystalline alloy in the B2 phase using ab initio calculations. We investigated the formation of metallic vacancies, helium interstitials, and vacancy-helium complexes to understand helium trapping and binding behaviour. We found that a single helium atom prefers to occupy the tetrahedral interstitial sites rather than the octahedral ones. The presence of helium interstitials greatly influences the formation of Cu and Zr vacancies. It has been observed that the ability of a single vacancy to bind the fifth helium atom reduces inclusion. This result is also supported by the trapping energy calculated for multiple helium atoms. These findings call for more research in this line to better understand the efficiency of this CuZr system in preventing structural degradation through helium clustering (Fig. 12).

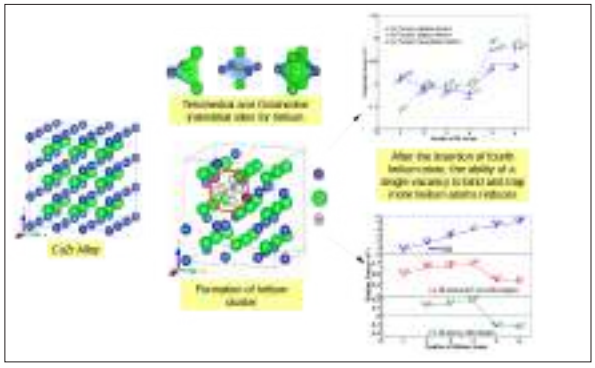


Fig. 12 Helium clustering, trapping and binding energies for CuZr alloy in its B2 phase.

E. Soft Materials

Coordinator: Dr. S. Kundu

E.1 Structure and morphology of bovine serum albumin–lysozyme (BSA–Lys) complex films at the air–water interface:

The hetero protein complex formed between the two globular proteins, bovine serum albumin and lysozyme, was studied at the air-water interface by varying the subphase pH condition (pH ≈ 4.0–12.0). The surface pressure–mean molecular area isotherms and the normalized molecular area-time curves of the hetero protein complex monolayers showed a relatively lower area per molecule, and the more stable film was obtained at pH ≈ 9.2 in contrast to the other pH conditions. The Brewster angle microscopy study showed the evolution of elongated and compact circular domains at pH ≈ 7.0 and 9.2, respectively, at higher surface pressure (≈ 18 mN/m). At the same time, homogenous films were visible at all the other pH conditions. The out–of–plane structure and in–plane morphology were obtained from X–ray reflectivity and atomic force microscopy analysis, respectively, which showed the formation of a relatively thicker film deposited at pH ≈ 9.2. This unique pH (pH ≈ 9.2), located between the isoelectric point of bovine serum albumin and lysozyme, is the preferred pH condition for complex formation through the electrostatic attraction of the two protein molecules. The biofilm of this stable protein complex may have potential applications in thin film technology (**Fig. 13)**.

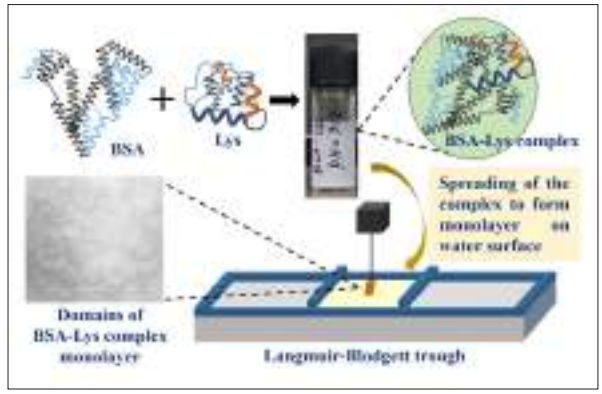


Fig. 13 Stable ultra-thin layer of BSA-Lysozyme complex on water surface at pH ≈ 9.2.

E.2 Environmentally benign L-cysteine functionalized ZnO/TiO_2 nanohybrid decorated on cellulose nanofiber for effective photo degradation of organic hydrocarbons:

L-cysteiene (LC) functionalized $ZnO\text{-}TiO_2$ nanohybrids in different ratios were fabricated using a facile approach with phytoextract of *Mirabilis jalapa* plant as reducing agent. These nanohybrids' photocatalytic activity was studied in the presence of natural sunlight in different aqueous solutions of benzene, toluene and phenol. The presence of LC on the surface of the nanohybrid functions as the co-catalytic centre. Maximum degradation was achieved when the molar ratio of ZnO to TiO_2 was 1:1. The fabricated nanohybrid also exhibited a good degradation pattern for toluene despite its symmetric structure with methyl-benzene conjugation. This enhancement of the photocatalytic property of the nanohybrid could be accredited to the reduced band gap and enhanced surface properties that decreased the rate of recombination of electron-hole pairs. The nanohybrid with a 1:1 ratio was further utilized to decorate cellulose nanofibers obtained from the stems of the same plant and cast in the paper. The paper was cut into small strips and used for an industrial wastewater photodegradation study. The nanohybrid decorated nanocomposite paper exhibited good photodegradation efficiency in the presence of NOM, heavy metals and variable pH (5.5–10), which can be attributed to further lower recombination rates of electron-hole pairs for efficient degradation (Fig. 14).

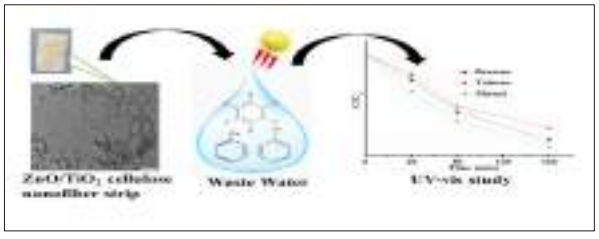


Fig. 14 Effective photo degradation of organic hydrocarbons by $_L$-cysteine functionalized ZnO/TiO_2 nanohybrid decorated on cellulose nanofibers.

F. Materials for Energy and Environment

Coordinator: Dr. Biswajit Choudhury

F.1 Piezphotocatalytic $BiVO_4$ nanorods

The surface piezoresponsive behaviour of BiVO4 nanorods impacts their piezophotocatalytic activities. Figure 15a shows that the piezophotocatalytic actions are realized through simultaneous light exposure and ultrasonication. When mechanical stress is initiated via ultrasonic vibrations, it constantly creates acoustic cavitation bubbles in the low-pressure cycle. The bubbles eventually grow and collapses in the high-pressure process. Subsequently, an implosion of such bubbles creates high-speed microjets and shock waves. This phenomenon leads to the creation of polarization charges in the $BiVO_4$ surface. Consequently, an internal electric field builds up, which can spatially separate the electron and hole pairs. Strikingly, it was observed that piezo-photocatalytic process retards with time. This phenomenon can be ascribed to the "fracturing effect" of sonication, as shown in Figure 15b. It was found that low-frequency sonication has adverse effects for a longer duration, which lead to damage to the catalytic sites, affecting the entire catalytic process. Therefore, the slow process of piezo-photocatalysis may be attributed to (a) nanoparticle coalescence and photoinduced carrier recombination; (b) accelerated desorption processes and (c) poor transmission of visible light. Based on the total organic carbon (TOC) analysis, a 41% mineralization efficiency was achieved (Fig. 15).

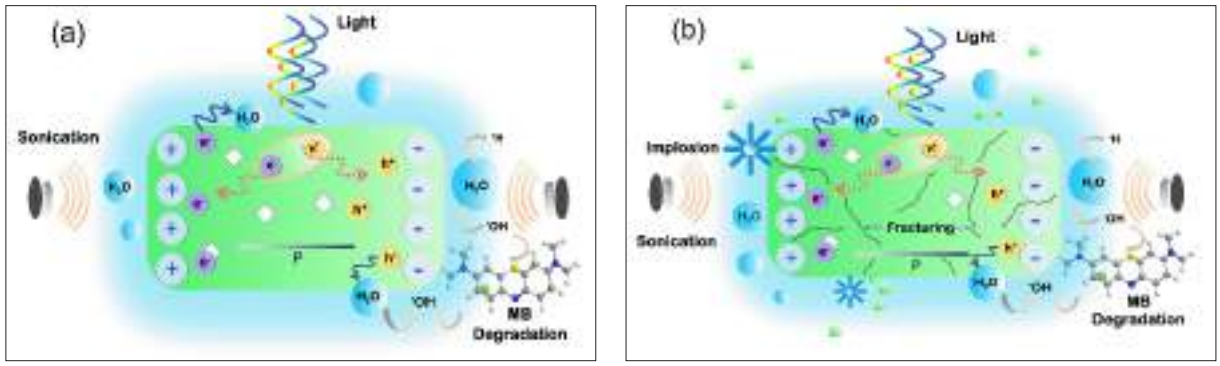


Fig. 15 Mechanism of piezo-photocatalytic performance at (a) 0–10 min, (b) 10–40 min.

G. Metal-Organic Frameworks

Coordinator: Dr. Anamika Kalita

G.1. Functional Organic Ligands and Derived Framework Materials

Finding a concession between performance and affordability for practical application is the foremost need in the design and synthesis of materials with increased affinity and quick and superior adsorption capacity. Exploring the structure of organic ligands and their functional characteristics to produce framework materials, specifically Metal-Organic Frameworks (MOFs), has emerged as the most significant challenge for synthetic chemists. The scientific world accords Naphthalene diimide (NDI) based functional organic ligands and the frameworks they create unmatched importance because of their extreme diversity and extensive modular nature, which may make them valuable materials in various multidisciplinary fields. The current study addressed the synthesis of a regenerative framework adsorbent that demonstrates outstanding performance for a range of water-polluting contaminants, specifically organic dyes of industrial importance, with an ultrahigh adsorption capacity and 99% elimination efficacy. Furthermore, artificial intelligence (AI) based on artificial neural network (ANN) modelling has been successfully used to estimate and model process parameters of dye removal by adsorption technique, resulting in a mutual correlation between lab-based techniques and neural-based modelling for environmental concerns (Fig. 16).

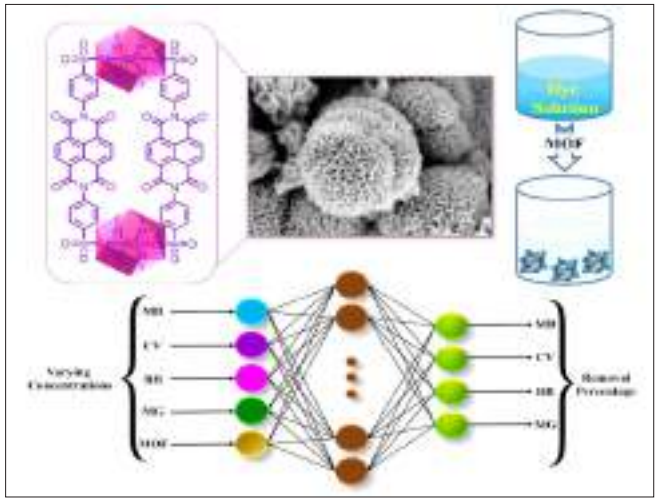


Fig. 16 The overall schematic representation of environmental remediation allied neural modelling of our developed material.

RESEARCH OUTPUT

Completed projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:	Achievement(s)
Study of a few polyelectrolytes, fluorescent polymers and their uses as sensor	Funding Agency: IASST (In-house project) Total fund: Rs. 10 Lakhs Duration: 2 years PI/Coordinator: Prof. Neelotpal Sen Sarma Co-PI: Dr. Anamika Kalita	• The present work demonstrated a new approach towards the selective and sensitive detection of L-dopa in aqueous and artificial urine. • The aqueous method is based on high fluorescence turn-on of reduced graphene quantum dots in the presence of L-dopa with a reasonable detection limit.
Carbon Based Nanocomposites: Synthesis, Characterization, Properties and Applications	Funding Agency: IASST (In-house project) Total Fund: Rs. 20 lakhs Duration: 2 years PI: Dr. Devasish Chowdhury Co-PI: Prof. N. Sen Sarma	• Successfully developed a carbon nanomaterial-based nanocomposite which can enhance soil fertility. • Developed Biogenic carbon dot-based fluorescence-mediated immunosensor for the detection of disease biomarker • Developed Liposomeazobenzene nanocomposite system as photoresponsive drug delivery vehicle • We have developed gold nano bio-conjugate from onion peel extract as an effective antioxidant, and anti-inflammatory agents. • Published six(6) papers in international journals fulfilling the project's objectives.
Structure and Morphology of Protein-Lipid Mixed Films	Funding Agency: IASST (In-house project) Total fund: Rs.17 Lakhs Duration: 2 Years PI/Coordinator: Dr. Sarathi Kundu Co-PI: Dr. Subir Biswas	• Protein-lipid mixed films were prepared. • In-plane and out-of-plane morphology and structure of the DMPA-lysozyme films were obtained using microscopic (BAM and AFM) and X-ray scattering techniques. • Effects of cholesterol and protein concentration on the structure and hysteresis of the lipid monolayer were also explored.

Study on Charge Extraction from Photoelectric Devices using Plasmonic Materials	Funding Agency: IASST, (In-house Project) Total Fund: Rs.16.65 Lakh Duration: 2 Years PI/Coordinator: Dr. A. R. Pal Co-PI: Prof. H. Bailung	• A hybrid material system has been developed for plasmonic and surface polarization induced pyro-phototronic harvesting of light. • The study has been carried out on interband transition in plasmonic titanium nitride and its contribution towards ZnO based pyro-phototronic device application. • Synergistic effect of Au interband transition on graphene oxide/ ZnO heterostructure has been investigated with experiment and simulation. • Gold nanoparticle-crystalline rubrene hybrid nanocomposite has been prepared by plasma processing and plasmon-enhanced organic thin film transistor has been fabricated, which shows high responsivity. • Four research papers have been published in cited international scientific journals.
Two-dimensional graphitic carbon nitride nanosheets loaded with Au@ WO3 metal-semiconductor bi-plasmonic nanocrystals for maximizing overall water-splitting performance under solar illumination	Funding agency: IASST (In-house project) Total Fund: Rs.16.9 lakh Duration: 2 Years PI/Coordinator: Dr. B. Choudhury Co-PI: Dr. A.R. Pal	• WO3 is grown hydrothermally, and it found that the hydrated orthogonal/hexagonal mixed-phase shows an excellent response to visible light photocatalysis • WO3/g-C3N4 composite shows excellent photoelectrochemical H2 and O2 evolution performance under solar illumination. • One paper is published from the project work.

Ongoing projects

Title of the project	**Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:**	**Goal**
Non-collinear magnetism in Heusler materials	Funding Agency: DST, Govt. of India Total Fund: Rs.35,20,720/- Duration: 04-02-2020 to 03-08-2023 PI : Dr. Munima B Sahariah	• Structural stability, bonding characteristics and electronic properties of Mn_2PtSn and Pt_2MnGa heusler alloys • To explore the stable non-collinear magnetic arrangements in these structures

A facile strategy towards Naphthelene Diimide based Metal Organic Frameworks-Polymer Composite Membrane as Traps for Selective Capture of CO_2	Funding Agency: DST, Govt. of India Total Fund: Rs. 35 Lakhs Duration: 5 years (01st October 2018-30th September 2023) PI/Coordinator: Dr. Anamika Kalita	• The project aims to design potentially active functional organic ligands and their derived framework materials, such as metal-organic frameworks (MOFs), covalent organic frameworks (COFs) etc., employing naphthalene diimide as core entity functionalized with various pendant coordinating groups such as -OH, -COOH, -NH_2 is considered for structure-property relationship for tuning the adsorption behaviour towards guest analytes. • Investigation of adsorption behaviour towards emerging environmental pollutants using as-synthesized framework materials and their derived polymer composites is underway.

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./ page no.	Month/Year of publication
N. Sultana, A. Degg, S. Upadhyaya, T. Nilges, N. Sen Sarma	Synthesis, Modification, and Application of Black Phosphorus, Few-Layer Black Phosphorus (FLBP), and Phosphorene: A Detailed Review	Mater. Adv.	3/ 5557–5574	May/ 2022
S. Upadhyaya, G. Gogoi, N. Sen Sarma	Synthesis of n-vinylpyrrolidone and acrylonitrile-derived stiff crosslinked copolymer using high pressure for its application in reversible dye adsorption and antimicrobial activities	Mater. Today Commun.	31/ 103826-103836	June/ 2022
K. Phukan, S. Chutia, G. P. Chutia, N. Sen Sarma	Fabrication of Conducting Polyaniline–Betel Nut Fiber Filaments with Potential Ammonia Gas Sensing Behavior	J. Nat. Fibers	19 (16)/ 13694–13710	August/ 2022

K. Goswami, N. Sultana, N. Sen Sarma	Duel phase selective inner filter effect-based luminescent sensing for the detection of para-nitrophenol and picric acid	Sens. Actuators B Chem.	374/ 132778-132787	January/ 2023
N. Sultana, A. Degg, K. Goswami, B. Gogoi, T. Nilges, N. Sen Sarma	Reduced phosphorene quantum dot incorporated flexible bio-electronic device for detection of uric acid in real media.	ACS Appl. Electron. Mater.	5 (3)/ 1502–1513,	March/ 2023
A. Deb, D. Chowdhury	Unravelling the Origin of Photoluminescence in Dual Emissive Biogenic Carbon Dot,	Mater. Today Commun.	31/ 103777.	May / 2022
T. Bhattacharjee, R. Rabha, D. Chowdhury, G. Majumdar.	Carbon Dot grafted pH-sensitive smart paper for highly efficient separation of anionic/cationic dyes from a mixture.	Sustain. Mater. Technol.	33/ e00489	September / 2022
S. Rahman, D. Chowdhury	Guar gum-sodium alginate nanocomposite film as a smart fluorescence-based humidity sensor: A smart packaging material	Int. J. Biol. Macromol.	216/ 571–582	September / 2022
T. Bhattacharjee, S. Rahman, D. Deka, M. K. Purkait, D. Chowdhury, G. Majumdar	Synthesis and characterization of exfoliated beta-cyclodextrin functionalized graphene oxide for adsorptive removal of atenolol	Mater. Chem. Phys.	288/ 126413	September / 2022
P. Chakravarty, D. Chowdhury, H. Deka	Ecological risk assessment of priority PAHs pollutants in crude oil contaminated soil and its impacts on soil biological properties	J. Hazard. Mater.	437/ 129325	September / 2022
J. S. Boruah and D. Chowdhury	Advances in Carbon Nanomaterial–Clay Nanocomposites for Diverse Applications	Minerals	13/ 26	December / 2022

J. S. Boruah, D. Chowdhury	Liposomeazobenzene nanocomposite as photoresponsive drug delivery vehicle.	Appl. Nanosci.	12/ 4005–4017	December / 2022
E. Elango, V. P. Kannan, S. Madangurusamy, R. K. Karn, D. Chowdhury, C. Upadhyay, A. Yadav	MagnetronSputtered Silver Nanoparticles for Surface Plasmons for Terahertz Sensors	J. Electron. Mater.	52/4289-4294	January /2023
A. Deb, G. R. Nalkar, D. Chowdhury	Biogenic carbon dot-based fluorescence-mediated immunosensor for the detection of disease biomarker.	Anal. Chimi. Acta	1242/ 340808	February / 2023
S. Biswasi, D. Gogoi, A. R. Pal	Gold Nanoparticle-Crystalline Rubrene Hybrid Nanocomposite via Plasma Processing and Realization of Plasmon-Enhanced Organic Thin Film Transistor with High Responsivity	Appl. Surf. Sci.	599/ 153883 (1-11)	October /2022
M. Srivastava, M. B. Sahariah, A. Srinivasan	Size dependent properties of single domain Fe2CoGa nanoparticles prepared by a facile template-less chemical route	J. Mater. Chem. C	10/ 11946-11958	July/ 2022
P. Bhagowati, P. Saha, M. B. Sahariah	Size-dependent optical properties of small titanium nitride nanoclusters	Comput. Mater. Sci.	220/ 112060	March/ 2023
S. Pandit, S. Kundu, V.K. Aswal	Interaction among bovine serum albumin (BSA) molecules in the presence of anions: a small-angle neutron scattering study	J. Biol. Phys.	48/ 237–251	April/2022
S. Pandit, S. Kundu, V.K. Aswal	Effect of monovalent salts on molecular interactions of globular protein (BSA) above its isoelectric point	Chem. Phys. Lett.	804/ 139916	July/2022

S. Sarkar, S. Kundu	Effect of different valent ions (Na^{+}, Ca^{2+} & Y^{3+}) on structural and morphological features of protein (BSA) thin films adsorbed on hydrophobic silicon (H-Si) surface	J. Mol. Struct.	1270/ 133892	August/2022
S. Kumar, R. J. Sarmah, S. Kundu	Growth of monolayer and trilayer of gold nanoparticles attached octadecanethiol films on hydrophilic silicon surface using Langmuir–Blodgett method.	Bull. Mater. Sci.	45/208	October/2022
R. J. Sarmah, S. Kundu	Structure and morphology of bovine serum albumin–lysozyme (BSA–Lys) complex films at air–water interface	Food Hydrocolloids	131/107788	October/2022
R. J. Sarmah, S. Kundu	Stable layers of pure myelin basic protein (MBP): Structure, morphology and hysteresis behaviours.	Coll. Surf. A	662/130973	January/2023
A. Saikia, S. Kundu	An environmentally benign L-cysteinefunctionalized ZnO/TiO2 nanohybrid decoratedon cellulose nanofibers for effective photodegradation of organic hydrocarbons	New J. Chem.	47/4074-4085	January/2023
S. Sau, S. Kundu	Improved electrical and mechanical properties of highly stretchable polymeric films prepared by blending DMF with the mixed solution of PEDOT: PSS and PVA.	Coll. Surf. A	664/131082	March/2023
M.P. Nath, S. Biswas, P. Nath, B. Choudhury	Synergy of Adsorption and Plasmonic Photocatalysis in the Au–CeO2 Nanosystem: Experimental Validation and Plasmonic Modeling.	Langmuir	24/ 7628–7638	June 6/ 2022

S. Deka, M. B. Devi, M. R. Khan, Keerthana, V. Adyam, B. Choudhury	Piezo-Photocatalytic and Photocatalytic Bismuth Vanadate Nanorods with Antibacterial Property	ACS Appl. Nano Mater.	5(8)/ 10724–10734	August/2022
M. K. Jaiswal, B. Choudhury	Role of dopants and defects on the photocatalytic performance of g-C3N4 under visible light and sub-band gap excitation	J. Phys. D: Appl. Phys.	55/ 504002	October/ 2022
M. P. Nath, H. Sarma, T. Chutia, D. J. Kalita, B. Choudhury	Self-Assembled p–n Homojunction in SnS2 Nanosheets for Enhanced Visible Light-Driven Photocatalysis	ACS Appl. Nano Mater.	6 (7)/ 5325-5335	March/ 2023
H. Jyoti Bora, C. Paul, Prof. N. Sen Sarma, A. Kalita	Facile Synthesis of Regenerative Framework Adsorbent for Organic Dyes: Experimental and Artificial Neural Modeling Studies	Chemistry Select	7 (45)/ e202203766	December/2022

Conference Proceedings:

Author (s)	Title	Journal name	Volume & Issue no./ page no.	Month/Year of publication
S. Pandit, S. Kundu	Fluorescence Emission Enhancement of Copper Nanoclusters (CuNCs) In The Presence of Ascorbic Acid	Proceedings of the 65th DAE Solid State Physics Symposium	55/ 163-164	April/2022
S. Sau, S. Kundu	Heat-Induced Silver Nanoparticles Inside Poly(vinyl alcohol) Film	Proceedings of the 65th DAE Solid State Physics Symposium	55/ 175-176	April/2022
R.J. Sarmah, S. Kundu	Bovine Serum Albumin/ Lysozyme (BSA/Lys) Complex Thin Films	Proceedings of the 65th DAE Solid State Physics Symposium	55/ 434-435	April/2022

Patents

Inventor(s)	Title	Patent Application No.	Provisional/ final Patent grant No.	Issue no. of patent office
D. Chowdhury, S. Rahman, A. Konwar	Edible Biopolymer Based Xerogel Nanocomposite Film and Method of its Fabrication	202231069691 filed on 02.12.2022	Provisional	--

Book Chapters

Authors Name	Chapter Title	Book Title	Publisher	Year/ Month of Publication
S. Rahman, G. Majumdar, D. Chowdhury	Biocompatibility of Polymer-quantum Dots Composites	Quantum Dots and Polymer Nanocomposites: Synthesis, Chemistry, and Applications	CRC Press, 1st Edition	2022/ December
J. S. Boruah, A. Deb, J. Gogoi, K. Phukan, N. Gogoi, D. Chowdhury	Carbon dots- A versatile carbon nanomaterial: A Review	Novel Applications of Carbon based Nano-materials	CRC Press (Taylor and Francis Group)	2022/ November
S. Pandit, S. Kundu	Methods of synthesis of metal nanoclusters	Luminescent Metal Nanoclusters: Synthesis, Characterization, and Applications	Woodhead Publishing, Elsevier, UK	2022/July
A. Kalita, I. Hazarika, P. Barman, B. Gogoi	Applications of metal-organic framework-based membranes in energy storage and conversion	Environmental Sustainability and Industries: Technologies for Solid Waste, Wastewater, and Air Treatment	Elsevier	2022/June
S. Upadhyaya, N. Sen Sarma	Chapter 8: Biodegradable plastics as a substitute to traditional polythenes: a step toward a safer environment	Environmental Sustainability and Industries. Technologies for solid waste, wastewater, and air treatment	Elsevier publications	June/2022

Popular article published in Newspaper/Magazine

Authors Name	Article Title	Newspaper/ Magazine name	Volume & Issue no./ page no.	Month/Year of publication
D. Chowdhury	Biodegradable biopolymer nanocomposite that detects relative humidity can monitor packed food freshness	DST newsletter	--	August/2022
D. Chowdhury	Fluorescent carbon nanomaterial-based immunosensor from natural sources can help early detection of cancer	DST newsletter	--	February/2023
R. J. Sarmah, S. Kundu	Newly developed ultrathin hetero protein film: better alternative to isolated protein films	STRIDES (DST E-Newsletter)	3(9)/3	June/2022

Contributory

Author(s)	Title	Conference name	Oral/ poster	Date & Venue
S. Rahman, D. Chowdhury	Biopolymer Nanocomposite film as a smart humidity sensor for food packaging Applications	North-east Research conclave Sustainable Science and Technology	Oral	May 20-22, 2022 / IIT Guwahati
S. Rahman, D. Chowdhury	Fabrications of Smart biopolymer Composite film for Food packaging Applications	International conference of sustainable approaches in food engineering and technology (SAFETy 2022)	Oral	October 19-20 2022 / Tezpur University, Assam, India
S. Rahman, D. Chowdhury	Biopolymer nanocomposite film as a smart food packaging Material	International Conference on Polymers for Advanced Technology	Oral	February 23-25, 2023 / Asian Polymer Association (A.P.A.) in Goa, India.

R. Sonkar, N.J. Mondal, D. Chowdhury	Investigation of the photocatalytic activity of the semiconductor/ plasmonic materials hetero nanostructures	2nd national conference on advance nanomaterials and applications (ANA-2023)	Poster	March 20-22,2023 / Department of Physics, central University of South Bihar, gaya
J. Bora, A. R. Pal	Extraction of interband carriers in plasmonic titanium nitride and its application for UV light harvesting	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Oral	19-23 December 19-23, 2022/IIT Jodhpur
J. Bora, A. R. Pal	Self-powered broadband photodetector based on metal nitride nanostructure	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022/Department of Physics, Manipur University, Imphal
D. Gogoi, A. R. Pal	Polyaniline-crystalline rubrene nanosystem synthesis by one-step plasma based route: application in optoelectronics by plasmonic functionalization	75th annual gaseous electronics conference & 11th international conference on reactive plasmas	Poster	October 3-7, 2022/ Sendai International center, Sendai, Japan (by American Physical Society)
S. Podder, A. R. Pal	Hot carrier dynamics in lspr tuneable plasmonic tin at the interface of p and n type semiconductors	75th annual gaseous electronics conference & 11th international conference on reactive plasmas	Poster	October 3-7, 2022/ Sendai International center, Sendai, Japan (by American Physical Society)
P. Bhagowati	A first principles study on predicting the low-energy structure and electronic properties of zirconium nitride nanoclusters	CTMSE 2022	Oral	July 28-30, 2022/ Institute of Engineering and Management, Kolkata
P. Saha	Effect of spin-orbit coupling on Mn1.5PtSn	CTMSE 2022	Oral	July 28-30, 2022/ Institute of Engineering and Management, Kolkata

P. Bhagowati	Optical properties of small titanium nitride nanoclusters from first-principles calculation	ICN 2022	Poster	August 12-14, 2022/Mahatma Gandhi University, Kottayam, Kerala
P. Bhagowati	A first-principles study of titanium nitride small nanoclusters	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Oral	November 8-10, 2022/Manipur University
D. Sarma	First-principles study of helium interstitial in BCC CuZr	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022/Manipur University
B. Kakati	Heusler alloy Pt2MnGa and its electronic and magnetic properties	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022/Manipur University
P. Bhagowati	A first-principles study on the optical behaviour of small titanium nitride nanoclusters	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/IIT Jodhpur
P. Saha	Mn-Pt-Sn inverse Heusler compound in spintronics devices	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/IIT Jodhpur
D. Sarma	First-principles study of helium behavior in CuZr bulk	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/IIT Jodhpur
B. Kakati	Electronic and magnetic properties of ternary Heusler alloy Pt2MnGa	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/IIT Jodhpur
S. Sarkar, S. Kundu	Protein adsorption on hydrophilic and hydrophobic surfaces	XIII Biennial National Conference of Physics Academy of North East (PANE-2022)	Oral (online)	November 8-10, 2022/Department of Physics, Manipur University, Manipur

A. Saikia, S. Kundu	Efficient photocatalytic degradation of organic pollutants by nanocomposite of cellulose nanofiber with amino acid functionalized nanohybrid	International Conference on Polymers for Advanced Technology	Oral (offline)	February 23-25, 2023/The International Centre Goa
S. Sarkar, S. Kundu	Biopolymer immobilization on hydrophilic and hydrophobic surfaces	International Conference on Polymers for Advanced Technology	Poster (offline)	February23-25, 2023/The International Centre Goa
S. Sau, S. Kundu	Investigation of electrical and mechanical properties of dmf doped pedot:pss/ pva stretchable polymeric films	International Conference on Polymers for Advanced Technology	Poster (offline)	February23-25, 2023/The International Centre Goa
M.K. Jaiswal, B. Choudhury	Role of dopants and defects on the photocatalytic performance of g-C3N4 under visible light and sub-band gap excitation	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022 /Department of Physics, Manipur University, Manipur
S. Deka, B. Choudhury	Deciphering the piezo-photocatalytic and photocatalytic behaviour of $BiVO_4$ nanorods with anti-bacterial activity	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022 /Department of Physics, Manipur University, Manipur
M.K. Jaiswal, B. Choudhury	Doping of metal ions of variable valency into g-C_3N_4 : Photocatalysis under broad band and sub-band gap photoexcitation	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/ IIT Jodhpur
S. Deka, B. Choudhury	Piezo-photocatalytic and Photocatalytic traits of monoclinic $BiVO_4$ with Anti-bacterial Property	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/ IIT Jodhpur

M. P. Nath, B. Choudhury	Synergy of Adsorption and Plasmonic Photocatalysis in the Au–CeO_2 **Nanosystem: Experimental Validation and Plasmonic Modeling**	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022 /Department of Physics, Manipur University, Manipur
M. P. Nath, B. Choudhury	Synergy of Adsorption and Plasmonic Photocatalysis in the Au–CeO_2 **Nanosystem: Experimental Validation and Plasmonic Modeling**	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/ IIT Jodhpur
T. Kashyap, B. Choudhury	UV light promoted photocatalytic activity of bimetallic AuAg/CN	XIII biennial national conference of Physics Academy of North East (PANE-2022)	Poster	November 8-10, 2022 /Department of Physics, Manipur University
T. Kashyap, B. Choudhury	Plasma exfoliated-defect activated graphitic carbon nitride: a promising photocatalyst	IUMRS-ICA 2022 conference and 33st AGM of Materials Research Society of India (MRSI)	Poster	December 19-23, 2022/ IIT Jodhpur

Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/ Exhibitions	Date & Venue
Dr. Anamika Kalita	2-days Performance review meeting for DST-INSPIRE Faculty Fellows under the subject area Material Sciences	December 14-15, 2022/ JNCASR Bangalore
Dr. Anamika Kalita	Attended workshop on "Empowering knowledge on ethical publishing: Mastering the art of identifying predatory, fake and cloned journals" organized by Elsevier	June 08/ 2022

Dr. Anamika Kalita	Attended workshop on "Reviewer workshop: How to get the most out of being a reviewer of scientific articles" organized by Elsevier	August 10/2022
K. J. Goswami, N. Sen Sarma	International Conference on Biomaterials, Regenerative Medicine and Devices Organized by IIT, Guwahati	December 14-18, 2022/ IIT, Guwahati
N. Sultana, N. Sen Sarma	International Conference on Polymers for Advanced Technology, Goa (APA-2023), Organized by Asian Polymer Association at International Conference Centre, Goa.	February 23-25, 2023/ ICPAT, Goa
B. Basumatary	DST STUTI Training program on "Instrumentation and Applications of ICP-OES, GF-AAS and Electron Microscopy"	April 28 - May 4, 2022/ SAIF NEHU, Shillong
B. Basumatary	DST STUTI Training program on "Uses of Sophisticated Instruments in Material Science and Nanotechnology"	September 15-21, 2022/ SMIT Sikkim
S. Bora	Hands on Training on "CRYSTAL-DFT Modelling Nano Science"	February 12-16, 2023/ INST, Mohali
D. Pegu	Hands on Training on "CRYSTAL-DFT Modelling Nano Science"	February 13-16, 2023/ INST Mohali
S. Alom	Hands on Training on "CRYSTAL-DFT Modelling Nano Science"	February 13-16, 2023/ INST Mohali

Presentation in Conferences/seminar

Invited talks

Faculty	Title	Programme Name	Date & Venue
Prof. Devasish Chowdhury	Biopolymer Nanocomposite Materials for Food Packaging Applications	National Conference on Research at the Interface of Chemical, Biological and Material Sciences	March 10, 2023 / Tezpur University
Prof. Devasish Chowdhury	Wonderland of Nanoscience and Nanotechnology	4th C.V. Raman Lecture Series	March 27, 2023/ Department of Physics, Bodoland University, Assam, India

Prof. Devasish Chowdhury	Scanning Electron Microscope	One-Week Training Program on "Sophisticated Instruments Used in Scientific Research"	September 7-13, 2022/ Sponsored by Project Management Unit, NIT Agartala Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (STUTI)
Dr. M. B. Sahariah	Role of stoichiometry in designing Heusler materials	Condensed Matter Days-2022	December 14-16, 2022/NIT Nagaland
Dr. S. Kundu	X-Ray Diffraction: Theory, Experiments and Applications	A training on 'Sophisticated Instruments used in Scientific Research' organized by the Sophisticated Analytical Instrument Centre (SAIC), IASST, under the DST STUTI program.	September 7-10, 2022, IASST, Guwahati, India
Dr. S. Kundu	Nanohybrid decorated nanocellulose-polymer membranes for ultrafiltration	International Conference on Membrane-Assisted Water Purification Processes (ICMW 2023)	March 10-12, 2023/ Mahatma Gandhi University, Kottayam, Kerala, India
Dr. B. Choudhury	BET Surface Area Analyzer	A training on 'Sophisticated Instruments used in Scientific Research' organized by the Sophisticated Analytical Instrument Centre (SAIC), IASST under DST STUTI program.	September 7-10, 2022, IASST, Guwahati, India
Dr. B. Choudhury	Instrumentation on UV-visible and FTIR spectroscopy	DST-STUTI hands-on training program on Sophisticated Analytical Instruments Facility organized by Tezpur University	Oct 31- Nov 7, 2022, Tezpur University
Dr. B. Choudhury	Nanomaterials: From Bulk to Nano	One-day symposium on nanoscience and plasma-based technologies	September 24/ 2022/ Assam Don Bosco University

Lectures delivered at other institutes

Faculty	Topic	Date & Venue
Prof. Devasish Chowdhury	Nano-biocomposite as food packaging material/ FDP on Basic Science and Research Methodology	August 2 – 8, 2022 / Assam Don Bosco University, Guwahati
Dr. B. Choudhury	Solid State Physics: Bulk to Nanomaterials	September 3, 2022/ Dibru College, Dibrugarh
Dr. B. Choudhury	Nanoscience and Nanomaterials: From Concept to Applications	October 21, 2022/ Assam Royal Global University
Dr. B. Choudhury	Fascinating World of Nanoscience and Nanotechnology	March 17/Department of Physics, Gauhati University

Other activities

Visits to national/international institutes/laboratories

Faculty/Research scholar	National/international institutes/ laboratories	Date
Prof. Devasish Chowdhury	12th Training Programme on "Science, Technology and Emerging Trends in Governance"/Indian Institute of Public Administration (IIPA)	November 21-25, 2022
Prof. Devasish Chowdhury	Technology Bhavan, DST, New Delhi/ Administrative Vigilance conducted at Department of Science and Technology, New Delhi	June 15- 17, 2022
Prof. Devasish Chowdhury	Technology Bhavan, DST, New Delhi/ Interactive session on cyber security	August 26, 2022

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student/ Supervisor	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Ms. Sonali Dubey/Prof. Devasish Chowdhury	Central University of Punjab, Bhatinda	PG Intern	Ongoing	February – April 2023
Boobalan D./Dr. M.B. Sahariah	Karpagam University, Tamilnadu	PG Intern	Ongoing	06 months

Awards/Recognitions/Achievements

Name of Faculty/Student	Details of the recognition
Dr. S. Kundu	Dr. S. Kundu chaired one technical session at International Conference on Membrane Assisted Water Purification Processes (ICMW 2023), which was held at Mahatma Gandhi University, Kottayam, Kerala, India, during March 10-12, 2023
Dr. B. Choudhury	Listed in Stanford's list of top 2% most-cited scientists in the applied physics category for the year 2022

List of PhD awardees

Name of student	Name of supervisor	Title of the thesis	Award giving university
Samiran Upadhyaya	Prof. Neelotpal Sen Sarma	Poly (N-Vinylpyrrolidone-co-Acrylonitrile) and its Derived Materials: Property Evaluation and Probable Applications	Gauhati University, Guwahati
Jayanta Sarmah Boruah	Prof. D. Chowdhury	Carbon Nanomaterial Tagged Bio-Mimicking System for Biomedical Application	Cotton University
Santanu Podder	Dr. A. R. Pal	Synthesis and Characterization of Plasmonic Nanomaterials Suitable for Optoelectronic Applications	Gauhati University
Deepshikha Gogoi	Dr. A. R. Pal	Synthesis of Hybrid Plasmonic Nanostructures for Implementation in Optoelectronic Applications	Gauhati University
S. Pandit	S. Kundu	Studies on structural and optical behaviors of biomacromolecules in presence of ions and nanomaterials	Gauhati University, Guwahati

PHYSICAL SCIENCES DIVISION

PSD-2

BASIC AND APPLIED PLASMA PHYSICS

A. Basic Plasma

Coordinator: Prof. Heramba Bailung

A.1 Experimental Investigation of Static and Dynamical Nonlinear Phenomena in a Low-Temperature Laboratory Plasma

The study of static and dynamical nonlinear structures in basic and dusty plasma has been a subject of interest among plasma physicists. Currently, we are working on the characteristics of a plasma fireball within a dc discharge plasma. The potential profile measured using an emissive probe with distance confirms the formation of a double layer near the boundary of the fireball and the background plasma. The Langmuir probe investigation inside the fireball shows the presence of two electron groups where one (lower energetic) is trapped by the fireball and the other (higher energetic) is accelerated by the double layer potential.

In dusty plasma, we are currently working on generating and characterising a non-planar dust acoustic solitary wave. These waves have a unique stable structure that can travel long distances without any change in shape or velocity owing to a delicate balance between the nonlinearity and dispersion of the medium. The observed evolution of the solitary wave is compared with the numerical solution of the modified Korteweg de Vries equation with an additional geometrical term. The velocity and amplitude of the diverging non-planar wave are measured and compared with the results obtained from the numerical simulations (Fig. 16).

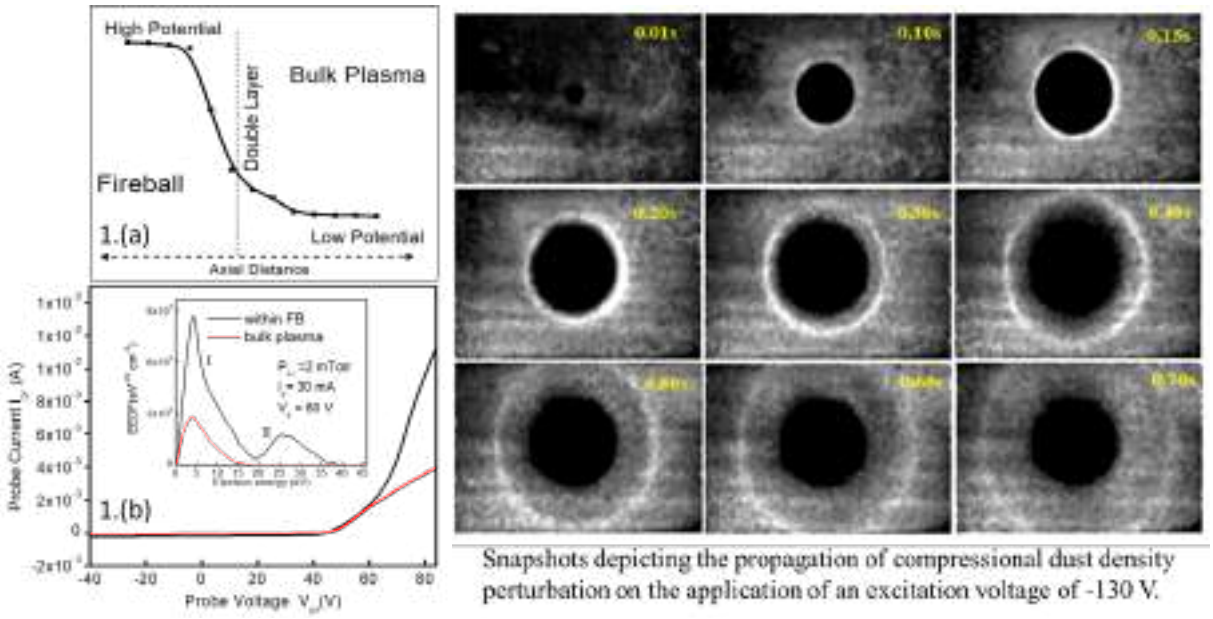


Fig. 16 Graphical Presentation of the work.

A.2 Rapid Crystallization and Surface Engraving of Amorphous Titanium Oxide using Plasma Liquid Interaction

This work highlights a facile, green, and controlled technique known as plasma-liquid interaction for crystal growth, defect engineering, and surface modification of amorphous titanium oxide. Using a novel two-step procedure combining hydrolysis and plasma treatment, we have fabricated defect-enriched anatase TiO2 powder. Rapid crystallization of amorphous titanium oxide is observed due to the interaction of plasma-generated reactive species with the solvated material. However, prolonged treatment time decreases the material's crystallinity due to excess oxygen vacancy defects (OVD) generation in the TiO_2 lattice. The plasma treatment also engraves the material's surface forming the porous structure, increasing the specific surface area to ~ 46 %. TiO2 nanoparticles are grown on the material's surface at a higher treatment time. The dye adsorption of the material is relatively rapid, and the performance depends on the material's surface condition. This rapid adsorption speeds up the photo-degradation performance (up to ~96 %) of the material. The presence of OVD increases the photocatalytic activity of the material. However, excessive OVD slightly quenches the activity (Fig. 17).

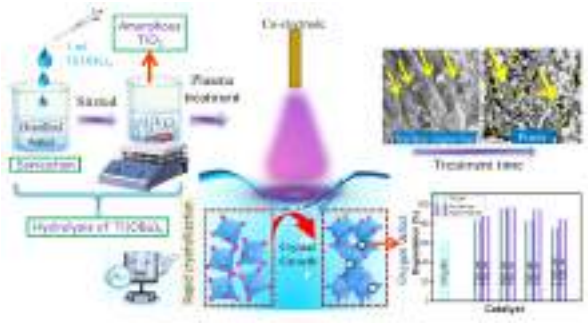


Fig. 17 Graphical Presentation of the work.

B. Plasma Sources and Biomedical Plasma

Coordinator: Dr. Subir Biswas

B.1 Uniform and quiescence plasma generation by filament dc discharge in a linear plasma device

The generation of uniform and quiescence plasma has drawn colossal interest in plasma research for performing basic experiments and in various plasma reactors used for material processing. Such plasma has been produced in the indigenously designed linear plasma device of IASST by filament DC discharge. An array of three filaments connected in parallel is heated using ~4 A current to get the thermionic electrons which are then accelerated by biasing the filaments negatively concerning a mesh grid placed in front of it. Density (ne) and electron temperature (Te) of the plasma were measured at various spatial positions by inserting four cylindrical Langmuir probes in the device from the four collinear radial ports at z= 22, 44, 66 and 88 cm using in-house developed radial probe drive systems. The measurements enable us to obtain 2-dimentional (2D) profile of ne and Te . Figure 18 shows 2D profiles of ne and Te at filling gas pressure p~$3x10^{-4}$mbar showing very uniform ne and Te inside the plasma chamber. The plasma produced in this device is also found to be very quiescent ($\delta n_e/n_e \approx 0.5\%$) in a wide range of neutral pressures (p ~ 1×10^{-4} -$1x10^{-3}$ mbar) (Fig. 18).

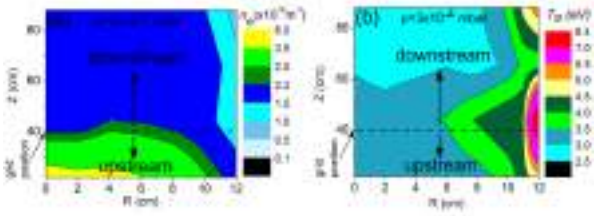


Fig. 18 2D profile of (a) n_e and (b) T_e at filling gas pressure p~$3x10^{-4}$ mbar

B.2 Dielectric Barrier Discharged-Cold Atmospheric Plasma (DBD-CAP) Source for Biomedical Application (Coordinator: Dr. Subir Biswas):

The presence of reactive oxygen and nitrogen species (ROS and RNS) in cold atmospheric plasma (CAP) makes it a promising field of

research in medical applications such as surface and wound sterilization, antisepsis, bleeding coagulation, wound healing, oncology etc. Various CAP sources, e.g., plasma jets, corona discharge plasma, dielectric barrier discharge (DBD) plasma sources, etc., are used in biomedical applications. Here, in IASST, a DBD CAP source is designed and fabricated for this purpose. The schematic diagram of it is given in Figure 19 (a). It consists of a cylindrical shape brass electrode of diameter 10 mm with a hemispherical tip. The electrode is covered with 1-mm thick borosilicate glass. A stainless steel mesh is used as a grounded electrode. A quasi sinusoidal high voltage pulse (V_{pk-pk} ~20-30 kV) of repetitive frequency ~20-30 kHz has been applied between the electrodes to obtain the CAP. A typical applied voltage and plasma current pulse are shown in Figure 19 (b). The biological sample will be placed on the grounded electrode in multi-hole Patri dishes for the treatment.

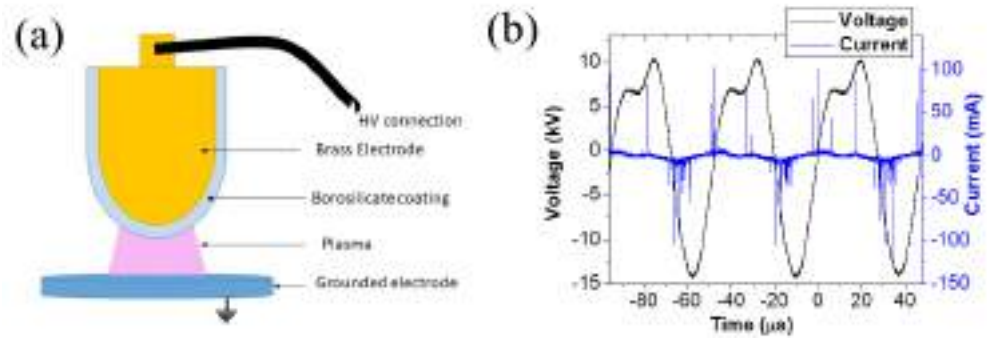


Fig. 19 (a) Schematic diagram and (b) Applied voltage and plasma current pulse of the DBD CAP.

Extramural projects

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:	Goal
1. Application of dielectric barrier discharged cold atmospheric plasma for the treatment of inflammation	Funding Agency: ICMR, Govt. of India; Total Fund:55.38 Lakhs; Duration: January, 2021-January, 2024; PI: Dr. Subir Biswas Co-Investigator: Dr. P Manna (NEIST, Jorhat) and Dr. J. Borah	• Design and development of dielectric barrier discharged cold atmospheric plasma source for biomedical application. • Collection of monocytes and proper cell culture to differentiate monocyte-derived macrophages (MDM). • Study the effects of treating the monocytes and the MDM by CAP and evaluate their viabilities. • Investigation of the possibilities to drive the polarization of MDM toward M1/M2 phenotypes with the exposure of CAP.

2. Experimental investigation of zonal flow and turbulence in linear device	Funding Agency: Board of Research in Nuclear Sciences (BRNS) Govt. of India; Total Fund: 38.65 Lakhs; Duration: June, 2021- June, 2024; PI: Dr. Subir Biswas PC: Dr. Malay Bikas Chowdhuri, IPR, Gandhinagar Co-PC: Dr. J. Ghosh, IPR, Gandhinagar	• Design and development of a linear magnetized plasma device suitable for zonal flow studies. • Production and characterization of plasma in the device. • Generation of the zonal flow and control of its flow velocity and shear. • Experimental investigation of the zonal flow generation physics.

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./page no.	Month/Year of publication
P. Kalita, P. J. Boruah, R. R. Khanikar and H. Bailung	Plasma–induced rapid crystallization and surface engraving of amorphous TiOx(OH)y to enhance adsorption and photocatalytic activity	J. Photochem. Photobiol. A (Elsevier)	434, 114251-114266	August/2022
D. Bora, A. Tarafder, S. Biswas, M. B. Chowdhuri and J. Ghosh	Uniform plasma generation with filament assisted DC discharge in a linear plasma device	Phys. Scr.	98, 045618	March/2023

Contributory

Author(s)	Title	Conference name	Oral/poster	Date & Venue
P. Sut, P. Gogoi, B. Borgohain, N. C. Adhikary and H. Bailung	Investigation on Double Layer in a DC discharge Plasma	National Conference on Recent Development and Evolving Trends in Plasma Science and Technology	Oral	September 22-24, 2022/ Department of Physics, Bharathiar University, Coimbatore, Tamilnadu
P. Kalita, P. J. Boruah and H. Bailung	Rapid Crystallization of Amorphous TiO2 using Atmospheric Pressure Plasma	National Conference on Recent Development and Evolving Trends in Plasma Science and Technology	Poster	September 22-24, 2022/ Department of Physics, Bharathiar University, Coimbatore, Tamilnadu

P. Gogoi, B. Chutia, N. C. Adhikary and H. Bailung	Experimental Observation of Non-planar Dust Acoustic Solitary Wave	National Conference on Recent Development and Evolving Trends in Plasma Science and Technology	Poster	September 22-24, 2022/ Department of Physics, Bharathiar University, Coimbatore, Tamilnadu
P. Sut, P. Gogoi, N. C. Adhikary and H. Bailung	Experimental Investigation of Double Layers Near a Fireball Boundary	37th National Symposium on Plasma Science and Technology (Plasma-2022)	Oral	December 12-14, 2022/IIT Jodhpur
P. Kalita, P. J. Boruah and H. Bailung	Rapid Crystal Growth and Controlled Tailoring of Defect Density in TiO_2 Crystal Lattice using Plasma – Liquid Interaction	37th National Symposium on Plasma Science and Technology (Plasma-2022)	Poster	December 12-14, 2022/IIT Jodhpur
P. Gogoi, B. Chutia, N. C. Adhikary and H. Bailung	Experimental Study of the Evolution of a Non-planar Solitary Wave in a Strongly Coupled Dusty Plasma	37th National Symposium on Plasma Science and Technology (Plasma-2022)	Poster	December 12-14, 2022/IIT Jodhpur
D. Bora, A. Tarafder and S. Biswas	Production of uniform plasma with filament assisted dc discharge in a linear plasma device	37th National Symposium on Plasma Science & Technology, PLASMA-2022	Poster	December 12-14, 2022/IIT Jodhpur
A. Thapa, R. B. Gohain, S. Kundu and S. Biswas	Degradation of harmful dyes using plasma-treated TiO2 films-enhanced with CAP	37th National Symposium on Plasma Science & Technology, PLASMA-2022	Poster	December 12-14, 2022/IIT Jodhpur
A. Tarafder, D. Bora and S. Biswas	Linear device for zonal flow study	37th National Symposium on Plasma Science & Technology, PLASMA-2022	Poster	December 12-14, 2022/IIT Jodhpur

A. Tarafder, D. Bora and S. Biswas	Magnetic field simulation for a linear plasma device suitable for zonal flow study	2nd National Physics Meet	Poster	February 17-19, 2023/ Department of Physics, University of Kalyani

Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
S. Biswas	2nd National Physics Meet	February 17-19, 2023/ Department of Physics, University of Kalyani
P. Sut	National Conference on Recent Development and Evolving Trends in Plasma Science and Technology	September 22-24, 2022/ Department of Physics, Bharathiar University, Coimbatore, Tamilnadu
P. Sut	37th National Symposium on Plasma Science & Technology, PLASMA-2022	December 12-14, 2022/IIT Jodhpur
P. Kalita	National Conference on Recent Development and Evolving Trends in Plasma Science and Technology	September 22-24, 2022/ Department of Physics, Bharathiar University, Coimbatore, Tamilnadu
P. Kalita	37th National Symposium on Plasma Science & Technology, PLASMA-2022	December 12-14, 2022/IIT Jodhpur
P. Gogoi	National Conference on Recent Development and Evolving Trends in Plasma Science and Technology	September 22-24, 2022/ Department of Physics, Bharathiar University, Coimbatore, Tamilnadu
P. Gogoi	37th National Symposium on Plasma Science & Technology, PLASMA-2022	December 12-14, 2022/IIT Jodhpur
D. Bora	37th National Symposium on Plasma Science & Technology, PLASMA-2022	December 12-14, 2022/IIT Jodhpur
A. Thapa	37th National Symposium on Plasma Science & Technology, PLASMA-2022	December 12-14, 2022/IIT Jodhpur
A. Tarafder	37th National Symposium on Plasma Science & Technology, PLASMA-2022	December 12-14, 2022/IIT Jodhpur
A. Tarafder	2nd National Physics Meet	February 17-19, 2023/ Department of Physics, University of Kalyani

Presentation in Conferences/seminar

Invited talks

Faculty	Title	Programme Name	Date & Venue
S. Biswas	Writing research proposal and submission, funding project application process and preparing your submission	Faculty Development programme on "Advanced Research Methodology and IPR" organized by IQAC Birjhora Mahavidyalaya, Bongaigaon in collaboration with Department of Chemistry, Cotton University	August 22 -27, 2022/ online mode
S. Biswas	Cold atmospheric plasma and its application in biomedicine	2nd National Physics Meet	February 17 -19, 2023/ Department of Physics, University of Kalyani

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/ University	UG/PG Projects/ Intern	Status of Project	Duration
Shailendra Kumar Mishra	NIT, Patna	PG Intern	Completed	July 2022- December 2022
Shailendra Kumar Mishra	NIT, Patna	PG Projects	Ongoing	Continuing from January 2023

Awards/Recognitions/Achievements

Parismita Kalita, received the second-best poster presentation at National Conference on Recent Developments and Evolving Trends in Plasma Science and Technology from 22nd to 24th September 2022	Rapid Crystallization of Amorphous TiO_2 using Atmospheric Pressure Plasma
Shailendra Kumar Mishra, Intern, PSD Physics Academy of North East (PANE) Young Researchers Award (Poster)	Study of structural and optical characterization of sputtered ZrO_2, ZrO_2-Pt and ZrO_2-Pt-Ag doped nanoparticle and their application in photoluminescent and photocatalytic activity.

PHYSICAL SCIENCES DIVISION

PSD-3

MATHEMATICAL AND COMPUTATIONAL SCIENCES

A. Schocastic Modelling

Coordinator: Dr. Gautam Choudhury

A.1 Schocastic Modelling with special reference to the queueing theory

A queueing system with service interruption (server breakdown and vacation) is an intensive research topic and a significant aspect of many real-world congestion scenarios. In our study period, we investigated two different vacation mechanisms, one exhaustive vacation (N-policy) and another non-exhaustive vacation (Bernoulli schedule). Under N policy, after returning from a vacation, the server becomes operative for service only when the number of units in the system is greater than or equal to a threshold value N (≥ 1). Whereas under Bernoulli schedules, the server after each customer service either takes a vacation with some probability or serves another customer, if any, with its complementary probability. These vacation policies are chosen as they are analytically easier to deal with than the other policies available in the literature. The stochastic decomposition results, which help analyze the behaviour of such models by considering the different distribution of queue size with and without vacations, are studied. Recently, we extended this concept to an M/G/1 type of queue with two types of heterogeneous service under repeated service policy as they are more generic against a basic queueing model rendering a single service.

B. Artificial Inteligence and Machine Learning

Coordinator: Dr. Lipi B. Mahanta

B.1 A comparative assessment of deep object detection models for blood smear analysis

Blood smears are a common type of blood test that involves observing red blood cells, white blood cells, and platelets in a patient's blood sample. Pathologists manually count these elements in a meticulous process susceptible to human errors. With the advancement of deep learning, object detection techniques have become useful for automating the process and mitigating such errors. This study compares three object detection models - Faster R-CNN, EfficientDet D3, and CenterNet Hourglass - for detecting RBCs, WBCs, and platelets in microscopic blood smear images. The models were compared using COCO evaluation metrics to identify the best-performing model. The Faster R-CNN model demonstrated the highest average precision at 99.4% for detecting WBCs and platelets. While inference time was slower, the Faster R-CNN model proved the best for accuracy-centric tasks like medical image processing. The study also compares its work with the existing models in this domain to establish its efficiency. Overall, the study's findings present a robust framework for using deep learning-based object detection techniques in blood smear analysis, reducing the potential for human errors and ultimately improving the diagnosis and treatment of diseases (Fig. 20).

Fig. 20 Workflow diagram of the proposed work.

B.2 Multi-resolution Transform Based Approach for Automated Cervical Dysplasia Detection

Pattern detection and classification of cervical cell dysplasia can assist with diagnosis and treatment. This study aims to develop a computational model for real-world applications for cervical dysplasia with the highest degree of accuracy and the lowest computation time. Initially, an ML framework is created, which has been trained and evaluated to classify dysplasia. Three different colour models, three multi-resolution transform-based techniques for feature extraction (each with additional filters), two feature representation schemes, and two well-known classification approaches are developed in conjunction to determine the optimal combination of "transform (filter) ⇒ colour model ⇒ feature representation ⇒ classifier". Extensive evaluations of two datasets, one are indigenous (own generated database). The other is publicly available, demonstrating that the Non-subsampled Contourlet Transform (NSCT) feature-based classification performs well. It reveals that the combination "NSCT (pyrexc,pkva), YCbCr, MLP" gives the most satisfactory framework with a classification accuracy of 98.02% (average) using the F1 feature set. Compared to the two other approaches, our proposed model yields the most satisfying results, with an accuracy of 98.00–99.50% (Fig. 21).

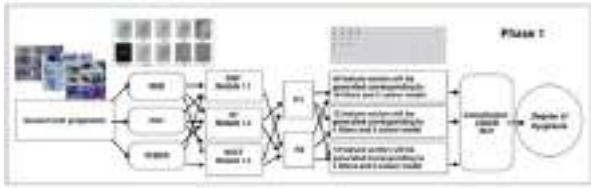


Fig. 21 Overview of the proposed work

C. Mathematical Modelling

Coordinator: Dr. Santu Das

C.1 Mathematical Modelling of geophysical fluid flow

Coastal areas, including land mass and water, throughout the world, have been the most significant part of human civilisation as more than 600 million people live within 10m of elevation, accounting for 10% of the world population. Approximately 2.4 billion people, around 40% of the world population, live within 100 kilometres of the coastline. Any threat to the coastal region thus possesses enormous potential socio-economical damage. Among all the natural calamities, tsunamis pose a grave danger, evident from the recent accounts of destruction they caused following submarine earthquakes. Predicting and simulating tsunami waves is vital in providing a reliable warning system. Numerical simulations are essential, and very sophisticated models have been developed. A tsunami model based on a compressible ocean was found to be more accurate than a model with an incompressible ocean as it allows for the simulation of acoustic

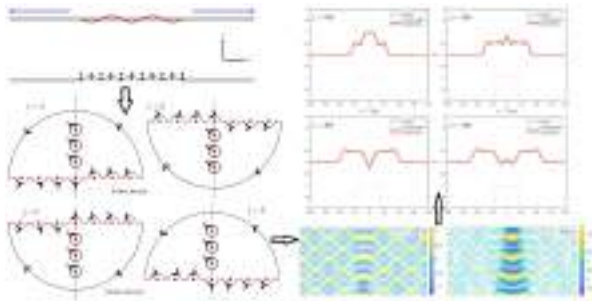


Fig. 22 The surface wave profile generated by the ocean bottom oscillation in a compressible ocean is shown.

gravity waves, which have been proposed as a method for early warning. It is also essential to simulate different kinds of motions of the ocean bottom. An appropriate model considering the water compressibility that can cater to such changes in the initial time-domain displacement is developed (Fig. 22).

C.2 Long lead predictability of Indian Summer Monsoon Rainfall (ISMR) with emphasis on Northeast India Summer Monsoon Season rainfall (NEIR)

An increasingly difficult prediction of the Indian summer monsoon rainfall (ISMR) and increasing frequency of hydrological extremes leads to the growing loss of food production in a warming world. Skilful long-lead forecast of ISMR becomes critical for ensuring regional food security but has been lacking and remains challenging. We established the foundation for long-lead prediction of ISMR by showing the 20O isotherm depth (D20) over the global tropical oceans is ideal for achieving the highest-skill ISMR predictions bringing contributions not only from El Nino and Southern Oscillation (ENSO) in deep global tropics but also from Atlantic Multidecadal Oscillation (AMO) through off-equatorial D20. Our study demonstrated the higher potential of deep learning convolutional neural network (CNN) models in successfully predicting ISMR at long leads compared to the physical dynamical models. We developed two CNN models for ISMR prediction at 18-month and 5-month leads. The models are trained on ISMR and D20 simulations by 45 CMIP6 models (1861-2004), learning is transferred to D20 observations and observed ISMR (1861-1974), and forecasts are validated between 1979-2011. For the first time, we found that the CNN model can successfully train on the nonlinear association between global D20 and ISMR and predict almost all ISMR extremes (droughts/floods) at the long-leads mentioned above (Fig. 23).

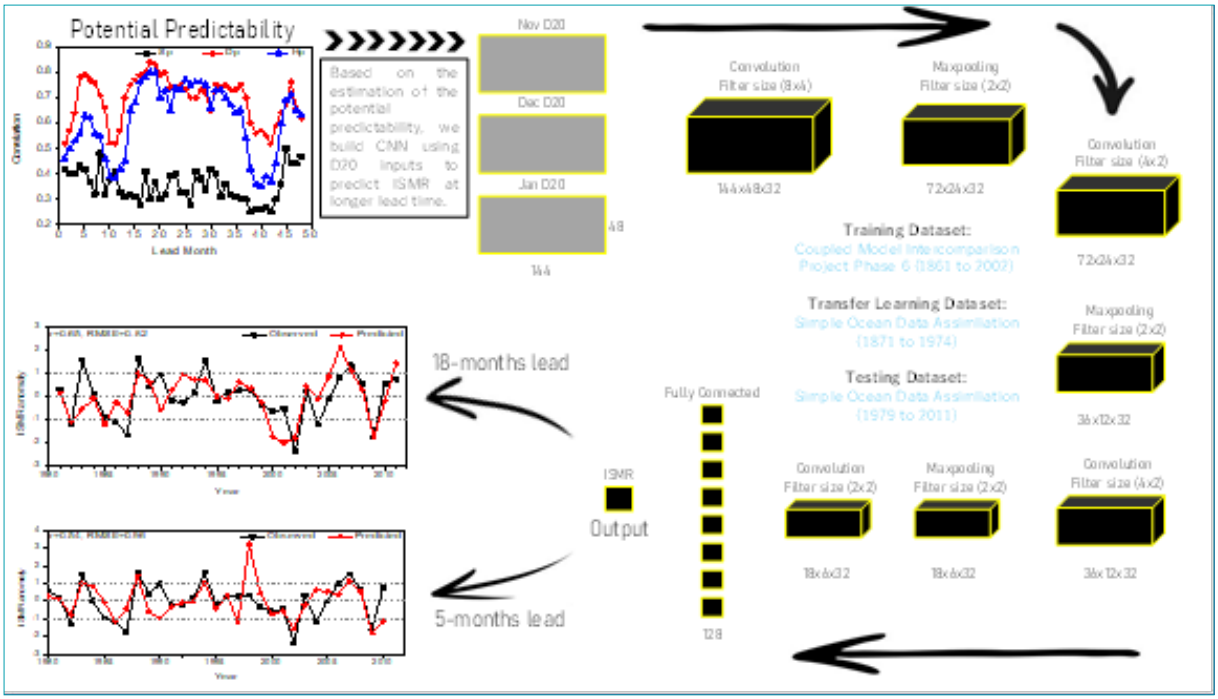


Fig. 23 A successful potential predictability of ISMR including the extremes is achieved by a CNN model through nonlinear association between global D20 and ISMR.

Research Outputs

Completed projects

Title of the project	Funding Agency; Total fund; Duration; PI/ Coordinator: Co-Investigator:	Achievement
Computer-assisted automated identification of handloom gamusa: artificial intelligence approach	Funding agency: NECTAR, DST, Govt. of India Total Cost: 15,29,000 Duration: 1 year from October 2021 – March 2023 PI: Dr. L. B. Mahanta Co-PI: Dr. K. Bora, Cotton University, Guwahati Co-PI: Dr. C. Chakraborty, NITTTR, Kolkata	• Development of a classified image database of handloom and Power loom gamusa using a normal digital camera, along with their annotations. • Detailed feature study (at microstructural and textural feature level) followed by development of RoI (Region of Interest) segmentation and feature extraction algorithms. • Development of Artificial Intelligence-driven models (both Machine and Deep Learning) for automated recognition of handloom and powerloom gamusa. • Development of Computer Assisted Handloom Recognizing System and its front-end design through user-friendly GUI.
A comparative study of AI-assisted automated diagnosis of colposcopy and visual inspection (VIA/VILI) images aimed at early screening of cervical cancer for accuracy and feasibility.	Funding agency: IASST (In-house project) Total Cost: 12,14,400 Duration: 2 years from 31.08.21 to 30.8 23 PI: Dr. L. B. Mahanta Co-PI: Dr. S. Das	• To contribute towards the development of two image databases or repositories: one comprising of healthy and malignant colposcopy images, and another with similar sets of cervix images captured as per visual inspection process. • To develop an imaging module that will capture the cervix images and send them to a cloud server for further processing using explainable artificial intelligence (XAI) algorithms. • To develop XAI modules that will classify the samples into a low grade or normal or CIN1, high grade or non-invasive cancer or CIN2+ and high grade or suspected invasive cancer or CIN2+ as per the Swede Score standard.

PM10 and PM2.5 Related Health Effects in North-East	Funding Agency: DST Total Cost: 46,13,000/- Duration: 3 Years PI: Dr Arundhuti Devi, IASST; Co-PI: Dr Lipi B Mahanta	• To monitor PM10 /PM2.5 in five different locations of Assam, i.e. centre of Guwahati city-Ganeshguri (Gateway of North East India), near a major municipal landfill site in Guwahati, industrial hub consisting of IOCL Refinery, Guwahati and other nearby industries, a predominantly educational and residential area (IIT G campus in North Guwahati) and a prominent oil exploration area in Upper Assam and also collect meteorological data for the locations. • To analyze the chemical constituents associated with PM 10 and PM2.5. using multivariate data analysis to identify the key sources that are contributing to PM10/PM2.5 concentrations. • To assess the health status and other hazards in light of the above. • To carry out air quality modelling studies in order to identify the contributing sources to PM2.5/ PM10 and thus to develop mitigation strategies to reduce PM10 /PM 2.5in ambient air.
Flexural-Gravity Waves: A Complete Theoretical Development	Funding Agency: MHRD, Govt. of India Total Cost: 70,10.645/- Duration: 2019-2021. Extended till 30th September 2022; Prof. T. Sahoo, IIT Kharagpur (PI - Indian) Prof. M. H. Meylan, University of Newcastle, AUS (PI - International) Dr. S. Das (Co-Investigator - Indian) Prof. Y. Stepanyants, University of Southern Queensland, AUS (Co-Investigator - International)	• We developed theoretical models for flexural-gravity wave motion in sea ice/very large floating structures. • The effect of wave blocking is studied extensively and the hydrodynamic instabilities are analysed. • A monograph based on the project work is under preparation. • International collaborators visited the host country, delivered talks, and short-term courses are organized.

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/ Coordinator: Co-Investigator:	Goal
Cervi Tester: A Smart and Portable Screening Device for AI-Assisted Automated Diagnosis of Cervical Cancer in Low Resource Settings	Funding Agency: DST (BDTD programe) Total Cost: 33,70,576/- Duration: 2 years PI: Dr. S. V. Shinde, Pimpri Chinchwad College of Engineering (PCCOE), Pune. Co-PI: Dr L. B. Mahanta	• To develop an AI based intelligent biomedical screening device that can diagnose the cervical cancer accurately and provides a cost-effective and affordable solution that can be quickly deployed in regions lacking sufficient capital. • To facilitate the different tests including Pap Smear and Colposcopy Test for the detection and staging of cervical cancer. • To leverage the power of recent technologies like Internet of Things (IOT), Cloud Computing and Artificial Intelligence (AI) for the development of smart biomedical device system. • To digitize the microscopic images and transferring these images to cloud using IOT for the further processing using AI algorithms. • To propose a novel algorithm for automatic segmentation of cervical cells that accurately distinguishes the affected area. • To analyse the existing different machine learning and deep learning algorithms for the classification of cervical cancer images and to propose the new algorithm that can process and classify the cervical cancer images accurately

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./ page no.	Month/ Year of publication
A. Begum, G. Choudhury	Analysis of a bulk arrival N-policy queue with two-service genre, breakdown, delayed repair under Bernoulli vacation and repeated service policy	RAIRO-Oper.	56(2), 979 – 1012	April 2022

G. Choudhury, A. Goswami, A. Begum, H. K. Sarmah	Stochastic Decomposition Results for Poisson Input Queue and Its Applications	Thai. Statist.	20(1), 185 – 194	April 2022
A. Begum, G. Choudhury	Analysis of an $M/\left(G_1^{G_2}\right)/1$ Queue with Bernoulli Vacation and Server Breakdown	Int. J. Appl. Comput. Math.	9(1), 9	February 2023
K. Talukdar, K. Bora, L. B. Mahanta, A. K. Das	A comparative assessment of deep object detection models for blood smear analysis	Tissue Cell	76, 101761	June 2022
M. Choudhury, S. Randhawa, R. Mohanty, L. B. Mahanta	How does flooding affect the nutritional status of children in floodplain regions? A cross-sectional study from North East India's Brahmaputra valley.	India. Proc. Indian Natl. Sci. Acad.	88, 765–777.	October 2022
K. Bora, L. B. Mahanta, K. Borah, G. Chyrmang, B. Barua, S. Mallik, Z. Zhao[3]	Machine Learning Based Approach for Automated Cervical Dysplasia Detection Using Multi-Resolution Transform Domain Features	Mathematics	10(21), 4126.	November 2022
S. C. Barman, S. Das, T. Sahoo and M. H. Meylan	Scattering of flexural-gravity waves due to a crack in a floating ice sheet in a two-layer fluid in the context of blocking dynamics	Phys. Fluid	34(5), 056602	May 2022
D. Sharma, S. Das, S. K. Saha and B. N. Goswami,	Mechanism for high 'potential skill' of Indian Summer Monsoon Rainfall Prediction up to two years in advance	Q. J. R. Meteorol. Soc.	148 (749), 3591-3601	September 2022
S. Saha, S. Das and S. N. Bora	Trapped waves within the blocking frequency under compressed sea ice and two-dimensional current	Mar. Struct.	87, 103336	January 2023
S. Das and M. H. Meylan	Time-domain wave response of a compressible ocean due to an arbitrary ocean bottom motion	Appl. Math. Model.	118, 832-852	February 2023

Contributory

Author(s)	Title	Conference name	Oral/ poster	Date & Venue
K. Bora, L. B. Mahanta, C. Chakraborty, P. Borah, B. Barua, K. Rangpi, B. Sharma and R. Mala	Computer-Aided Identification of Loom Type of ethnic textile, the Gamusa, using Texture features and Random Forest Classifier	International Conference on Data, Electronics and Computing (ICDEC-2022)	Oral	September 7-9, 2022/ Departments of Electronics & Communication Engineering and Department of Computer Applications, North-Eastern Hill University (A Central University) Shillong, Meghalaya, India in collaboration with COMSYS Educational Trust, Kolkata, India
S. Das and M. H. Meylan	Time dependent motion due to sinusoidal ocean bottom oscillation	37th International Workshop on Water Waves and Floating Bodies (IWWWFB-2022) - online	Oral	April 10-13, 2022/ Giardini Naxos, Italy.
S. Saha, S. Das and S. N. Bora	Trapped waves within the blocking frequency under compressed sea ice and two-dimensional current	37th International Workshop on Water Waves and Floating Bodies (IWWWFB-2022) - online	Oral	April 10-13, 2022/ Giardini Naxos, Italy.
S. Saha, S. Das and S. N. Bora	Time-dependent water-wave scattering by a bottom-mounted porous compound cylinder	14th International Conference on Hydrodynamics (ICHD-2022)	Oral	October 21-25, 2022/ Wuxi, China.
S. Das and S. Saha	Time-domain simulation of flexural-gravity waves in a compressed sea-ice subject to 2D current over a stratified ocean	67th Congress of the Indian Society of Theoretical and Applied Mechanics (ISTAM 2022)	Oral	December 14-16, 2022/ IIT Mandi, India
R. Das and S. Das	Surface wave profile due to oscillatory motion of an asymmetric block of ocean floor	67th Congress of the Indian Society of Theoretical and Applied Mechanics (ISTAM 2022)	Oral	December 14-16, 2022/ IIT Mandi, India

Conferences/Workshops/Meetings attended

Faculty/ research scholar	Conference/Workshop/Exhibitions	Date & Venue
Dr. L. B. Mahanta	21st Foundation Training Programme for Scientists and Technologists of the S&T Departments, Government of India, (Scientist & Technologist, at B & C levels and equivalent)	November 21-25, 2022/ IIPA, New Delhi
Dr. S. Das	37th International Workshop on Water Waves and Floating Bodies (IWWWFB-2022) - Online	April 10-13, 2022/ Giardini Naxos, Italy.
Dr. S. Das	88th Annual Conference of the Indian Mathematical Society (IMS)	December 27-30, 2022/ BIT Mesra, Ranchi, India
Dr. S. Das	67th Congress of the Indian Society of Theoretical and Applied Mechanics (ISTAM 2022)	December 14-16, 2022/ IIT Mandi, India
Dr. S. Das	Workshop MWSW05 (Winter School)	January 09-13, 2023/ Isaac Newton Institute for Mathematical Sciences, Cambridge, UK
Mr. D. Sharma	High End Workshop on Fundamentals of Deep Learning	September 12-18, 2022/ IIT Guwahati, India
Ms. R. Das	67th Congress of the Indian Society of Theoretical and Applied Mechanics (ISTAM 2022)	December 14-16, 2022/ IIT Mandi, India
Mr. H. J. Sarma	Partial Differential Equation-Advanced Training in Mathematical School – National Centre of Mathematics, IIT Bombay, TIFR	November 20 – December 3, 2022/ Tezpur University
Mr. H. J. Sarma	One Week Short Term Course on Application of Statistical Methodology in Allied Domains- RUSA 2.0, UGC-HRDC-Gauhati University	March 1 -10, 2023/ HRDC - Gauhati University
Mr. I. H. Ahmed	Short term Course – Mathematical Modeling and Recent Computational Techniques, Centre for Continuing Education, NIT Warangal (Online)	October 17-21,2022/ Department of Mathematics, SNIST, Hyderabad
Mr. I. H. Ahmed	Partial Differential Equations- Advanced Training in Mathematical School – National Centre of Mathematics, IIT Bombay, TIFR	November 20 – December 3, 2022/ Tezpur University

Contribution to World Database

Author (s)	Title	Database
T. Y. Rahman, L. B. Mahanta, A. K. Das, J. D. Sarma	Histopathological imaging database for Oral Cancer analysis	Mendeley Data, V2, doi: 10.17632/ftmp4cvtmb.2

Presentation in Conferences/Seminars

Invited talks

Faculty	Title	Programme Name	Date & Venue
Dr. L. B. Mahanta	AI in biomedical application	RUSA 2.0 Approved "Short term Course on Artificial Intelligence, Machine Learning Automation, Robotics Future of Work & Humanity"	March 10, 2023/ Dept. of Applied Sciences, Gauhati University, Guwahati
Dr. L. B. Mahanta	Artificial Intelligence And ITS IMPORTANCE along with hands on Python	DST sponsored "Research Exposure cum Training Programme for Students from North-Eastern States and UTs of Jammu and Kashmir and Ladakh Region"	March 29-31, 2023/ CSIR –NEIST
Dr. S. Das	Ocean surface waves are influenced by slight water compressibility	Symposium on Water Wave Mechanics - 88th Annual Conference of the Indian Mathematical Society (IMS)	December 27-30, 2022/ BIT Mesra, Ranchi, India
Mr. D. Sharma	Understanding the Northeast India Summer Monsoon Rainfall. Long-lead Prediction and Predictability of the Indian Summer Monsoon Rainfall.	Next step of hydro-climatological research on monsoon over the Northeastern Indian subcontinent.	March 21, 2023/ Cotton University, India

Other activities

Visits to national/international institutes/laboratories

Faculty/Research scholar	National/international institutes/ laboratories	Date
Mr. D. Mahanta	Models and Posters in India International Science Festival-2022, held on at Bhopal.	January 21-24, 2023
Dr. S. Das	University of Newcastle, Australia	November 01- 25, 2022
Dr. S. Das	Isaac Newton Institute (INI) for Mathematical Sciences, Cambridge, UK	January 09-13, 2023

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Mr. N. Moral	Tezpur University	Intern	Completed	02 months
Mr. K. Bhuyan	Tezpur University	Intern	Completed	02 months

Awards/Recognitions/Achievements

Dr. S. Das	Received financial support to visit the University of Newcastle (UoN), Australia and to carry out collaborative research work. **Fund**: UoN, AUS.
Dr. S. Das	Received financial support to attend the Workshop MWSW05 (Winter School) held at and organized by Isaac Newton Institute (INI) for Mathematical Sciences, Cambridge, UK. Duration: January 09-13, 2023. **Fund**: INI, Cambridge, UK

LIFE SCIENCES DIVISION

The life sciences division comprises two programmes, biodiversity and ecosystem research (BER) and the traditional and modern drug discovery and disease diagnosis (TMDDDD) programme.

The **BER** programme includes a wide array of research opportunities in the Life Sciences domain, including exploration of natural resources, such as traditional medicinal plants and snake venom for drug discovery against cardiovascular disease, neurological disorders, snakebites, and scorpion stings. North-east India is home to more than 300 ethnic groups with diverse food habits comprising fermented /non-fermented food and beverages. The focus has been on understanding the gut microbiome of these ethnic communities of the northeast of India, the development of functional foods from these ethnic foods and next-generation probiotics for better gut health. More than 2000 bacteria and yeasts isolated from these ethnic foods are being studied for use as probiotics.

Exploration and functional characterization of microorganisms prevalent in pristine and agricultural ecosystems for developing microbial bioformulation/s to promote plant growth and diseases/pest biocontrol in high-value commercial crops like Tea (*Camellia sinensis*). Further assessment of extracellular antimicrobial metabolites against MRSA, MDR strains, infectious diseases, and dermatophytes. Environmental Chemistry research group presently emphasizes the remediation of organic contaminants, specifically hydrocarbons, dyes, and pesticides emerging from different industries by adopting green technology. The group also focuses on developing techniques for efficient sensing and adsorption of heavy metals, another class of major pollutants causing severe environmental concern. The Seri-Biotechnology research team work on understanding the basic physiology of *Antheraea assamensis* (Muga Silkworm), and its response to virus and its pathogenesis to Muga silkworm. IASST has been authorized to certify the quality of the muga silk goods under the Geographical Indications of Goods (Registration and Protection) Act, 1999.

Taking a clue of the global trends and opportunities in plant-based medicines, in India, DCGI promulgated Phytopharmaceutical drug development similar to US-FDA botanical in 2015. The **TMDDDD** programme focuses on translational research towards the development of phytopharmaceutical drugs and/or lead molecules and Investigational New Drug (IND) from Indian Systems of Medicine (ISM) for the treatment of diabetes type 2 and its complications, hypertension, atherosclerotic cardiovascular disease, *antithrombotic* drugs. Multidisciplinary research activities include exploring snake venom-inspired custom peptides-based drug discovery against cardiovascular and neurological disorders. Further research includes improving the treatment of snakebite and scorpion stings using natural products and quality assessment of commercial snake and scorpion antivenom.

The group also works on drug metabolism and pharmacokinetics (DMPK) studies in the GLP-like animal house facility to experimentally evaluate a drug candidate's intrinsic properties and toxicokinetics parameters. Priority of the research plan also includes; working on recent advancements in molecular biology research and strategizing the development/ use of new antineoplastic agents in combination with other biological immune modulators/ bioengineered materials / Phytomolecules/ Plasma Therapies.

BIODIVERSITY AND ECOSYSTEM RESEARCH

A. Drug Discovery from Natural Resources

Co-ordinator: Prof. Ashis Kumar Mukherjee

A.1 Snake venom nerve growth factor-inspired designing of novel peptide therapeutics for preventing paraquat-induced apoptosis, neurodegeneration, and alteration of metabolic pathway genes in the rat pheochromocytoma PC-12 cells

Neurodegenerative disorders (ND), associated with the progressive loss of neurons, oxidative stress-mediated production of reactive oxygen species (ROS), and mitochondrial dysfunction, are significant health concerns. In recent years, synthetic biomaterials, viz. peptides possessing innate neurotrophic effects and enhanced neuroprotective potential, have gained profound interest as drug prototypes for treating ND. We developed two small synthetic peptides from the nerve growth factors from snake venoms for treating ND. Computational analysis predicted significant interaction of peptides with the human TrkA receptor, verified by *in vitro* binding study with rat pheochromocytoma PC-12 cells to induce neuritogenesis. The pre-treatment of PC-12 cells with peptides significantly reduced paraquat (PT)-induced intracellular ROS production, prevented alteration of mitochondrial transmembrane potential (ΔΨm) and ATP production and inhibited cellular apoptosis. These peptides lack adverse pharmacological effects in *in vitro* conditions. Functional proteomics analyses demonstrated the reversal of PT-induced altered metabolic pathway genes in PC-12 cells pre-treated with these peptides, which was also validated by qRT-PCR analysis of apoptotic pathway genes. Our study also deciphered the metabolic pathways these peptides regulate to induce neuritogenesis and counteract the PT-induced neuronal damage in PC-12 cells. The neuroprotective peptides developed in this study hold ample opportunity for creating neuroprotective drugs (Fig. 24).

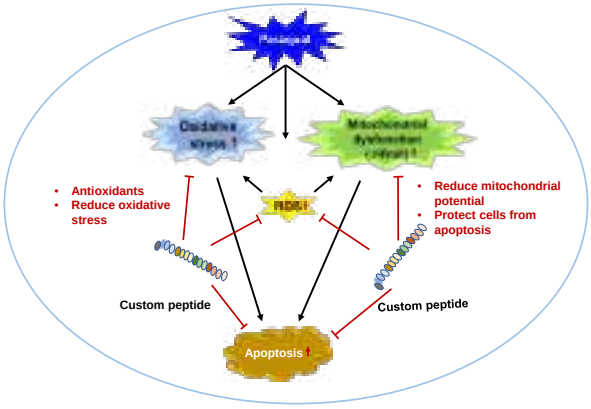


Fig. 24 The proposed neuroprotection mechanism of custom peptides against PT-induced neurotoxicity in PC-12 cells.

A.2 Computational and in vitro analyses identify the anticoagulant regions of Echicetin, an anticoagulant C-type lectin (Snaclec) from Indian saw-scaled viper (*Echis carinatus*) venom

Snake venom C-type lectins (Snaclecs) are a class of C-type lectins known for their anticoagulant and platelet-modulating activities; however, their interactions with the critical components of blood coagulation factors remain unknown. Computational analysis revealed the thrombin and FXa-binding regions of Echicetin (Snaclec from *Echis carinatus* venom). Based on these regions, two synthetic peptides (1A and 1B) were designed and synthesized, whose in silico studies demonstrated that peptide 1B interacted with both heavy and light chains of

thrombin while peptide 1A interacted with only the heavy chain of thrombin. Similarly, peptide 1B interacted with both heavy and light chains of FXa; however, peptide 1A interacted only with the heavy chain of FXa. Further, alanine screening predicted the hot-spots residues for peptides 1A and 1B. A spectrofluorometric interaction study revealed the higher binding strength of peptide 1B with both FXa and thrombin. The circular dichroism spectroscopy also established the interaction between thrombin and peptides. In vitro, studies demonstrated higher anticoagulant activity of peptide 1B due to higher inhibition of thrombin and FXa. Further inhibition of the anticoagulant activity of the peptides by respective anti-peptide antibodies corroborated our hypothesis that peptides 1A and 1B represent the anticoagulant regions of Echicetin and may be developed as antithrombotic peptide drug prototypes (Fig. 25).

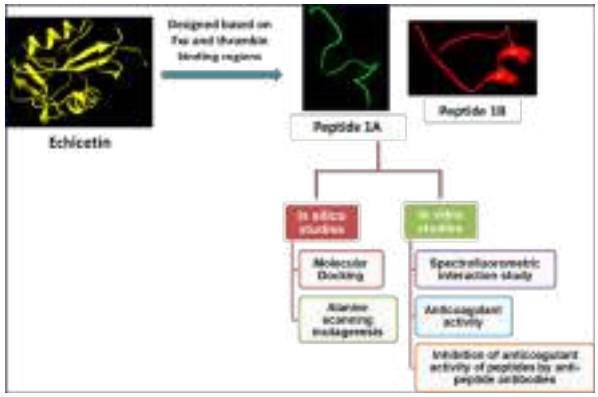


Fig. 25 A schematic diagram explaining the computational and in vitro approaches to identify the anticoagulant region of Echicetin.

B. Environmental Chemistry

Co-ordinator: Dr. Arundhuti Devi

B.1 Condensation product of 2, 4-diamino-6-hydroxy pyrimidine and 2-hydroxy-1-naphthaldehyde as a "turn off" fluorescent sensor for efficient detection of Cu^{2+} ions

A Schiff base fluorescent "turn-off" sensor L based on 2, 4-diamino-6-hydroxypyrimidine, and 2-hydroxy-1-naphthaldehyde was synthesized, which shows excellent selectivity and sensitivity towards Cu^{2+} ions in an aqueous medium. The probe's detection limit was 11.92 Figure 1 μM, which is much lower than the acceptable level of Cu^{2+} ions in drinking water as set by the World Health Organization (30 μM) and the U. S. Environmental Protection Agency (20 μM). The sensing mechanism of the fluorescent sensor is based on the fluorescent quenching activity, which is caused due to the complex formation of the ligand L with Cu^{2+}. Furthermore, a 1: 0.5 binding stoichiometry between the probe and Cu^{2+} ion was confirmed from the fluorescence titration data, Job's plot, and DFT calculation Figure 1. The binding constant (Ka) of the Cu^{2+} ion with the probe was 6.3×10^4 M^{-1}. Thus, the comprehensive study reveals that the synthesized Schiff base ligand is a potential fluorescent sensor for Cu^{2+} ions (Fig. 26).

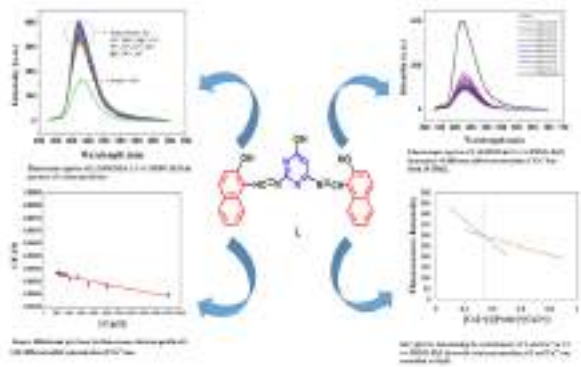


Fig. 26 Graphical abstract for the development of Cu^{2+} ion sensor.

B.2 Nickel-Titanium Dioxide-Fuller's Earth Nanocomposites: Synthesis, Characterization and Application as a photocatalyst in aqueous Methylene Blue degradation under visible light irradiation

Nickel-doped TiO_2 supported on Fuller's earth (NiTF), prepared via the sol-gel method (Fig. 2), has reasonable adsorbability for dyes, like MB, followed by near-total degradation of the dye in water under visible light irradiation. NiTF

composites showed variable photodegradation rates depending on the reaction medium's loadings, dye concentration and pH. NiTF showed the highest photodegradation rate for the tested reactions of 0.453 min^{-1} and can remove 100% of the dye in 60 min from $5x10^{-6}$M aqueous solution under visible light. NiTF had high thermal stability and a porous structure with a large surface area, suitable for higher adsorption and photocatalytic activity. The catalyst retained 93.7% of its activity up to the fifth cycle of the reaction under similar conditions, indicating good stability and reusability of the catalyst. The current approach for the treatment of dye-containing wastewater could be considered a cost-effective technique for removing dyes and similar pollutants from wastewater. The application of semiconducting materials like TiO_2 on microporous clay and their composite materials could be an effective adsorbent and a selective photocatalyst (Fig. 27).

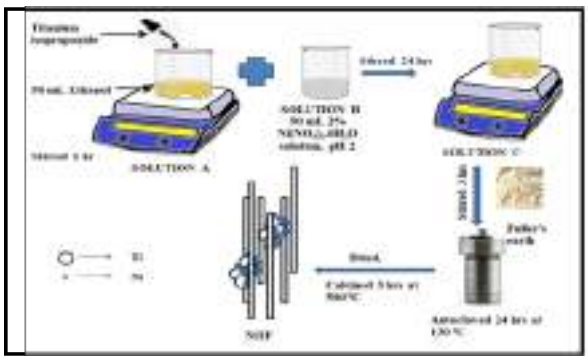


Fig. 27 Schematic diagram for the preparation of NiTF nanocomposite

C. Gut microbiome and ethnic food

Co-ordinator: Dr. Mojibur Rohman Khan

C.1 Development of functional foods based on the ethnic foods of north-east India

North-east India is home to more than 300 ethnic groups with diverse food habits comprising fermented /non-fermented food and beverages. Fermented soybean is an essential traditional delicacy with great potential to promote as functional food due to its rich nutritional properties. Our ongoing research helped decipher the bacteriome-functional metabolite linkages in fermented soybean varieties. *Hawaijar*, *Akhone* and *Bekang* (Fig. 1). A combined culture-dependent and metagenomic approach revealed that *Bacillus subtilis*, *Bacillus velezensis*, and *Ignatzschinaria* sp. are the predominant bacteria in these three varieties. Untargeted GC-MS-based metabolomic analysis detected amino acids, short-chain fatty acids (SCFAs), polyunsaturated fatty acids (PUFAs), prebiotics, nucleotide sugars, and vitamins-like compounds as potential functional metabolites in the fermented soybean varieties. Gene-metabolite-based KEGG pathway analysis and bacteria-metabolite correlation analysis predicted the bacteriome-metabolite linkages into four clusters. Cluster-1 (*Bacillus thermoamylovorans*/*B. amyloliquefaciens*), cluster-2 (*B. tropicus*), and cluster-4 (*B. velezensis*) synthesise amino acids, organic acids, oligosaccharides, sugar and sugar alcohol, SCFAs, and PUFAs. In contrast, cluster-3 (*B. megaterium*/*B. borstelensis*) synthesises most sugars, PUFAs, SCFAs, sugar alcohol, organic acids, vitamins and amino acids. The results are crucial for developing next-generation functional foods (**Fig. 28)**.

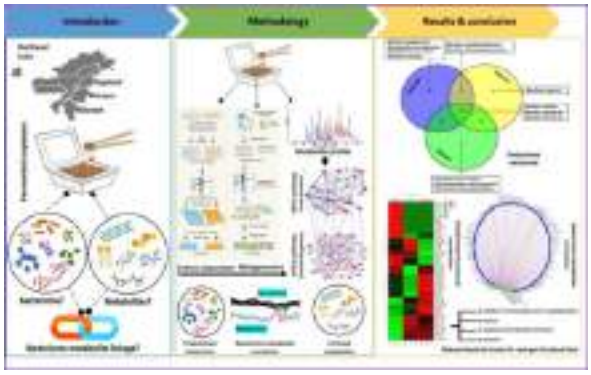


Fig. 28 Fermented soybean of the north-east India- understanding the bacteriome-metabolite linkages for development of functional food.

C.2 Omics-guided fermentation of mustard seed (*Kharoli*) to enhance PUFAs and improve the hallmarks of gastrointestinal health

Traditional fermented mustard seed, known as '*kharoli*' is an important delicacy that may be promoted as a functional food. As the fermentation process involves an interplay of diverse microbes in succession to yield the final product with desired characteristics, designing a good starter based on succession alone does not yield the desired outcome. Our team has, for the first time, reported the fermentation process of mustard seed, their metabolites, microbes involved and OMICS guided development of a starter for enhancement of PUFAs vis-à-vis its effect on the hallmarks of gastrointestinal health in HT-29 (Fig. 2). A starter culture was developed with coagulase-negative *Staphylococcus succinus*, *S. saprophyticus*, and *Bacillus subtilis* that enhanced PUFA content by 52.9% with desired organoleptic properties. Treatment with fermented mustard seed extract in HT-29 cells led to differential expression of 748 genes linked with 103 cellular pathways associated with gastrointestinal health, such as gut homeostasis, intestinal barrier integrity, immuno-modulatory, and neuronal development. Genes involved in anti-ageing, bone development, and anti-obesity pathways were upregulated. This work provides a conceptual framework for the controlled fermentation of mustard seeds with desired functionalities which is envisaged to facilitate future research to design functional fermented foods for novel gut-targeting therapies (Fig. 29).

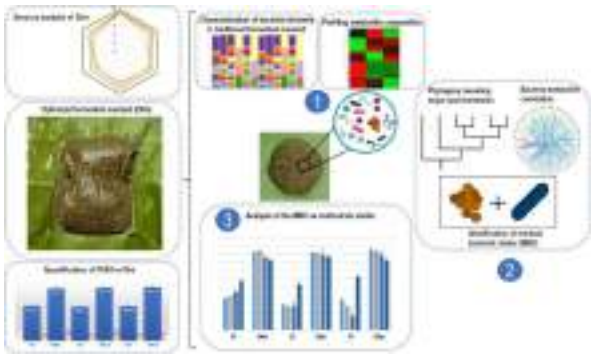


Fig. 29 A schematic diagram showing omics-guided fermentation of mustard seed (*Kharoli*) to enhance PUFAs content.

D. Tea-Microbe Interactions and Microbial Bioactive Metabolites

Co-ordinator: Dr. Debajit Thakur

D.1 Exploration of endophytic actinobacteria for growth and disease management in Tea (*Camellia sinensis* L.)

Endophytic microbes are vital for nutrient solubilization, plant uptake, growth, and survival. Our recent study reported the molecular genetic diversity of 88 endophytic actinobacteria associated with commercial tea clones planted in the Assam and Meghalaya Tea estates. All the endophytic actinobacterial isolates were screened to evaluate their beneficial roles towards the host plant (i.e. tea plant), like growth promotion and fungal disease control. Our experimental results showed that most of these endophytic actinobacteria could enhance plant growth through phytostimulation, biofertilization, and biocontrol of fungal pathogens.

In the nursery experiment, selected endophytic actinobacterial strains significantly enhanced the shoot and root biomass, shoot and root length, and leaf number in host tea plants. Additionally, treating tomato seeds with strain KA12 suppressed the growth of the fungal pathogen *Fusarium oxysporum*, increased seed germination, and improved root architecture, demonstrating its ability to be used as a seed biopriming agent. Our results confirm the potential of tea endophytic actinobacterial strains with multifarious beneficial traits to enhance plant growth and suppress fungal pathogens, which may be bioinoculant for sustainable agriculture. This study was published in the journal Frontiers in Plant Science.

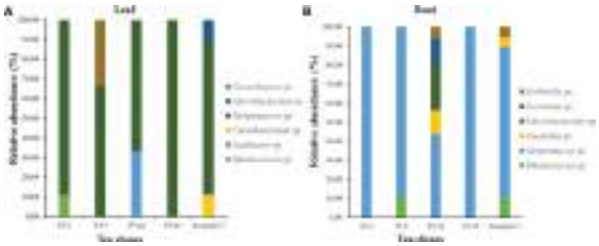


Fig. 30 Relative abundance (in percentage) of endophytic actinobacterial genera isolated from (A) leaf and (B) roots of five different tea clones (TV1, TV9, TV22, TV25, and Teenali 17).

D.2 Antimicrobial potentiality of *Streptomyces* sp. strain PBR11, a forest-derived soil *Actinomycetia*

Novel antibiotic breakthroughs are urgently required to combat antimicrobial resistance. The present study demonstrated the broad-spectrum antimicrobial potential of an *Actinomycetia* strain *Streptomyces* sp. PBR11 isolated from the forest rhizosphere soil of Pobitora Wildlife Sanctuary, Assam. The isolate was identified as *Streptomyces* sp. with 92.91% sequence similarity to their closest type strain, indicating that the strain may represent a novel taxon within the phylum *Actinomycetota*. The strain demonstrated significant antimicrobial activity against 19 test pathogens, including multidrug-resistant clinical isolates and dermatophytes.

Metabolic profiling of the ethyl acetate extract of the strain PBR11 (EtAc-PBR11) was performed by TLC, and flash chromatography resulted in the extraction of two bioactive fractions, namely, PBR11Fr-1 and PBR11Fr-2. The metabolomics studies of the EtAc-PBR11 revealed structurally diverse antimicrobial agents, including detecting the antituberculosis drug ethambutol in the bioactive fraction of strain PBR11 for the first time. The presence of the PKS II and chitinase genes in the genome of the strain suggested that both genes have been involved in the production of antimicrobial activity. This study suggests that the untouched forest ecosystems have a tremendous potential to harbour potent actinomycetia for future drug discovery. This study was published in the journal Microbiology Spectrum.

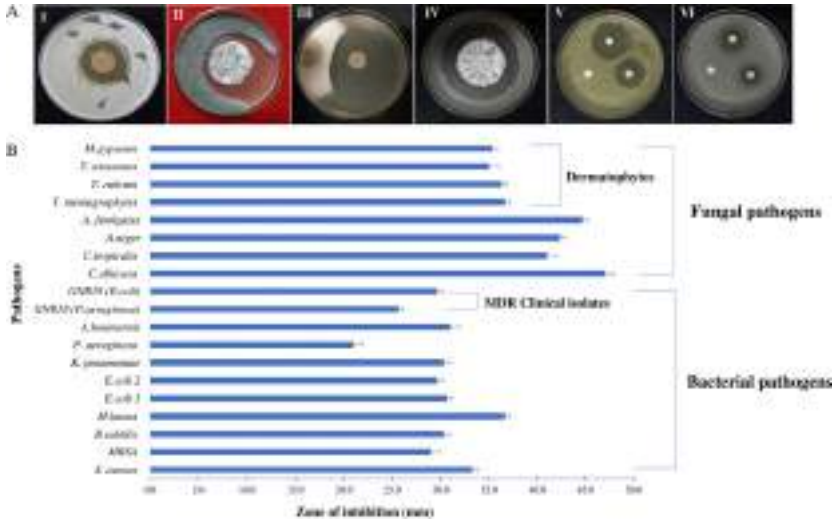


Fig. 31 (A) *In vitro* antimicrobial activity of *Streptomyces* sp. PBR11 as determined by spot inoculation (I to IV) and disc diffusion (V and VI) against test pathogens. (I) *Trichophyton rubrum* MTCC 8477. (II) *Aspergillus fumigatus* MTCC 1811. (III) *T. mentagrophytes* MTCC 8476. (IV) *C. albicans* MTCC 227. (V) *M. luteus* MTCC 1538 (VI) *E. coli* MTCC 739. (B) Graph representing the antimicrobial activity of *Streptomyces* sp. PBR11. Each bar denotes the mean of three independent replicates, and the error bar indicates the standard error of the mean of the three replicates. (*E. coli* 1, *E. coli* ATCC BAA-2469; *E. coli* 2, *E. coli* MTCC 739).

Completed projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:	Achievement
Studies on signal transduction mechanism(s) of Indian cobra (*Naja naja*) and Russell's Viper (*Daboia russelii*) venoms neurotrophin molecules in cultured neuronal cells and their functional significance	Funding Agency: Science & Engineering Research Board (SERB) Total Fund: Rs.39,29,600/- Duration: 3 Years (15th Dec, 2018 to 14th Dec, 2021) PI/Coordinator: Prof. Ashis K. Mukherjee Co-PI: Dr. Robin Doley	• First ever report on purification and characterization of NGF from *D. r. russelii* venom along with purification of Nn-α-elapitoxin-1 from Indian Cobra (*N. naja*) venom and unique neuritogenesis potency of Indian Cobra *N. naja* venom long-chain α-neurotoxin. • Our study on transcriptomic and quantitative proteomic analyses in unison showed differential expression of common and unique genes and intracellular proteins, respectively in RVV-NGFa/ Nn-α-elapitoxin-1-treated cells compared to control (untreated), mouse 2.5S-NGF treated PC-12 cells. • A total of four research publications were published in internationally reputed journal namely viz., - *Journal of Neurochemistry, Biochimie, Expert Review of Proteomics and Free Radical Biology and Medicine.* • One provisional Indian patent was filled on "Neuritogenic Peptides and Neuroprotective Composition Comprising Such Peptides" (Provisional Patent Application No. 202231054298 filed on 22.09.2022).
Engineered Bioremediation Approaches for Onsite Remediation of crude oil Contaminated Soil.	Funding Agency: DBT, Govt. of India Total Fund: Rs.59,05,960/- Duration 4 Years (2019-2023) PI/Coordinator: Dr. Arundhuti Devi	• Organic carbon and total nitrogen derived from petroleum hydrocarbon negatively affect microbial diversity. • Contamination levels vary widely on site, with levels of PAHs ranging from 5.04 to 1.66×10^3 μg kg^{-1} and 6.20 to 10×5.64^3 μg kg^{-1} in Assam and Gujarat sites respectively, covering a higher proportion of low molecular weight (LMW) PAHs (fluorene, phenanthrene, pyrene, and anthracene). • Functional diversity values were positively correlated ($p < 0.05$) with acenaphthylene, fluorene, anthracene, and phenanthrene. Microbial diversity was the highest in fresh oily sludge, which decreased upon storage, indicating that immediate bioremediation would be beneficial soon after its generation. Improvement in the bio-accessibility of hydrocarbon compounds by the treatment of biosurfactant produced by a (soil isolate/isolate) was demonstrated., for substrate utilization

Exploration and conservation of antimicrobial metabolites producing Actinobacteria prevalent in protected forest ecosystems of North East India to develop an antimicrobial metabolites producing actinobacterial database (AMPAD) for utilization against human and microbial pathogens, agro-protective and production system.	Funding Agency: DBT, Govt. of India Total Fund: Rs.74.152 lakhs Duration: 4 Years (2019-2023) PI: Dr. Debajit Thakur	As per the objectives of the project, we have developed a curated antimicrobial metabolites producing actinobacterial database (AMPAD). The online database contains more than 283 actinobacteria accessions from 16 different geographical locations of North East India with various parameters related to their morphology, biochemical property, metabolite production, antagonistic activity against plant and human pathogens including multidrug and clinical pathogens. The database can be accessed through the URL https://ampad.in. We have published exploration diversity and antimicrobial metabolites producing capacity of protected forest derived Actinobacteria in *Scientific Reports*, 2020, **10,** 4104 and Microbiology Spectrum, 2023, Vol. 11, No. 2, doi.org/10.1128/spectrum.03489-22.
Understanding the mechanisms of resistance to sucking pest, *Helopeltis theivora* and the development of microbe-based bioformulation against major tea pests	Funding agency: DBT, Govt. of India Total Fund: Rs. 27.446 lakhs Duration: 2019-2023; PI: Dr. Debajit Thakur	In this project work, 88 endophytic actinobacteria (EnA) associated with five tea clones were isolated, assessed for their diversity, plant growth promoting (PGP), and biocontrol traits, and then used as an inoculant for plant growth promotion, disease and major tea pest control. Five Actinobacterial strains viz. ATE -7, ATE-26, SA1, KA12 and T1LA3 showed promising antifungal activity were used to biocontrol of significant pests of tea viz. tea looper (*Hyposidra talaca*), tea mosquito bug (*Helopeltis theivora*) and red spider mite (*Oligonychus coffeae*) in collaboration with TTRI, TRA, Jorhat, Assam. The bioformulation of actinobacterial strains showed promising mortality rates for all three major pests. Part of the project work is published in Front. Plant Sci., 2022, Vol. 13, doi.org/10.3389/fpls.2022.989794
Exploration of endophytic bacterial community prevalent in Tea (*Camellia sinensis*) for utilizing biotic and abiotic stress management.	Funding agency: IASST in-house project. Total Fund: Rs. 11,00,000/- Duration: 2 Years (2021-2023) Dr. D. Thakur (PI) Dr. J.C. Borah (Co-PI)	A total of 106 endophytic bacteria isolated and identified as members of phyla Proteobacteria, Firmicutes, and Actinobacteria were related to 22 different genera and six major clusters. Drought is one of the most common stresses induced in tea plants. Thus, one of the vital roles of beneficial bacteria associated with tea plants is to alleviate stress and promote growth. One such mechanism exploited by EnB is lowering plant ACC levels, a precursor of ethylene, by producing ACC deaminase. In our study, 87.73% of isolates produced ACC deaminase, which was much higher than reported by other researchers. The study was published in Front. in Microbiol., 2021, Vol. 12, doi.org/10.3389/fmicb.2021.738058. Another review article is published under this project in J. Appl. Microbiol., 2022, Vol.133, 2314-2330.

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:	Goal
ST/SC community development programme in IASST	Funding Agency: DST (under SEED division) Total Fund: Rs.13,98,71,508/- Duration: 03 years (11th November, 2020-10th November, 2023) PI/Coordinator: Coordinator: Prof. Ashis Kumar Mukherjee PIs: Dr. Mojibur. R. Khan (component-I) Dr. Dhruba Sharma (component-II)	• Documentation of indigenous traditional knowledge (ITK) associated with various ethnic fermented foods, traditional herbs and edible insects and protection of their IPR. • To develop a method of production of fermented functional foods, and beverages with improved quality, safety and health benefits. • To develop a method of production of herbs and edible insects of nutrition and health benefits. • To identify beneficial functional ingredients of heritage foods and beverages. • To train SC-ST people to adopt improved production methods and develop a commercialization strategy for marketing heritage food and beverage.
DBT-NER advance level institutional biotech hub (phase-II)	Funding Agency: DBT, Govt. of India Total Fund: Rs.59,35,440/- Duration: 03 years PI: Dr Mojibur Rohman Khan	• Characterization of ethnic food and beverage and optimization of their production process • Value addition of available fruits and vegetables • Development of probiotics from ethnic foods and beverages.
Continuation of Bioinformatics Infrastructure Facility	Funding Agency: IASST in-house project Total fund: Rs. 16,25,400/- Duration: 2020-2023 Coordinator: Dr. Debajit Thakur	The centre regularly provides training and bioinformatics services (sequence analysis, docking study, molecular dynamics simulations) to the researchers of IASST. Presently, the softwares, journals available in the centre are extensively used by researchers, scientists of IASST. Centre is regularly organizing seminars, workshops and training programmes from time to time to spread latest knowledge on Bioinformatics.

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./page no.	Month / Year of publication
J. Castro-Amorim, A. Novo de Oliveira, S. L. Da Silva, A.M. Soares, A. K. Mukherjee, M. J. Ramos, P. A. Fernandes	Catalytically active snake venom PLA_2 Enzymes: An overview of its elusive mechanisms of reaction	J. Med. Chem.	66(8), 5364–5376	March 2023
U. Puzari, M. Goswami, K. R. Rani Singh, A. Patra, A. K. Mukherjee	Computational and *in vitro* analyses to identify the anticoagulant regions of Echicetin, a snake venom anticoagulant C-type lectin (Snaclec): Possibility to develop anticoagulant peptide therapeutics?	J. Biomol. Struct. Dyn.	1–15	March 2023
D. Madhubala, A. Patra, T. Islam, K. Saikia, M. R. Khan, S. A. Ahmed, J.C. Borah, A. K. Mukherjee	Snake venom nerve growth factor-inspired designing of novel peptide therapeutics for the prevention of paraquat-induced apoptosis, neurodegeneration, and alteration of metabolic pathway genes in the rat pheochromocytoma PC-12 cell.	Free. Radic. Biol. Med.	197, 23-45	January 2023
S. Nath, A. K. Mukherjee	Ethno-medicines for the treatment of scorpion sting: A perspective study.	J. Ethnopharmacol.	305, 116078	December 2022
B. Kalita, Y. N. Utkin, A. K. Mukherjee	Current insights in the mechanisms of cobra venom cytotoxins and their complexes in inducing toxicity: Implications in antivenom therapy	Toxins	4(12), 839	December 2022

A. Patra, A. K. Mukherjee	Mushroom mycetism–A neglected and challenging medical emergency in the Indian subcontinent: A road map for its prevention and treatment.	Toxicon	217, 56–77	August 2022
B. Das, A. Patra, U. Puzari, P. Deb, A. K. Mukherjee	*In vitro* laboratory analyses of commercial anti-scorpion (*Mesobuthus tamulus*) antivenoms reveal their quality and safety but the prevalence of a low proportion of venom-specific antibodies.	Toxicon	215, 37-48	August 2022
U. Puzari, P.A. Pedro, A. K. Mukherjee	Pharmacological re-assessment of traditional medicinal plants-derived inhibitors as antidotes against snakebite envenoming: A critical review	J. Ethnopharmacol.	292, 115208	June 2022
H. Kakati, A. Patra, B. Kalita, A. Chandra, S. Rapole, A. K. Mukherjee	Comparison of two different analytical workflows to determine the venom proteome composition of *Naja kaouthia* from North-East India and immunological profiling of venom against commercial antivenoms	Int. J. Biol. Macromol.	208, 275-287	May 2022
A.K. Mukherjee, D.J.Chattopadhya	Potential clinical applications of phytopharmaceuticals for the in-patient management of coagulopathies in COVID-19	Phytother Res.	36(5), 1884-1913	May 2022
S. Das, M. J. Bhattacharjee, A.K. Mukherjee, M.R. Khan	Recent advances in the understanding of multifaceted changes in the vaginal microenvironment: implications in vaginal health and therapeutics	Crit. Rev. Microbiol.	49(2), 256-282	March 2022

J. Baruah, P. Bardhan, A. K. Mukherjee, R.C. Deka, M. Mandal, E. Kalita	Integrated pretreatment of banana agrowastes: Structural characterization and enhancement of enzymatic hydrolysis of cellulose obtained from banana peduncle	Int. J. Biol. Macromol.	201, 298-307	March 2022
A. K. Mukherjee, A. Chanda, I. Mukherjee, P. Kumar	Characterization of lipopeptide biosurfactant produced by a carbazole degrading bacterium *Roseomonas cervicalis*: The role of biosurfactant in carbazole solubilization.	J. Appl. Microbiol.	132(2), 1062-1078.	February 2022
A. Kumar, T. Joishy, S. Das, M.C. Kalita, A.K. Mukherjee, M.R. Khan	A potential probiotic *Lactobacillus plantarum* JBC5 improves longevity and healthy aging by modulating antioxidative, innate Immunity and serotonin-signaling pathways in *Caenorhabditis elegans*	Antioxidants	11(2), 268	January 2022
B. Devi, A. K. Guha, C. Malakar, A. Devi.	Synthesis, characterization, Density Functional Theory (DFT) calculation, and fluorescent study of an efficient and novel Schiff base Cu (II) sensor	Journal of Chemical Sciences	134(3), 88	2022
J. Deka, H. Das, A. Singh, P. Barman, A. Devi, K. G. Bhattacharyya	Methylene blue removal using raw and modified biomass Plumeria alba (white frangipani) in batch mode: isotherm, kinetics, and thermodynamic studies	Environmental Monitoring and Assessment	195(1), 26	2023
S. Sharma, A. Devi, K. G. Bhattacharyya,	Nickel-titanium dioxide-Fuller's earth nanocomposites: Synthesis, characterization and application as a photocatalyst in aqueous methylene blue degradation under visible light irradiation	Inorganic Chemistry Communications	151, 110550	2023

G. Yerulker, P. Patel, A. Chafale, V. Rathod, S. Das, P. Pandey, N. Khan , A. Devi, N. S. Munshi, R. Dhodapkar, A. Kapley	Comparative assessment of soil microbial community in crude oil contaminated sites.	Environmental Pollution	121578	2023
B. Bhaskar, A. Bhattacharya, A. Adak, S. Das, M. R. Khan	A Human and Animal Based Study Reveals That a Traditionally Fermented Rice Beverage Alters Gut Microbiota and Fecal Metabolites for Better Gut Health	Fermentation	9 (2), 126	January 2023
S. Dash, Y. A. Syed, M. R. Khan	Understanding the role of the gut microbiome in brain development and its association with neurodevelopmental psychiatric disorders	Front. Cell Dev. Biol.	10:880544	April 2022
R. Mazumdar, P. P. Dutta, J. Saikia, J. C. Borah, D. Thakur	*Streptomyces* sp. PBR11, a forest-derived soil actinomycetia with antimicrobial potentials.	Microbiology Spectrum	Vol. 11, No. 2: https://doi.org/10.1128/spectrum.03489-22	January 2023
J. Saikia, R. Mazumdar, D. Thakur	Phylogenetic affiliation of endophytic actinobacteria associated with selected orchid species and their role in growth promotion and suppression of phytopathogens.	Front. in Plant Sci.	Vol. 13: https://doi.org/10.3389/fpls.2022.1058867.	December 2022
S. N. Hazarika, K. Saikia, D. Thakur	Characterization and selection of endophytic actinobacteria for growth and disease management of Tea (*Camellia sinensis* L.).	Front. in Plant Sci.	Vol. 13: https://doi.org/10.3389/fpls.2022.989794.	November 2022
A. Borah, S. N. Hazarika, D. Thakur,	Potentiality of actinobacteria to combat against biotic and abiotic stresses in tea [*Camellia sinensis* (L) O. Kuntze].	Journal of Applied Microbiology	Vol.: 33, (4), 2314-2330	July 2022
A. N. Konwar, S.N. Hazarika, P. Bharadwaj, D. Thakur	Emerging nontraditional approaches to combat antibiotic resistance.	Current Microbiology	Vol. 79(11): 330	September 2022

Book Chapters

Authors Name	Chapter Title	Book Title	Publisher	Year/ Month of Publication
Dr. S. Kalita and Dr. A.Devi	Bioadsorption of endocrine disrupting pollutants from wastewater	Current Developments in Biotechnology and Bioengineering	Elsevier	2023
A. Kumar, C.T. Singh, M.R. Khan	Symbiotic microbes from the human gut	Functionality of gut microbiota	Microbial Symbionts	2023
J. Saikia, R. Mazumdar and D. Thakur	Endophytic Actinobacteria: A source of novel bioactive metabolites for the treatment of infectious diseases.	Infectious Diseases: From Prevention to Control (ed. Yvette S. Brewer), pp. 171-196.	Nova Science Publishers, Inc., New York, ISBN: 979-8-88697-664-9.	2023
R. Mazumdar, J. Saikia and D. Thakur	Infectious Diseases: Antibiotic Resistance and Stewardship.	Infectious Diseases: From Prevention to Control (ed. Yvette S. Brewer), pp. 197-217.	Nova Science Publishers, Inc., New York, ISBN: 979-8-88697-664-9.	2023

Popular article published in Newspaper/Magazine

Authors Name	Article Title	Newspaper/ Magazine name	Volume & Issue no./ page no.	Month/Year of publication
B. Kalita, A. K. Mukerjee	Prevention and in-patient management of snakebite	Newspaper-Assam Tribune	16th July, 2022 (page no. 4)	July, 2022
A. Devi	No action plan for conservation of Deepor Beel (Face to Face)	The Assam Tribune	Vol.84,No. 157	June 12, 2022

Contributory

Author(s)	Title	Conference Name	Oral/ poster	Date & Venue
A. Patra & A.K. Mukherjee	Geographical variation in the proteome composition of the *Echis Carinatus* venom from India and Sri Lanka: An urgent need for the development of Sri Lanka-specific antivenom	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	Poster	November 3-5, 2022 Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
U. Puzari & A. K. Mukherjee	Snakebite diagnosis: An age-old dilemma and an insight on the current aspects in research and development of tools and bio-analytical methods for snake venom detection	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	Poster	November 3-5, 2022 Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
U. Puzari, N. Boro & A. K. Mukherjee	Advances in the therapeutic application of repurposed small molecule inhibitors against snakebite	One day National Symposium on Snake and Scorpion Envenomation and Therapy: National and International Prespectives	Poster	July 16, 2022 IASST Guwahati
D. Madhubala, A. Patra, T. Islam, K. Saikia, M. R. Khan, S. A. Ahmed, J.C. Borah, A. K. Mukherjee	Reversal of paraquat-induced apoptosis, neurodegeneration, and alternation of metabolic pathway genes in the rat pheochromocytoma PC-12 cell by custom peptides developed from the nerve growth factors from Snake venoms	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	Poster	November 3-5, 2022 Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
B. Das, A. Patra & A. K. Mukherjee	A comparative study of proteome composition of Indian red scorpion venom with other scorpion venom proteome: Failure of commercial antivenom to immunerecognize the abundance of low molecular mass toxins of venom	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	Poster	November 3-5, 2022 Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata

B. Das, A. Roy & A. K. Mukherjee	Proteomic characterization of Indian red scorpion and in vitro laboratory analyses of commercial anti scorpion antivenoms reveal their quality and safety	One day National Symposium on Snake and Scorpion Envenomation and Therapy: National and International Prespectives	Poster	July 16, 2022 IASST Guwahati
H. Kakati, & A. K. Mukherjee	A comparison of two different analytical workflows to determine the venom proteome composition of *Naja Kaouthia* from North-East India and immunologicl profiling of venom against commercial antivenoms	One day National Symposium on Snake and Scorpion Envenomation and Therapy: National and International Perspectives	Poster	July 16, 2022 IASST Guwahati
H. Kakati, A. Patra, B. Kalita, Chanda, S. Rapole & A. K. Mukherjee	Proteomic characterization of *Naja Kaouthia* venom from North-East India by two different analytical workflows and immunological cross-reactivity of venom against commercial antivenom	Gurukul in emerging areas in modern biology and medicine	Poster	March 2-3, 2023 MBBT, Tezpur University
H. Kakati A. Patra, B. Kalita, A. Chanda, S. Rapole & A. K. Mukherjee	Quantitative proteomic profiling of *Naja Kaouthia* Venom From North-East India by two different analytical workflows and assessment of potency of commercial antivenom	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	Oral	November 3-5, 2022 Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
P. Baruah, A. Patra, S. Barge, M. R. Khan & A. K. Mukherjee	Therapeutic potential of bioactive compounds from edible mushroom to attenuate SARS-COV-2 infection and complications in coronavirus diseases	International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC-2023)	Poster	February 24-26, 2023 Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur

S. Nath & A.K. Mukherjee	Future strategies for the advancement of ethno medicine for the treatment of scorpion stings	International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC-2023)	Poster	February 24-26, 2023 Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur
S.Das, M. J. Bhattacharjee, A.K Mukherjee, M.R. Khan	Predictive omics approach on the functionality of bacteriome in fermented soybeans of Northeast India	International Conference on Biotechnology for sustainable Bioresources and Bioeconomy (BSBB-2022)	Poster	December 7 - 11, 2022 IIT Guwahati
M.B. Devi, M.R. Khan	A potential probiotic *Lactobacillus plantarum* isolated from fermented ethnic food of Manipur alleviates TNFα by regulating ADAM-17 protein	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC -2023)	Oral	February 24-26, 2023 Imphal, India
A. Bhattacharya, S.Barge, M.R. Khan	Study on the bacterial diversity and metabolite Profiles of ethnic fermented bamboo shoots of north East India	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC -2023)	Poster	February 24-26, 2023 Imphal, India
C.T.Singh, A.K. Mukherjee, M R. Khan	Potential probiotic properties of Ethnic food-derived bacteria	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC-2023)	Poster	February 24-26, 2023 Imphal, India
Md Y.Sheikh, J.C.Borah , A. K. Mukherjee, M.R.Khan	Anti-diabetic and anti-oxidant activities of some selected medicinal plants used by ST/SC communities of the North East India	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC-2023)	Poster	February 24-26, 2023 Imphal, India

S.N. Hazarika, A. Barman, D. Thakur	*Streptomyces* sp. mediated plant defense against phytopathogens and plant growth promotion in host and non-host plants	62nd Annual International Conference on Microbes and society: Current trends and Future Prospects	Poster	September 21-23, 2022 Vijnana Bhavana, Manasagangotri University of Mysore, Mysore
P. Bharadwaj, D. Thakur	Isolation, screening and bioprospecting potential of endophytic actinomycetia from tea plants (*Camellia* spp.)	62nd Annual International Conference on Microbes and society: Current trends and Future Prospects	Poster	September 21-23, 2022 University of Mysore
P. Bharadwaj, A. N. Konwar, S. Basak, D. Thakur	Bioprospecting potential of endophytic actinomycetia from tea plants (*Camellia* spp.) for growth promotion and disease management	National Science Day	Poster	February 28 IASST Guwahati
R. Das and D. Thakur	Potentiality of chlorpyrifos degrading strain *Streptomyces* sp. ATE-26 towards plant growth promotion and fungal disease suppression	62nd Annual International Conference on Microbes and society: Current trends and Future Prospects	Oral	September 21st -23rd 2022 Mysore
R. Mazumdar and D. Thakur	Exploration of Actinobacteria from Protected Forest Ecosystems of Assam for the production of Microbial Secondary metabolites.	North-East Research Conclave 2022	Oral	May 20-22, 2022 IIT Guwahati,
J. Saikia and D. Thakur	Evaluation of Antifungal and Plant Growth Promoting Potential of Endophytic Actinomycete Streptomyces sp. DNLA13 isolated from Orchidaceae	North-East Research Conclave 2022	Oral	May 20-22, 2022 IIT, Guwahati,
A. N. Konwar, and D. Thakur	Bioactive potential of *Streptomyces* sp. MNP32 isolated from Manas National Park of Assam, India	62nd Annual International Conference on Microbes and society: Current trends and Future Prospects	Poster	21-23 September 2022 Mysore

Conferences/Workshops/Meetings attended

Faculty/ research scholar	Conference/Workshop/Exhibitions	Date & Venue
Prof. A. K. Mukherjee	Brainstorming-cum-Consultation Meeting on Promotion of Bio-entrepreneurship in North East Region	July 18, 2022 Guwahati Biotech Park, Guwahati, Assam
Prof. A. K. Mukherjee	One Day National Symposium on -Snake and Scorpion Envenomation and Therapy: National and International Perspectives	July 16, 2022 IASST, Guwahati, Assam
Prof. A. K. Mukherjee	Department of Science & Technology-Synergistic Training Program Utilizing the Scientific & Technological Infrastructure (DST-STUTI)	September 07-13, 2022 Sophisticated Analytical Instrument Centre of IASST, Guwahati, Assam
Prof. A. K. Mukherjee	National Seminar on "Bioeconomy Based Entrepreneurship Development with Biotechnological Interventions" Jointly Organized by the National Academy of Sciences, India, Prayagraj (Allahabad) and Institute of Bioresources and Sustainable Development, Imphal, Manipur.	October 11-12, 2022 Institute of Bioresources and Sustainable Development, Imphal, Manipur
Prof. A. K. Mukherjee	Member, Scientific Committee and Keynote speaker, 21st World Congress of the International Society on Toxinology, Abu Dhabi, UAE,	October 16-21, 2022 Abu Dhabi, UAE.
Prof. A. K. Mukherjee	National Conclave on "Science and Technology Empowerment of Tribal Community	November 11-12, 2022 Indian Institute of Technology, Guwahati, Assam
Prof. A. K. Mukherjee	As chief guest in Department of Technology-Synergistic Training Program Utilizing the Scientific and Technological Infrastructure (DST-STUTI) program	November 24, 2022 Department of Instrumentation, Gauhati University, Assam
Prof. A. K. Mukherjee	8th edition of India International Science Festival (IISF)	January 21-24, 2023 Manit, Bhopal, Madhya Pradesh
Prof. A. K. Mukherjee	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023 IASST, Guwahati, Assam
Prof. A. K. Mukherjee	International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC 2023)	February 24-26, 2023 Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur

Prof. A. K. Mukherjee	National Seminar on - Excitements in Biological Research	March 6, 2023 Department of Molecular Biology and Biotechnology, Tezpur University, Assam
Prof. A. K. Mukherjee	8th International Conference on Molecular Signalling and 4th CeSin Symposium: Signalling in Disease Management and Diagnostics	March 16-18, 2023 CSIR, Indian Institute of Chemical Biology (IICB), Jadavpur, West Bengal
B. Devi and A. Devi	International seminar on "Environmental Sustainability and Conservation: Issues and Challenges" organised by Indian Council of Social Science Research (ICSSR), New Delhi.	November 3-4, 2022 Bongaigaon College, Assam
M. Goswami and A. Devi	"Environmental Sustainability and Conservation: Issues and Challenges" organised by Indian Council of Social Science Research (ICSSR), New Delhi.	November 3-4, 2022 Bongaigaon College, Assam
Dr. S. Das	International Conference on Biotechnology for sustainable Bioresources and Bioeconomy (BSBB-2022)	December 7 - 11, 2022 IIT Guwahati
Dr. Y. Sheikh	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023)	February 24-26, 2023 Imphal, India
A. Bhattacharya	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023)	February 24-26, 2023 Imphal, India
M. B. Devi	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023)	February 24-26, 2023 Imphal, India
C. T. Singh	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023)	February 24-26, 2023, Imphal, India
S. N. Hazarika	Seven days workshop on "Advance Techniques in Plant Stress Biology" sponsored by Department of Science and Technology (DST) under STUTI (Synergistic Training Program Utilizing the Scientific and Technological Infrastructure)	November 7-13, 2022 Department of Botany, Gauhati University, Guwahati, Assam
P. Bharadwaj	Science and Technology Empowerment of Tribal Community organized by DST	November 15-17, 2022 IIT Guwahati
P. Bharadwaj	62nd Annual International Conference of Association of Microbiologists of India	September 21-23, 2022 University of Mysore
P. Bharadwaj	DBT-sponsored Hands-on Training Programme on Gene cloning, Protein Expression and NGS Data Analysis	July 12-18, 2022 ALSBT Hub, Dept. of Animal Biotechnology, College of Veterinary Science, AAU, Khanapara

R. Das	62nd Annual International Conference of Association of Microbiologists of India	September 21-23, 2022 University of Mysore
C. J. Devi	62nd Annual International Conference of Association of Microbiologists of India	September 21-23, 2022 University of Mysore
C. J. Devi	Two Day Research to Reality Workshop Series in Technology Transfer organized by KIITTBI Technology Transfer Office	October 13-14,2022 KIIT-TBI Technology Transfer Office, Bhubaneswar, Odisha, India (Online)
A. N. Konwar	62nd Annual International Conference on Microbes and society: Current trends and Future Prospects	September 21-23, 2022 University of Mysore
S. Basak	62nd Annual International Conference of Association of Microbiologists of India	September 21-23, 2022 University of Mysore
Dr. A. Patra	One day National Symposium on -Snake and Scorpion Envenomation and Therapy: National and International Perspectives	July 16, 2022 IASST, Guwahati, Assam
Dr. A. Patra	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	November 3-5, 2022/ Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
Dr. A. Patra	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam
Dr. A. Patra	National Science Day celebration at IASST	Februrary 28-March 1, 2023/ IASST, Guwahati, Assam
D. Madhubala	One day National Symposium on -Snake and Scorpion Envenomation and Therapy: National and International Perspectives	July 16, 2022 IASST, Guwahati, Assam
D. Madhubala	Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP)	November 3-5, 2022/ Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
D. Madhubala	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam
P. Baruah	One day National Symposium on -Snake and Scorpion Envenomation and Therapy: National and International Perspectives	July 16, 2022 IASST, Guwahati, Assam
P. Baruah	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam

P. Baruah	International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC-2023)	February 24-26, 2023/ Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur
A. Roy	One day National Symposium on -Snake and Scorpion Envenomation and Therapy: National and International Perspectives	July 16, 2022 IASST, Guwahati, Assam
A. Roy	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam
S. Nath	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam
S. Nath	International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC-2023)	February 24-26, 2023/ Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur
R. Kumar	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam
R. Mahato	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam
B. L. Rajbongshi	Two day's workshop on -Application of Proteomics in Bio-medical Research	February 1-2, 2023/ IASST, Guwahati, Assam

Contribution to World Database

Author (s)	Title	Database	
Dr. M. R. Khan	Metagenomic sequences	NCBI SRA	PRJNA886465 (9 samples) PRJNA906264 (142 samples) PRJNA906723 (15 samples) PRJNA908300 (72samples) PRJNA945571 (6 samples)
Dr. M. R. Khan	16S ribosomal RNA gene, partial sequence	NCBI	OL762329 - OL762395, OM049264 - OM049390, OQ629908 - OQ308987, OQ308990, OQ308997, OQ308998, OQ309000, OP218265 OP218267, OP218274, OP218348 to OP218362, MG824976 OM049342

S. N. Hazarika, K. Saikia, D. Thakur	Whole genome sequencing and assembly of *Streptomyces* sp. KA12	NCBI	JAPDOH000000000 Bioproject: PRJNA842704 Biosample: SAMN28684230
R. Mazumdar, K. Saikia and D. Thakur	Whole genome Sequencing of three potent actinobacteria	NCBI	JAMOLN000000000, JAMOLM000000000, JAMOLO000000000 BioProject: PRJNA834923
R. Mazumdar and D. Thakur	Polyketide synthase (PKS-II) gene of soil actinobacteria	NCBI	ON911583, ON993811, ON993812
R. Mazumdar and D. Thakur	Chitinase 18 Glycosyl Hydrolase family gene (GH18) of soil actinobacteria	NCBI	ON911582
C. J. Devi, K. Saikia, D. Thakur	Whole genome sequencing of endophytic actinobacteria isolated from *Camellia sinensis*	NCBI	JANFMQ000000000 Bioproject: PRJNA851545, Biosample: SAMN29232540,
J. Saikia and D. Thakur	16s rRNA sequence	NCBI	OP313739, OP279764, OM773478, OP314453, OP279737, OP313501, OP315317, OP279747, OP265707, OP313605, OP279748, OP279740, OP279749, OP313683, OP256561, ON076552, OP314520, OM648299, OM746929, OP313686, OP314452, OP339857, OP256850, OP267965, OP287967
A. N. Konwar, and D. Thakur	16s rRNA gene sequence submission	NCBI	OP278936, OP278937, OP278938, OP278939, OP278940, OP278941, OP278942, OP278943, OP278944
S. Basak, R. Hepat, K. Saikia and D. Thakur	Assembly and Annotation of *Antheraea assamensis* cypovirus 4	NCBI	ON783657 to ON783666

Presentation in Conferences/seminar

Invited talks

Faculty	Title	Programme Name	Date & Venue
Prof. A. K. Mukherjee	Exploring the Anticoagulant Mechanism of *Clerodendrum colebrookianum*- A Traditional Ethnomedicinal Plant Used to Reduce Hypertension by the Tribal People of North-east India.	9th International Congress of the Society for Ethnopharmacology, India (SFEC-2022).	April 22-24, 2022 JSS Academy of Higher Education and Research Campus, Mysuru, Karnataka, India
Prof. A. K. Mukherjee	Bio-economy of the NER-Based on the Ethnic Foods & Beverages	Foundation Day Celebration and National Seminar on-"Bioeconomy from Bioresources with special reference to NER" at Institute of Bioresources & Sustainable Development (IBSD), Imphal, Manipur, 29th April, 2022.	April 29, 2022 IBSD, Imphal, Manipur.
Prof. A. K. Mukherjee	Exploring the Traditional Plant -based Resources/ formulations for Chronic/ metabolic disorder : Tradition to Translation	Brainstorming Session -"Exploring the Traditional Plant based Resources/ formulations for Chronic/ metabolic disorder: Tradition to Translation	July 4, 2022 Institute of Bioresources and Sustainable Development, Imphal, Manipur
Prof. A. K. Mukherjee	The Laboratory-Based in Vitro Quality Assessment of Commercial Antivenom: An Essential Criteria for the Improvement of Quality of Antivenom	One-day symposium on snake and scorpion envenomation and therapy: National and international perspectives" Organized by Institute of Advanced Study in Science and Technology, Guwahati,	July 16, 2022 IASST, Guwahati, Assam
Prof. A. K. Mukherjee	Bioeconomy of the NER-Based on the Ethnic Foods & Beverages	National seminar on "Bioeconomy based entrepreneurship development with biotechnological interventions" jointly organized by the National Academy of Sciences, India, Prayagraj (Allahabad) and Institute of Bioresources and Sustainable Development, Imphal, Manipur.	October 11-12, 2022 Institute of Bioresources and Sustainable Development, Imphal, Manipur

Prof. A. K. Mukherjee	Laboratory Analysis of Quality of Commercial Antivenoms: An important Stepping Stone for Maintaining their Quality and Improvement of Venomous Bite Treatment.	21st World Congress of the International Society on Toxinology	October 16-21, 2022 Conrad Abu Dhabi Etihad Towers, Abu Dhabi, United Arab Emirates
Prof. A. K. Mukherjee	Unveiling the Neuritogenesis Mechanism of a Snake Venom Nerve Growth Factor	14th Annual Meeting of the Proteomics Society, India & International Conference on Proteins & Proteomics (PSI-ICPP 2022) in Kolkata	November 3-5, 2022 Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata
Prof. A. K. Mukherjee	Anticoagulant synthetic peptides developed from snake venom anticoagulant toxins: Prospects and challenges for the treatment of thrombosis-associate cardiovascular diseases	International conference on "Biomaterials, Regenerative Medicine and Devices"	December 14-18, 2022 Indian Institute of Technology, Guwahati, Assam
Prof. A. K. Mukherjee	Envisioning the Therapeutic Application of Plant-derived Natural Products as Antithrombotic Drugs: Key Issues and Challenges	International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC 2023)	February 24-26, 2023 Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur
Prof. A. K. Mukherjee	Snake venom-inspired development of anticoagulant peptides for the treatment of thrombosis-associated cardiovascular diseases	National Seminar on - Excitements in Biological Research	March 6, 2023 Department of Molecular Biology and Biotechnology, Tezpur University, Assam
Dr. M. R. Khan	'Gut feeling' on Darwinism: Microbiome and health	Workshop on Next generation sequencing and data analysis	31st March,2023 NIPER, Guwahati
Dr. M. R. Khan	Ethnic food to functional food for the emerging market	National Research Development Corporation (NRDC) industry meet	25th March,2023, Hotel Palacio, Guwahati

Dr. M. R. Khan	Ethnic food to functional food for the emerging market	Techno-commercial Assessment of TRL 6 and Above Technologies Developed in India by Academia, Research Labs and Industries" jointly organized by TIFAC-NIPER	4th November,2023 NIPER, Guwahati
Dr. D. Thakur	Possibility of reducing chemical inputs in Tea (*C. sinensis*) production through the intervention of microbial inputs	Agriculture committee review meeting, Amalgamated Plantations Private Limited (Tata Enterprise)	22 November,.2022 APPL Guwahati Office at Christian Basti, GS Road, Guwahati
Dr. D. Thakur	Microbial biocontrol of major fungal diseases and pests in Tea	Seminar in "Pest & Disease Control in Tea", organized by Upper Assam Advisory Centre, TTRI, Tea Research Association, Dikom, Assam	20 January, 2023 Panitola Sport Club, Tinsukia, Assam

Lectures delivered at other institutes

Faculty	Topic	Date & Venue
Prof. A. K. Mukherjee	Online Interdisciplinary Refresher Course (IDRC) on Academic Writing and Research, Teaching Learning Centre (TLC),: Topic - Preparation for Project Proposal: Some Useful Suggestions	May 17, 2022 Tezpur University, Assam
Dr. M. R. Khan	'Gut feeling' on Darwinism: Microbiome and health	6th May, 2022 Royal Global University, Guwahati

Patents granted

Inventor(s)	Title	Patent no.	Date of Grant
M. R. Khan, B. Bhaskar, A. Adak, N. C. Talukdar	A method of production of rice based beverage with high alcohol content.	418469	January 18, 2023
M. R. Khan, B. Bhaskar	Production of antioxidant rich red wine like alcoholic beverage using black rice.	400100	June 27, 2022

Patent filed:

Inventor(s)	Title	Patent No. File no. for enrollment	Date of Patent filed
A. K. Mukherjee, D. Madhubala, T. Islam, M. R. Khan	Neuritogenic peptides and neuroprotective composition comprising such peptides.	Application no. 202231054298	22-09-2022
M. R. Khan, S. Das, J. Bhattacharjee, A. Bhattacharya, A. K. Mukherjee	A method of fermentation of mustard seed with enhanced polyunsaturated fatty acids (PUFA).	Application no. 202231069776	02-12-2022
M. R. Khan, J. C. Borah, Y. Sheikh, S. Barge, R. Sagar, J. Bhattacharjee, A. K. Mukherjee	Method of Preparation of Bioactive Fractions and Molecules with α-Glucosidase Inhibition Activity from the Plant *Eurya Acuminata*.	Application no. 202331004131	20-01-2023
M. R. Khan, J. C. Borah, Y. Sheikh, S. Barge, R. Sagar, J. Bhattacharjee, A. K. Mukherjee	Method of Preparation of Bioactive Fractions and Molecules with α-Glucosidase Inhibition Activity from the Plant *Parkia Roxburghii.*	Application no. 202331004130	20-01-2023
A. Devi, B. Devi, M. Goswami, S. Kalita	A process for preparation of low cost activated carbon for effective adsorption of heavy metals from aqueous solution.	Application no. 202231045938	11-08-2022
A. Devi, M. Goswami, K. Patowary, R. Patowary	Green, efficient and low cost technology for treatment of oil field formation water.	Application no. 202231054227	22-09-2022

Other activities

Visits to national/international institutes/laboratories

Faculty/Research scholar	National/international institutes/ laboratories	Date
Prof. A. K. Mukherjee	Institute of Nano Science and Technology (INST), Mohali, Punjab	December 19, 2022
Prof. A. K. Mukherjee	National Institute of Pharmaceutical Education and Research (NIPER), Mohali, Punjab	December 22, 2022

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Prerna Jain	Cotton University	PG Project	Completed	Jan 2022-June 2022
Dhandapani R	V.S.B. Engineering College, Tamil Nadu	UG Intern	Ongoing	February-July 2023

Awards/Recognitions/Achievements

Name of Faculty/ Student	Details of the recognition
Prof. A. K. Mukherjee	Elected Fellow, Indian Academy of Sciences, Bangalore, 2022.
Prof. A. K. Mukherjee	SFE-ZANDU Award – 2022 by Society for Ethnopharmacology, Kolkata, India, drugs for treating snakebite and thrombosis-associated cardiovascular diseases from plants and other natural resources. This award, constituted by the Emami, an Indian Conglomerate Company, was conferred to him during the 9th International Congress of Society for Ethnopharmacology held April 22-24, 2022, at Mysuru, Karnatka.
Prof. A. K. Mukherjee	Advisory Committee Member, Department of Scientific and Industrial Research-TePP Outreach cum Cluster Innovation Centre (DSIR-TOCIC), Ministry of Science and Technology, Govt. of India, 2022.
Prof. A. K. Mukherjee	Advisor, Organizing Committee, Brainstorming and awareness workshop on "R&D Funding Opportunities by SERB- DST: Awareness Workshop for Researchers from North-East Institutions", Organized by Institute of Advanced Study in Science and Technology, Guwahati, July 14th-15th, 2022.
Prof. A. K. Mukherjee	Global recognition in the list of Stanford University and Elsevier BV's top 2% Indian Scientist in the world among in the field of 'Biochemistry and Molecular Biology', 2022.
Prof. A. K. Mukherjee	Sectional Chairman, 22nd International Congress of International Society of Ethnopharmacology & 10th International Congress of Society for Ethnopharmacology, Imphal, Manipur, February 24-26, 2023.
Prof. A. K. Mukherjee	Sectional Chairman, 8th International Conference on Molecular Signaling and 4th Sein Symposium: Signaling and Management and Diagnostics (ICMSCS- SDMD-2023) at CSIR-Indian Institute of Chemical Biology, Kolkata from March 16-18, 2023.
Dr. S. Das	Received the best 'Flash Talk & Poster Award' among 268 participants in the International Conference on Biotechnology, Sustainable Bioresources and Bioeconomy (BSBB-2022) and the XIX Annual Convention of the Biotech Research Society, India (BRSI) organized at IIT Guwahati during December 7-11, 2022.
Dr. A. Patra	Best poster presentation award at Proteomics Society of India: International Conference on Proteins and Proteomics (PSI-ICPP) from November 3-5, 2022 conducted by Proteomics Society of India at CSIR-Indian Institute of Chemical Biology, Kolkata.
Dr. A. Patra	Best poster presentation award at National Sciene Day Celebration from Februry 28- March 1, 2023 conducted by IASST, Guwahati, Assam.
S. N. Hazarika	1st position (Life Sciences Division) in the weekly research scholar presentation (16th March 2022-15th February 2023) organized by IASST, Guwahati, Assam on the occasion of National celebration of Azadi ka Amrit Mahotsav.

P. Bharadwaj	Best poster presentation award at 62nd Annual International Conference of Association of Microbiologists of India conducted by University of Mysore on 21st to 23rd September, 2022
P. Baruah	Received 'Travel Grant' to attend International Bioresource Conclave & Ethnopharmacology Congress, India (ISE-SFEC-2023) from February 24-26, 2023 condcuted by Institute of Bioresources and Sustainable Development, Imphal at City Convention Centre, Imphal, Manipur.

List of PhD awardees

Name of student	Name of supervisor	Title of the thesis	Award giving university
Dr. Dibyayan Deb	Dr. Mojibur Rohman Khan	Effect of traditional rice beer (*Xaaj* and *Joubishi*) on gut microbiota of Ahom and Bodo communities of Assam	Cotton University
Dr. Arun Kumar	Dr. Mojibur Rohman Khan	Study on the effect of potential probiotic bacteria in enhancing longevity and healthy aging of *Caenorhabditis elegans*	Gauhati University

TRADITIONAL AND MODERN DRUG DISCOVERY AND DISEASE DIAGNOSIS

A. Sustainable utilization of natural resources

Co-ordinator: Dr. (Mrs.) Rajlakshmi Devi

A.1 Understanding the role of *Musa balbisiana* (Bhimkol) on bioenergetic profile and oxidative stress

Bioenergetic dysfunction is emerging as a causal factor for the pathophysiology of cardiovascular disease, diabetes, neurodegeneration and ageing. The bioactive fractions of *Musa balbisiana fruit* (pulp and seed) protect the mitochondrial damage induced by oxidative stress by increasing the oxygen consumption rate (OCR). *Musa balbisiana* (MB) fruit improves basal respiration, showing the cell's energetic demand under baseline conditions. The active fractions drive mitochondrial ATP production to meet the cell's energy demand and prevent proton leaks. Pretreatment of HepG2 cells with MB fruit markedly decreased ROS production, thereby protecting against oxidative stress.

Moreover, the ripe pulp decreased gene expression of cardiac inflammatory markers (TNF-α and TGF-β) in LPS-treated H9C2 cells. In addition to the pharmacological properties, MB fruit is rich in macronutrients and micronutrients, including carbohydrates, starch, protein, dietary fiber and minerals (Ca, K, Mg, Zn, Na, Fe). Although MB fruits are commercially undesirable for the presence of seeds, the seed part has significant antioxidant, anti-glycation and anti-hyperglycemic properties (Fig. 32).

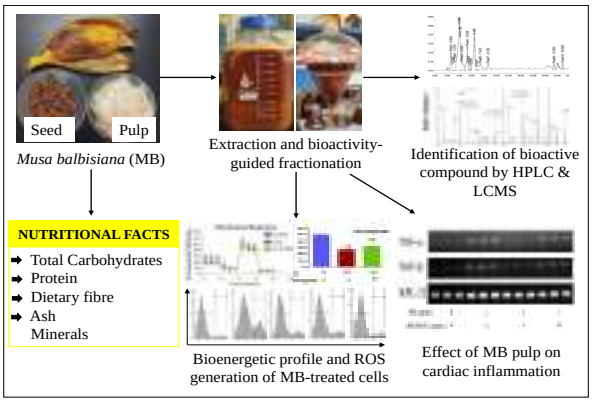


Fig. 32 Schematic diagram of extraction and bioactivity-guided fractionation of *Musa balbisiana* and therapeutic effect against oxidative stress-induced mitochondrial dysfunction.

B. Pre-clinical evaluation of the Indian system of medicine (ISM) towards the development of phytopharmaceutical drug

Co-ordinator: Jagat C Borah, PhD.

B.1 Phytopharmaceutical, a new class of drug regulated in India

Synonymously to the US-FDA botanical guidelines adopted in the Western country, India also promulgated DCGI guidelines for phytopharmaceutical drug development in 2015. This new step has sparked hope in the development and innovations of introducing new plant-based drugs through scientific and molecular interventions for the global acceptance of herbal products by the modern medical profession.

Our team contributes to mitigating diabetes and diabetic complications by investigating

traditional medicinal plants used by the folk people in the NER of India. The work is focused on developing phytopharmaceutical drugs/ isolation of lead molecules/ investigational new drug (IND) from ethno-medicinal plants for treating Type 2 Diabetes Mellitus and its related complications.

B.2 Taxifolin-3-O-glucoside from *Osbeckia nepalensis* Hook. mediates antihyperglycemic activity in CC1 hepatocytes via regulating AMPK/ G6Pase/PEPCK signaling axis

Osbeckia nepalensis Hook. f. (Melastomataceae), also known as Boga phutkola (Ass.) and Yachubi (Mani.) is categorized as one of the potent antidiabetic medicinal plants used by the local herbal healers of Northeast India, especially in Assam, Manipur, and Nepal. The plant has also made its name in the ICMR book of medicinal plants, 2018 (Vol. 18, page no. 753). In T2DM, due to high circulating free fatty acid (FFA), HGP (Hepatic glucose production) increases and stimulates insulin resistance, leading to hyperglycemia. The current study targets the reduction of hyperglycemia induced by free fatty acid *in vitro* CC1 hepatocytes using enriched bioactive fraction and isolate compounds from *O. nepalensis*. *O. nepalensis* leaves were extracted in methanol, fractionated, and checked for cytotoxicity and glucose uptake in FFA-induced CC1 hepatocytes. Crude methanolic extract, ethyl acetate fraction and *n*-butanol fraction showed promising results, which were further subjected to Diaion HP 20 column chromatography resulting in 5 subfractions where subfraction 2 showed the most significant glucose uptake activity in CC1 hepatocytes yielding three bioactive compounds: Myricitrin, Taxifolin-3-O-glucoside and Quercrtin-3-O-rhamnoside which were isolated using semi-preparative HPLC. Taxifolin-3-O-glucoside showed the most significant glucose uptake in FFA-induced CC1 hepatocytes. The summary of the study is given in Figure 1. Further study in the molecular pathway was carried out and confirmed using immunoblotting of the different associated proteins (*Journal of Ethnopharmacology*, 2023, 303, 115936) (Fig. 33).

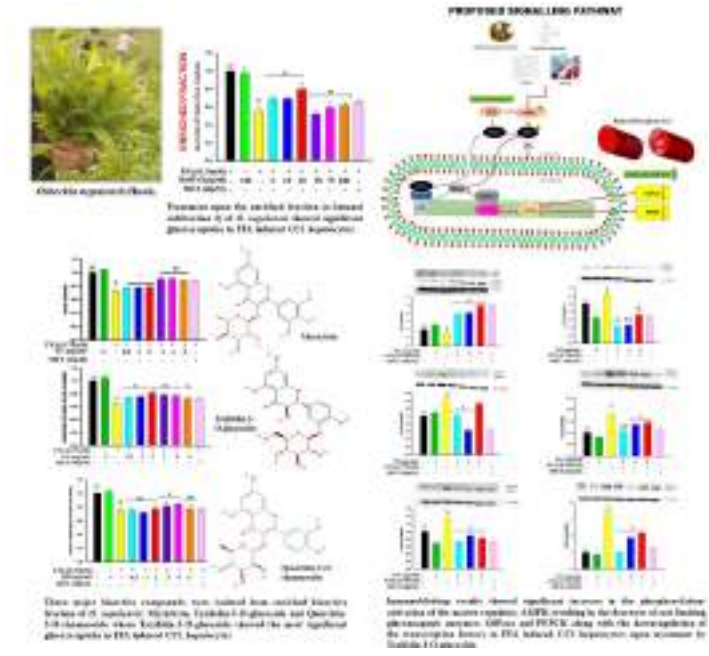


Fig. 33 Summary of the study revealed that Taxifolin-3-O-glucoside from *Osbeckia nepalensis* Hook. mediates antihyperglycemic activity in CC1 hepatocytes *via* regulating AMPK/G6Pase/PEPCK signaling axis.

C. Pharmacology and Drug Discovery

Co-ordinator: Dr Asis Bala

C.1 Pharmacology and Drug Discovery

A recent study published in the Journal of Inflammopharmacology led by Dr. Asis Bala, Associate Professor, Division of Life Sciences, IASST as one of the corresponding authors, and his collaborators Dr. Debjeet Sur, Department of Pharmaceutical Technology, JIS University, Agarpara, Kolkata 700109, India; Dr. Ashok Kumar Balaraman, Faculty of Pharmacy, MAHSA University, Bandar Saujana Putra, 42610, Malaysia and Prof. Pallab Kanti Haldar, Department of Pharmaceutical Technology, Jadavpur University, Kolkata 700032, India, has comprehensively explored the role of monoamine oxidase (MAO)-mediated H2O2–NF–κB–COX-2 pathway in acute inflammation in an experimental animal model. The present investigation identified that MAO inhibitors might reprofile for treating acute inflammation and further proved experimentally that the MAO enzyme may be used as a novel therapeutic target to design and develop a new class of anti-inflammatory agents (**Fig. 34)**.

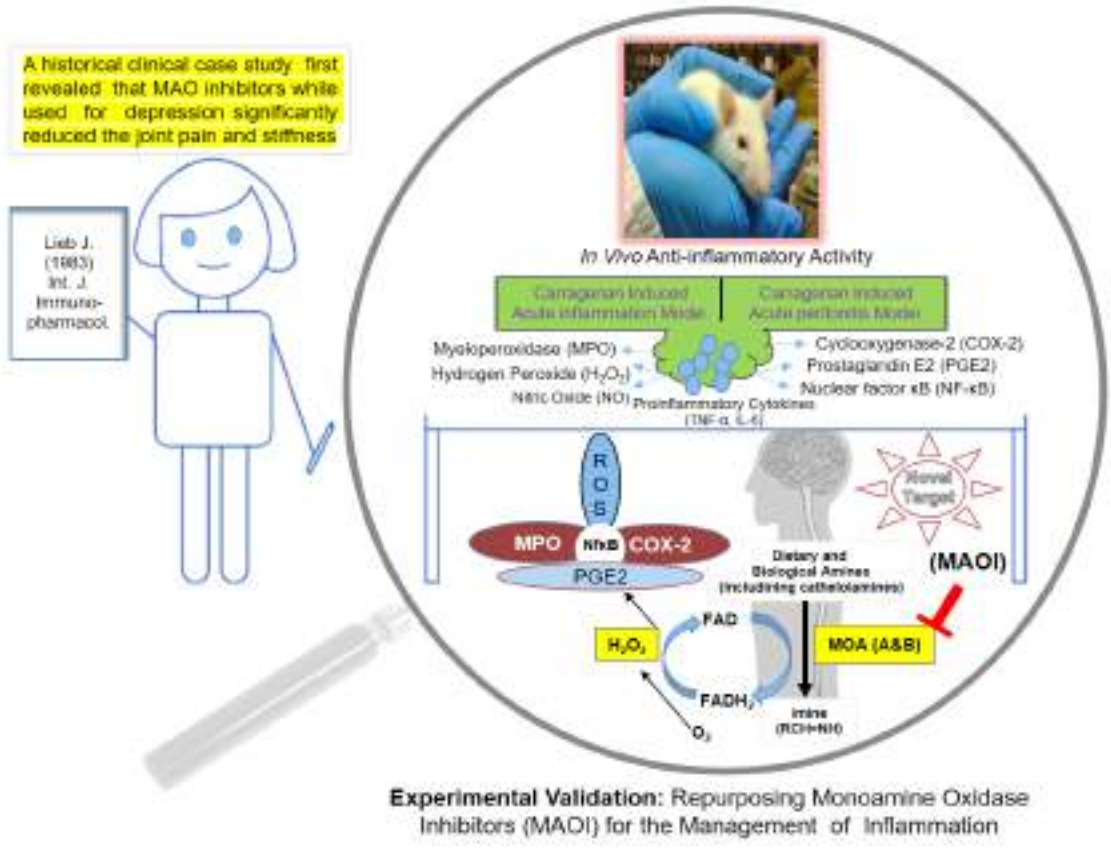


Fig. 34 Schematic representation of the work done on experimental validation of repurposing Monoamine Oxidase Inhibitors (MAOI) for the Management of Inflammation.

Completed projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:	Achievement
Characterization of high value phytochemicals of anti-diabetic and immunomodulatory properties in North-Eastern banana varieties.	Funding Agency: DBT, Govt. of India Total Fund: Rs. 37.73 lakh Duration: 3 years (2018-2022) PI: Dr. (Mrs.) Rajlakshmi Devi	Identification and quantification of phytochemicals present in bananas having antioxidant, anti-diabetic and cardioprotective properties.
Evaluation of antioxidant and anti-hyperlipidemic property of few selected medicinal plants used by the tribal population of Goalpara district, Assam.	Funding Agency: DBT, Govt. of India Total Fund: Rs. 19 lakh Duration: 3 years (2019-2023) PI: Dr. (Mrs.) Rajlakshmi Devi	Screening of medicinal plants used by the tribal population of Assam for health benefits and development of antioxidant and anti-hyperlipidemic compounds enriched fractions.
Exploration of traditionally used medicinal plants of North East India for the prevention and treatment of the metabolic syndrome.	Funding Agency: IASST (In-House Project) Total fund: Rs. 20.00 lakh Duration: 2 years (2021-2023) PI: Dr. (Mrs) Rajlakshmi Devi	Isolation and characterization of nutraceuticals in different scented rice variety having anti-diabetic properties. Development of antioxidant rich bioactive fraction of *Garcinia pedunculata* having cardioprotective properties.
Phytopharmaceutical Development of *Ficus semicordata* Buch.-Ham. ex. Sm. as per regulatory guidelines of DCGI. (BT/PR28069/ TRM/120/192/2018).	Funding Agency: DBT, Govt. of India. Total Fund: Rs. 197.288 lakh Duration: 4 years (2018 -2022) PI: Dr. Jagat C. Borah	For development of Phytopharmaceutical Drug in collaboration with CSIR and Industry.
Molecular and biochemical studies on indigenous medicinal plants from the North East India including *Urginea Indica* (Bon Pollundu) and *Dactyloscapnos scandens* for the development of potential anti-diabetic formulation" (BT/PR25194/ NER/95/1071/2017 Dated 15-03-2019)	Funding Agency: DBT, Govt. of India Total Ffund: Rs. 95.186 lakh Duration: 3 years (2019 -2022) PI: Dr. Jagat C. Borah	Development of potential anti-diabetic formulation.

Chemical investigation and therapeutic evaluation for linking marker compound(s) with anti-diabetic potential of young shoots of *Wendlandia glabrata* D.C. and fruits of *Phoebe cooperiana,* used by indigenous ST people of Arunachal Pradesh. (BT/PR24712/ NER/95/828/2017)	Funding Agency: DBT, Govt. of India. Total fund: Rs. 85.959 Lakh Duration: 3 years (2018-2021) PI: Dr. Jagat C. Borah	Development of standardized chemically defined anti-diabetic potential enriched fraction with pre-clinical data for future Phytopharmaceutical development.

Ongoing projects

Title of the project	**Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:**	**Goal**
Empowerment of Tribal population of selected District of Assam by scientific exploration of *Musa balbisiana*-a versatile medicinal plant of Northeast.	Funding Agency: DST, Govt. of India. Total fund: Rs.71,31,636/- Duration: 3 years (2021-2024) PI: Dr.(Mrs) Rajlakshmi Devi	Scientific exploration of *Musa balbisiana* is being carried out and extensive plantation in different SC/ ST villages has been started. Fibre extraction is under process along with training of the ethnic tribal population towards skill development. This endeavor has already started employment generation
Setting up a Quality Control & Quality Assurance laboratory facility for the Phytopharmaceutical mission for North East India. (No. BT/ PBD/10/08/2018).	Funding Agency: DBT, Govt. of India. Total fund: Rs. 190.58 lakh Duration: 4 years (2019-2023) PI: Dr. Jagat C. Borah	ANBL accredited Quality Control & Quality Assurance of Herbal drugs, botanical raw materials etc.
Development of layered double hydroxide (LDH) nanoclays for topical delivery of RNAi for sustained protection of economically important plants against pest attack	Funding Agency: DBT Govt. of India. Total fund: Rs. 41.9 Lakhs PI: Dr. Rajiv Borah Co-PI: Dr. Asis Bala	• Synthesize and characterize the nanoclays. • Identification and purification of low-cost dsRNA. • Formulate nanobioclays for delivery of RANi • Evaluation of the tropical nanobioclays formulation for pest control on economically important plants

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./page no.	Month/ Year of publication
S. Bhattacharya, E. Ramakrishnan, P. K. Deb, P. P. Sarma, D. Choudhury, S. Kabilan, R. Devi.	Influence of drying condition on nutritional and chemical profile of *Garcinia pedunculata* Roxb. Fruit	Pharmacognosy Magazine	1-15 https://doi.org/10.1177/ 09731296231158433	March, 2023
Sur D, Mondal C, Balaraman AK, Haldar PK, Maji HS, Bala A	Attenuation of COX-2 enzyme by modulating H2O2-mediated NF-κB signaling pathway by monoamine oxidase inhibitor (MAOI): a further study on the reprofiling of MAOI in acute inflammation	Inflammo pharmacology	doi: 10.1007/ s10787-023-01165-5. Epub ahead of print	February, 2023
Maitra S, Bhattacharya D, Paul S, Ghosh Chowdhury P, Mandal D, Haldar PK, Kumar Balaraman A, Bala A	Programmed Cell Death Protein 1 (PD-1) in relation to PANoptosis: Immune Pharmacological Targets for Management of Breast Adenocarcinoma	Endocrine Metabolic & Immune Disorders- Drug Targets	doi: 10.2174/ 1871530323666230213121803. Epub ahead of print	February, 2023
S. A. Ahmed, P. Sarma, S.R. Barge, D. Swargiary, S. Gurumayum, J. C. Borah.	Xanthosine, a purine glycoside mediates hepatic glucose homeostasis through inhibition of gluconeogenesis and activation of glycogenesis via regulating the AMPK/ foxo1/AKT/GSK3β signaling cascade	Chemico-Biological Interactions	371, 110347	January, 2023
S. Gurumayum, S. Bharadwaj, Y. Sheikh, S. R. Barge, K. Saikia, D. Swargiary, S. A. Ahmed, D. Thakur, J. C. Borah.	Taxifolin-3-O-glucoside from *Osbeckia nepalensis* Hook. Mediates antihyperglycemic activity in CC1 hepatocytes and in diabetic Wistar rats via regulating AMPK/G6Pase/ PEPCK signaling axis	Journal of Ethnopharmacology	303, 115936	November, 2022
P. Choudhury, S. K. Samanta, S. Bhattacharjee, H. Sarma, R. Devi	Chemical composite of indigenous whole grain scented joha rice varietal prevents type 2 diabetes in rats through ameliorating insulin sensitization by the IRS-1/AKT/PI3K signaling cascade	Food & Function	13, 11879-11895 https://doi.org/10.1039/ D2FO02373C	October, 2022

H. Sarma, D. Rabha, P. Khound, N. Gurumayum, P. P. Sarma, R. Devi.	Comparative phytochemical screening through high-performance thin layer chromatography technique and free radical scavenging ability of five species of genus *Clerodendrum*	Vegetos	https://doi.org/10.1007/s42535-022-00494-0	October, 2022
S. Bhattacharjee, R. Elancharan, K. Dutta, P. Deb, R. Devi.	Cardioprotective potential of the antioxidant-rich bioactive fraction of *Garcinia pedunculata* Roxb. ex Buch.-Ham. against isoproterenol-induced myocardial in fraction in wistar rats	Frontiers in Pharmacology	13: 1009023 https://doi.10.3389/fphar.2022.1009023	October, 2022
B. Kashyap, K. Saikia, S. K. Samanta, D. Thakur, S. K. Banerjee, J. C. Borah, N. C. Talukdar.	Kaempferol 3-O-rutinoside from *Antidesma acidum* Retz. Stimulates glucose uptake through SIRT1 induction followed by GLUT4 translocation in skeletal muscle L6 cells	Journal of Ethnopharmacology	301(115788)	September, 2022
P. P. Sarma, N. Gurumayum, S. K. Samanta, P. Khound, S. Kumari, D. Devi, J. Barman, S. K. Banerjee, R. Devi.	Pharmacologically active chemical composite of *Musa balbisiana* ameliorates oxidative stress, mitochondrial cellular respiration, and thereby metabolic dysfunction	Journal of Food Biochemistry	46 (9), e14347 https://doi.org/10.1111/jfbc.14347	July, 2022
S. K. Samanta, P. Choudhury, P. P. Sarma, B. Gogoi, N. Gogoi, R. Devi.	Dietary phytochemicals/nutrients as promising protector of breast cancer development: a comprehensive analysis.	Pharmacological Reports	74 (4):583-601. https://doi.org/10.1007/s43440-022-00373-0	June, 2022
S. Bharadwaj, S. Gurumayum, P. Sarma, B. Deka, S.R. Barge, B. Kashyap, Yunus Sheikh, P. Manna, J. C. Borah, N. C. Talukdar.	Prophylactic role of *Premna herbacea,* a dietary leafy vegetable in managing hepatic steatosis via regulating AMPK/SREBP1/ACC/HMGCR signaling pathway	Food Bioscience	48, 101720	April, 2022

Book Chapters

Authors Name	Chapter Title	Book Title	Publisher	Year/Month of Publication
H. Sarma, P. Kashyap, J. H. Zothantluanga, R. Devi	Nanotherapeutics of phytoantioxidants for cardiovascular diseases.	Phyto Antioxidants and Nanotherapeutics	Wiley	September, 2022
S. Bhattacharjee, P. K. Deb, R. Devi	Phytoantioxidants and their role in cellular oxidative stress.	Phyto Antioxidants and Nanotherapeutics	Wiley	September, 2022
A. Bharali, B. Deka, H. Sarma, A. Ahmed, B. Bhattacharjee, S. Sarma, S. K., Susankar Kushari, R. Devi	The role of vitamin D in the restriction of the progress and severity of covid-19 infection.	Vitamin D Deficiency - New Insights	IntechOpen	September, 2022

Presentations in Conferences/Seminars

Author(s)	Title	Conference name	Oral/ poster	Date & Venue
N. Gurumayum, R. Devi	Effect of *Musa balbisiana* seed on brain and liver redox imbalance and intestinal barrier dysfunction induced by D-galactose in rats	9th International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Poster	February 24-26, 2023 City Convention centre, Manipur
D. Swargiary, B. Kashyap, P. Sarma, S. A. Ahmed, Dr. J. C. Borah	Bioactive fraction of *Phyllanthus niruri L*. Enhances free radical Scavenging activity And stimulates glucose Uptake through SIRT1 Induction followed by GLUT4 translocation in C2C12 myotubes And streptozotocin Induced Wistar rats Abstract No: ISESFEC/23/P-196, Page No: 205	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Poster	February 24-26, 2023 City Convention centre, Manipur

P. Sarma, D. Swargiary, S.A. Ahmed, S. Gurumayum, D. Basumatary, A. Saikia, Dr. J. C. Borah	Evaluation of the therapeutic effect of *Leucaena leucocephala. (Lam.) De Wit*. In the regulation of insulin resistance associated oxidative stress in C2C12 muscle cell Abstract No: ISESFEC/23/P-202 Page No: 208	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Poster	February 24-26, 2023 City Convention centre, Manipur
A. Saikia, P. Sarma, S.A. Ahmed, D. Swargiary, S. Gurumayum, D. Basumatary, Dr. J.C. Borah	Anti-diabetic potential of *Vitex negundo L.* By modulating hepatic glucose homeostasis in CC1 hepatocytes Abstract No: ISESFEC/23/P-201 Page No: 207-208	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Poster	February 24-26, 2023 City Convention centre, Manipur
S. Gurumayum, D. Basumatary, D. Swargiary, S. A. Ahmed, P. Sarma, A. Saikia, Dr. J. C. Borah	Flavone enriched Extract of O*sbeckia nepalensis hook.f.* Ameliorates elevated Hepatic Gluconeogenesis via Ampk Phosphorylation in Diabetic models Abstract No: ISESFEC/23/O-060 Page no: 92-93	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Oral	February 24-26, 2023 City Convention centre, Manipur
S.A. Ahmed, P. Sarma,D. Swargiary,S. Gurumayum, D.Basumatary, A. Saikia, Dr. J. C. Borah	Xanthosine, a purine Glycoside ameliorates Hyperglycaemia via the AMPK/AKT/GSK3β Signalling pathways in Type 2 diabetic rats And CC1 hepatocytes Abstract No: ISESFEC/23/P-199 Page No: 206-207	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Poster	February 24-26, 2023 City Convention centre, Manipur
D. Basumatary, S. Gurumayum, D. Swargiary, S.A. Ahmed, P. Sarma, A. Saikia, Dr. J. C. Borah	Role of *g. Morella (gaertn.) Desr*. Marker compounds in preventing Disrupted intestinal Barrier integrity in Caco-2 cells Abstract No: ISESFEC/23/P-198 Page no: 206	International Bioresources Conclave and Ethnopharmacology Congress (ISESFEC 2023).	Poster	February 24-26, 2023 City Convention centre, Manipur

N. Sarma, R. Devi	Integrated application of natural fiber with additive manufacturing process specifically 3D printing for advanced manufacturing and bio medical application	International conference on biomaterials, regenerative medicine and devices.	Poster	December 16-18, 2022 IIT-Guwahati
M. Barman, R. Devi	*Musa balbisiana* as a patch for wound healing application	International conference on biomaterials, regenerative medicine and devices.	Poster	December 16-18, 2022 IIT-Guwahati
N. Gurumayum, R. Devi	Bioactive fraction of *Musa balbisiana* attenuates D-galactose-induced aging by ameliorating oxidative stress and age-related shift in intestinal epithelial barrier	International Conference on Drug Discovery (ICDD-2022)	Poster	November 10-11, 2022 BITS Pilani, Goa
P. Khound, R. Devi	Bioactivity guided fraction of *Clerodendrum glandulosum* Lindl. effectively ameliorates oxidative stress, mitochondrial dysfunction and diet induced atherosclerosis	International Conference on Drug Discovery (ICDD-2022)	Poster	November 10-11, 2022 BITS Pilani, Goa
D. Kalita, R. Devi	Evaluation of antioxidant, antihyperlipidemic and antimicrobial properties of *Clerodendrum sp*. Plants used by tribal population of Goalpara district, Assam	International Conference on Drug Discovery (ICDD-2022)	Poster	November 10-11, 2022 BITS Pilani, Goa
S. Pait, R. Devi	A comparative study of the pharmacological properties of different parts of *Musa balbisiana* (Pulp, inflorescence, pseudostem and root)	International Conference on Drug Discovery (ICDD-2022)	Poster	November 10-11, 2022 BITS Pilani, Goa
D. Basumatary, B. Kashyap, Dr. J. C. Borah	Role of G. *Morella* Wonder fruit in Maintaining the Intestinal barrier Integrity in caco-2 Cells	62nd Annual Conference of Association of Microbiologists of India (AMI)	Poster	September 21-23, 2022 University of Mysore, Karnataka, India

P. Sarma, B. Kashyap, Dr. J. C. Borah	Maniposide, a novel Bioactive natural Product from Wendlandia glabrata dc and the Role of its enriched Fraction in Attenuating hepatic Gluconeogenesis	International Conference on Chemistry and Allied Sciences (ICCAS-2022)	Oral	August 25 -27, 2022 NIT Warangal, Telangana
P. Khound, R. Devi	Polyphenol-enriched bioactive fraction of *Clerodendrum glandulosum* effectively ameliorates oxidative stress and atherosclerosis, in vitro.	Cardiovascular Research Convergence	Poster	June 25, 2022 CSIR-IICB, Kolkata
P. P. Sarma, R. Devi	Polyphenol rich fraction of *Musa balbisiana* ameliorates mitochondrial cellular respiration via inhibition of oxidative stress.	9th International Congress of the Society for Ethnopharmacology, India (SFEC-2022)	Poster	April 22-24, 2022 JSS-AHER Mysore, Karnataka
S. A. Ahmed, S. Bagre, P. Sarma, D. Swargiary,Dr. J.C. Borah	Anti-hyperglycemic Effects of *Tribulus terretris l.* Through inhibition of hepatic Gluconeogenesis and Activation of Glycogen synthesis Via Ampk/akt/ gsk3β Cascade	9th International Congress of the Society for Ethnopharmacology, India (SFEC-2022)	Oral	April 22-24, 2022 JSS-AHER Mysore, Karnataka
D. Swargiary, B. Kashyap, P. Sarma, S. A. Ahmed, Dr. J. C. Borah	Evaluation of therapeutic effect of P*hyllanthus niruri l.* In ameliorating insulin resistance in muscle line and diabetic rat model via regulation of sirt1/pgc1-α signaling cascade and glut4 translocation	9th International Congress of the Society for Ethnopharmacology, India (SFEC-2022)	Oral	April 22-24, 2022 JSS-AHER Mysore, Karnataka

Conferences/Workshops/Meetings attended

Faculty/ Research scholar	Conference/Workshop/Meetings/ Exhibitions	Date & Venue
Dr. R. Devi	Expert in the Ph.D. Progress presentation of Ms. Wanaz Nasreen Islam.	March 31, 2023/ Department of Zoology, USTM
Dr. A. Bala	Zebra Fish Aquaculture System for Biomedical Research	March 20-24, 2023/ MACS Agharkar Research Institute, Pune
Dr. A. Bala	International Bioresource Conclave and Ethnopharmacology Congress (ISE SFEC 2023) as Chairperson of the Scientific Session	February 24-26, 2023/ City Convention centre, Manipur
N. Gurumayum	Cardiovascular BioBanking	February 3, 2023/ICMR-SCTIMST, Trivandrum (online)
Dr. A. Bala	India International Science Festival 2023 as faculty coordinator	January 20-24, 2023/ MANIT Bhopal
N. Sarma	Workshop on advances in 3D printing and bioprinting and publishing, scientific writing and communication	December 14-15, 2022/ IIT-Guwahati
M. Barman	Workshop on advances in 3D printing and bioprinting and publishing, scientific writing and communication	December 14-15, 2022/ IIT-Guwahati
Dr. R. Devi	Member of IEC (Institutional Ethical Committee) meeting for TB screening project of Foundation for Advancement of Essential Diagnostics (FAED)	December 13, 2022/ BioNest, IIT Guwahati.
Dr. R. Devi	Convenor of World Heart Day	September 29, 2022/ IASST
Dr. R. Devi	Expert for PMC meeting	September 7, 2022/ NECTAR
Dr. R. Devi	Delegate in the Cardiovascular Research Convergence, 2022.	June 24, 2022/CSIR-IICB, Kolkata
Dr. R. Devi	Coordinator of International Yoga Day, 2022	June 21, 2022/IASST
Dr. R. Devi	Expert for PMC meeting	April 30, 2022/ NECTAR

Patents

Inventor(s)	Title	File no. for enrollment	Provisional/final patent grant no.	Issue no. of patent office
R. Devi, K. N. Dutta, P. Choudhury, S. K. Samanta, N. C. Talukdar,	Rice bran oil from the scented rice (joha) variety rich in w-6 and w-3 fatty acid, efficacious to diabetes.	Application No.201831035549	Patent Grant No: 405790	September 06, 2022

Other activities

Visits to national/international institutes/laboratories

Faculty/Research scholar	National/international institutes/ laboratories	Date
Dr. Asis Bala	MACS- Agharkar Research Institute, Pune	March 20-24, 2023
P. P. Sarma	Visited NEHU, Shillong under DST-STUTI scheme.	November 1-7, 2022
M. Barman	Visited NEHU, Shillong under DST-STUTI scheme.	June 28-July 4, 2022
Dr. R. Devi	External expert at USTM	May 19, 2022
Dr. R. Devi	PhD progress evaluation at NEIST, Jorhat.	April 29, 2022
Dr. R. Devi	PhD progress evaluation at NIPER, Guwahati.	July 29, 2022
Dr. A. Bala	External Expert at Faculty of Pharmaceutical Sciences; Assam Down Town University	February 07-08, 2023

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Naresh Joshi	Yenepoya Research Center, Yenepoya University, Mangalore	M.Sc Biosciences 4th Semester	Completed	6 months
Nikita Isharwalia	Department of Zoology, Gauhati University	M.Sc Zoology 3rd Semester	Completed	2 months
Vishal Kumar	H.N.B.G. University, Uttarakhand	M.Sc. Microbiology	Completed	2 months

Awards/Recognitions/Achievements

Name	Particulars
Dr. A. Bala	Selected as Review Editor of the journal 'Frontiers in Pharmacology' (JCR 2021 Impact Factor 5.988) Section: Experimental Pharmacology and Drug Discovery
Dr. A. Bala	Selected as Associate Editorial Board Member of the journal Endocrine Metabolic & Immune Disorders - Drug Targets (JCR 2021 Impact Factor 2.387) - Official Journal of Association of Medical Endocrinologist - Italy
Dr. A. Bala	Received the "Bentham's Outstanding Reviewer Award" 2023
S. Gurumayum	Awarded Young Ethnopharmacologist Award in ISE-SFEC, 2023
S. A. Ahmed	Awarded best poster presentation at ISE-SFEC, 2023
N. Gurumayum	Awarded first prize in Poster competition at ICDD-2022
P. Khound	Awarded ICMR -SRF fellowship

INTERDISCIPLINARY RESEARCH

Co-ordinator: Dr. Kamatchi S.

A.1 Cold Atmospheric Plasma for Circular Economy

The plasma produced in laboratories, known as cold atmospheric plasma (CAP), has many applications in biomedical and other industries. Food, textiles, and disinfection industries are looking for green and chemical-free technology. In our work, we have shown the effect of CAP on the SARS-CoV-2 spike protein and RNA mediated through the Reactive Oxygen and Nitrogen species (RONS) produced in the CAP. Extending the work on making the CAP useful for disinfection purposes, we have shown the effect of CAP and Plasma Activated Water (PAW) on the Omicron variant of the SARS-CoV-2. We considered the ability of the binding of Angiotensin-converting Enzyme Protein (ACE2) protein to the CAP and PAW treated spike protein and Receptor binding domain (RBD) of the Omicron variant. The binding efficiency of Omicron spike protein to ACE2 decreases with increased CAP treatment time with both direct treatment and PAW, as evidenced using spectroscopic techniques. Correspondingly, the comparison between direct treatment and PAW efficiency shows that the effective RONS in PAW are predominant and proficient in deactivating the Spike protein. Together with other comparative works from the literature, we proposed that CAP technology can help achieve the goal of a circular economy. The main motto of the circular economy is to create products which are organic and quickly eliminated from the waste cycle with specific retention of quality, which in turn relates to UNDP SDG's.

A.2 Cold Atmospheric Plasma for Supramolecular Self-Assembly

Amino acids, which are the building blocks of proteins when treated with CAP, could be helpful in creating self-assembled supramolecular biomaterials. In this work, we demonstrate the process of self-assembly of aromatic amino acid tryptophan (Trp) enantiomers (L-tryptophan and D-tryptophan) into ordered supramolecular structures induced by the reactive species generated by cold atmospheric helium plasma jet (Figure 1). These enantiomers of tryptophan form organized structures as evidenced by FE-SEM analysis. We have analyzed the modifications in the Trp after CAP treatment through biophysical techniques revealing the addition of oxygenated ions to the pure Trp. These studies on the self-assembly of Trp due to ROS and RNS interactions will help us to understand and explore new ways to mimic, create and design natural self-assembled functional new nano supramolecular functional biomaterials using CAP (Fig. 35).

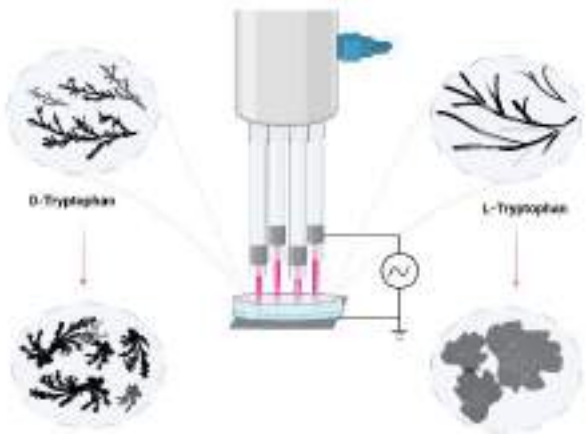


Fig. 35 Graphical representation of CAP treatment on Trp enantiomers in forming supramolecular assemblies.

Publication Part

Extramural projects

Completed projects

Title of the project	Funding Agency; Total fund; Duration; PI/Coordinator: Co-Investigator:	Achievement
Rheological Behaviour of the Concomitant Self-Assembly of Protein/Peptides Prompted by Water Soluble Inorganic Nanomaterials: A Fundamental Advancement Towards the Central Dogma of Parkinson's Disease.	Funding Agency: SERB-Startup Research Grant Total Fund: Rs. 28.1 Lakhs Duration: Jan. 2021-Jan. 2023 PI: Kamatchi S.	To understand the rheological behavior of proteins/peptides which tend to form amyloid fibrils.
Cold Atmospheric Plasma activated bio-molecular self-assembly and applications in Plasma medicine.	Funding Agency: IASST (In-house Project Grant) Total Fund: Rs. 15 lakhs Duration: 2 Years (Apr. 2021 – Mar 2023) PI: Kamatchi S. C0-PI: H Bailung	To understand the role of CAP in proteins and other small biomolecule self-assembly for further applications in the biomedical field.

Ongoing projects

Title of the project	Funding Agency; Total fund; Duration; PI/ Coordinator: Co-Investigator:	Goal
Cold atmospheric pressure plasma for the treatment of chronic wounds - A Geroscience-based approach	Funding Agency: ICMR-ITR Grant Total fund: Rs. 83 lakhs Jan. 2023 – Jan. 2026 PI: Dr. Kamatchi S Co-PI: Dr. Devashish Choudhury, Dr. H. Bailung, Dr. A.K. Mukherjee	To understand the role of CAP in proteins self-assembly for further applications in the Geroscience.

Publications

In cited journals

Author (s)	Title	Journal name	Volume & Issue no./page no.	Month/ Year of publication
D. Sarmah, M. A. Rather, A. Sarkar, M. Mandal, K. Sankaranarayanan, N. Karak	Self-cross-linked starch/chitosan hydrogel as a biocompatible vehicle for controlled release of drug	International Journal of Biological Macromolecules	237, 124206	Mar, 2023
R. R. Khanikar, P. Kalita, M. Narzary, D. Basumatary, A. J. Bharati, A. Priyadarshi, R. Swaminathan, H. Bailung, K. Sankaranarayanan	Cold atmospheric plasma driven self-assembly in serum proteins: Insights into the protein aggregation to biomaterials	RSC Advances	12, 26211 - 26219	Sept. 2022
Reema, R. R. Khanikar, H. Bailung, K. Sankaranarayanan	Review of the Cold Atmospheric Plasma (CAP) technology application in food, disinfection and textiles: A way forward for achieving the circular economy	Frontiers of Physics	DOI: 10.3389/ fphy.2022.942952	Aug. 2022
M. E. Joy, N. K. Sah, S. J. Phukan, V. Ganesan, M. Roy, P. K. Sonkar, S. Garai, K. Sankaranarayanan	Ultrafast detection of ammonia at room temperature and subsequent electrochemical water splitting via the ionic liquid templated nano nickel oxide	Materials Chemistry and Physics	290, 126537 (12 pages)	June, 2022

Popular article published in Newspaper/Magazine

Authors Name	Article Title	Newspaper/ Magazine name	Volume & Issue no./ page no.	Month/ Year of publication
K. Sankaranarayanan	Plasma-based green disinfectants can limit spread of infectious diseases like COVID 19	PIB Delhi, DST and more than 50 online news channels		Apr – May, 2022

Conferences/Workshops/Meetings attended

Faculty/research scholar	Conference/Workshop/Exhibitions	Date & Venue
K. Sankaranarayanan	Organized Biophysics Week at DST-IASST, Guwahati under the aegis of Biophysical Society, USA	Mar. 20-24, 2023
K. Sankaranarayanan	Attended 11th Training Programme on "Science & Technology for Rural Societies (Women Component)" at Indian Institute of Public Administration, Delhi	Dec. 19-23, 2022
K. Sankaranarayanan	37th National Symposium on Plasma Science & Technology (PLASMA-22) at IIT Jodhpur	Dec. 12-14, 2022

Presentation in Conferences/seminar

Invited talks

Faculty	Title	Programme Name	Date & Venue
Reema, K. Sankaranarayanan	Cold Atmospheric Plasma for the Deactivation of Omicron Variant of SARS-CoV-2	37th National Symposium on Plasma Science & Technology (PLASMA-22) at IIT Jodhpur	Dec. 12-14, 2022
D. Basumatary, K. Sankaranarayanan	Cold Atmospheric Helium Plasma Jet Triggering Self-assembly of Amino Acids Enantiomers into Supramolecular Structures	37th National Symposium on Plasma Science & Technology (PLASMA-22) at IIT Jodhpur	Dec. 12-14, 2022
K. Sankaranarayanan	Cold atmospheric Pressure Plasma mediated fibril formation in Hen Egg White Lysozyme and its inhibition using Polyoxometalate nanomaterials	National symposium on Challenges and opportunities in the management of neurological disorders, NIPER Guwahati	7 Dec. 2022

Lectures delivered at other institutes

Faculty	Topic	Date & Venue
K. Sankaranarayanan	Resource person and delivered talk on "General Laboratory Safety Measures" One-Week Training Program on "Sophisticated Instruments used in Scientific Research" jointly organized by NIT Agartala and DST-IASST, Guwahati under DST-STUTI	Sept. 7-13, 2022

Visits to national/international institutes/laboratories

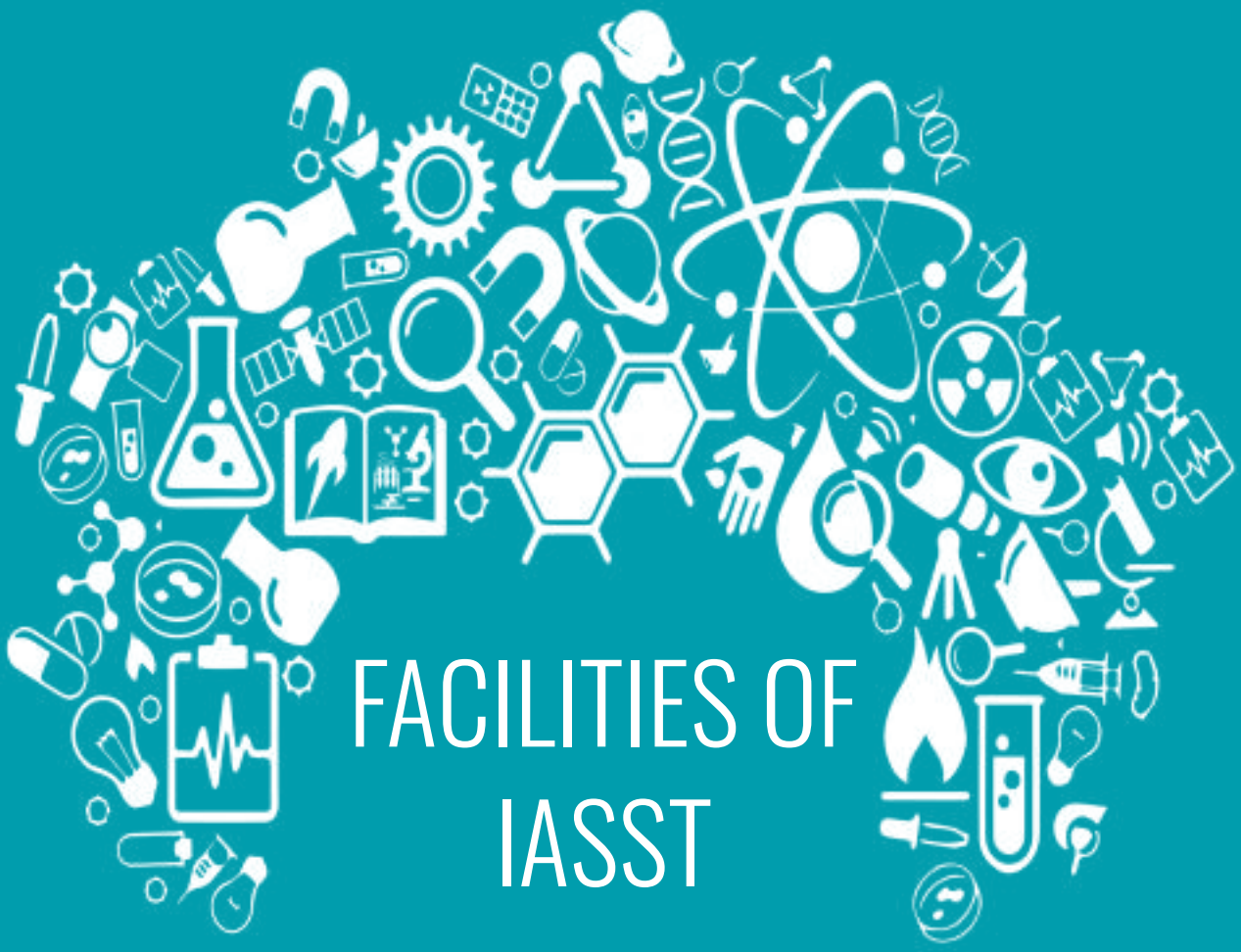
Faculty/Research scholar	National/international institutes/ laboratories	Date
K. Sankaranarayanan	CSIR-IITR, Lucknow and Banaras Hindu University, Varanasi	July 28 – Aug 7, 2022

M.Sc. / B. Tech projects/Internship/training courses offered at IASST

Name of Student	College/University	UG/PG Projects/ Intern	Status of Project	Duration
R. Z. Ravindra	M.Tech Medical Devices, NIPER Guwahati	PG Project	Ongoing	July 2022 – May 2023
P. S. Garad	M.Tech Medical Devices, NIPER Guwahati	PG Project	Ongoing	Jan 2023 – May 2023
A. S. Gaikhe	M.Tech Medical Devices, NIPER Guwahati	PG Project	Ongoing	Jan 2023 – May 2023
T. Bedmutha	M.Tech Medical Devices, NIPER Guwahati	PG Project	Ongoing	Jan 2023 – May 2023

Awards/Recognitions/Achievements

K. Sankaranarayanan	ICMR – ITR Grant Awarded - Jan 2023



FACILITIES OF IASST

Activities of the Research and Development (R&D) Cell

The Research and Development (R&D) cell of IASST was established in March 2021 to facilitate the healthy growth of research activities at IASST. This cell manages the extramural projects funded by external funding agencies and ensures easy dissemination of core research funds through in-house project mode. This cell also helps the project principal investigators recruit project personnel and assess the project's progress.

During the financial year 2022-23, IASST had undertaken 28 (Twenty-Eight) numbers of extramural projects, out of which 09 (Nine) are being funded by DBT, Govt of India, 12 are being funded by SERB and DST and the rest by other funding agencies. A total amount of Rs.199.67 Lakhs has been received against these extramural projects during the year. Apart from these, IASST has undertaken 15 (Fifteen) In-house research projects during the year, being funded by the institute, of which 14 (Fourteen) projects were completed on 31.03.2023.

Sophisticated Analytical Instrument Centre (SAIC)

The sophisticated Analytical Instrument Centre (SAIC) of IASST provides equipment support to meet the growing demand of the researchers of IASST and the North Eastern region.

Currently, SAIC has more than 35 pieces of equipment, including NMR, FE-SEM, TEM, AFM, Confocal Microscope, PL, TRPL, GC-MS/MS, HPLC, UPLC, HPTLC, LC-MS/MS, AAS, CHNS/O Analyzer, FACS, Raman Spectrometer, BET surface area analyser, DSC, TGA, FT-IR, Zeta Sizer, Contact Angle Analyzer, UV-Vis Spectrophotometer, Multi-mode Reader, Solar Simulator etc. Some new equipment, e.g. Ellipsometry, Circular Dichroism Spectrometer and Isothermal Titration Calorimetry, are also coming soon. Thirteen thousand one hundred eighty-three internal and 928 external samples are analyzed at SAIC during 2022-2023.

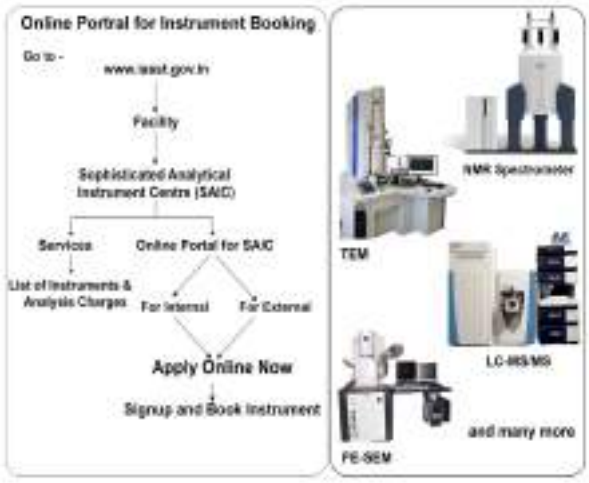


Fig. 36 Information for sample booking through SAIC portal and glimpses of SAIC instruments.

Animal house facility

The animal house is situated on the premises of IASST, facilitating the State of Art Laboratory for preclinical drug discovery, especially for *in vivo* evaluation in various disease models like Cancer, Endocrine Metabolic, and Autoimmune Diseases. Drug metabolism and pharmacokinetics (DMPK) studies to experimentally evaluate the drug candidate's intrinsic properties and their toxicokinetics parameters. This Animal House is registered with Committee for Control and Supervision of Experiments on Animals (CCSEA) under the Ministry of Fisheries, Animal Husbandry, and Dairying; Govt. of India.

It is funded jointly by DBT, Govt. of India, and DST, Govt. of India.

Medicinal Plant Garden, IASST

IASST is setting up a Medicinal Plant Garden to create awareness of conservation and traditional uses of herbs and medicinal plants to visitors and to also be a place where students, farmers, and others can learn how to identify and conserve these important plants. 53 different medicinal plant species has been planted based on Indian Systems of Medicine (ISM) and many of them are highly abundant in the NER region of India. Many medicinal plants are in the way of extinction and our garden will serve as conservation of Nature Red List of Threatened Species (IUCN). Healing with medicinal plants is an old treatment method as old as mankind itself. The connection between human and their search for drugs in nature dates from the far past, of which there are enormous evidence from different sources. Awareness of medicinal plants' usage is a result of the many years of struggles against diseases and man learned to pursue drugs in barks, seeds, fruits, and other parts of the plants. Contemporary science has acknowledged and considered in modern pharmacotherapy the active actions of plant origin drugs, known by ancient civilizations and used throughout the millennia. The knowledge of the development of ideas related to the usage of medicinal plants with awareness will increase the ability to combat the challenges encountered by the healthcare professionals.

Inauguration of Medicinal Plant Garden by DST Secretary Dr. S. Chandrasekhar

Quality Ccontrol and Quality Assurance

(QC & QA) FACILITY

QCQA Laboratory Facility for Herbals and Phytopharmaceuticals

Quality Control and Quality Assurance (QCQA) laboratory facility, IASST, has been granted National Accreditation Board for Testing and Calibration Laboratories (NABL) accreditation as per ISO/IEC 17025:2017 (certificate no. TC-11569) and also State Drug Testing License (AYUSH) under State Drug Control as per 160-A of Drugs and Cosmetics Rule, 1945 vide letter no. AYUSH/LA/20/2022/1386 dated 02.09.2022. Along with this, a few more quality test parameters as per IP or API of *Emblica officinalis, Mucuna pruriens, Taxus baccata, Asparagus racemosus , Boerhaavia diffusa, Piper longum* are being added under NABL accreditation. QCQA IASST also houses 25 authenticated herbariums (per national pharmacopeial standards) of high commercial value medicinal plants of NER and raw drug samples stored in the facility museum.

As a part of the capacity building program objective, all the project personnel have been trained on ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories and Measurement of Uncertainty conducted by QCI, Delhi and IIQM, Jaipur (as a certificate program). Local medicinal pant growers/FPOs, herbal product manufacturers and traditional healers have been identified and made aware of GMP requirements in the medicinal plant sector and the facility available at IASST, Guwahati. This facility will assist in much-needed demand from all stakeholders of this region for a quality testing laboratory facility for herbals.

BioNEST IASST- an initiative by BIRAC, DBT, GoI

BioNEST–IASST is nestled in the Institute of Advanced Study in Science and Technology

(IASST) to justify the concept of an incubator wherein Innovation & Entrepreneurship, Networks & Collaboration, Resource management & Outreach is taken care of for emerging Biotech/Life Science Startup Ventures. It is supported by scheme-BioNEST (Bio Incubators Nurturing Entrepreneurship for Scaling Technologies) BIRAC, Govt. of India, to create a robust mechanism for the translation of technology and to encourage transformation in the culture of bio-entrepreneurship in North-East India.

Few activities of BioNEST IASST (2022-23):

- Dr. Srivari Chandrasekhar, Hon'ble Secretary, Department of Science and Technology, Government of India, visited the Bio-NEST IASST facility and interacted with the incubatees

- Dr. Manish Dewan, Head of Strategic Partnership & Entrepreneurship Development, BIRAC, visited Bionest-IASST to interact with the management team and incubatees.

- Participated in the North East Research Conclave at IIT-Guwahati

- Attended the Biotech Startup Expo – 2022 at Pragati Maidan, New Delhi, marking the 10th anniversary of the Biotechnology Industry Research Assistance Council (BIRAC)

- Conducted 20+ awareness programmes/workshops/webinars on Entrepreneurship Development, Funding Schemes, Grant Writing, Sector specific topic, Sectors of Incubation at BioNEST IASST, etc.

- Inaugurated the functional workspace allotted to Aavya Life Science Pvt. Ltd.– incubatee of BioNEST IASST in the august presence of Director General of NECTAR and Director of IASST.
- Participated in the Regional Meet organized by the Institution Innovation Council (IIC) under the aegis of the Ministry of Education, GoI & All India Council of Technical Education hosted by The Assam Royal Global University.
- Sealing and packaging instruments were installed successfully at the Bionest-IASST
- Participated in the Startup Conclave, a part of the events organized at the India International Science Festival (IISF) at MANIT, Bhopal.

IASST Astronomical Telescope and observatory

Snapshot of the sky observation event (for trial) for the IASST staffs and research scholars

An astronomical telescope (Celestron CGX-L Equatorial 1400 Schmidt-Cassegrain Optical Telescope) along with its dome have been installed on the terrace of the observatory building of the institute. Aperture of the telescope is 14" with focal ratio f/11. A camera (Celestron Skyris 236 Camera) for astronomical imaging is also attached with the telescope. Telescope is placed inside the observatory dome of about ~3 m in diameter and ~3 m in height. Dome head is motorized control with forward and reverse switched movement. Along with this main telescope, a small telescope (Celestron Advanced VX 6" Schmidt-Cassegrain Small Optical Telescope) is also procured for its advantage of carrying it at various places. A sky observation event for making a trial run of the telescope has been organized for about the staffs and research scholars of IASST on 29th and 30th November, 2022. The planet Jupiter, Saturn, Mars and Venus had been observed. Jupiter has been seen with its 4 satellites. Saturn had been seen along with its ring. The moon surface had also been explored to them with the telescope.

DEVELOPING COLLABORATIVE NETWORK

Institute of Advanced Study in Science and Technology (IASST) signed a Memorandum of Understanding (MoU) with the Central Public Works Department, National Highway 37, Kotabari, Garchuk, Guwahati-35 here at Guwahati on March 28, 2023, for construction of Women's Hostel for IASST Guwahati. The DST sponsored this project worth Rs 25 Crore. The MoU was signed by Dr Diganta Goswami, Registrar, IASST and Mr Sarat K. Chaudhury, Executive Engineer of CPWD, Guwahati, in the presence of Prof Ashis Kumar Mukherjee, Director, IASST, Mr Sanjay Gupta, Chief Engineer, CPWD, Guwahati, Ms Ivy Nandi, Architect, CPWD, faculty members and officers of IASST and other officials of CPWD. Addressing a learned gathering on the occasion of the MoU signing function, Prof. Ashis Kumar Mukherjee, Director, IASST, expressed his gratitude to Science and Technology Minister Sr. Jitendra Sing, Dr S. Chandrasekhar, Secretary, DST, Dr M. Mohanty, Head, AI division, the finance section of DST. He also congratulated the team of CPWD and thanked Mr Sanjay Gupta, Chief Engineer, CPWD, for the collaboration. Prof. Mukherjee spoke about the vision of the IASST and the importance of constructing the women's hostel at IASST, which will fulfil a long pending requirement in the institute to attract women research scholars to pursue research staying at IASST comfortably. In his remarks, Mr Sanjay Gupta, Chief Engineer, CPWD, said the construction work would be completed within two years. The meeting ended with a vote of thanks from Dr Diganta Goswami, Registrar of IASST.

Memorandum of Understanding (MoU) between IASST Guwahati and Central Public Works Department (CPWD) Guwahati

STAFF WELFARE MEASURES

IASST has been persistently carrying out several welfare measures and introducing new measures time to time for welfare of the employees and Students of IASST

Medical Facility

The institute has its medical reimbursement system through which bills on expenses of both indoor and outdoor treatment in respect of all employees and their family members are reimbursed as per CGHS rules and rates. In addition to regular employees, the medical facility is also provided to research scholars and temporary employees engaged for short term on contract basis. One part time Lady allopathic doctor is also engaged as consultant Medical Officer(CMO) who attends the institute in all the working days in a week for consultation. She also attends patients in her private chamber. Facilities like rest bed, pressure machine and common medicines are available in the institute. A dedicated room equipped with routine medical equipment and medicines is being used as Doctor's Chamber in the main building. Beside this the institute empaneled

few renowned hospitals of Guwahati to provide medical facilities as per central government/ CGHS rates. These includes-1) Ayursundra Superspecialty Hospital, Garchuk, Guwahati-35 (2) Hayat Hospital, Lalganesh, Guwahati-34, (3) Arya Hospital, Rehabari, Guwahati-8, (4) GNRC limited, Guwahati-6 (5) GNRC Limited, Sixmile, Guwahati-22 (6) Narayana Super specialty Hospital, Amingaon, Guwahat-31 (7) Critical Care Hospital, Lokhra, Guwahati (8) Sri Sankardeva Nethralaya, Beltola, Guwahati and (9) Trinetra Nethralaya Eye Care Centre, Garchuk, Guwahati. All these hospitals provide medical facility to beneficiaries on credit basis. These hospitals also organized "Health checkup and Awareness camps" at IASST time to time to spread awareness about risky non-communicable diseases and advise on good life style and healthy living to keep doctor's away.

Canteen and Mess Facility

he institute canteen is outsourced to a private Caterer who serves meals, snacks and beverages in hygienic condition to employees, students and guests at subsidized rates. There is facility of serving snacks and beverages inside the main building through Vending Machine. The private caterer also provides hygienic food to the boarders and guests in the Dorothy Hodgkins Students and Scientists' Home.

Benevolent Fund

An IASST employees' Benevolent Fund was established by equal contribution from employees and the Institute. All the regular staff members are member of the Fund. The fund envisages a benefit in the form of one-time payment to nominees of the members in case of death and permanent disability while in service.

Group Insurance

A Group Insurance Scheme for the employees of the institute is operating with the Life Insurance Corporation of India. All the regular employees of the institute are members of the scheme. Subscription for the scheme is made by the institute to get appropriate insurance cover for each group of employees.

Housing Facility

The institute has limited housing facility. Six (6) nos. of quarters in the old residential building are allotted to few essential service staff of the institute. In the new Essential Service Staff Quarter (ESSQ) twelve nos. of essential staff reside. In the essential Service Staff quarter complex, there is arrangement of 12 Godrej bunker beds in each of the separate dormitory rooms for boys and girls for accommodation who visit IASST for different training and summer internship programme. The Director is residing in the quarter in the midst of Bio Conservation Hub. In the Scientific Staff Quarter complex there are five nos. of Type-V, six nos. of Type-IV and eight units of Studio Apartment. Most of these quarters are occupied by Faculty, National Programme faculty, PDF and Officers of IASST. In the SSH and the Old hostel, accommodation have been made for 52 nos. of research scholars. Moreover, there are 3 (three) nos. of VIP suites and six (6) nos. of scientist room in SSH for accommodating guests who visit IASST from various parts of India and abroad.

Different Government policies adopted in IASST

Reservation Policy

The Institute is following post based rosters for affecting the prescribed percentage of reservations to SC/ST/OBC/EWS in all its new recruitments as per Government of India Rules in this regard.

Official Language Policy

The institute is paying emphasis on implementation of provisions of Official Language Act and the rules made and instructions issued there under. All the Letter heads of the Institute are in bilingual format. Annual Report of the Institute is published both in English and Hindi. All the nameplates

and main signboards of the institute are made Trilingual (Assamese, Hindi and English). The institute had a Hindi Assistant who is looking after the implementation of the official language at IASST. Hindi courses are undergoing in the institute and many employees are taking classes under Hindi Teaching Scheme of Govt. of India. The employees have also started getting used to writing note in hard files and E-Office files in official Hindi language. Four nos. of Hindi workshop and Four nos. of Official Language Implementation committee meeting were organized in the institute during 2022-23. The institute is also observed 'World Hindi Diwas' and 'Hindi Pakhawada' during the year with great zeal.

Revenue Generation

The Institute realizes that there has to be efforts towards revenue generation venture without affecting the primary mandates of high quality basic research and academic programme of producing Ph. Ds. and training graduate level students for developing research skill. Through several extramural grants, institute earns overhead charges which are handy in reducing the maintenance cost provision of core budget. Besides, the internal source of income generation during 2022-23 is highlighted in the following table.

Source of Income	**Amount (₹)**
Laboratory Instrument uses charge	38,20,744.00
Sale Proceeds of institute products	8,18,431.00
Other Receipts (tender paper charge, bank interest etc.)	2,13,601.00
Hostel/guest house receipt	15,80,859.00
Total	**64,33,635.00**

ACADEMIC ACTIVITIES

List of Ph.D. awarded

Name of the students	Name of the Supervisor	Title of the thesis	Ph.D. awarding university
Daisy Das	Dr. L. B. Mahanta	On the study of automated detection of childhood medulloblastoma and its subtypes from histological images of biopsy tissue	Gauhati University
Samiran Upadhaya	Dr. N. Sen. Sarma	Poly (N-Vinylpyrrolidone-co-Acrylonitrile) and its Derived Materials: Property Evaluation and Probable Applications.	Gauhati University
Subhankar Pandit	Dr. Sarathi Kundu	Studies on structural and optical behaviors of biomacromolecules in presence of ions and nanomaterials	Gauhati University
Santanu Podder	Dr. Arup Ratan Pal	Synthesis and Characterization of Plasmonic Nanomaterials Suitable for Optoelectronic Applications	Gauhati University
Deepshikha Gogoi	Dr. Arup Ratan Pal	Synthesis of Hybrid Plasmonic Nanostructures for Implementation in Optoelectronic Applications	Gauhati University
Arun Kumar	Dr. Mojibur R. Khan	Study on the effect of potential probiotic bacteria in enhancing longevity and healthy aging of Caenorhabditis elegans Mr. Arun Kumar Department of Biotechnology	Gauhati University
Dibyayan Deb	Dr. Mojibur R. Khan	Effect of traditional rice beer (Xaaj and Joubishi) on gut microbiota of Ahom and Bodo communities of Assam	Cotton University
Manshi Hazrika	Dr. Lipi B. Mahanta	Design of an automated system to detect abnormal masses in Mammogram images.	Gauhati University
Monalisa Kalita	Dr. Rangam Rajkhowa, Dr. Ben Allardyce, Dr. Dipali Devi	Extraction and characterisation of silk sericin and its potential application.	Deakin University
Anurupa Goswami	Dr. Dipali Devi	Studies on structure of silk gland and silk protein of *Antheraea assamensis* Helfer	Gauhati University
Madhurankhi Goswami	Prof. Suresh Deka	Potentiality of biosurfactant producing microbes in plant growth promotion and inhibition of phytopathogenic fungi	Cotton University
Jayanta Sarma Boruah	Prof. Devasish Chowdhury	Carbon nanomaterial tagged bio-mimicking system for biomedical application.	Cotton University

M.Sc./B. Tech projects/Internship Courses Offered at IASST

Students Name	College/University	UG/PG Projects/ Intern	Status of Project	Duration
Ms. Indrakshi Dasgupta	Amity University, Kolkata	Internship	Completed	14-07-2022 to 16-08-2022
Mr. Nilesh Khedikar	University Institute of Sciences, Chandigarh University	Internship	Completed	08-07-2022 to 23-08-2022
Mr. Joshi Naresh Dilip	Yenepoa Research Centre, Yenepoa Deemed to be University, Mangalore	Dissertation	Completed	18-04-2022 to 26-08-2022
Miss. Aendrila Adhikary	Gauhati University, Zoology	Internship	Completed	11-07-2022 to 11-09-2022
Miss. Mrigakhi Das	Gauhati University, Zoology	Internship	Completed	11-07-2022 to 11-09-2022
Miss. Nikita Isharwalia	Guwahati University, Zoology	Internship	Completed	11-07-2022 to 11-09-2022
Mr. Shailendra Kumar Mishra	NIT-Dept of Physics, Patna Bihar, India	Internship	Completed	07-07-2022 to 20-12-2022
Mr. Nilotpal Moral	Tezpur University, M.Sc in Mathematics Sciences,	Internship	Completed	27-01-2023 to 14-03-2023
Ms. Sonali Dubey	Central University of Punjab, Bathinda, Dept. of Microbiology	Internship	Completed	15-02-2023 to 15-05-2023
Mr. Dhandapani R,	VSB Engineering College, Tamilnadu, India. IV year, B.Tech, Bio-Technology	Dissertation	Completed	08-02-2023 to 23-05-2023
Mr. Vishal Kumar	Hemvati Nandan Bahuguna Garhwal University, Srinagar	Internship	Ongoing	01/02/2023- till date
Mr. Shailendra Kumar Mishra	NIT-Dept of Physics, Patna Bihar, India	Dissertation	Ongoing	25/01/2023- till date
Ms. Prajakta Sharad Garad	National Institute of Pharmaceutical Education and Research (NIPER) Guwahati	Dissertation	Ongoing	31/01/2023- till date

Tejas Parasmal Bedmutha	National Institute of Pharmaceutical Education and Research (NIPER) Guwahati	Dissertation	Ongoing	25/01/2023-till date
Mr. Boobalan D	Karpagam Academy of Higher Education, Tamil Nadu	Dissertation	Ongoing	08/02/2023-till date
Mr. Arya Sunil Gaikhe	National Institute of Pharmaceutical Education and Research (NIPER) Guwahati	Dissertation	Ongoing	25/01/2023-till date
Ms. Bhanita Deka	Guwahati University	Dissertation	Ongoing	09/02/2023-till date
Mr. Kamal Krishna Sharma	Guwahati University	Dissertation	Ongoing	09/02/2023-till date
Mr. Kallol Bhuyan	Tezpur University, Assam	Internship	Ongoing	27-01-2023 to

Placements of the IASST alumni:

1. Miss. Elima Hussain joined as an Assistant Professor at Dept. of Computer science & Engineering, K.L. University, Vijayawada.
2. Dr. Uttam Kumar Jana joined as a Research Associate-I position at Saha Institute of Nuclear Physics (SINP) Kolkata.
3. Dr. Sushmita Das joined as an Assistant Professor at Guwahati University, Assam.
4. Dr. Rajiv Borah joined as a Post-Doc at trinity college Dublin, Ireland Dublin.
5. Mr. Arun Kumar joined as a Post-Doc at University of Massachusetts, Chan Medical School, USA.
6. Mr. Sagar Barge- joined as a PDF at Harvard Medical School, USA.
7. Mr. Dibyajyoti Koiri joined as Banch Chemist at Guwahati Biotech Park under Assam Excise Department, Assam.
8. Mr. Palabita Baruah joined as Banch Chemist at Guwahati Biotech Park, under Assam Excise Department, Assam.
9. Mr. Lokendra Singh joined as Se QA Engineer (SDET) in Canwill Technologies Pvt Ltd, MNC Private Company.
10. Ms. Kaberi Kalita joined as Lab Assistant at APGCL, Assam.
11. Dr. Kaustuvmani Patowary joined as an Assistant Professor at USTM, Meghalaya.
12. Mr. Bidyut Chutia joined as Project Scientific Officer at CPP-IPR, Guwahati, Assam.
13. Ms. Kabyashree Phukan joined as an Assistant Professor at Baosi Banikanta Kakati College, Barpata, Assam.

14. Ms. Bhaswati Kashyap joined as a Project Assistant at NIPER, Guwahati, Assam.
15. Dr. Abdus Samad joined as a Research Scientist R&D in Sun Pharma, Guwahati, Assam.
16. Dr. Santanu Poddar joined as a Research Associate at IACS, Kolkata.

Scientific Societal Responsibilities

Activity Date	Name of the supervisor/ in-charge	Description	Photograph
Lab Visit cum Hands-on training programme at IASST Date: 4-8 April 2022	Dr. M. R. Khan and Dr. Dhruba Sharma	Two days "Lab Visit cum Hands-on training programme" was organized for the students of BTC area of Assam under the SC/ST Community Development Programme. Thirty students of class X, accompanied by their science teachers from 6 government schools of Kokrajhar district attended the program.	
Lab experience based education programme for school students Date: 18-23 April, and 9-14 May, 2022	Dr. M. R. Khan and Dr. Dhruba Sharma	The project team visited 12 govt. schools in Baksa district of BTC. Over 1200 students attended the demonstration and hands-on class/ training.	
Scientific kit distribution Date: 22nd July 2022	Dr. M. R. Khan and Dr. Dhruba Sharma	A Scientific kit distribution event was organised by IASST, Guwahati in Baksa district of Assam under the SC/ST Community Development Project at IASST. Twelve govt. schools were provided scientific kit box.	

Lab visits programme for an excursion team of Manipur Date: 21st April 2022	Dr. Dhruba Sharma and Dr. T. D. Goswami	A DST excursion team of more than 40 school students from Manipur visited IASST.	
Training programme for Village Farmers and Students of IASST Date: 18th May 2022	Prof. R. Devi	A training programme on Vermicomposting, Banana Fibre Extraction and Preparation of Household Appliances for Village Farmers and Students of IASST. Total 34 number of participants have attended this training program.	
Teachers Lab Visit cum Hands-on training programme Date: 28 - 29, June 2022	Dr. M. R. Khan and Dr. Dhruba Sharma	Thirteen teachers from different schools of Kokrajhar district attended the program.	
Lab Visit cum Hands-on training programme for school students Date: 6-9 Sept., 2022	Dr. M. R. Khan and Dr. Dhruba Sharma	Thirty students of class X, (Twenty numbers of students from Baksa and Ten numbers of students from Udalguri district) accompanied by their teachers from six different government schools attended the program	
Art competition for the school students Date: 30th November 2022	Dr. M. R. Khan, Dr. Dhruba Sharma	An art competition for the primary School Students of "Parijat Academy" was organized on 30th of November 2022 at IASST.	

Linking ST/ SC communities for cultivation of soybean and commercialization of soybean-based products Date: 3rd May 2022	Dr. M. R. Khan	The Bodo community farmers at Udalguri, Assam were sensitized to take up soybean cultivation. A male society *Daogalang* was formed which cultivated soybean at Barnagaon village in Udalguri in 8 bighas of land where IASST arranged the agricultural inputs in collaboration with Assam Agricultural University, Jorhat and Krishi Vigyan Kendra, Udalguri.	
Linking ST/ SC communities for cultivation of mustard and commercialization of fermented mustard Date: 7th February 2023	Dr. M. R. Khan	The *Daogalang* society has cultivated soybean in Barnagaon village at Udalguri under the aegis of the project. The same society has been further sensitized to take up mustard cultivation and the female society *Gwjwnsri* has been trained to produce the optimized fermented mustard with starter as deduced thorough the study mentioned above. *Daogalang* cultivated mustard in 8 bighas of land in Barnagaon village	

Training the *Kaibarta* (SC) community to adapt processing and marketing of optimized *Shidal* Date: 15th February 2023	Dr. M. R. Khan	Training for safe processing of *Shidal* with starter culture was organised in Tripura under the guidance of Prof. R. K. Majumdar, College of fisheries, Central Agricultural University, Tripura.	
Linking tribal communities for promoting and commercialization of *Xindol* Date: 7th Dec 2021	Dr. M. R. Khan	The SC/ST community development project team organized several meetings with tribal women in the village and made awareness programme on self-employment for better livelihood by selling fermented food items. *Upasona* ethnic food society (society registration number: RS/KAM(R)/264/J/119) was formed in IASST adopted village Bakarapara, Rani, Assam to promote their ethnic food *Xindol* under this project. The group earned Rs. 9040 by selling 12.64 kilogram of *Xindol*. For upscaling the production of *Xindol*, the project has provided incubation platforms (Bionest) to the society members for socio-economic upliftment of tribal community and to promote women empowerment in NE region.	

Biofloc installation to support fish farming for *Xindol* production at Bakarapara Village, Rani, Assam Date: 13th March 2023	Dr. M. R. Khan	A hurdle for consistent production of *Xindol* chiefly includes non-availability of fishes required for *Xindol* production throughout the year. The small fishes are available on a particular season and therefore, the people in this region can't rely economically on *Xindol* for sustainable livelihood. To overcome this issue, we proposed installation of Biofloc system at Bakarapara village, Rani, Assam.	
Linking with NGO for the expansion of *Eri* cultivation in other region of Assam Date: 10th October 2022	Dr. M. R. Khan	A Guwahati based, NGO (Ankurito asom) has been engaged for the expansion of eri cultivation in the Khaloi bari village at Khetri (Dimoria Tehsil in Kamrup Metro District) of Assam. Several meetings have been conducted with the members for the same for selling of eggs and cocoon. A business model was developed for commercialization and marketing for the socio-economic upliftment of the people associated with *Eri* rearing and cultivation.	

PHOTO GALLERY

PHOTO GALLERY

Administrative Staff

SAIC Team Members

BioNest Group

Engineering Cell

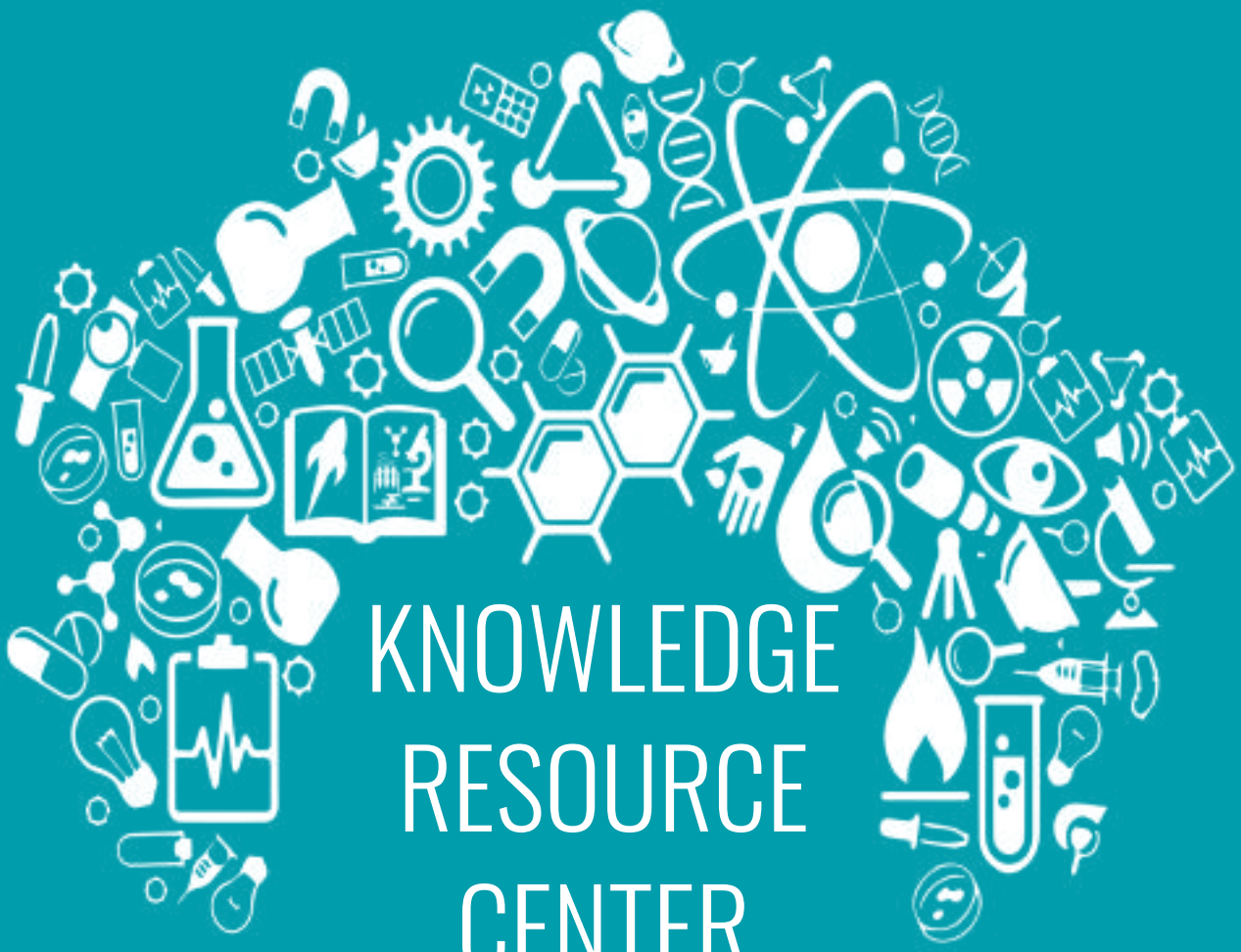
KRC Team

Academic Cell

IT Cell Team

R & D Cell

Editorial Board members



KNOWLEDGE RESOURCE CENTER

KNOWLEDGE RESOURCE CENTER

The Knowledge Resource Center (KRC) of IASST is the hub of knowledge and research activities. Since its inception, the Knowledge Resource Center has been playing an important role in providing information and various academic services to its users using modern tools and resources to the scientific multitude of people involved in the institute's research and development activities. It is a special library, and the library has memberships of the National Knowledge Resource Consortium (NKRC), National Digital Library (NDL), Developing Library Network (DELNET) and Current Science Association (CSA). The centre also provides services to research other educational and research institutes in North East India. The KRC collection includes 8452 books, 2939 bound periodicals, 109 theses, 184 dissertations, and 781 research papers (Journal articles and chapters in the book). The centre provides its patrons access to subscribed e-resources like e-journals comprised of scholarly content via Wi-Fi and LAN (Local Area Network) connections and also manages the use of iThenticate, a plagiarism checks software, Grammarly, a writing assistant software and SigmaPlot, a scientific graphing and data analysis software. The institute also has its own Institutional Repository (IR) or Digital Library, accessible through the institute's Wi-Fi or LAN facility, which provides access to digital resources produced by the institute.

In 2022-2023, the services and activities were improvised, with 387 new books procured based on the requisition of the patrons, 347 books circulated, photocopy and printing services of 75,500 pages and 149 scans provided. The KRC is partitioned into sections such as Circulation Section, Property Counter, Technical Processing Section, Reading Area, Digital Resource Section, Periodical Section, Book Section, Mini Conference Room, Back Volume Section and Faculty Reading Room, Providing the perfect reading and brainstorming environment to the users.

EMINENT SCIENTISTS/ PERSONALITIES WHO VISITED IASST AND DELIVERED LECTRURE UNDER THE BANNER OF 75TH YEAR OF INDIA'S INDEPENDENCE- "AZADI KA AMRIT MAHOTSAV"

Sl. No.	Name of Scientist/ Speaker	Affiliation	Title of talk/ Lecture	Date
1.	Dr. Himangshu Kousik Bora	Senior Scientist, CSIR-North East Institute of Science and Technology (NEIST), Pulibor, Jorhat-785006	Good laboratory practices (GLP) in biomedical research: perspectives and regulatory aspects	April 4, 2022
2.	Mr. Archita Borgohain	Founder CEO- Binbag Recycling	Advancement in the fields of electronic waste recycling	May 5, 2022
3.	Dr. Alaka Goswami	President, Global Organization of Life Development, Guwahati	Awareness talk on sexual harassment	May 12, 2022
4.	Dr. Madhurima Goswami	C. Saikiani Centre for Women Studies, Tezpur University	Awareness talk on sexual harassment	May 12, 2022
5.	Prof. Bosanta Ranjan Baruah	Department of Physics, IIT Guwahati	High resolution imaging using laser beam scanning microscopes	May 16, 2022
6.	Mr. Anup K. Misra	Chairman of Pollution Control Board, Assam	Theme of World Environment Day 2022 is 'Only one earth'	June 6, 2022
7.	Prof. Debendra C. Baruah	H.o.D. , Energy Dept., Tezpur University	Theme of World Environment Day 2022 is 'Only one earth'	June 6, 2022
8.	Mr. Anijit Bhattacharya	MSME Consultant	Creation of Biotech Ministry of Micro, Small and Medium Enterprises (MSME) for Atmanirbhar Bharat	June 27, 2022
9.	Mr. Ratish Iyer	General Manager, BridgePeople Technology Solutions	Online seminar on usage of Grammarly software	July 19, 2022
10.	Mr. Milind Wagh	Principal Account Manager- Scientific Solutions ACS International India Pvt Ltd. – Representing CAS Jeevan Heights, 501-3 Thorat Colony, Erandwane	Training on usage of SciFinder	August 22, 2022

11.	Prof. Ranendra Kumar Majumdar	Department of Fish Processing & Technology, College of Fisheries, CAU, Tripura	Traditional processed fish products of North East India-validation, quality evaluation and future prospects	August 26, 2022
12.	Dr. Roshan M. Borkar	Assistant Professor, NIPER Guwahati	Liquid Chromatography with Tandem Mass Spectrometry (LC-MS/MS)	September 7, 2022
13.	Prof. Alika Khare	IIT Guwahati	Raman Spectroscopy	September 10, 2022
14.	Mr. S. Chakraborty	Technical Officer, IACS Kolkata	Transmission Electron Microscopy (TEM)	September 10, 2022
15.	Prof. Mahuya De	Chemical Engineering Dept., IIT Guwahati	CHNS/O Elemental Analyzer	September 11, 2022
16.	Dr. Chiranjit Bhowmik	Senior Project Associate DST-STUTI PMU, NIT Agartala	DST STUTI Program	September 12, 2022
17.	Shri Manoj Kumar	Senior Translation Officer, Rajya Bima Nigam	Importance of technical Hindi for implementation of Official Language	September 27, 2022
18.	Mr. Rishav Kumar	Technical Support Team, Bridge People Technology Solutions	Admin panel training for Grammarly software	October 21, 2022
19.	Dr. Manash Pratim Boruah	Apollo Excelcare Hospital, Guwahati	Genesis of chronic lifestyle diseases: peeping through the evolutionary lenses	November 14, 2022
20.	Dr. Suman Dasgupta	Assistant Professor, Tezpur University	Type 2 diabetes and immune metabolic disorder	November 14, 2022
21.	Mr. Akshay Prasanna	Customer Success Manager – Turnitin	NKRC- Ensuring Research Integrity with iThenticate	November 18, 2022
22.	Shri Komal Kumar	Director, Ra. Bha., Kendriya Hindi Shikshan Yojana, Guwahati	Implementation of Hindi at office	December 22, 2022
23.	Dilip Kumar Medhi	HoD, Dept. of Hindi, Gauhati University, Guwahati, Assam.	Vishwa Hindi Diwas-development of usage of Hindi language in science, research	January 10, 2023
24.	Dr. Bhargab Kalita	Assistant Professor, Amirta Vishwa Vidyapeetham, Kochi	Mass spectrometry-based proteomics: Instrumentation and interpretation of mass spectra	February 01, 2023

25.	Dr. Debasis Dash	Chief Scientist, CSIR-IGIB, New Delhi	Mining proteoforms from public repositories and way forward	February 01, 2023
26.	Dr. Shantanu Sengupta	Sr. Principal Scientist, CSIR-IGIB, New Delhi	Proteomics and its clinical application	February 01, 2023
27.	Dr. Mahesh J. Kulkarni	Scientist, CSIR- NCL, Pune	Selection and prioritization of glycated peptides of albumin for diagnosis of diabetes-A targeted proteomics approach	February 01, 2023
28.	Dr. Swasti Raychaudhuri	CSIR-CCMB, Hyderabad	Two day's workshop on application of Proteomics in Bio-Medical Research	February 01, 2023
29.	Dr. Tashnin Rahman	Prof. & Head, Department of Head & Neck Surgery, Dr. B. Borooah Cancer Institute, Guwahati, Assam	Close the care gap	February 04, 2023
30.	Prof. Seyed E. Hasnain	Chairman of the Scientific Advisory Council, IASST, and Distinguished Professor at Sharda University, Greater Noida	Intelligent strategies for survival and Pathogenesis adopted by the TB bacterium Mycobacterium tuberculosis.	February 14, 2023
31.	Dr. Subhra Chakraborty	J.C. Bose National Fellow and Director, National Institute for Plant Genome Research, New Delhi	Healthy Plant Healthy Planet, Food & Nutrition Security	February 28, 2023
32.	Prof. Amlan J. Pal	J.C. Bose Antional Fellow and Director of UGC-DAE, Consortium of Scientific Research, Indore	Research on Device Physics	February 28, 2023
33.	Prof. Krishanu Ray	Director, National Brain Research Centre, Gurgaon, Haryana122051, India	Phosphoregulation of kinesins – the nano-motors that walk on microtubule nano-rails - in neurons	February 28, 2023
34.	Dr. Pedro Alexandrino Fernandes	Computational Biochemistry, University of Porto, Portugal	Supercomputing in Biochemistry, Biotechnology, and Drug Discovery	February 28, 2023
35.	Dr. Sriparna B. Baruah	Former Head, CIE, Indian Institute of Entrepreneurship, Guwahati.	DigitALL: Innovation and technology for gender equality	March 07, 2023

36.	Prof. Anupam Saikia	Professor, Department of Mathematics, IIT Guwahati	Mathematics for everyone	March 14, 2023
37.	Prof. Sujata Sharma	Professor, Dept. of Biophysics, AIIMS Delhi	Biophysics: The hero emerging in Pandemics	March 20, 2023
38.	Mr. Susruta Narayan Choudhury	Application Engineer, Photonics and Optics	Overview of photonics simulation, solution and their application	March 30, 2023
39.	Sushri Manashi Neog	IIT Guwahati	Rajbhasha Hindi Prayog evang karyavyahan	March 28, 2023

SCIENTIFIC TALK, LECTURE DELIVERED BY IN-HOUSE FACULTIES UNDER THE BANNER OF 75TH YEAR OF INDIA'S INDEPENDENCE- "AZADI KA AMRIT MAHOTSAV"

Sl. No.	Name of the Speaker	Affiliation	Title of the talk/ Lecture	Date
1.	Dr. Jagat C. Borah	Assoc. Prof. II, Traditional and Modern Drug Discovery and Disease Diagnosis (LSD)	Common Sense, Science and Natural Product Drug Discovery	April 20, 2022
2.	Dr. Subir Biswas	Asst. Prof. II, Basic and Applied Plasma Physics (PSD)	Cold Atmospheric Plasma and its Application in Medical Science	May 19, 2022
3.	Dr. Arundhuti Devi,	Assoc. Prof. II, Biodiversity and Ecosystem Research (LSD)	Water is life's matter and matrix: Conserve water	June 30, 2022
4.	Dr. Munima B. Sahariah	Assoc. Prof. II, Advanced Material Sciences (PSD)	Hello Heusler	August 11, 2022
5.	Dr. Biswajit Choudhury	Asst. Prof. II, Materials and Energy Laboratory (PSD)	Plasmonics: Matter meets Light at the Nanoscale	September 21, 2022
6.	Dr. Lipi B. Mahanta,	Asso. Prof. II, Mathematical and Computational Sciences (PSD)	Man vs machine: comparing artificial and biological neural networks	January 24, 2023
7.	Prof. A .K. Mukherjee	Director, IASST	Multidimensional chromatographic techniques in proteomics analysis	February 01, 2023
8.	Prof. A.K Mukherjee	Director, IASST	Ethics in Research	September 07, 2022

9.	Prof. D. Chowdhury	Professor I, Advanced Material Sciences (PSD)	Scanning Electron Microscopy (SEM)	September 07, 2022
10.	Dr. A. Devi	Associate Professor, LSD, IASST	Gas Chromatography with Tandem Mass Spectrometry (GC-MS/MS)	September 07, 2022
11.	Dr. Jagat C. Borah	Associate Professor, LSD, IASST	High Performance Liquid Chromatography (HPLC)	September 07, 2022
12.	Dr. Biswajit Choudhury	Assistant Professor IASST	BET Surface Area Analyzer	September 09, 2022
13.	Professor N.S Sarma	PSD, IASST	Basic Electronics and Instrumentation	September 09, 2022
14.	Dr. S. Kamatchi	Assistant Professor PSD, IASST	General Laboratory Safety Measures	September 10, 2022
15.	Professor H. Bailing	Bodoland University	Vacuum Techniques and Systems for sophisticated Analytical Instruments	September 10, 2022
16.	Dr. Sarathi Kundu	Associate Professor PSD, IASST	X-Ray Diffraction (XRD)	September 10, 2022
17.	Dr. Suman Kr. Samanta	LSD, IASST	Confocal Microscopy	September 11, 2022

MAJOR EVENTS (AKAM)

Celebration of National Technology Day

On May 11, 2022, BioNEST-IASST celebrated National Technology Day in conjunction with the Swatchata Pakhwada 2022 campaign. As part of the program, a webinar session was conducted by Mr. Achitra Borgohain, founder and CEO of Binbag Recycling, who delivered a talk titled "E-Waste: The Tech Garbage Issues and Opportunities." The session saw a total of 46 participants in attendance.

Celebration of World Intellectual property Day

Bio-NEST IASST organized a webinar on April 26, 2022 from 11 am onward. The topic for the webinar was "Strategies for Patenting" which was addressed by Shri Govind Sharma, Ex Chief of National Research Development Corporation. About 40 participants attended the webinar in hybrid mode. The inaugural speech was rendered by Prof. Neelotpal Sen Sarma, Head R&D, IASST and the meeting ended with the vote of thanks by Prof. Devasish Chowdhury, PSD, IASST.

International Day of Light

The International Day of Light is a globally recognized initiative established by UNESCO, observed annually on May 16th, 2022. This

significant event aims to emphasize the profound significance of light in various domains such as science, culture, art, education, and sustainable development.

The Institute of Advanced Studies in Science and Technology (IASST) celebrated this momentous occasion by inviting Professor Basanta Ranjan Baruah as the guest speaker to enlighten the audience about the essence of light in day-to-day life and its contributions to scientific advancements. Prof. Baruah commenced the talk by discussing confocal microscopy, a powerful instrument widely utilized in physical, chemical, and particularly biological sciences. A significant outcome of the event was the commemoration of the anniversary of the first successful operation of the laser in 1960 by Theodore Maiman.The event fostered a deeper appreciation for the multifaceted applications of light and encouraged attendees to further explore the potential of light in their respective domains.

World Environment Day

In commemoration of World Environment Day 2022, IASST hosted a two-day celebration on June 5th and 6th, 2023, within the institute's premises, as part of the grand 75th Year of India's Independence - Azadi Ka Amrit Mahotsav. This momentous occasion unfolded with an introductory address by Dr. Arundhuti Devi, the event coordinator, who presented a concise yet informative documentary showcasing the remarkable research endeavors undertaken by the Environmental Chemistry Lab at IASST.

IASST Director, Prof. A.K. Mukherjee in his welcome speech eloquently expounded upon the overarching theme of the event, "Only One Earth," underscoring the imperative of environmental stewardship and conservation. Reflecting the institute's commitment to sustainable practices, a poignant highlight of the program was a plantation ceremony held within the IASST premises, where the entire institute community actively participated, symbolizing their dedication to nurturing and preserving the environment.

The event further flourished with the esteemed presence of guest speakers, including Dr. Arup Kr. Misra, Chairman of the Pollution Control Board, Assam, and Prof. Debendra Chandra Baruah, Head of the Department of Energy at Tezpur University. Both Dr. Misra and Prof. Baruah's contributions enriched the event, underscoring the importance of sustainable practices and showcasing the remarkable potential for environmental conservation and resource utilization. The event aptly exemplified IASST's unwavering commitment to raising awareness about environmental issues and championing sustainable practices.

A Captivating Moment: Sapling Plantation at the World Environment Day Celebration

Felicitation of Mr. Arup K. Misra, Chairman Pollution Control Board, Assam, by Prof. A.K Mukherjee

Scene from Prof. Debendra C. Baruah's talk

Celebration of World MSME Day

On the occasion of World Micro, Small and Medium-sized Enterprises (MSME) Day and as part of the celebration of India's 75th Year of Independence, Azadi ka Amrit Mahotsav, BioNEST IASST hosted a webinar on June 27, 2022. The webinar focused on the topic of "Creation of Biotech MSMEs for Atmanirbhar Bharat" and featured Mr. Anijit Bhattacharya, an esteemed MSME Consultant, as the keynote speaker.

In his presentation, Mr. Anijit Bhattacharya provided valuable insights into the profound impact of the biotechnology sector on the economy. He offered a comprehensive overview of the concept of MSMEs and highlighted their significant contribution to the country's GDP

The webinar served as a platform for knowledge exchange and valuable insights, shedding light on the crucial role of biotech MSMEs in fostering self-reliance and economic growth in India.

Dr. Debasmita Saikia delivering her talk

Celebration of World Snake Day

The Institute of Advanced Study in Science and Technology (IASST) commemorated World Snake Day on July 16, 2022, as part of the 75th Year of India's Independence - "Azadi Ka Amrit Mahotsav". A one-day national symposium titled "Snake and Scorpion Envenomation and Therapy: National and International Perspectives" was organized. The event drew the presence of esteemed government officials, renowned toxicologists, clinicians, young scientists, faculty members, research scholars, and postdoctoral fellows associated with IASST.

In his welcome address, Prof. Ashis K. Mukherjee, Director of IASST, emphasized the importance of snake and scorpion venom research in India, highlighting the use of laboratory tests to assess the quality and efficacy of commercial antivenoms. Dr. Joy Kumar Chakma, Scientist E at ICMR, delivered an insightful talk on "ICMR initiatives in snakebite research." The symposium featured captivating lectures by renowned national and international scientists including Prof. Choo Hock Tan from the University of Malaya, Malaysia, Prof. Shakti Vaiyapuri from the University of Reading, UK, Prof. Jose M. Gutierrez from Instituto Clodomiro Picado, Costa Rica and several other notable experts engaged in snake and scorpion venom research. The symposium also included a poster session where several posters were displayed, offering an opportunity for evaluation and interaction with young researchers.

Director, IASST inspecting the posters during the event

Prof. Raktim Pratim Tamuli addressing the gathering

Dr. Surajit Giri felicitated by Dr. Arundhati Devi

Observation of International Day for Universal Access to Information (AI)

On September 28, 2022, the Institute of Advanced Study in Science and Technology (IASST) observed the International Day for Universal Access to Information (AI) with great significance. The distinguished chief guest for this auspicious occasion was Mr. Deepak Goswami, retd. Deputy Director General at the National Informatics Centre (NIC). The chief guest delivered a profound address highlighting the utmost importance of the day and actively participated in an engaging and interactive session, delving into the profound impact of Universal Access to Information. This session served as a poignant reminder of the imperative nature of ensuring unrestricted access to information for all individuals.

World Diabetes Day

On the occasion of World Diabetes Day, the Institute of Advanced Study in Science and Technology (IASST) hosted an interactive talk session on November 14, 2022. The invited guests, namely Dr. Manas Pratim Boruah from Apollo Excelcare Hospital, Guwahati, and Dr. Suman Dasgupta from Tezpur University, captivated the audience with their profound insights and expertise in their respective fields.

Dr. Manas Pratim Boruah, an eminent figure in the medical community, delved into the intriguing topic of "Genesis of chronic lifestyle diseases: peeping through the evolutionary lenses". Dr. Suman Dasgupta, a distinguished scholar from Tezpur University, delved into the realm of "Type 2 diabetes and immune metabolic disorder." The session showcased their profound expertise and in-depth understanding of their respective fields illuminated new avenues of research and shed light on critical issues concerning chronic lifestyle diseases and type 2 diabetes.

Dr. Manas Pratim Boruah delivering his talk

Dr. Suman Dasgupta being felicitated by Prof. A.K. Mukherjee

Commemoration of World Cancer Day

The Institute of Advanced Study in Science and Technology (IASST), Guwahati, commemorated World Cancer Day on February 03, 2023, as part of the 75th Year of India's Independence celebration-"Azadi Ke Amrit Mahotsava". The theme of World Cancer Day, "Close the Care Gap," served as a focal point for the event, which took place virtually.

Honourable Director of IASST, Prof Ashis K. Mukherjee delivered a brief talk on the rise of the incidence of the disease and the importance of taking action in the regard. Dr. Tashnin Rahman, Head of the Department of Head and Neck Surgery at B. Borooah Cancer Institute, Guwahati, an eminent onco-surgeon, served as the resource person for the event. In her talk shed light on the theme and its origins. She delved into the global and national landscape of different types of cancers, their incidences, risk factors, and preventive measures.

The program was attended by faculty members, research scholars, postdoctoral fellows, and other staff members of IASST, who actively participated in the talk. The event emphasized the crucial role of awareness and prevention in curbing the escalating burden of cancer and expressed concern about the limited number of oncologists addressing this issue.

Dr. Tashnin Rahman addressing the participants during the online event

Observation of International Day of Women & Girls in Science

The Institute of Advanced Study in Science and Technology (IASST), in collaboration with the Rotary Club of Gauhati South (RCGS), celebrated the "International Day of Women and Girls in Science" on February 10, 2023. Over thirty girls, students from various scientific disciplines in nearby colleges, participated in a day-long program that included a visit to IASST laboratories and an interactive session with women scientists from IASST. The program aimed to inspire and motivate the students to pursue careers in STEM (Science, Technology, Engineering, and Mathematics).

Prof. Ashis K. Mukherjee, Director of IASST, welcome address emphasized on the importance of encouraging and supporting young women and girls in pursuing careers in science and technology. Mr. Nabajyoti Sharma, President of RCGS, provided an inaugural speech explaining the purpose of the meeting, while Dr. Indira Bardoloi, Chairperson of RCGS, presented the objectives of the event through a digital presentation. The program featured motivational talks by invited speakers, including Prof. Joyanti Chutia, Former Director of IASST and former Emeritus Scientist, DST, Government of India, and Dr. Bula Choudhury, Senior Scientist at Guwahati Biotech Park. The event was attended by more than one hundred participants, including faculty members, research scholars, postdoctoral fellows, staff members of IASST, dignitaries from RCGS, and college students.

Prof. Joyanti Chutia being felicitated at the event

Lab visit attended by girls from nearby colleges at IASST

Celebration of International Women's Day 2023

Bio-NEST IASST, celebrated International Women's Day on March 7, 2023, with a motivational talk centered around the theme "DigitALL: Innovation and Technology for Gender Equality". Dr. Sriparna B. Baruah, Advisor (Livelihoods and Entrepreneurship) North Eastern Handloom and Handicrafts Development Corporation (Purbashree). graced the occasion as the guest speaker.

The welcome address was delivered by Dr. Arundhuti Devi, Chairperson of the Internal Compliance Committee (ICC) at IASST. In the absence of Prof. Ashis K. Mukherjee, Director-IASST, the inaugural speech was given by Prof. Nilotpal Sen Sharma, Director i/c. Dr. Baruah's speech shed light on the transformative potential of innovation and technology in

Felicitation of Dr. Sriparna B. Baruah

advancing gender equality. She underscored the importance of leveraging these tools to empower women and bridge gender gaps in various domains. The session concluded with an interactive segment where participants engaged in a fruitful exchange with the speaker, further enriching the program

Celebration of International Day of Mathematics

IASST celebrated the International Day of Mathematics 2023 on March 14, 2023, as part of the 75th Year of India's Independence - Azadi Ka Amrit Mahotsav. The event was graced by Prof. Anupam Saikia from the Department of Mathematics at IIT Guwahati as the distinguished guest.

Prof. Asish K. Mukherjee, the Director of IASST highlighted the rich contributions of Indians to the field of mathematics since ancient times. Prof. Saikia's expert talk delved into the practical applications of mathematics in cryptography and presented intriguing unsolved problems that ignite deeper contemplation about the captivating realm of numbers. The session fostered active participation from the enthusiastic audience, with the speaker eloquently addressing their queries and providing further insights.

Prof. Anupam Saikia's talk on International Day of Mathematics

MAJOR ANNUAL EVENTS

Celebration of 'Swachhata Pakhwada'

The Institute of Advanced Study in Science and Technology (IASST), situated in Guwahati, celebrated the 'Swachhata Pakhwada' from May 1st to May 15th, 2022. This annual event, organized for the seventh consecutive year, was part of the Swachh Bharat Mission initiated by the Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India. Throughout the 'Swachhata Pakhwada,' several initiatives were undertaken to promote cleanliness and sanitation within the institute. These included intra-campus cleanliness drives, sanitation competitions among the workers and scholars, and awareness programs addressing the ban on single-use plastics, plastic recycling, and solid waste management. These activities aimed to instill a sense of responsibility and foster a culture of cleanliness among the institute's members.

The Pakhwada program culminated in a valedictory function held on May 13, 2022. During this event, the Director of IASST presented prizes to the winners of various competitions held during the fortnight-long campaign. The ceremony not only recognized the efforts and achievements of individuals but also served as a testament to the collective commitment of the institute towards cleanliness and hygiene.

Swachhata pakhwada celebrated at IASST

DST Foundation Day Celebrations

To commemorate the Department of Science and Technology Foundation Day, IASST organized an interactive session with Dr. Amal Chandra Kakati, MBBS, MD, Director, B. Borooah Cancer Institute on May 03, 2022. The

virtual session hosted a talk on the topic "Triple 'C' in Cancer". This informative discourse shed light on the intricate aspects of cancer, focusing on the three essential elements encompassing its understanding, prevention, and treatment. Subsequently, on May 4, 2022, the Director of IASST took the stage to address the esteemed members of the IASST family. This occasion held great significance as it marked the foundation day of the Department of Science and Technology (DST). The Director's speech resonated with the essence of this momentous event, reflecting upon the achievements, challenges, and aspirations of IASST. The commemorative occasion served as a time for reflection, unity, and renewed determination to forge ahead in the pursuit of knowledge and innovation.

Dr. Amal Chandra Kakati delvering his talk through online mode

Observation of International Yoga Day (IYD-2022)

In commemoration of International Yoga Day, a week-long Pre-Yoga Session was meticulously organized at the esteemed Institute of Advanced Study in Science and Technology (IASST). This event sought to provide faculty members, staff, and research scholars with a unique opportunity to experience the profound benefits of yoga. From June 13 to June 20, 2022, the premises of IASST thrived with activities aimed at promoting a sense of well-being and cultivating an understanding of the significance of yoga in everyday life. On June 17, 2022, an essay competition titled "The Essence of Yoga in Everyday Life" was organized for school students. The competition aimed to motivate and inspire young individuals to embrace yoga in their daily lives. Awards were presented to recognize and encourage the participants' efforts and talents. The Pre-Yoga Session culminated with the grand inauguration of International Yoga Day (IYD-2022) on June 21, 2022 by Director, IASST, Prof. A.K. Mukherjee. The event commenced with a lecture on "Meditation" followed by captivating performances of various yoga asanas.

Yoga practice at IASST, led by Yoga instructor Debajit Nath

A scene from the felicitation ceremony

Celebration of Independence Day

IASST celebrated 75th Independence Day on August 15th, 2022 with great fervor under the theme of "Azadi Ke Amrit Mahotsav."The event commenced with the hoisting of the tricolor flag by the Director of IASST Prof. Ashis K. Mukherjee, accompanied by the rendition of the national anthem. His special address, appealed to innate sense of patriotism, encouraging each individual to embrace their Indian heritage with pride and actively contribute to the holistic development of the nation.

Snapshots from the Independence Day celebrations

The event also included a distinguished recognition for the exceptional achievements of the children of IASST employees who demonstrated outstanding performance in their class 10th and 12th, 2022 examinations. Additionally, deserving recipients of the Slogan Writing Competition among the esteemed research scholars of the institute were duly acknowledged and celebrated.

Observance of Hindi Pakhwada: Promoting the Richness of the Hindi Language

IASST observed the Hindi Pakhwada for the year 2022-23 from September 14 to September 29, 2022, following the guidelines of the Department of Official Language, Ministry of Home Affairs. The inaugural ceremony at the national level took place on September 14, 2022, at the prestigious Pandit Deendayal Upadhyaya Indoor Stadium in Surat, Gujarat, with the esteemed presence of Amit Shah, Minister of Home Affairs and Cooperation. Representing the institute, Prof. Ashis Kumar Mukherjee, Director of IASST, and Ms. Nirmali Devi, Hindi Assistant, actively participated in the ceremony. Throughout the fortnight, various competitions and a one-day Hindi workshop were organized at the institute to promote the use and appreciation of the Hindi language. The closing ceremony, held on September 29, 2022, marked the culmination of the Hindi Pakhwada. The Director of IASST encouraged all officers and employees to incorporate Hindi more prominently in their daily office work. The observance of Hindi Pakhwada celebrated the richness of the Hindi language and served as a platform to emphasize its importance in official communication and daily interactions. Noteworthy participants in the competitions, including those in noting/drafting, essay writing, quiz, debate, and poetry recitation, were awarded certificates and prizes.

Scene from the Hindi Pakhwada award ceremony

Vigilance Awareness Week 2022 and Rashtriya Ekta Diwas

As part of the Vigilance Awareness Week 2022 and in commemoration of Rashtriya Ekta Diwas, an important program was organized at the IASST campus. Professor Ashis K. Mukherjee, Director of IASST, led the initiative by administering the "Integrity Pledge" to all the faculty members, staff members, employees, post-doctoral fellows, and students on October 31, 2022.

The program was initiated by Professor Devasish Chowdhury, the Vigilance Officer at IASST, who played a pivotal role in organizing and coordinating the event. With the objective of promoting a culture of integrity and ethical conduct, the theme of the vigilance awareness program was "Corruption-Free India for a Developed Nation". The administration of the "Integrity Pledge" served as a solemn commitment by the IASST community to uphold the highest standards of honesty, integrity, and ethical values in their professional and personal lives.

Scenes from the oath taking ceremony

44th Foundation Day of IASST

The 44th Foundation Day of the Institute of Advanced Study in Science and Technology (IASST) was celebrated with great zeal and enthusiasm, encompassing a day-long program on November 3, 2022.

In the spirit of celebration, Director of IASST, Prof. Ashis Kumar Mukherjee conveyed his profound felicitations to the entire IASST community and acknowledged their unwavering support and steadfast dedication in propelling the institute's noble objectives and upholding its visionary principles. The occasion witnessed the participation of eminent dignitaries, such as Dr. Srivari Chandrasekhar, the honorable Secretary of the Department of Science and Technology (DST), and Prof. Ashutosh Sharma, the former Secretary of the Department of Science and Technology (DST). A notable highlight of the event was the enlightening lectures delivered by several eminent researchers, enriching the gathering with their profound insights and valuable contributions to the field of science and technology.

Inauguration of the 44th Foundation Day of IASST in the presence of the respected dignitaries

Observation of Constitution Day of India

Institute of Advanced Study in Science and Technology (IASST), Guwahati observed the Constitution Day of India on November 26, 2022 with full enthusiasm to commemorate India's adoption of its constitution on November 26, 1949 which came into effect from November 26, 1950. Director, Prof. Ashis Kumar Mukherjee, Registrar, Dr. Diganta Goswami, faculty and staff members and the scholars of IASST read the Preamble of the Indian Constitution. A copy of the original constitution of India that was first adopted by the Constituent Assembly was also displayed for viewing by the members of IASST.

IASST family members lining up for viewing the copy of the original constitution first adopted by the constituent assembly of India

Observation of World Hindi Day

World Hindi Day was organized on January 10, 2023, at the Institute of Advanced Study in Science and Technology (IASST). The program featured Prof. Dilip Kumar Medhi, Head of the Department of Hindi at Gauhati University, who graced the event as the chief guest speaker.

Prof. Ashis Kumar Mukherjee, the Director of IASST, delivered a speech highlighting the significance of Hindi as an easily comprehensible language and noted the dearth of scientific literature available in Hindi. Prof. Dilip Kumar Medhi's speech shed light on the significance of Hindi as an accessible language and its potential for advancement in scientific fields. Adding a touch of elegance to the program, Shailendra Mishra, a research scholar from the institute, captivated the audience with a self-composed poem.

The program successfully raised awareness about the need for increased utilization of Hindi, both in official capacities and scientific endeavors, fostering a vision for the promotion and development of Hindi on a broader scale.

Celebration of World Hindi Day at IASST

National Science Day and IASST Open Day

On February 28, 2023, the Institute of Advanced Study in Science and Technology (IASST) organized a two-day program in honor of National Science Day. The event commenced with a solemn homage to the renowned Sri C.V. Raman, and the inauguration featured the lighting of the lamp by Prof. Ashis K. Mukherjee, Director of IASST, alongside invited speakers and eminent scientists. The guest speakers included Dr. Subhra Chakraborty, Director of the National Institute for Plant Genome Research in New Delhi; Prof. Amlan J. Pal, Director of the UGC-DAE Consortium for Scientific Research in Indore along with Prof. Krishanu Ray, Director of the National Brain Research Centre in Gurgaon, Haryana, India; and Dr. Pedro Alexandrino Fernandes, a Computational Biochemistry expert from the University of Porto, Portugal, who participated via virtual mode.

Offering of Floral Tributes to the Statue of C.V. Raman by Distinguished Guests and Director of IASST

The session began with a compelling welcome address by Prof. Mukherjee, who highlighted the importance of National Science Day in promoting scientific temper, inspiring curiosity, and honoring the contributions of Indian scientists. The interactive session with the distinguished guests provided a platform for highly engaging discussions. Additionally, IASST also organized an Open Day visit on March 01, 2023, allowing school and college students to visit the labs and fostering an atmosphere of intellectual exchange and engagement

Lighting of the lamp during the inaugural session

Dignitaries at IASST

Laboratory visit by school and college students on IASST Open Day

WORKSHOP/TRAINING, ETC.

Workshop on Scientific Short Story Writing

In an effort to enhance the writing skills of research scholars, post-doc fellows, and PG students, the Institute of Advanced Study in Science and Technology (IASST) conducted a significant workshop on 'Scientific Story Writing in Social Media and Newspapers' on May 27, 2022. The primary objective of this workshop was to equip participants with the necessary tools and knowledge to effectively communicate popular science in their respective research fields through social media and newspapers, thereby making scientific information accessible and comprehensible to the general public.

Dr. Dinesh Goswami, notable Assamese writer and the recipient of the prestigious Sahitya Academi's Bal Sahitya Puraskar in 2014 and

Former Advisor to the Director at NEIST, along with Prof. Abhijit Bora from the Dept. of Mass Communication and Journalism, Tezpur University, Prof. Abani Kumar Bhagabati, Associated Faculty from the Dept. of Geography, Gauhati University, and Mr. P.J. Baruah, Executive Editor of the Assam Tribune, graciously delivered their enlightening lectures during the workshop.

This workshop attracted the enthusiastic participation of 88 individuals, including research scholars, staff, and faculty members. By imparting invaluable insights and fostering an environment of knowledge exchange, the workshop at IASST marked a significant step forward in empowering aspiring scientists and scholars to effectively communicate scientific concepts to the wider audience.

Prof. Abhijit Bora being felicitated by Director with gamosa and memento

Dr. Dinesh Goswami delivering his talk

Prof. Abani Kumar Bhagabati being interviewed by the media

Mr. P.J. Baruah delivering his lecture

Hindi Workshop

On December 22, 2022, a quarterly Hindi workshop for October-December, 2022 quarter was organized at the Institute of Advanced Study in Science and Technology, Guwahati. Mr. Komal Singh, Deputy Director (Official Language), Hindi Teaching Scheme, Northeast Office, graced the workshop as the chief guest. The chief guest provided training on various subjects pertaining to the implementation of Hindi in the office, including guidance on filling the quarterly progress report and strategies

to increase correspondence percentage. The workshop acted as a catalyst for strengthening the institute's commitment to promoting Hindi as an official language. It served as a platform for nurturing linguistic skills and fostering a deep appreciation for the language's cultural heritage. By empowering the participants with the requisite knowledge and training, the workshop facilitated a broader adoption of Hindi within the administrative sphere.

Mr. Komal Singh addressing the IASST staff

Hindi Timahi Karyashala

IASST organized the 'Hindi Timahi Karyashala' on June 30, 2022, at IASST for the period between April and June 2022, as part of the 2022-23 session. The workshop aimed to enhance participants' skills in various aspects of Hindi language usage, with a focus on quarterly report preparation, Hindi notice writing, letter writing in Hindi, and promote the usage of Hindi in government offices, including IASST. Mohan Koirala, Assistant Director (Rajbhasha) from the Brahmaputra Board in Guwahati, served as the resource person for the program. With his expertise, he provided comprehensive training to the attendees, guiding them on the proper preparation of quarterly reports, effective writing of notices and letters in Hindi, and the correct manner of noting in Hindi. A total of 13 officials and 11 employees actively participated in the workshop to enhance their proficiency in Hindi engaging in practical learning Hindi language skills.

Director of IASST extending honor and recognition to Mr. Mohan Koirala

Workshop on R&D Funding Opportunities by SERB-DST

The Institute of Advanced Study in Science and Technology (IASST), an esteemed autonomous R&D institute under the DST, Government of India, orchestrated a thought-provoking two-day brainstorming workshop on "R&D Funding Opportunities by SERB-DST: Awareness Workshop for Researchers from North-East Institutions" on July 14 and July 15, 2022 at Radisson Blu, Guwahati. The event aimed to raise awareness among scholars and scientists from North-East institutions about research schemes and funding prospects provided by SERB.

The workshop witnessed enthusiastic participation from 61 participants including esteemed teachers, diligent research scholars,

and distinguished scientists representing diverse educational and research institutions in the North-East. Commencing with a warm welcome address by Prof. A. K. Mukherjee, Director of IASST, the event was gracefully chaired by Dr. Munima B Saharia, Associate Professor at IASST. The inaugural session witnessed profound guest of honor remarks by Prof. T. G. Sitharam, the Director of IIT Guwahati, and Prof. G. Narahari Sastry, the Director of NEIST, Jorhat. The keynote address by Prof. Sandeep Verma, the Secretary of SERB, New Delhi, further accentuated the significance of fostering basic research and extending financial support to scientific endeavors. Delving into the crux of the workshop, an extensive day-long orientation session unfolded, encompassing an array of captivating subject themes. Renowned scientists, erudite educationists, distinguished administrators, and successful entrepreneurs from across India took center stage, imparting their invaluable insights. Notable resource persons such as Dr. A. A. Mao, Director of the Botanical Survey of India, Prof. Tanusri Saha Dasgupta, Director of SN Bose National Center for Basic Sciences, Kolkata, Prof. Pulok Kr. Mukherjee, Director of IBSD, Manipur, and several others enriched the session with their profound expertise. An enthralling cultural program was thoughtfully orchestrated to pay homage to the esteemed dignitaries, resource persons, and enthusiastic participants. Prof. A. K. Mukherjee, the esteemed Director of IASST, adorned the occasion by personally presenting prizes to the well-deserving winners of the poster presentation. The program culminated with a heartfelt expression of gratitude conveyed by Prof. Devasish Chowdhary from IASST, leaving an indelible impression of camaraderie and knowledge-sharing.

Director, IASST felicitating the distinguished guests

Group photo

Scientific Database Training Workshop

On August 22, 2022, a comprehensive training program was organized, delving into the intricacies of a curated database of chemical and bibliographic information viz. SciFinder. The distinguished facilitator for the session was Mr. Milind Wagh, Principal Accounts Manager at Scientific Solutions, ACS International India Pvt Ltd. The events provided the participants with a profound understanding of this curated database, renowned for its vast collection of chemical and bibliographic information spanning diverse scientific and biomedical disciplines, with a particular emphasis on the realm of chemistry Also, equipped them with practical skills, allowing them to navigate and harness the extensive resources offered by the database.

A scene from the training session

Training Programme on Usage of Sophisticated Instruments

Aligned with the Department of Science and Technology's (DST) vision of augmenting human resources and knowledge capacity, the government of India launched the 'Synergistic Training Program Utilizing the Scientific & Technological Infrastructure (STUTI).' As part of this nationwide initiative, the Sophisticated Analytical Instrument Centre (SAIC) at IASST organized a training program from September 7 to 13, 2022. SAIC plays a crucial role in supporting research objectives and meeting the increasing infrastructural demands of researchers in the North-Eastern region. Currently, SAIC houses over thirty-five instruments essential for scientific research across multiple disciplines, accessible to researchers nationwide.

The training program provided comprehensive knowledge and hands-on experience with ten sophisticated instruments widely used in scientific research, including FE-SEM, TEM, XRD, HPLC, LC-MS/MS, GC-MS/MS, CHNS/O analyzer, Raman spectrometer, Confocal microscope, and BET surface area analyzer. 31 participants from various educational and research organizations actively participated in the program at IASST. The program consisted of fourteen informative lectures and fifty practical classes, providing participants with a comprehensive understanding of instrument applications. Trainers from IASST, IIT Guwahati, NIPER Guwahati, and IACS Kolkata guided the participants throughout the training. Furthermore, informative laboratory visits were organized to research divisions and laboratories within IASST, including the Life Sciences Division, Physical Sciences Division, BioNest, Quality Control & Quality Assurance Laboratory, and Ethnic Food & Beverage Laboratory. These visits offered participants valuable insights into ongoing research activities and showcased the state-of-the-art infrastructure available at IASST.

Mr. Roshan Borkar from NIPER Guwahati being felicitated by Dr. Neelotpal Sen Sarma, Professor IASST

A scene from the lab visit session

Dr. Alika Khare's talk on Laser Raman Spectroscopy

Group photo of the participants and the organizers with Mr. S. Chakraborty, IACS Kolkata

Workshop on "Application of Proteomics in Bio-medical Research"

The Institute of Advanced Study in Science and Technology (IASST), Guwahati, successfully organized a two-day workshop titled "Application of Proteomics in Bio-medical Research" from February 01, 2023, to February 02, 2023. This workshop, held in collaboration with the Proteomics Society of India (PSI), featured lectures delivered by esteemed resource persons, including Prof. Ashis K. Mukherjee, Director of IASST, and five other invited experts from renowned institutions. The distinguished resource persons included Dr. Shantanu Sengupta, Sr. Principal Scientist at CSIR-IGIB, New Delhi; Dr. Debasis Dash, Chief Scientist at CSIR-IGIB, New Delhi; Dr. Mahesh J. Kulkarni, Scientist at CSIR-NCL, Pune; Dr. Swasti Raychaudhuri from CSIR-CCMB; and Dr. Bhargab Kalita, Assistant Professor at Amrita Vishwa Vidyapeetham, Kochi.

A total of 42 participants from various academic and research institutes of North-East India attended the workshop. The participants gained insights into the significance of proteomic techniques in clinical research and received hands-on training on instruments related to proteomic analysis, such as Ultra High-Performance Liquid Chromatography (U-HPLC) and Liquid Chromatography-Mass Spectrometry (LC-MS/MS).

Dr. Shantanu Sengupta delivering his lecture

Workshop Group photo

Observation of Biophysics Week

IASST commemorated Biophysics Week as a part of the global celebrations organized by the Biophysical Society, USA. The event, held from March 20 to March 24, 2023, aimed to promote the field of biophysics and acknowledge the significant contributions and discoveries made by biophysicists in advancing scientific research. The festivities also coincided with the celebration of the 75th year of Indian Independence, known as Azadi ka Amrit Mahotsav.

The Director of IASST Prof. A.K Mukherjee inaugurated the event and underscored the paramount significance of interdisciplinary studies in the current era of the 21st century.

Prof. Sujatha Sharma from the Department of Biophysics at AIIMS Delhi delivered an enlightening lecture on March 20, 2023. Her lecture, titled "Biophysics: The Hero Emerging in Pandemics," emphasized the significance of studying biophysics and underscored the crucial role of science communication in effectively addressing public health crises. Research scholars from IASST and students from the Department of Biophysics at Pub Kamarup College, Guwahati, actively participated in the program and engaged in insightful discussions with Prof. Sujatha Sharma

Continuing the program on March 21, 2023, a dedicated team led by Dr. Kamatchi Sankaranarayanan, Assistant Professor of Biophysics at IASST, conducted an interactive session on the fundamentals of biophysics for school children from Parijat Academy, Guwahati.

OTHER ACTIVITIES/ EVENTS

Awareness Programme on Sexual Harassment of Women at Workplaces (Prevention, Prohibition and Redressal) Act, 2013


Awareness Programme on
Sexual Harassment of Women at Workplace
(Prevention, Prohibition and Redressal) Act, 2013

Organized
by

Institute of Advanced Study in Science and Technology, Guwahati

Date: 12th May, 2022

Programme Schedule:

11:00 am – 11:05 am	Welcome address by Dr. A Devi Chairwoman, ICC, IASST
11:05 am – 11:10 am	Address by Prof. A K Mukherjee, Director, IASST
11:10 am – 11:15 am	Felicitation of the Invited Speakers
11:15 am -11:30 am	Address by Dr. Alaka, Goswami President, Global Organization of Life Development, Guwahati
11:30 am – 12:00 pm	Awareness Talk by Dr. Madhurima Goswami Head, C Saikiani Centre for Women Studies, Tezpur Univ.
12:00 pm – 12:10 pm	Interaction with Researc Scholars/PDFs/Faculties/Staffs
12:10 pm – 12:15 pm	Vote of Thanks by the Convenor, ICC, IASST

All are cordially invited

Awareness Programme on Sexual Harassment of Women at Workplaces (Prevention, Prohibition and Redressal) Act, 2013

Institute of Advanced Study in Science and Technology (IASST), Guwahati has organized an awareness programme among its employees, research scholars on Sexual Harassment of Women at Workplaces (Prevention, Prohibition and Redressal) Act, 2013 on 12th May, 2022. IASST is celebrating the 75th year of our Independence Day, Azadi Ka Amrut Mahostav by organizing various event throughout the years. This programme is a part of such event. Programme was held at IASST auditorium. More than 150 employees, faculties, post docs and research scholars have participated in the programme. Programme started with the welcome address by Dr. Arundhuti Devi, Chairperson of ICC and Associate Professor of Life Science Division, IASST. It was followed by the speech of Prof. A. K. Mukherjee, the Director, IASST. The main attractions of the event were the awareness talks by two eminent scholars Dr. Alaka Goswami, a renowned gynecologist of Guwahati and the president of Global Organization of Life Development, Guwahati, and Dr. Madhurima Goswami, Head and Associate Professor of Chandraprabha Saikiani Centre for Women Studies, Tezpur University. In their speech, both of the speakers emphasized on the increase of awareness among the women employees and girl students to make a

workplace better and safer for them. They also gave emphasis on organize such programme in a regular manner to enhances the awareness among the employees of the workplaces. After their talks, an interactive session between the speakers and the audiences has been organized which was very fruitful for the girl research scholars and women employees of the institutes. The programme ended with the vote of thanks from Dr. Subir Biswas, Convener, ICC and Assistant Professor of Physical Science Division, IASST.

Exploring Future Prospects for Society and Industry Needs:

Guests being felicitated at the meeting

Collaborative Meet with Government Ayurvedic College and Hospital

The Institute of Advanced Study in Science and Technology (IASST) and the Government Ayurvedic College and Hospital (GACH), Guwahati, held a meeting on June 6, 2022, at IASST to discuss future prospects in collaboration and the development of joint projects to meet the needs of society and industry. Prof. A.K. Mukherjee, Director of IASST and the chairman of the brainstorming meeting, alongside Prof. (Dr.) Rama Kanta Sharma, Principal of GACH, and other participating guests from both institutes, outlined the potential collaborations and fruitful expectations during the event.

Brainstorming scenes

Inauguration of "Bir Lachit Barphukan Security Barrack" and "Bir Chilarai Security Barrack" at IASST

In a momentous event on July 20, 2022, Prof. Ashis Kumar Mukherjee, Director of IASST in Guwahati, officiated the inauguration of two meticulously constructed security barracks known as "Bir Lachit Barphukan Security Barrack" and "Bir Chilarai Security Barrack" at the premises of IASST. The security barracks derive their names from two iconic figures from Assam's rich history. The momentous occasion was graced by the presence of Dr. Diganta Goswami, Registrar, IASST, and a gathering of dedicated faculty members and staff from IASST.

The inauguration event marks a significant step in enhancing the security infrastructure of IASST, offering a conducive environment for the dedicated security personnel who tirelessly safeguard the premises.

Inauguration of the security barracks by Prof. A.K. Mukherjee

Award Distribution Ceremony: Recognizing Winners of Foundation Day 2021 Competitions at IASST

The much-awaited Award Distribution Ceremony for the competitions held during the Foundation Day 2021 program at IASST took place on July 22, 2022. Despite the challenges posed by the COVID-19 pandemic, the ceremony celebrated the remarkable achievements of participants who excelled in diverse sports disciplines showcased at IASST.

The event commenced with a warm welcome by the organizers that acknowledged the hard work, dedication, and sportsmanship of the participants. The distribution of awards not only celebrated their achievements but also served as a reminder of the collective strength and unity within the IASST community.

Scenes from the Award Distribution Ceremony

Research Scholars Orientation Programme

The Institute of Advanced Study in Science and Technology (IASST) organized an orientation program on August 29, 2022, for 24 newly joined research scholars. The orientation session commenced with an overview of the institute, where the enthusiastic freshers were acquainted with the wide array of facilities available on the campus. Additionally, a separate orientation session focusing on the Knowledge Resource Center (KRC) at IASST, was conducted in the evening, providing the scholars with comprehensive guidance on accessing and utilizing the vast array of resources available in the KRC.

Group photo session Research Scholars

A scene from the KRC orientation session

Special Campaign 2.0: Streamlining Administrative Efficiency

The Indian Institute of Advanced Study and Science and Technology (IASST) organized the Special Campaign 2.0 for the disposal of pending matters (SCDPM 2.0) in alignment with the Special Campaign conducted in all Ministries and Departments of the Government of India from October 2, 2022, to October 31, 2022. this endeavor aimed to address the issue of pending matters and streamline administrative processes. The campaign sought to achieve several crucial objectives, including minimizing pendency, promoting cleanliness and efficiency, strengthening internal monitoring mechanisms, providing records management training to officers, digitizing physical records, and establishing a unified digital platform for all ministries and departments.

Special Campaign 2.0 for disposal of pending matters

IASST hosts Brainstorming Session (BSS) on Innovation Circle: Communicating the culture of Innovation to Enterprise

The Institute of Advanced Study in Science and Technology (IASST) has hosted a one-day Brainstorming Session (BSS) on Innovation Circle: Communicating the culture of Innovation to Enterprise on 19th October, 2022 which was co-organized by the Centre for Knowledge Ideas and Development Studies (KnIDS), Kolkata. Dr. Praveen Arora, Adviser, Department of Science and Technology (DST), Government of India has chaired the session. Thirty enterprises from Guwahati participated in the session. Dr. Arora welcomed the participants and apprised about the government policies on Atmanirbhar Bharat to integrate the culture of innovation to the enterprises for their competitiveness that needs a robust system of generation and application of new knowledge in the production and services sectors. Prof. Ashish K. Mukherjee, Director, IASST (Out of station due to other engagements) has opined that this BSS will bring out the issues relevant to the enterprises of the north east India and will help in developing the roadmap for solving the issues in future.

Members participated in the discussion of brainstorming meet

IASST Sports Week 2022

During the third week of November, the Institute of Advanced Study in Science and Technology (IASST) organized a sports week for the year 2022. A wide range of outdoor games such as football, volleyball, and badminton, as well as indoor games including table tennis, chess, and carrom, saw substantial participation. Additionally, a salad dressing competition was held, which unveiled the hidden creativity among the participants.

The week-long event witnessed the active participation of the entire IASST community, including scholars, faculty members, and both academic and non-academic staff. The event was inaugurated by Prof. Ashis Kumar Mukherjee, the Director of IASST. The culmination of the sports week took place amidst the picturesque backdrop of an open-air setting, where a grand prize distribution ceremony was held to recognize and reward the outstanding performances and sportsmanship displayed by the participants.

Scenes from IASST's sports week 2022

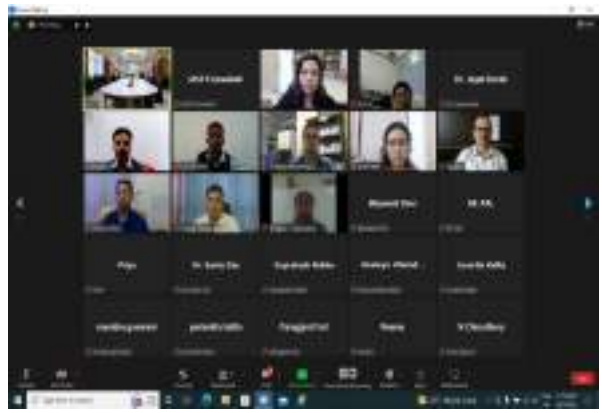
Awareness and Sensitization Programme on Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013

The Internal Complaint Committee (ICC) of the Institute of Advanced Study in Science and Technology (IASST), Guwahati, organized an awareness and sensitization program on the Sexual Harassment of Women at Workplaces (Prevention, Prohibition, and Redressal) Act 2013 on December 7, 2022. The event aimed to spread awareness among all the employees, research scholars, and postdocs working in the Institute. The program was conducted online and witnessed participation from more than 100 employees, faculties, postdocs, and research scholars.

Prof. Shakuntala Mahanta from the Department of Humanities and Social Sciences, IIT Guwahati, was the invited speaker on the occasion. The program commenced with a welcome address by Dr. Aurndhuti Devi, chairperson of the ICC at IASST, followed by an address from Prof. Ashis Kumar Mukherjee, Director of IASST.

Prof. Mukherjee emphasized the significance of prioritizing the well-being and safety of women in the workplace. He stressed the need to foster a culture that promotes respect, equality, and zero tolerance for harassment.

Prof. Mahanta, a renowned authority in the field of women's studies and the chairperson of IIT Guwahati's ICC, provided an interactive session on sexual harassment during the program. She emphasized prevention, prohibition, and redressal measures and stressed the importance of organizing regular programs to enhance awareness among employees for safer work environments.



Few snapshots of the webinar

Commencement of the New Year: IASST Holds Collective Gathering for Members

The Institute of Advanced Study in Science and Technology (IASST), convened a collective gathering for all its members on January 2, 2023, marking the commencement of the new year on a positive and vibrant note. Esteemed Director of IASST, Prof. Ashis Kumar Mukherjee, took to the podium and delivered an address to the IASST family, urging them to work diligently in the forthcoming year with heightened enthusiasm. Additionally, Prof. Rajlakshmi Devi and Prof. Neelotpal Sen Sarma graced the event and delivered their respective New Year's messages to the IASST members from the platform. The program concluded with a gracious vote of thanks presented by Dr. Diganta Goswami, the esteemed Registrar of IASST, expressing gratitude on behalf of the institute.

Hon'ble Director, Registrar and the heads of Physical Sciences and Life Sciences Division addressing the IASST family

7th Institution Ethics Committee (Human Studies) Meeting

On January 30, 2023, IASST held its 7th meeting of the Institutional Ethics Committee (Human Studies) registered with the Central Drugs Standard Control Organisation (CDSCO) under the Directorate General of Health Services, Ministry of Health & Family Welfare, Government of India. Notable Attendees, including Professor Ramesh C. Deka, former director of AIIMS New Delhi, and the committee Chairman, along with distinguished individuals including scientists, doctors, lawyers, and social workers from various fields, emphasized the meeting's significance.

Professor Ramesh C. Deka emphasized the significance of fostering collaboration between the scientists at IASST and clinicians. During the meeting, the committee diligently evaluated a total of 35 research proposals, all of which involved studies conducted on human volunteers.

Professor Ashis K. Mukherjee, Director of IASST, emphasized the utmost importance of adhering to the rules and regulations established by the CDSCO, upholding the highest ethical standards in research endeavors. The 7th meeting of the Institutional Ethics Committee (Human Studies) at IASST demonstrates the institute's unwavering commitment to maintaining ethical excellence in research.

Group Photo of Prof. Ramesh C. Deka, Prof. A.K. Mukherjee, and distinguished guests

A glimpse into the 7th Institutional Ethics Committee (Human Studies) Meeting

Orientation Programme

IASST organized an orientation program on January 31, 2023, for students and post-doctoral fellows who joined between September 2022 and January 2033. The objective of the orientation programme was to familiarize them with the institute's environment. The program was attended by various participants, including institutional JRFs, AcSIR Ph.D. scholars, post-doctoral fellows, faculties, HODs, and administrative staff. The Director, Prof. Asish K. Mukherjee, addressed the gathering, encouraging students to contribute to the institute's advancement. Division heads, Dr. Rajlakshmi Devi and Prof. Neelotpal Sen Sarma, highlighted their respective division's progress and research areas. Other institutional speakers discussed topics such as analytical instrument

facilities, R&D management, administrative rules, hostel admission, and IT services. The program concluded with visits to the Knowledge Resource Center and Sophisticated Analytical Instrumentation Cell at IASST.

Orientation session at KRC

Director, IASST addressing the new scholars at IASST

Felicitation of dignitaries on achievements

IASST received various awards in the last two years which was celebrated by inviting former retired IASST family members like Dr. Dipali Devi, Prof. Sabitri Bordoloi and Dr. N.C. Talukdar on May 25, 2022. Special felicitation was forwarded to Prof. Joyanti Chutia, former Director, IASST, Guwahati who all delivered speeches on the occasion along with Prof. A.K. Mukherjee, Director, IASST. The programme was followed by a celebratory feast for the faculty, scholars and staff of the institute.

Honourable Director and Dr. Kamatchi Sankaranarayanan honouring Prof. Joyanti Chutia (former Director, IASST) and Prof. Sabitri Bordoloi (former faculty, IASST)

Visit of Experts Team to IASST Guwahati

Formal Inauguration Ceremony of Maharishi Charaka Medicinal Plant Garden at IASST

In an auspicious ceremony held on August 17, 2022, Dr. Srivari Chandrasekhar, Secretary of Department of Science and Technology (DST), Ministry of Science and Technology, Government of India, inaugurated the Maharishi Charaka Medicinal Plant Garden at the prestigious Indian Institute of Advanced Study in Science and Technology (IASST), in Guwahati. The event witnessed the distinguished presence of the Director, esteemed faculty members, dedicated staff, and diligent research scholars of IASST.

During the inauguration, Dr. Chandrasekhar eloquently expressed his belief in the multifaceted benefits of the newly established park in educating a diverse audience, including visitors, students, and farmers, about the identification and preservation of vital medicinal plants resources. Prof. Ashis Mukherjee, Director of IASST, emphasized the garden's significance as a center for learning and research, focusing on the economic and therapeutic value of traditional medicinal plants. As a heartfelt tribute to the monumental contributions of Maharishi Charaka to the world of Indian medicinal plants and the ancient science of Ayurveda, the garden bears his illustrious name. The park is a rich repository of fifty-three different medicinal plant species based on Indian Systems of Medicine (ISM).

Dr. S. Chandrasekhar inaugurating the Maharishi Charaka Medicinal Plant Garden

Dr. S. Chandrashekhar interacting with IASST faculty during his visit

Audit visit at IASST

In the period spanning from September 2, 2022, to September 22, 2022, a team comprising Shri Kalyan Sarkar, Senior Audit Officer, Shri Mantos Kumar, Assistant Audit Officer, and Shri Abhinay Gaurav, Auditor, all hailing from the esteemed Director General of Audit (Environment & Scientific Department) in New Delhi and Kolkata, visited IASST for the purpose of conducting a comprehensive financial audit. Simultaneously, another group consisting of Shri Biswanath Dhara, Assistant Accounts Officer, Shri Anju Garg, Senior Accounts Officer, and Shri R. K. Jain, Consultant, from the Principal Accounts Office (Internal Audit Wing) of the Ministry of Science and Technology in New Delhi, paid a visit on September 14, 2022, and September 16, 2022, to conduct their own meticulous financial audit. The primary objective of these diligent examinations was to safeguard the financial integrity and accountability of the institute, ensuring that all transactions and practices adhered to established financial regulations. This concerted effort aimed to promote transparency and uphold the highest standards of financial management within the institution.

IASST Laboratory visit programme for promotion of laboratory experience-based science teaching & learning

Sl. No.	Name of School / Colleges/ Universities, etc.	Address	No. of Students visited	Date of visit
01.	School students' visit under SC-ST programme	Various schools students of SC-ST background	15	April 04,05,07 and 08, 2022
02.	Manipur Govt. School,	Manipur	38	April 21, 2022
03.	Pub Kamrup College	Guwahati	70	May 04, 2022
04.	Pandu College	Guwahati		
05.	LCB College	Guwahati		
06.	Pragjyotish College	Guwahati		
07.	Handique Girls College	Guwahati		
08.	Students from Gauhati University under DST STUTI Scheme	Guwahati	13	May 06, 2022
09.	2nd semester MLISc, Department of Library and Information Science, Gauhati University	Guwahati	18	May 31, 2022
10.	M.C. College	Barpeta	30	June 10, 2022
11.	School teachers training programme at IASST	Teachers for various schools of SC-ST background visited for being trained at teaching skills	13	June 28, 2022
12.	Lab based training programme under SC/ST community development project	Students from Baksa and Udalguri district of BTC, Assam	30	September 06, 2022 to September 09, 2022
13.	One week training programme on "Sophisticated instruments used in scientific research"	Research trainees from all across northeast India	31	September 07, 2022 to September 13, 2022 Lab visit was carried out on September 12, 2022
14.	Students from Gauhati University under DST STUTI program lab visit	Guwahati	27	November 29, 2022
15.	Anundoram Borooah Academy	Pathsala, Assam	08	December 29, 2022

16.	Bagharbari Jatiya Vidyalaya Scientific Social Responsibility (SSR) scheme of Science and Engineering Research Board (SERB), Department of Science and Technology, Govt. of India	Bagharbari, Guwahati	15	January 11, 2023
14.	Regent's academy visited under Scientific Social Responsibility (SSR) scheme of Science and Engineering Research Board (SERB), Department of Science and Technology, Govt. of India	Beltola, Guwahati	13	
15.	Guwahati College	Guwahati	09	February 10, 2023
16.	Pragjyotish College	Guwahati	10	
17.	Handique Girls College	Guwahati	14	
18.	Open Day visit of school/ college students	Students from different colleges of Guwahati	42	March 01, 2023
19.	Dept. of Instrumentation & USIC, Gauhati University	Guwahati	20	March 17, 2023

Display of IASST exhibits in national exhibitions

IASST Participated in the North-East Research Conclave 2022

IASST participated in the North-East Research Conclave 2022, organised by IIT Guwahati from May 19, .2022 to May 22, 2022, as a mark of the celebration of 75 years of India's independence, Azadi Ka Amrit Mahotsav. IASST showcased their research outputs and exhibited the scientific models in the conclave. In the conclave, a meeting was held to distribute the state award prize for excellence in science and technology. Dr. Himanta Biswa Sarma, Chief Minister of Assam, awarded IASST with the 2022 state science award.

Director, IASST receiving the state science award from the Chief Minister of Assam

Janjatiya Gaurav Diwas 2022 at IIT Guwahati

On the occasion of Janjatiya Gaurav Diwas, the nationwide celebration of Bhagwan Birsa Munda's birth anniversary, the Institute of Advanced Study in Science and Technology (IASST), Guwahati, actively participated in a conclave organized by the Department of Science and Technology (DST) and the Ministry of Tribal Affairs (MoTA), Government of India. The conclave was held in collaboration with IIT Guwahati, North-East Centre for Technology Application and Reach (NECTAR) in Shillong, Assam Science Technology and Environment Council (ASTEC) in Guwahati, Institute of Advanced Study in Science and Technology in Guwahati, and Vigyan Prasar in New Delhi on November 11, 2022, and November 12, 2022.

The conclave provided a platform for IASST to showcase its scientific interventions aimed at empowering tribal communities on November 15, 2022. The platform served as a catalyst for building networks, fostering partnerships, and creating a collective vision for the upliftment of tribal communities through science and technology.

Snapshots from the conclave at IIT, Guwahati

IASST's Contributions to the State Science Fair: Promoting Scientific Engagement and Knowledge Sharing

IASST actively participated in the State Science Fair, which was conducted alongside the 30th National Children's Science Congress from December 16 to 19, 2022, at Tezpur Government Boys Higher Secondary School. The event commenced with registration on December 16, 2022, followed by engaging interactions between scientists and coordinators of the science congress.

Throughout the fair, IASST delegates actively engaged in meaningful interactions with students, teachers, and visitors. Led by Dr. Biswajit Choudhury, the group leader, a team of three participants from IASST, namely Kuldip Kalita, Sangthousa Boro, and Trishna Kakoti, took the opportunity to explain the scientific intricacies behind the showcased models from IASST. Their expertise and insights proved valuable in fostering a deeper understanding among the attendees. In their commitment to sharing knowledge and shedding light on the ongoing scientific research conducted at the esteemed institute in the North East, IASST made available their annual report during the exhibition.

IASST's Science Models on display at the Exhibition

Innovation Festival 2023, Regional Science Centre, Khanapara

The Institute of Advanced Study in Science and Technology (IASST) partook in the Innovation Festival 2023 that took place in the Regional Science Centre, Khanapara, Guwahati in collaboration with National Innovative Foundation (NIF) with a two day programme on February 11 and 12, 2023. The objective of the festival was to provide a platform to create an environment of creativity to the people involved in science exhibition, innovation and other artistic fields. Several eminent scientists, experts from different fields of science and other allied fields participated in the festival. The participants from IASST displayed various scientific research based models that was conducted in the institute. The best innovator of the festival was conferred the Dina Nath Pandey Memorial Smart Idea Innovation Award – 2023.

Participants from IASST receiving a certificate and memento as a token of participation in the event

International Bioresource Conclave & Ethnopharmacology Congress, Imphal

The Institute of Advanced Study in Science and Technology (IASST), enthusiastically participated in a noteworthy three-day exhibition that took place from February 24 to February 26, 2023. The exhibition formed part of the esteemed International Bioresource Conclave & Ethnopharmacology Congress (ISESFEC 2023), held in Imphal.

The inauguration of the IASST stall witnessed the presence of distinguished guests, among them Dr. Rajkumar Ranjan Singh, Hon'ble Minister of State for the Ministry of External Affairs and Education, and Prof. Pulok K Mukherjee, Chairman of ISESFEC 2023 and Director of the Institute of Bioresources & Sustainable Development, Imphal, India.

Research scholars from the Life Sciences Division at IASST played a pivotal role in showcasing their groundbreaking scientific work through the display of informative posters and the presentation of innovative products and technologies developed by the IASST team. The exhibition also served as a platform for recognition, as Ms. Semim Akhtar Ahmed received the highly prestigious Best Poster Presentation Award at ISESFEC-2023. Additionally, Ms. Shalini Gurumayum's outstanding oral presentation earned her the esteemed 'SFE-Young Ethnopharmacologist Award'. These accolades highlighted the caliber and impact of the research conducted at IASST.

Team IASST led by Prof. A.K. Mukherjee, IASST-Director at ISESFEC 2023

Vaccination and Awareness Programme

IASST's Serosurveillance Study: Monitoring Antibody Titer Against SARS-CoV-2

The Institute of Advanced Study in Science and Technology (IASST), undertook a significant serosurveillance study aimed at monitoring the antibody titer against SARS-CoV-2. The study involved the participation of employees and their family members, and it was conducted on multiple dates: April 05, 06, 18, and 19, 2022.

To facilitate the study, blood samples were meticulously drawn by a skilled technician at IASST. The samples were then subjected to comprehensive testing, which took place at one of the empanelled hospitals associated with IASST.

IASST fraternity volunteering for the study by donating blood samples

Fire Safety Drill at IASST

During the noteworthy period spanning from April 25, 2022, to April 30, 2022, Mr. Amalesh Medhi, the esteemed Security Officer at IASST, delivered a comprehensive presentation aimed at enhancing fire safety awareness within the esteemed IASST community. Within this enlightening session, the meticulous Security Officer conducted a thorough demonstration on the proper usage of the diverse fire extinguishers located throughout the IASST campus. Furthermore, Mr. Medhi explored a range of alternative methods for handling fire-related emergencies, providing invaluable insights and practical strategies to empower the members of IASST in navigating challenging situations and responding appropriately when faced with fire-based crises.

A scene from Mr. Amalesh Medhi's training session

Covid-19 Vaccination drive at IASST

With a clear recognition of the significance of ongoing protection against the virus, IASST proactively organized a vaccination drive on April 28, 2022, within its premises. This commendable initiative aimed to provide eligible individuals with a convenient and free opportunity to receive their booster shots. The vaccination drive held at IASST exemplified the institute's unwavering commitment to fostering a secure and resilient environment, while also highlighting the collective determination of the institution and its members to prioritize public health and actively contribute to global efforts in mitigating the impact of Covid-19.

Scenes from the Vaccination Drive at IASST

Training on Vermicomposting, Banana Fiber Extraction, and Household Appliance Preparation

IASST organized a comprehensive training session on May 18, 2022, with the aim of empowering village farmers and students in the areas of vermicomposting, banana fiber extraction, and the preparation of household appliances. The event garnered significant attention, attracting a total of 34 enthusiastic farmers who actively participated in the program. IASST extended invitations to two accomplished trainers from NEDFi Hut, renowned for their proficiency in the field. These trainers dedicated their efforts to enlighten the participants about the intricate art of preparing household appliances. The training program also included enlightening sessions on vermicomposting facilitated by esteemed individuals, namely Dr. R Devi and Miss Sumi Pait. In addition, Mr. Neeraj Sarma, an esteemed authority in the domain of fiber extraction from the pseudostem of the banana plant, delivered an enlightening training session on this subject.

A scene from the training session

Training on usage of Sigma Plot software

Mr. Kiran Bhandari, Technical Associate, Inpixion, Karnataka on January 25, 2023 conducted a training in which he explained the usage of subscribed version of Sigma Plot 14.5 software to the scholars of IASST who attended the training. SigmaPlot is a proprietary software package for scientific graphing and data analysis. It runs on Microsoft Windows. The software can read multiple formats, such as Microsoft Excel spreadsheets, and can also perform mathematical transforms and statistical analyses.

Mr. Kiran Bhandari resolving doubts of research scholars at IASST

Superannuation and Farewell of Employees

Farewell of Mrs. Komal Kumari 	On May 31, 2022, a farewell meeting was organized to bid farewell to Ms. Komal Kumari, Finance and Accounts Officer (in lien vacancy) marking the end of her period at IASST. She served at IASST between December 01, 2021 to May 31, 2022 for a period of six months. The faculty members and staff members of IASST in their speech appreciated Ms. Komal Kumari's contribution to the institute and wished her good health and a prosperous life.
Retirement of Mr. Babul Deka 	On October 31, 2022, a farewell meeting was organized to bid farewell to Mr. Babul Deka, Multi-tasking staff on account of his superannuation. Mr. Deka was given a warm felicitation. The faculty members and staff members of IASST in their speech appreciated Mr. Babul Deka's contribution to the institute and wished him good health and a prosperous life.
Retirement of Mr. Suresh Sarma 	On January 31, 2023, a farewell meeting was organized to bid farewell to Mr. Suresh Sarma, Section Officer (Accounts) on account of his superannuation. Mr. Sarma was given a warm felicitation. The faculty members and staff members of IASST in their speech appreciated Mr. Suresh Sarma's contribution to the institute and wished him good health and a prosperous life.

IASST Media Reach

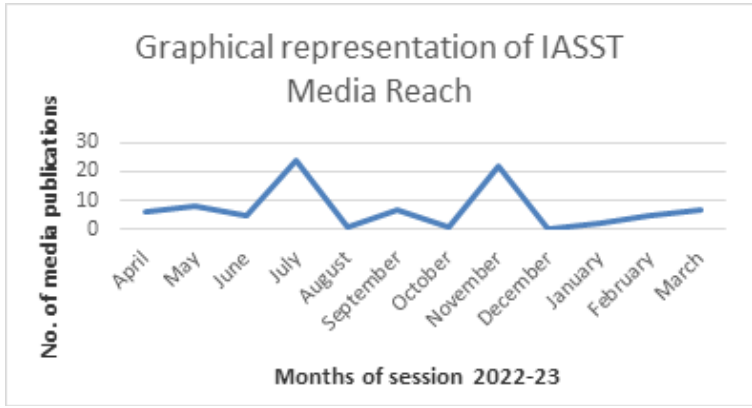
SI. No.	Topic of the Programme	Name of the newspaper/ web news portal, etc.	Date of publication
1.	IASST discovers probiotic bacterium that promotes healthy ageing	The Assam Tribune	April 12, 2022
2.	Guwahati scientists develop method to deactivate covid virus	The Assam Tribune	April 14, 2022
3.	Ashis Kumar Mukherjee gets award in Karnataka	Niyomiya Barta	April 28, 2022
4.	IASST scientist develops drugs to treat snake bite, bags ZFE- Zandu awards	Arunachal Observer	April 28, 2022
5.	IASST Guwahati scientist bags SFE-Zandu Award 2022	The Hill Times	April 28, 2022
6.	Director Ashis Kumar Mukherjee gets SEF Zandu 2022 Award	Amar Asom	April 29, 2022
7.	IASST Receives State Science Award	The Assam Tribune	May 23, 2022
8.	IASST Receives State Science Award	Amar Asom	May 23, 2022
9.	IASST Receives State Science Award	Dainik Agradoot	May 24, 2022
10.	Scientific short story writing workshop	Amar Asom	May 26, 2022
11.	Scientific short story writing workshop	Asomiya Pratidin	May 30, 2022
12.	Scientific short story writing workshop at IASST	Niyomiya Barta	May 30, 2022
13.	Scientific short story writing workshop at IASST	Purbanchal Prahari	May 30, 2022
14.	Scientific short story writing workshop	Amar Asom	May 30, 2022
15.	Scientific short story writing workshop at IASST	Asomoya Khabor	June 01, 2022
16.	IASST Receives State Science Award	Dainik Batori Kakot	June 01, 2022
17.	Workshop on science short story writing in social media	The Assam Tribune	June 01, 2022
18.	International Yoga Day celebrated at IASST	Niyomiya Barta	June 22, 2022
19.	International Day of Yoga celebrated	The Assam Tribune	June 22, 2022
20.	Two-days Brainstorming Workshop on R&D Funding Opportunities by SERB-DST : Awareness Workshop for Researchers from North-East Institutions	DD News Guwahati	July 14, 2022
21.	Two-days Brainstorming Workshop on R&D Funding Opportunities by SERB-DST: Awareness Workshop for Researchers from North-East Institutions	NE Live Today	July 14, 2022
22.	Two-days Brainstorming Workshop on R&D Funding Opportunities by SERB-DST : Awareness Workshop for Researchers from North-East Institutions	NKTV Assam	July 14, 2022

23.	Two-days Brainstorming Workshop on R&D Funding Opportunities by SERB-DST : Awareness Workshop for Researchers from North-East Institutions	Narad Live	July 14, 2022
24.	Two-days workshop on IASST Guwahati's initiative ends	NE Focus	July 15, 2022
25.	Two-days workshop on IASST Guwahati's initiative ends	Amrit News	July 16, 2022
26.	Workshop on IASST's initiative ends	Niyomiya Barta	July 16, 2022
27.	Workshop on IASST's initiative ends	Dainik Asam	July 16, 2022
28.	IASST's workshop	Asomiya Pratidin	July 16, 2022
29	One-day symposium on snake abd scorpion envenomation and therapy: national and international perspectives	DD News Guwahati	July 16, 2022
30.	Prevention and in-patient management of snakebite	The Assam Tribune	July 16, 2022
31.	Today is World Snake Day	Jagaran News	July 16, 2022
32.	Awareness workshop on World Snake Day ended at Boragaon	NE Live Today	July 16, 2022
33.	Special awareness campaign by IASST in accordance with World Snake Day	Times News Assam	July 17, 2022
34.	World Snake Day Celebrate	Dainik Assam	July 17, 2022
35.	World Snake Day Celebration at IASST	The Assam Rising	July 17, 2022
36.	On IASST Guwahati's initiative northeast's research scholar's issues discussed at Raddisson Blu	Assam Aditya	July 17, 2022
37.	World Snake Day Celebration at IASST	Assomiya Khabar	July 17, 2022
38.	World Snake Celebrated at IASST	The North East Time	July 18, 2022
39.	World Science Day at World IASST	Niyamiya Barta	July 18, 2022
40.	Two Day Workshop on IASST Guwahati's initiative ends	Dainik Batori Kakot	July 18, 2022
41.	Workshop at IASST'S initiative ends	Dainik Janambhumi	July 18, 2022
42.	Workshop on R&D FUNDING BY SERB-DST held at IASST	The Assam Tribune	July 20, 2022
43.	Scientific kits provided to 12 schools of Baksa district by IASST	Asomiya Pratidin	July 25, 2022
44.	Independence Day celebrated with fervour	The Assam Tribune	August 17, 2022
45.	Week long training Programme at IASST	Dainik Assam	September 8, 2022
46.	IASST organizes training Programme on ' Sophisticated Instruments used in Scientific Research '	Asomiya Khabar	September 8, 2022

47.	IASST organizes training Programme on 'Sophisticated Instruments used in Scientific Research'	The Hill Times	September 8, 2022
48.	IASST organizes training Programme on 'Sophisticated Instruments used in Scientific Research'	Amar Asom	September 8, 2022
49.	IASST organizes training Programme on ' Sophisticated Instruments used in Scientific Research'	W7S News	September 8, 2022
50.	Weeklong training on 'Sophisticated Instruments used in Scientific Research' held	Assam Rising	September 8, 2022
51.	IASST training Programme	The Assam Tribune	September 8, 2022
52.	IASST encourages basic and applied research	The Assam Tribune	October 9, 2022
53.	Foundation Day at IASST	Amar Asom	November 2, 2022
54.	44th Foundation day to be celebrated at IASST tomorrow	Asomiya Khabar	November 2, 2022
55.	IASST'S Foundation day	Dainik Asam	November 3, 2022
56.	Foundation day of IASST Guwahati celebrated	Zee Barta	November 3, 2022
57.	Foundation day of IASST Guwahati celebrated	Ishan News	November 3, 2022
58.	Foundation day of IASST Guwahati celebrated	Azir Khabar	November 3, 2022
59.	Foundation day of IASST Guwahati celebrated	RP LIVE Digital	November 3, 2022
60.	Foundation day of IASST Guwahati celebrated	First News Assam	November 3, 2022
61.	Foundation day of IASST Guwahati celebrated	First News Assam	November 3, 2022
62.	Foundation Day at IASST	Dainik Asam	November 4, 2022
63.	Speeches delivered on the occasion of IASST'S Foundation day	Dainik Asam	November 4, 2022
64.	IASST'S Foundation day yesterday	Dainik Jnambhumi	November 4, 2022
65.	IASST, Paschim Boragaon celebrates Foundation day	Asomiya Pratidin	November 4, 2022
66.	IASST'S 44th Foundation day	Niyomiya Barta	November 4, 2022
67.	IASST'S Foundation day celebrated	Asomiya Khabar	November 4, 2022

68.	The 44th Foundation day of IASST celebrated	The Chronicle News	November 4, 2022
69.	Foundation day of IASST Guwahati celebrated	Batori24	November 4, 2022
70.	IASST celebrated 44th Foundation day	Purbanchal Prahari	November 5, 2022
71.	IASST'S 44th Foundation day celebrated	Assam Aditya	November 6, 2022
72.	IASST'S 44th Foundation day celebrated	Dainik Batori Kakot	November 7, 2022
73.	IASST'S 44th Foundation day celebrated	Dainik Janambhumi	November 7, 2022
74.	National conclave to empower tribal community through S&T innovation	India Science Wire	November 18, 2022
75.	Biswa Hindi Divas organized at IASST Guwahati	Purbanchal Prahari	January 12, 2023
76.	Snake venom found useful to treat Parkinson's disease	The Assam Tribune	January 21, 2023
77.	Boragaon's IASST organizes National Science Day	Assam Talks	February 28, 2023
78.	Boragaon's IASST organizes National Science Day	Ishan News	February 28, 2023
79.	Boragaon's IASST organizes National Science Day	DD News Assam	February 28, 2023
80.	Boragaon's IASST's National Science Day. Two-day Science Day from today.	Pratidin Time	February 28, 2023
81.	National Science Day celebrated in Boragaon's IASST	Brahmaputra News 24x7	February 28, 2023
82.	Three educational institutes in Guwahati city celebrates National Science Day	Asomiya Pratidin	March 1, 2023
83.	Quiz contest at IASST	Dainik Asom	March 1, 2023
84.	IASST & Assam Jatiya Vidyalaya National Science Day Celebrated	Asom Aditya	March 1, 2023
85.	Two-day National Science Day Program celebrated at IASST	Purbanchal Prahari	March 1, 2023
86.	National Science Day at IASST	Bikashit Bharat Samachar	March 1, 2023
87.	2-day National Science Day programme concludes at IASST	The Assam Tribune	March 2, 2023
88.	Miss Madhurankhi Goswami awarded the degree of Doctor of Philosophy for her thesis titled "Potentiality of Bio surfactant Producing Microbes in Plant Growth Promotion and Inhibition of Phytopathogenic Fungi''	The Assam Tribune	March 2, 2023

Sl. No.	Months of session 2022-23	No. of Media Publications
01.	April	06
02.	May	08
03.	June	05
04.	July	24
05.	August	01
06.	September	07
07.	October	01
08.	November	22
09.	December	0
10.	January	02
11.	February	05
12.	March	07



IASST's Achivements appeared in newspapers

FINANCIAL STATEMENTS

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GUWAHATI - 781035

AUDIT REPORT FOR THE YEAR ENDED
31ST MARCH, 2023

U.K. RATHI & CO.
Chartered Accountants

Block-A, 1st Floor
House No 86, Prasad House
Near NE TV Complex
A. K. Azad Road
Rehabari, Guwahati – 781008

U.K. RATHI & CO.
Chartered Accountants
FRN with ICAI: 326128E

House No 66, Prasad House
Near RE TY Complex
R. K. Road Road
Rehabari, Guwahati - 781008

INDEPENDENT AUDITOR'S REPORT

TO
THE MEMBERS
THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
GUWAHATI

We have audited the accompanying Financial Statements of **The Institute of Advanced Study in Science & Technology, Paschim Boragaon, Garchuk, Guwahati** which comprise the Consolidated Balance Sheet as at 31st March, 2023, the Consolidated Receipts and Payments Account and the Consolidated Income and Expenditure Account for the year then ended, and a summary of significant accounting policies and other explanatory information.

Management's Responsibility for Financial Statements :

Management is responsible for the preparation of these financial statements that give a true and fair view of the financial position and financial performance of the society in accordance with the Accounting Standards generally accepted in India. This responsibility includes the design, implementation and maintenance of internal control relevant to the preparation and presentation of the financial statements that give a true and fair view and are free from misstatement, whether due to error or fraud.

Auditor's Responsibility :

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with the Standards on Auditing issued by the Institute of Chartered Accountants of India. Those standards require that we comply with ethical requirements and plans and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the society's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the entity's internal control. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of the accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Cond..P/2

FOR, U. K. RATHI & CO.
CHARTERED ACCOUNTANTS
FRN WITH ICAI: 326128E

CA UMESH RATHI
PARTNER
MEMBERSHIP NO : 064719

Institute of Advanced Study in Science & Technology, Paschim Boragaon Guwahati-35 Assam India

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Senior Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

U.K. RATHI & CO.
Chartered Accountants
FRN with ICAI: 326128E

Block-B, 1st Floor
House No 86, Prasad House
Near BE TV Complex
R. K. Road Road
Rehabari, Guwahati - 781008

Opinion:

In our opinion and to the best of our information and according to the explanations given to us, the financial statements give the information required by the Act in the manner so required and give a true and fair view in conformity with the accounting principles generally accepted in India :

(a) In the case of the Balance Sheet, of the state of affairs of the Society, as on 31st March, 2023;

(b) In case of the Income and Expenditure Account of the Income/Expenditure of Society for the year ended 31st March, 2023;

(c) In case of the Receipts and Payment Account of the Receipts/Payments of Society for the year ended 31st March,2023

We further report that:

(a) We have obtained all the information and explanations to the best of our knowledge and belief were necessary for the purpose of our audit;

(b) In our opinion, proper books of account, as required by law have been kept by the Society so far as appears from our examination of those books;

(c) The Balance Sheet, the Receipts and Payments Account and the Income and Expenditure Account dealt with by this Report are in agreement with the books of account.

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No.064719

UDIN : 23064719BGVCTC8885
Place : Guwahati
Date : 30/05/2023

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Institute of Advanced Study in Science and Technology
Paschim Boragaon, Guwahati-35 Assam India

निदेशक/Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED BALANCE SHEET AS ON 31ST MARCH, 2023

PARTICULARS	Schedule	Amount (₹) 2022-23
CAPITAL FUND & LIABILITIES		
Capital Fund/Corpus Fund	1	876,415,806.55
Reserve & Surplus	2	11,532.00
Earmarked Funds	3	42,389,994.98
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	210,939,148.87
TOTAL :		**1,129,756,482.40**
ASSETS		
Fixed Assets	8	818,925,016.10
Investments - From Earmarked/Endowment Funds	9	0.00
Investments - Others	10	79,813,869.56
Current Assets, Loans and Advances	11	231,017,597.76
TOTAL :		**1,129,756,482.40**
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOU	25	

In terms of our report of even date annexed hereto.

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2023

PARTICULARS	Schedule	Amount (`) 2022-23
INCOME		
Income from Sales/Services	12	0.00
Grant/Subsidies	13	178,056,131.00
Fees/Subscriptions	14	0.00
Income from Investments (Income on Invest. From earmarked/endow. Funds transferred to Funds)	15	0.00
Income from Royalty, Publication, etc.	16	0.00
Interest earned	17	1,760,568.41
Other Income	18	8,781,437.25
Increase/(decrease) in stock of Finished goods and work-in-progress	19	0.00
TOTAL (A) :		**188,598,136.66**
EXPENDITURE		
Establishment Expenses	20	114,593,544.00
Other Administrative Expenses, etc.	21	81,900,682.10
Expenditure on Grants, Subsidies, etc.	22	45,634,884.16
Interest	23	0.00
TOTAL (B) :		**242,129,110.26**
Balance being excess of Income over Expenditure (A-B)		**(53,530,973.60)**
Transfer to Unutilised Grant		(62,368,975.76)
Transfer to Benevolent Fund		0.00
Transfer to / from General Reserve		0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		**8,838,002.16**
Significant Accounting Policies	24	
Contingent Liabilities and Notes to Accounts	25	

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : Guwahati
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

SCHEDULE - 3 : :: EARMARKED FUNDS ::

Particulars	Salary	Contingency	Travel	Consumables	Training	Overhead	Misc.	Meeting & Training	Research Fellow	Consultancy Fees	Construction	Bank Interest	Refund Against Advance (Receipt)	Refund	Total(₹)
a) Opening Balance	40,414,650	2,983,576	4,956,169	21,530,272	897,111	-1,946,208	2,854,419	26,164	10,640	-47,417	-200,000	10,652,725	0	0	82,132,104
b) Addition to the Funds															
i) Grants	12,464,508	698,392	159,789	3,974,511	-	630,065	201,064	1,657,138	90,555	951,661		-76,188	0	0	20,753,495
ii) Other Receipts	0	0	-	0	0	0	271,929					4,065,922	0	0	4,337,851
TOTAL (a+b)	12,464,508	698,392	159,789	3,974,511	0	630,065	472,993					3,991,734	0	0	25,091,346
	52,879,158	3,681,968	5,115,958	25,504,783	897,111	-1,316,140	3,327,412					14,644,459	0	0	107,223,450
c) Payment towards objectives of Funds	21,647,733	1,817,047	1,335,555	16,351,534	640,264	674,230	308,482	1,042,955	229,088	374,318	0	10,885	0	-	44,431,891
d) Advances															
PY Advance Adjusted	80,000	123,360	154,392	1,153,408	166,350	0	0	0	-	4,000	-	0	0	0	1,681,710
CY Advance Given	0	29,360	-	206,446	0	8,000	0					0	0	0	243,806
Interest Refund	0	0	0	0	0	0	0					-1,259,427	0	0	-1,259,427
	-80,000	-94,200	-154,392	-946,962	-166,350	8,000	0	-0	0	-4,000	0	-1,259,427	0	0	-2,697,331
e) Current Liabilities															
PY Liability Adjusted	0	0	0	0	0	0	0					0	0	0	0
CY Liability Created	0	0	0	0	0	0	0					0	0	0	0
	0	-0	-0	0	0	0	0					0	0	0	-0
f) Expenditure towards objectives of Funds (c-d+e)	21,727,733	1,911,247	1,489,947	17,298,496	806,614	666,230	308,482	1,042,955	229,088	378,318	0	1,270,312	0	-	47,129,222
g) Adjustment of Refund	7,861,894	792,009	3,176,778	4,649,984	0	27,812	448,352	747,404	-	-	-	0	0	0	17,704,233
h) Net Balance as at the year end (a+b-f-g)	23289531.4	978712.2	449235.2	3556503.3	90497.0	(2010182.0)	2570577.6	(1790359.0)	(229088.0)	(378318.0)	(0.0)	13374146.3	(0.0)	(0.0)	42389995.0

3

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

कुलसचिव/Registrar
विज्ञान एवं प्रौद्योगिकी उन्नत अध्ययन संस्थान
Institute of Advanced Study in Science & Technology
पश्चिम बहाघाव, गुवाहाटी-35, असम भारत
Paschim Boragaon,Guwahati-35,Assam India

निदेशक/Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BOWAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED RECEIPTS & PAYMENTS ACCOUNT FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS		Amount (₹)	PAYMENTS		Amount (₹)
I Opening Balances :			**I EXPENSES :**		
a) Cash in hand	0.00		**a) Establishment Expenses**		
b) Bank Balances			Extramural Projects	21,647,770.00	
i) In current accounts	0.00		DST General Fund	111,018,870.00	
ii) In deposit accounts	0.00		Miscellaneous & Others	0.00	132,666,640.00
iii) Savings accounts	53,308,253.44	53,308,253.44			
			b) Administrative Expenses/ Expenses on Grant		
II Grants Received			Extramural Projects	22,309,217.00	
a) From Government of India			DST General Fund	134,915,971.96	
Capital Grant	225,017,480.00		Miscellaneous & Others	2,418,791.73	159,637,980.29
Revenue Grant	259,955,495.00				
(As per Annexure-II)			**II Payments made against funds for various projects**		0.00
b) From State Government	0.00				
c) From other sources (details)	0.00				
(Grants for capital & revenue exp. to be shown separately)		864,972,985.00	**III Investments and deposits made**		
			a) Out of Earmarked/ Endow. Funds		0.00
III Income from investments from			b) Out of Own Funds		10,000,000.00
a) Earmarked/ Endow. Funds		0.00			
b) Own Funds (Dtls. Investments)		0.00	**IV Expenditure on Fixed Assets & Capital WIP**		
			a) Purchase of Fixed Assets		0.00
IV Interest Received			Extramural Projects	19,884,721.00	
a) On Bank deposits	5,648,056.33		DST General Fund	192,675,278.00	
b) Loans, Advances, etc.	0.00	5,648,056.33	Miscellaneous & Others	0.00	212,479,999.00
			b) Expenditure on Capital WIP		0.00
V Other Income					
Institute Facility	3,858,867.26		**V Refund of Surplus money/Loans**		
Sales/Services	919,431.68		a) To the Government of India		0.00
SBI/Guest House	1,584,099.80		b) To the State Government		0.00
Security	329,000.00		c) To other principles of Funds		0.00
Mess Dues	1,597,247.32				
Other Income	1,426,838.80	9,615,442.58	**VI Finance charges (Interest)**		
			VII Other Payments		
VI Amount Borrowed		0.00	* Bank Charges	31,527.84	
			* EMD Refund	25,500.00	
VII Any Other receipts			* Bank Interest refund	3,592,202.00	
FDR Maturity / Redemption		485,000,000.00	* Fund refunded against completed projects (Bharat K)	5,904,245.82	
			* GIA Refund through TSA	72,855,516.00	
			* Refund to C.N.A as on 31.03.23	15,347,397.00	
			* Receivable from Extramural Project	899,894.00	
			* Loans and Advances	78,300.00	97,820,377.76
			CLOSING BALANCE :		
			a) Cash in hand	0.00	
			b) Bank Balances		
			i) In current accounts	0.00	
			ii) In deposit accounts	0.00	
			iii) Savings accounts	25,736,077.30	25,736,077.30
		658,542,737.35			658,542,737.35

For U K Rathi & Co
Chartered Accountants
FRN : 324128E

CA Umesh Rathi
Partner
Membership No. 064739
Place : Guwahati
Date : 30/09/2023
UDIN : 23064739BGYCTC8085

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035, Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

(Amount - Rs.)

SCHEDULE 1 - CORPUS/CAPITAL FUND		Current Year
Part A Capital Fund		
Balance as at the beginning of the year		860,335,062.34
Add : Contributions towards Corpus/Capital fund	86,699,060.00	
Less : Capital Grant refund to Funding Agency	3,347,360.00	
Less: Depreciation for the year	113,154,676.00	(29,802,976.00)
		830,532,086.34
Part B Corpus Fund		
Balance as at the beginning of the year	37,045,718.05	
Add : Balance of net income/(expenditure) transferred from the Income and Expenditure Account	8,838,002.16	45,883,720.21
		876,415,806.55

SCHEDULE 2 - RESERVES AND SURPLUS		
1. Capital Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	
		0.00
2. Revaluation Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	
		0.00
3. Special Reserve -IASST Employees Benevolent Fund (664178)		
As per Last Account	11,532.00	
Addition during the year		
Less: Deductions during the year	0.00	11,532.00
4. General Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	
		0.00
Total		11,532.00

5

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOG
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS:

			Current Year
A. CURRENT LIABILITIES			
1. Acceptances			0.00
2. Sundry Creditors:			
a). For Goods		277,184.00	
b). Others		20,372.00	297,556.00
3. Advance Received			0.00
4. Interest accrued but not due on:			
a). Secured Loans/Borrowings		0.00	
b). Unsecured Loans/Borrowings		0.00	0.00
5. Statutory Liabilities:			
a). Overdue		0.00	
b). Others		73,469.00	73,469.00
6. Other Current Liabilities:			
Unutilised Grant in Aid		194,985,607.68	
Security Deposit Payable		11,690,514.23	
Other Current Liabilities		3,892,001.96	210,568,123.87
	Total (A)		210,939,148.87
B. PROVISIONS			
1. For Taxation		0.00	
2. Gratuity		0.00	
3. Superanuation/Pension		0.00	
4. Accumulated Leave Encashment		0.00	
5. Trade Warranties/Claims		0.00	
6. Others (Specify)		0.00	0.00
	Total (B)		0.00
	Total (A+B)		210,939,148.87

6

IASST, Paschim Boragaon, Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE - 8 : **:: FIXED ASSETS ::**

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01/04/22	Additons/(Deletion) >180 days	<180 days	Total	Depreciation	W.D.V on 31/03/23
Block "A" : 0%						
Land	0.00	0.00	0.00	0.00	0.00	0.00
Block "B" : 10%						
Building & Site Development	508,069,460.66	7,323,391.00	3,202,753.00	518,595,604.66	51,699,422.00	466,896,183.66
Furniture & Fixtures	39,574,330.45	3,297,253.00	2,023,469.00	44,895,052.45	4,388,333.00	40,506,720.45
Block "C" : 15%						
Equipment	271,912,861.97	26,629,419.00	38,767,520.00	337,309,800.97	47,688,906.00	289,620,894.97
Air Conditioner	3,995,171.00	592,495.00	591,306.00	5,178,972.00	732,498.00	4,446,474.00
Refrigerator	5,636.00	0.00	0.00	5,636.00	845.00	4,791.00
Projector	41,122.00	0.00	0.00	41,122.00	6,168.00	34,954.00
Vehicles	3,766,362.00	0.00	0.00	3,766,362.00	564,954.00	3,201,408.00
Plant & Machinery	1,702,773.00	24,000.00	33,500.00	1,760,273.00	261,528.00	1,498,745.00
Block "D" : 40%						
Library	2,774,588.00	1,263,904.00	79,188.00	4,117,680.00	1,631,234.00	2,486,446.00
Computer	13,537,826.02	956,426.00	1,914,436.00	16,408,688.02	6,180,588.00	10,228,100.02
Printer & Xerox Machine	260.00	0.00	0.00	260.00	104.00	156.00
Computer Software	239.00	0.00	0.00	239.00	96.00	143.00
	845,380,630.10	40,086,888.00	46,612,172.00	932,079,690.10	113,154,676.00	818,925,016.10

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Registrar
Institute of Advanced Study in Science & Technology
Guwahati-35, Assam India

Director
IASST, Paschim Boragaon
Guwahati-35, Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 10 - INVESTMENTS - OTHERS:		(Amount - Rs.) Current Year
1. In Government Securities		0.00
2. Other Approved Securities		0.00
3. Shares		0.00
4. Debentures and Bonds		0.00
5. Subsidiaries & Joint Ventures		0.00
6. Others - Investment in FDR		
Extramural Projects		
Opening Balance	81,675,368.56	
Investment In FDR	0.00	
Interest accrued	3,341,599.00	
TDS	194,079.00	
Maturity Value of STDR	58,480,817.00	26,342,071.56
Misc. Projects		
Opening Balance	42,247,012.00	
Add: Current Year Investment (Net)	10,000,000.00	
Add: Current Year Interest	1,360,874.00	
Less : TDS	136,088.00	
Less: Interest Received	0.00	53,471,798.00
Total		79,813,869.56

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC.

(Amount - Rs.)

A. CURRENT ASSETS:	Current Year	
1 Inventories:		
a) Stores and Spares	0.00	
b) Loose Tools	0.00	
c) **Stock-in-trade:**		
Finished Goods	0.00	
Work-in-progress	0.00	
Raw Materials	0.00	0.00
2 Sundry Debtors:		
a) Debts Outstanding for a period exceeding six months	0.00	
b) Others	0.00	0.00
3 Cash Balances in Hand: (including cheques/drafts & imprest)		0.00
4 Bank Balances:		
a) With Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts		
SBI Khanapara Branch	4,708,866.73	
SBI Khanapara Branch - Workshop	418,477.33	
SBI - IASST Corpus Fund	208,582.73	
SBI Garchuk Branch - Project	15,484,707.90	
SBI - Herbal Medicine N.C. Talukdar	12,223.91	
SBI - IASST Employees Benevolent Fund	25,017.00	
SBI - Students & Scientist Home (IASST)	340,455.82	
Bank of Baroda - Overhead/Miscellaneous	3,248,908.12	
HDFC Bank- Project	1,290,837.76	25,738,077.30
On Zero Balance Saving Account		
Union Bank of India	0.00	
Bank of Maharastra	0.00	
ICICI Bank	0.00	0.00
b) With Non-Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts	0.00	0.00
5 Post Office Savings Accounts:		
Total (A)		25,738,077.30

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)

B. LOANS, ADVANCES & OTHER ASSETS:

(Amount - Rs.)

	Current Year	
1 Loans:		
a) Staff	422,940.00	
b) Other entities engaged in activities/objectives similar to that of the entity	0.00	
c) Others	0.00	422,940.00
2 Advances and other amounts recoverable in cash or in kind or for value to be received:		
a) On Capital Account	0.00	
b) Prepayments	0.00	
c) Others		
Crest Award	343,770.00	
TDS	218,345.00	
Others	307,746.00	
Receivable from Extramural Project	899,839.00	
Advances against Expenditure of Grants (Annexure 'D'	21,097,533.22	
Advances against Fixed Assets (Annexure 'E')	181,989,347.24	
Advance from Core Fund (LC/TT,Misc. Account)	0.00	204,856,580.46
3 Income Accrued:		
a) On Investments from Earmarked/Endowment Funds	0.00	
b) On Investments - Others	0.00	
c) On Loans & Advances	0.00	
d) Others (includes income due unrealised - Rs._____)	0.00	0.00
4 Claims Receivable		0.00
Total (B)		205,279,520.46
Total (A+B)		231,017,597.76

10

E INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLO
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

		(Amount - Rs.) Current Year
SCHEDULE 13 - GRANTS/SUBSIDIES		
(Irrevocable Grants & Subsidies Received)		
1) Central Government (Salary & General Grant)		178,056,131.00
Amount Received during the yea	219,200,000	
Less : Grant Refunded through T	41,143,869	
2) State Government (s)		0.00
3) Government Agencies		0.00
4) Institutions/Welfare Bodies		0.00
5) International Organisations		0.00
6) Others		0.00
Total		178,056,131.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 17 - INTEREST EARNED

	(Amount - Rs.) Current Year
1) On Term Deposits:	
a) With Secheduled Banks	1,360,874.00
b) With Non-Secheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
2) On Savings Accounts:	
a) With Secheduled Banks	399,694.41
b) With Non-Secheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
3) On Loans:	
a) Employees/Staff	0.00
b) Others	0.00
4) Interest on Debtors and Other Receivables	0.00
Total	1,760,568.41

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 18 - OTHER INCOME

	(Amount - Rs.) Current Year
1) Profit on Sale/Disposal of Assets:	
a) Owned Assets	0.00
b) Assets acquired out of grants, or received free of cost	0.00
2) Export Incentives Realised	0.00
3) Fees for Miscellaneous Services	0.00
4) Miscellaneous Income	8,781,437.25
Total	8,781,437.25

SCHEDULE 20 - ESTABLISHMENT EXPENSES

a) Salaries & Wages	114,593,544.00
b) Allowances & Bonus	0.00
c) Contribution to Provident Fund	0.00
d) Contribution to Other Fund (Specify)	0.00
e) Staff Welfare Expenses	0.00
f) Expenses on Employees' Retirement and Terminal Benefits	0.00
g) Others	0.00
Total	114,593,544.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC.	(Amount - Rs.) Current Year
a) Contingency Expenses	19,691,614.78
b) Works and Services	15,292,776.02
c) Training and Conference	1,436,153.00
d) Travelling and Conveyance Expenses	910,738.80
e) Security Services	6,078,166.00
f) Financial Assistance for Seminar/Workshop	0.00
g) Salary (Contractual Employees)	11,234,412.00
h) Fellowship (JRF/SRF/IPDF)	25,552,818.00
i) Hospitality	1,703,561.00
j) Bank charges	442.50
Total	81,900,682.10

U.K. RATHI & CO. CHARTERED ACCOUNTANTS

14

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 22 - EXPENDITURE ON GRANT, SUBSIDIES ETC.

			(Amount - Rs.) Current Year
a)	Grants given to Institutions/ Organisations		
	Contingency Expenses	2,794,163.16	
	Laboratory Consumables	12,521,952.00	
	Works and Services	23,097,699.00	
	Institutional Projects	7,221,070.00	45,634,884.16
b)	Subsidies given to Institutions/ Organisations		0.00
		Total	45,634,884.16

A.K. RATHEE & CO. CHARTERED ACCOUNTANTS

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam, India

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035, Assam, India

Registrar
IASST, Paschim Boragaon
Guwahati-781035, Assam, India

15

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

Annexure "A" - Unutilised Grant

		Amount(`)
Opening Balance		149,945,800.44
Add : Capital Grant received during the year	225,017,490.00	
Add : Unutilised Revenue Grant for the year	-62,368,975.76	162,648,514.24
		312,594,314.68
Less : Contribution towards Capital Fund (Addition to Fixed Assets)		86,699,060.00
Less : Refund of Grant through TSA (Capital Grant)		30,909,647.00
Closing Balance		194,985,607.68

Annexure "B" - Security Deposit Payable

Earnest Money	1,432,598.00
Security Deposit (SSH)	4,392.23
Earnest Money (Misc. Overhead)	486,200.00
Security Deposits (Works)	9,767,324.00
	11,690,514.23

Annexure "C" - Other Current Liabilities

	Amount(`)
Payable to Core Fund	33,361.00
Payable against Equipments	17,565.00
Advance from DST to Project	343,829.96
Others	3,497,246.00
	3,892,001.96

U.K. RATHI & CO. CHARTERED ACCOUNTANTS

Assistant Registrar Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035, Assam India

Deputy Director
IASST, Paschim Boragaon
Guwahati-781035, Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON,GUWAHATI- 781035

Annexure "D" - Advance against expenditure on grant : Amount(`)

Current year unadjusted advance :

	Project	DST General	Total	
Salary (Against House Buildin	0.00	422,940.00	422,940.00	
Salary (Other Advance)	0.00	158,037.00	158,037.00	
Empowerment of SC/ST	0.00	109,368.00	109,368.00	
Works and Services	0.00	3,572,753.00	3,572,753.00	
Contingency	29,360.00	35,586.22	64,946.22	
Overhead	8,000.00	0.00	8,000.00	
Training	0.00	250,000.00	250,000.00	
Advance to Extramural Project	0.00	4,097.00	4,097.00	
Consumables	206,446.00	190,273.00	396,719.00	4,986,860.22

Earlier years unadjusted advance :

	Project	DST General	Total	
Salary	0.00	6,632,721.00	6,632,721.00	
Contingency	0.00	327,194.00	327,194.00	
Travel	0.00	0.00	0.00	
Consumables	0.00	1,997,579.00	1,997,579.00	
Others	0.00	21,093.00	21,093.00	
Training & Conference	0.00	755,775.00	755,775.00	
Works and Services	0.00	6,559,216.00	6,559,216.00	
GST Receivable	0.00	0.00	0.00	
Advance to Extramural Project	0.00	240,035.00	240,035.00	
Outsourcing	0.00	0.00	0.00	16,533,613.00

TOTAL : **21,520,473.22**

Annexure "E" - Advance against Fixed Assets :

Current year unadjusted advance :

	Project	DST General	Total	
Building & Site Development	0.00	170,558,224.24	170,558,224.24	
Dedicated Power Supply	0.00	0.00	0.00	
Computer & Peripherals	0.00	0.00	0.00	
Equipment	0.00	0.00	0.00	170,558,224.24

Earlier years unadjusted advance :

	Project	DST General	Total	
Equipment	0.00	5,260,013.00	5,260,013.00	
Building & Site	0.00	1,355,248.00	1,355,248.00	
Furniture & Fixtures	0.00	34,324.00	34,324.00	
Development of BCH	0.00	20,000.00	20,000.00	
Construction of Director Quart	0.00	10,300.00	10,300.00	
Dedicated Power Supply	0.00	3,407,156.00	3,407,156.00	
Plant & Machinery	0.00	54,360.00	54,360.00	
Computer & Peripherial	0.00	1,289,722.00	1,289,722.00	11,431,123.00
				181,989,347.24

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

ANNEXURE : "F"

DETAILS OF GRANT-IN-AID FOR THE FINANCIAL YEAR 2022-23

Sl.	Particulars	Capital Grant (₹)	Revenue Grant (₹)	Amount(₹)
1	DST General Fund	218,000,000.00	219,200,000.00	437,200,000.00
2	Molecular and Biochemical studies on indigenous	0.00	750,747.00	750,747.00
3	Developing carbon based biopolymer	0.00	451,520.00	451,520.00
4	Structural , optical and electrical responses of	0.00	451,520.00	451,520.00
5	Assessment of endophytic Actinobacteria from	0.00	451,520.00	451,520.00
6	Development of software for automated	214,000.00	258,000.00	472,000.00
7	Molecular mechanistic insight of the bioactive	0.00	472,500.00	472,500.00
8	Feasibility study of commercial scale coating on	7,490.00	287,330.00	294,820.00
9	Wetland of Assam, India: a look into the current	0.00	57,013.00	57,013.00
10	R & D funding opportunities by SERB-DST:	0.00	1,600,000.00	1,600,000.00
11	Rheological Behavior of the Concomitant Self	0.00	300,000.00	300,000.00
12	Phosphorene-Biodegradable Polymer Composites:	0.00	987,425.00	987,425.00
13	Study of antidiabetic effects of folklora medicines	0.00	919,697.00	919,697.00
14	Experimental investigation of Zonal Flow and	250,000.00	191,503.00	441,503.00
15	Experimental investigation of Zonal Flow and	0.00	25,760.00	25,760.00
16	Application of Dielectric Barrier Discharged Cold	0.00	1,104,942.00	1,104,942.00
17	Development of Pt based ternary Oxygen	0.00	600,000.00	600,000.00
18	A Novel approach for integration of dietary	0.00	38,228.00	38,228.00
19	Investigating the potential of probiotic bacteria	0.00	182,500.00	182,500.00
20	Study of Effect of rhamnolipid biosurfactant on	0.00	50,600.00	50,600.00
21	Cold atmospheric pressure plasma _Dr. Kamatchi	4,500,000.00	1,273,129.00	5,773,129.00
22	Generation of Plasma inside liquid, its	0.00	92,406.00	92,406.00
23	Fellowship stipend and contingent expenditure to	0.00	515,600.00	515,600.00
24	Muga Silk Worm diseases and key solution to	0.00	1,103,925.00	1,103,925.00
25	A study on Hydrocarbon Pollution in Lentic	0.00	54,047.00	54,047.00
26	A facile strategy towards Naphthalene Diimide	1,546,000.00	166,255.00	1,712,255.00
27	Application of wetland macrophytes as a	0.00	660,000.00	660,000.00
28	On the development of an automated image	0.00	433,829.00	433,829.00
29	Evaluation of antioxidant and anti-hyperlipidemic	0.00	566,511.00	566,511.00
30	Development of Hybrid Electroactive Biomaterials	0.00	2,233,904.00	2,233,904.00
30	Empowerment of Tribal population of selected	0.00	2,000,000.00	2,000,000.00
31	Development of layered double hydroxide (LDH)	0.00	813,166.00	813,166.00
32	DBT-NER Advance Level Institutional Biotech Hub	500,000.00	1,659,920.00	2,159,920.00
		225,017,490.00	239,953,495.00	464,970,985.00

18

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-781035, Assam, India

Assistant Registrar (Accounts & Audit)
IASST, Paschim Boragaon
Guwahati-781035, Assam, India

Assistant Registrar (Finance)
IASST, Paschim Boragaon
Guwahati-781035, Assam, India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE " 24 " **: SIGNIFICANT ACCOUNTING POLICES :**

1. **ACCOUNTING CONVENTION :**

The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of Accounting.

2. **REVENUE RECOGNITION :**

(a) Income on Interest bearing securities and Term Deposits is recognised on accrual basis as and when these are realised.

(b) Income other than Interest Income are recognised on Cash basis.

3. **INVESTMENTS :**

Term deposits with Banks are taken as Investments and valued at accrual basis.

4. **FIXED ASSETS :**

Fixed Assets are stated at cost of acquisiton, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisiton less depreciation.

5. **DEPRECIATION :**

(a) Depreciation on Fixed assets purchased/acquired/ constructed out of Government Grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

(b) Depreciation is charged to Capital Fund by way of reducing the net value of Fixed Assets.

6. **GOVERNMENT GRANTS/SUBSIDIES :**

(a) Revenue grants are shown realisation basis and expenditure thereof is charged to appropriate revenue heads. In the case Capital Grant, the Capital Fund is credited to the extent of the amount of acquisition of Fixed Assets.

(b) During the Financial Year, the Institute received some Grants or re-assignmentof Grants

(C) During the Financial Year, the Institute received Grant-in-Aid through Tressury Single Account (TSA) mode. The remaining unutilised grants as on 31 Mrach, 2023 has returned back automatically to TSA as per new revised procedure of fund flow system.

19

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE " 25 " : CONTINGENT LIABILITIES & NOTES TO ACCOUNTS :

(i) No provision has been made in respect of Leave Salary.

(ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.

(iii) In the opinion of the Management, the Current Assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.

(iv) Balances under Current Liabilities, Loans and Advances are subject to conformation /reconciliation /adjustments, if any.

(v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.

(vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.

(vii) Any surplus balance that remains in Income & Expenditure A/c after adjusting the expenditure with the income is transferred to Capital/Corpus Fund.

(viii) Bank Interest received in SBI Khanapara (DST) during the year is not recognised as Income instead shown as Current Liability because it will be refunded to DST, Govt. of India.

(ix) Any surplus of revenue grant alongwith other income over revenue expenditure of Extramural Projects is transferred to earmarked fund and it isn't included in the preparation of the Consolidated Income & Expenditure Account.

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

BALANCE SHEET OF EXTRAMURAL PROJECTS AS ON 31ST MARCH, 2023

PARTICULARS	Schedule	Amount (`) 2022-23
CAPITAL FUND & LIABILITIES		
Capital Fund	1	116,994,383.24
Reserves & Surplus	2	0.00
Earmarked/ Endowment Funds	3	42,389,994.98
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	10,670,461.13
TOTAL :		170,054,839.35
ASSETS		
Fixed Assets	8	120,341,743.24
Investments - From Earmarked/Endowment Funds	9	0.00
Investments - Others	10	26,342,071.56
Current Assets, Loans and Advances	11	23,371,024.57
Miscellaneous Expenditure (To the extent not written off or adjusted)		0.00
TOTAL :		170,054,839.35
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25	

In terms of our report of even date annexed hereto.

For U K Rathi & Co
Chartered Accountants
FRN: 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF EXTRAMURAL PROJECTS FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS		Amount (₹)	PAYMENTS		Amount (₹)
I Opening Balances :			I EXPENSES :		
a) Cash in hand	0.00		a) Establishment Expenses		
b) Bank Balances			Salary		21,647,733.00
i) In current accounts	0.00				
i) In deposit accounts	0.00		b) Administrative Expenses/ Expenses on Grant		
i) Savings accounts	16,740,430.91	16,740,430.91	Consumables	16,083,151.00	
			Contingency	1,817,047.00	
II Grants Received			Travel	1,333,682.00	
a) From Government of India			Workship/Conference	1,042,955.00	
Capital Grant	7,017,490.00		Overhead	674,230.00	
Revenue Grant	20,753,895.00		Meeting/Training	640,264.00	
(As per Annexure D)			Other Cost	288,832.00	
b) From State Government	0.00		GST Consultancy	374,318.00	
c) From other sources	0.00		Studentship	229,088.00	
C N A Reassignment	32,661,056.00		Social Scientific Responsibility	19,650.00	22,503,217.00
(Grants for capital & revenue exp. to be shown separately)		60,432,041.00	II Payments made against funds for various projects		0.00
III Income from Investments from					
a) Earmarked/Endow. Funds)		0.00			
b) Own Funds (Oth. Investments)		0.00	III Investments and deposits made		
			a) Out of Earmarked/ Endow. Funds		0.00
IV Interest Received			b) Out of Own Funds		0.00
a) On Bank deposits	4,205,139.92				
b) Loans, Advances, etc.	0.00	4,205,139.92	IV Expenditure on Fixed Assets & Capital WIP		
			a) Purchase of Fixed Assets		0.00
V Other Income			Equipments	19,804,721.00	
Other Receipts	271,929.00		b) Expenditure on Capital W	0.00	19,804,721.00
Interest on LC	0.00	271,929.00			
VI Amount Borrowed		0.00	V Refund of Surplus money/Loans		
			a) To the Government of India		0.00
VII FDR Maturity		55,000,000.00	b) To the State Government		0.00
			c) To other providers of Funds		0.00
			VI Finance charges (Interest)		0.00
			VII Other Payments		0.00
			Bank Charges		10,885.34
			Fund refunded against completed projects (Bharat Kosh/I)		7,163,622.92
			Capital	1,822,532.00	
			Revenue	4,081,663.92	
			Interest Refund	1,259,427.00	
			Refund to C N A for re-assignment		32,661,056.00
			Refund to C N A as on 31.03.23		15,147,397.00
			Receivable from Extramural Project		899,839.00
			EMD Refund		23,300.00
			CLOSING BALANCE :		
			a) Cash in hand	0.00	
			b) Bank Balances		
			i) In current accounts	0.00	
			i) In deposit accounts	0.00	
			i) Savings accounts	16,787,769.57	16,787,769.57
		136,649,540.83			136,649,540.83

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : Guwahati
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE - 3 :

« EARMARKED FUNDS »

Particulars	Salary	Contingency	Travel	Consumables	Training	Overhead	Misc.	Meeting & Training	Research Fellow	Consultancy Fees	Construction	Bank and other Interest	Refund Against Advance (Receipt)	Refund (Payment)	Total(₹)
a) Opening Balance	40,414,650	2,985,976	4,956,169	21,830,272	897,111	-1,946,205	2,854,419	28,344	10,680	-47,437	-200,000	10,652,725	0	0	92,132,104.48
b) Addition to the Funds															
i) Grants	12,464,508	698,392	159,789	3,974,511		680,865	201,864	1,657,138	98,555	951,661		-74,188	0	0	20,753,495.80
ii) Other Receipts	0	0		0	0	0	271,829					4,065,922	0	0	4,337,850.92
TOTAL (a+b)	12,464,508	698,392	159,789	3,974,511	0	680,865	473,993	1,657,138	98,555	951,661		3,991,734	0	0	25,091,346
	52,879,158	3,684,368	5,115,958	25,804,783	897,111	-1,316,140	3,327,412	1,685,482	109,235	904,224		14,644,459	0	0	307,223,450
c) Payment towards objectives of Funds	25,647,733	1,807,047	3,555,555	16,351,354	640,264	674,230	308,482	1,042,955	229,088	374,318	0	10,865	0		44,431,091.34
d) Advances															
PY Advance Adjusted	80,000	125,560	154,392	1,153,488	166,350	0	0	0		4,000		0	0	0	1,683,710.00
CY Advance Given	0	29,560		286,446	0	8,000	0					0	0	0	243,806.00
Interest Refund	0	0	0	0	0	0	0					-1,259,427	0	0	-1,259,427.00
	-80,000	-94,200	-154,392	-866,962	-166,350	8,000	0	-0	0	-4,000	0	-1,259,427	0	0	-2,697,331
e) Current Liabilities															
PY Liability Adjusted	0	0	0	0	0	0	0					0	0	0	0
CY Liability Created	0	0	0	0	0	0	0					0	0	0	0
	0	-0	-0	0	0	0	-0					0	0	0	-0
f) Expenditure towards objectives of Funds (c+d+e)	25,727,733	1,931,247	3,555,547	17,298,396	806,614	666,230	308,482	1,042,955	229,088	378,318	0	1,270,302	0	-	47,129,222.34
g) Adjustment of Refund	7,861,896	792,089	3,179,778	4,649,984	0	27,812	446,582	747,434	-			0	0	0	17,704,233.80
h) Net Balance as at the year end (a+b-f-g)	23269553.4	970712.2	449233.2	3556803.3	90497.0	(2010182.0)	2970877.8	(109287.0)	(127093.0)	525926.0	(0.0)	13374146.3	(0.0)	(0.0)	42309995.0

3

U. K. RATHI & CO. CHARTERED ACCOUNTANTS

Finance & Accounts Officer
वित्त एवं लेखा अधिकारी
IASST, Paschim Boragaon
Guwahati-781035,Assam India

Registrar
निदेशक एवं रजिस्ट्रार
Institute of Advanced Study in Science & Technology
पश्चिम बड़गाँव, गुवाहाटी-35, असम भारत
Paschim Boragaon,Guwahati-35,Assam India

Director
निदेशक
IASST, Paschim Boragaon
पश्चिम बड़गाँव
Guwahati-781035,Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 1 - CORPUS/CAPITAL FUND		(Amount - Rs.) Current Year
Balance as at the beginning of the year		119,619,411.24
Add : Contributions towards Corpus/Capital fund	20,419,807.00	
(Deduct) : Capital Grant refund to Funding Agency	3,347,360.00	
Less : Depreciation for the year	19,697,475.00	-2,625,028.00
		116,994,383.24

U. K. RATTA & CO. CHARTERED ACCOUNTANTS

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon Guwahati-35 Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS: (Amount - Rs.)

			Current Year
A. CURRENT LIABILITIES			
1. Acceptances			0.00
2. Sundry Creditors:			
a). For Goods		0.00	
b). Others		0.00	0.00
3. Advances Received			0.00
4. Interest accrued but not due on:			
a). Secured Loans/Borrowings		0.00	
b). Unsecured Loans/Borrowings		0.00	0.00
5. Statutory Liabilities:			
a). Overdue		0.00	
b). Others		0.00	0.00
6. Other Current Liabilities:			
Unutilised Grant in Aid	(As per Annexure 'A'	8,566,238.17	
Earnest Money		1,032,598.00	
Other Current Liabilities	(As per Annexure 'B'	1,071,624.96	10,670,461.13
		Total (A)	10,670,461.13
B. PROVISIONS			
1. For Taxation			0.00
2. Gratuity			0.00
3. Superannuation/Pension			0.00
4. Accumulated Leave Encashment			0.00
5. Trade Warranties/Claims			0.00
6. Others			0.00
		Total (B)	0.00
		Total (A+B)	10,670,461.13

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35, Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE - 8 : **:: FIXED ASSETS ::**

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01/04/22	Additons/(Deletion) >180 days	Additons/(Deletion) <180 days	Total	Depreciation	W.D.V on 31/03/23
Block "B" : 10%						
Furniture & Fixtures	2,860,447.00	0.00	0.00	2,860,447.00	286,045.00	2,574,402.00
Block "C" : 15%						
Equipments	116,758,964.24	4,881,348.00	15,538,459.00	137,178,771.24	19,411,430.00	117,767,341.24
	119,619,411.24	4,881,348.00	15,538,459.00	140,039,218.24	19,697,475.00	120,341,743.24

U.K. RATHI & CO. CHARTERED ACCOUNTANTS

6

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

(Amount - Rs.)

	Current Year	
SCHEDULE 10 - INVESTMENTS - OTHERS:		
1. In Government Securities		0.00
2. Other Approved Securities		0.00
3. Shares		0.00
4. Debentures and Bonds		0.00
5. Subsidiaries & Joint Ventures		0.00
6. Investment in FDR		
Opening Balance	81,675,368.56	
Add: Investment In FDR	0.00	
Add: Interest accrued	3,341,599.00	
Less: TDS	194,079.00	
Less: Maturity Value of STDR	58,480,817.00	26,342,071.56
Total		26,342,071.56

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC.

(Amount - Rs.)

A. CURRENT ASSETS:	Current Year	
1 Inventories:		
a) Stores and Spares	0.00	
b) Loose Tools	0.00	
c) Stock-in-trade:		
Finished Goods	0.00	
Work-in-progress	0.00	
Raw Materials	0.00	0.00
2 Sundry Debtors:		
a) Debts Outstanding for a period exceeding six months	0.00	
b) Others	0.00	0.00
3 Cash Balances in Hand: (including cheques/drafts & imprest)		0.00
4 Bank Balances:		
a) With Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts		
SBI Garchuk Branch - Project	15,484,707.90	
SBI - Herbal Medicine	12,223.91	
HDFC Bank	1,290,837.76	16,787,769.57
On Zero Balance Saving Account		
Union Bank of India	0.00	
Bank of Maharastra	0.00	
ICICI Bank	0.00	0.00
b) With Non-Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts	0.00	0.00
5 Post Office Savings Accounts:		0.00
	Total (A)	16,787,769.57

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)

B. LOANS, ADVANCES & OTHER ASSETS:

(Amount - Rs.)

	Current Year	
1 Loans:		
a) Staff	0.00	
b) Other entities engaged in activities/objectives similar to that of the entity	0.00	
c) Others		
Advance to Overhead A/c	0.00	
Advances against Expenditure of Grants	0.00	0.00
2 Advances and other amounts recoverable in cash or in kind or for value to be received:		
a) On Capital Account	0.00	
b) Prepayments	0.00	
c) Others		
Crest Award	343,770.00	
TDS	218,345.00	
Receivable from Extramural Project	899,839.00	
Advance to Overhead A/c	4,877,495.00	
Advances against Expenditure of Grants (Annexure 'C	243,806.00	
Advances against Equipments	0.00	6,583,255.00
3 Income Accrued:		
a) On Investments from Earmarked/Endowment Funds	0.00	
b) On Investments - Others	0.00	
c) On Loans & Advances	0.00	
d) Others (includes income due unrealised - Rs._____)	0.00	0.00
4 Claims Receivable		0.00
Total (B)		6,583,255.00
Total (A+B)		**23,371,024.57**

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

Annexure "A" - Unutilised Grant

	Amount(₹)
Opening Balance	21,968,555.17
Add : Capital Grant received during the year	7,017,490.00
	28,986,045.17
Less : Contribution towards Capital Fund (Addition to Fixed Assets)	20,419,807.00
Closing Balance	8,566,238.17

Annexure "B" - Other Current Liabilities

		Amount(₹)
Payable against Equipment		17,565.00
DST General Fund		
Bank of Baroda - Conference (000918)	107,090.00	
SBI Garchuk - Seminar (888433)	64,830.00	
HDFC Bank	171,909.96	343,829.96
IASST Other Fund (Equipment, Consumables & Travel)		710,230.00
		1,071,624.96

Annexure "C" - Advance against expenditure on grant :

		Amount(₹)
Current year unadjusted advance :		
Contingency	29,360.00	
Consumable	206,446.00	
Overhead	8,000.00	243,806.00
TOTAL :		**243,806.00**

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

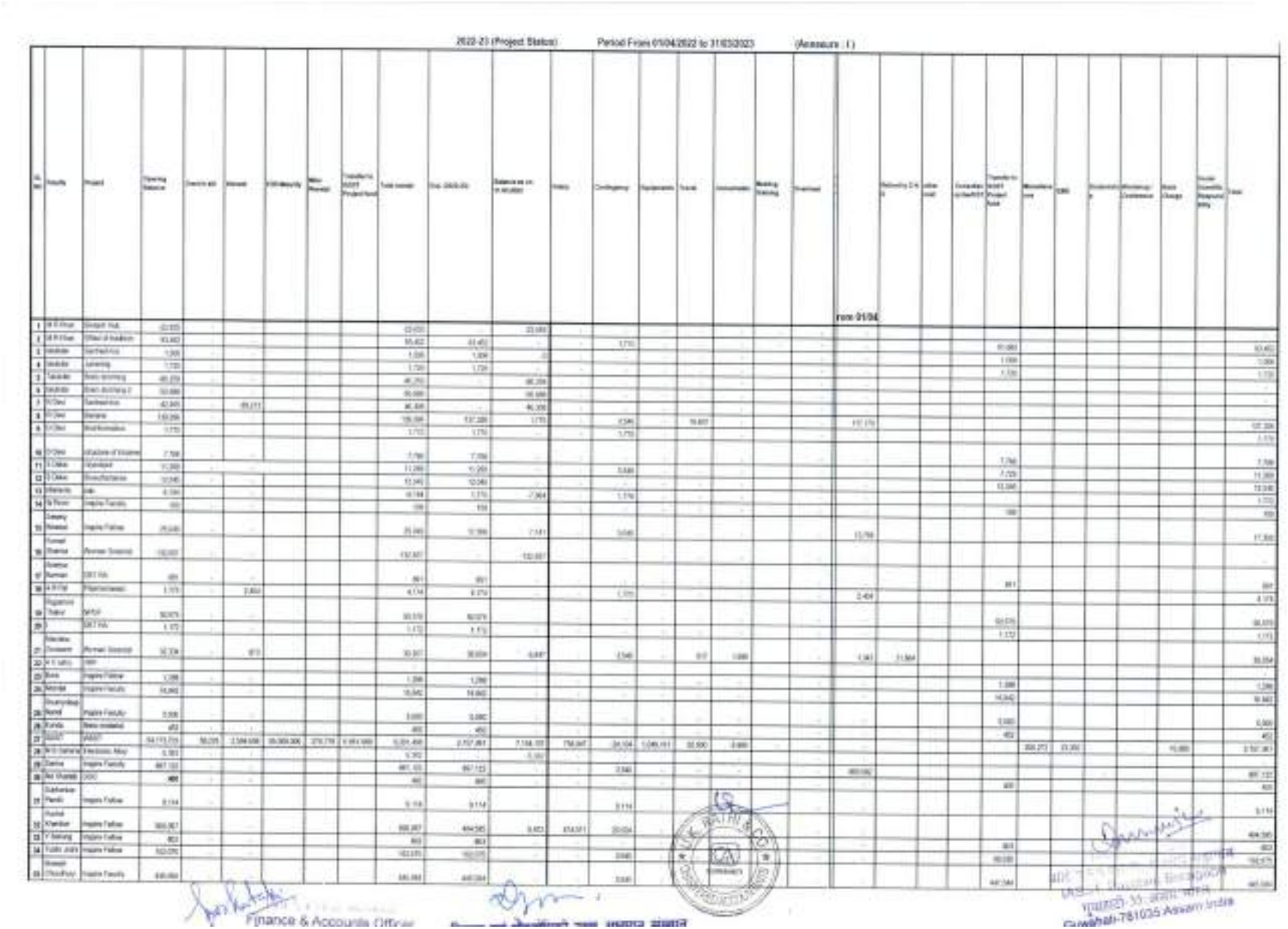
PASCHIM BORAGAON,GUWAHATI- 781035

ANNEXURE : "D"

DETAILS OF GRANT-IN-AID OF EXTRAMURAL PROJECTS FOR THE FINANCIAL YEAR 2022-23

Sl.	Name of the Project	Capital Grant (₹)	Revenue Grant (	Amount(₹)
1	Molecular and Biochemical studies on	0.00	750,747.00	750,747.00
2	Developing carbon based biopolymer	0.00	451,520.00	451,520.00
3	Structural , optical and electrical	0.00	451,520.00	451,520.00
4	Assessment of endophytic Actinobacteria	0.00	451,520.00	451,520.00
5	Development of software for automated	214,000.00	258,000.00	472,000.00
6	Molecular mechanistic insight of the	0.00	472,500.00	472,500.00
7	Feasibility study of commercial scale	7,490.00	287,330.00	294,820.00
8	Wetland of Assam, India: a look into the	0.00	57,013.00	57,013.00
9	R & D funding opportunities by SERB-	0.00	1,600,000.00	1,600,000.00
10	Rheological Behavior of the Concomitant	0.00	300,000.00	300,000.00
11	Phosphorene-Biodegradable Polymer	0.00	987,425.00	987,425.00
12	Study of antidiabetic effects of follicora	0.00	919,697.00	919,697.00
13	Experimental investigation of Zonal Flow	250,000.00	191,503.00	441,503.00
14	Experimental investigation of Zonal Flow	0.00	25,760.00	25,760.00
15	Application of Dielectric Barrier	0.00	1,104,942.00	1,104,942.00
16	Development of Pt based ternary Oxygen	0.00	600,000.00	600,000.00
17	A Novel approach for integration of	0.00	38,228.00	38,228.00
18	Investigating the potential of probiotic	0.00	182,500.00	182,500.00
19	Study of Effect of rhamnolipid	0.00	50,600.00	50,600.00
20	Cold atmospheric pressure plasma _Dr.	4,500,000.00	1,273,129.00	5,773,129.00
21	Generation of Plasma inside liquid, its	0.00	92,406.00	92,406.00
22	Fellowship stipend and contingent	0.00	515,600.00	515,600.00
23	Muga Silk Worm diseases and key	0.00	1,103,925.00	1,103,925.00
24	A study on Hydrocarbon Pollution in	0.00	54,047.00	54,047.00
25	A facile strategy towards Naphthalene	1,546,000.00	166,253.00	1,712,253.00
26	Application of wetland macrophytes as a	0.00	660,000.00	660,000.00
27	On the development of an automated	0.00	433,829.00	433,829.00
28	Evaluation of antioxidant and anti-	0.00	566,511.00	566,511.00
29	Development of Hybrid Electroactive	0.00	2,233,904.00	2,233,904.00
30	Empowerment of Tribal population of	0.00	2,000,000.00	2,000,000.00
31	Development of layered double	0.00	813,166.00	813,166.00
32	DBT-NER Advance Level Institutional	500,000.00	1,659,920.00	2,159,920.00
		7,017,490.00	20,753,495.00	27,770,985.00

11



2022-23 (Project Status) Period From 01/04/2022 to 31/03/2023 (Annexure - I)

Sl. No.	Faculty	Project	Opening Balance	Overhead	Interest	FD/Maturity	Misc. Receipts	Transfer to IASST Project Fund	Total receipt	Exp. 2022-23	Balance as on 31.03.2023	Salary	Contingency	Equipments	Travel	Consumables	Meeting/ Training	Proportional		Fellowship/ JRF		Consultancy	Transfer to IASST Project Fund	Miscellaneous	CMS	Overhead	Monitoring/ Maintenance	Bank Charge	Income Tax/ Professional Tax	Total
																			from 01/04											
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													
13																													
14																													
15																													
16																													
17																													
18																													
19																													
20																													
21																													
22																													
23																													
24																													
25																													
26																													
27																													
28																													
29																													

Finance & Accounts Officer

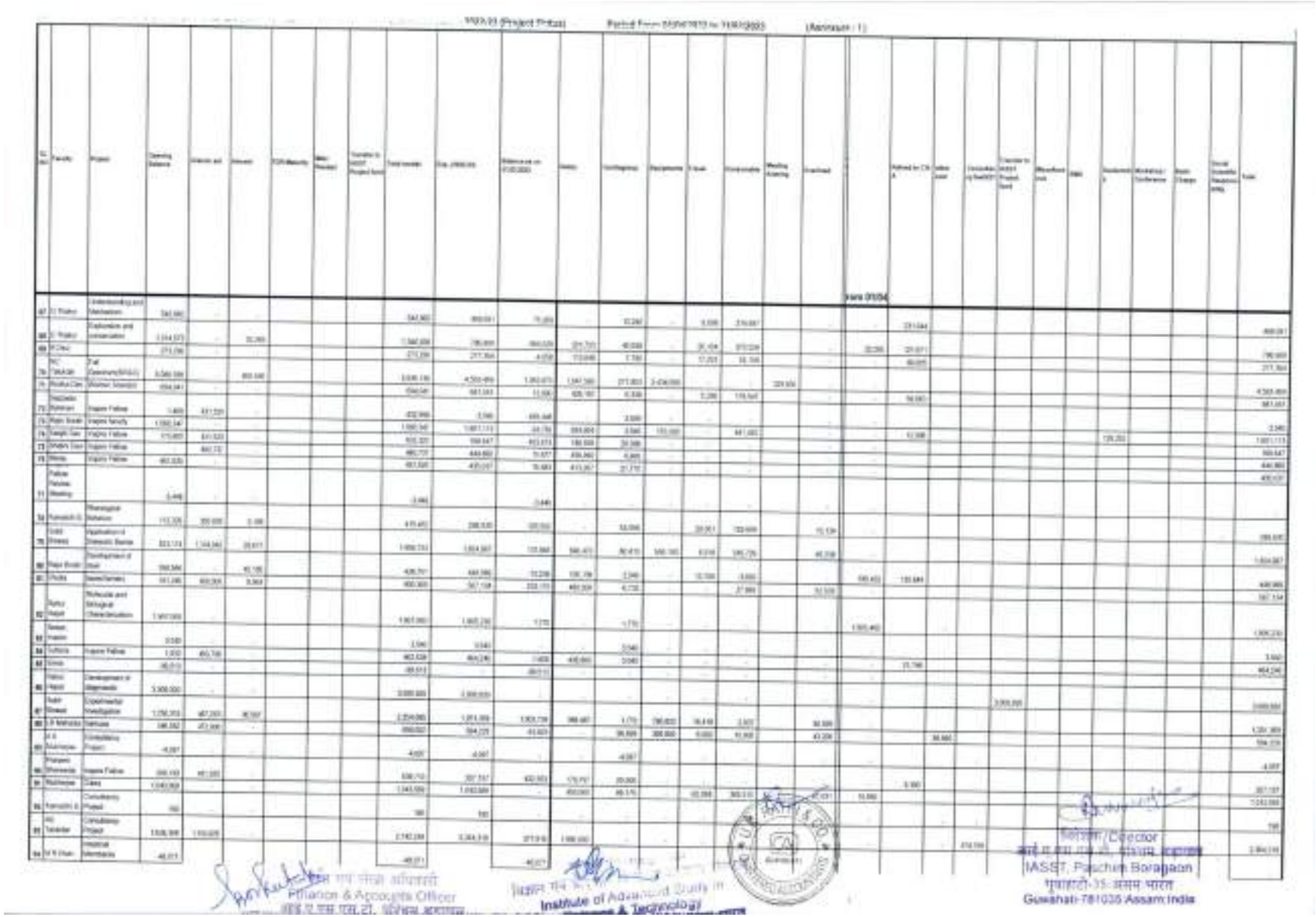
FINANCIAL STATEMENTS

2022-23 (Project Status) Period From 01/04/2022 to 31/03/2023 (Annexure : I)

Finance & Accounts Officer

Institute of Advanced Study in

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon
Guwahati-781035 Assam India



Institute of Advanced Study in Science & Technology

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

2022-23 (Project Status) Period From 01/04/2022 to 31/03/2023 (Annexure : I)

Sl. no.	Faculty	Project	Opening Balance	Grant-in-aid	Interest	TDS Refunds	Misc Receipts	Transfer to Project Fund/Deposit	Total receipt	Exp. upto 31.03.22	Balance as on 01.04.2022	Salary	Contingency	Equipments	Travel	Consumables	Meeting/ Training	Overhead	Fellowship	Recruitment	Other costs	Consultancy Fee/HRD	Transfer to IASST Project Fund	Miscellaneous	OBC	Employee Cost	Workshop / Conference	Bank Charge	Annual Contribution/ Repayment to IASST	Total
96	Dr Devi	Oxidative	-31,964						-31,964		-31,964																		
98	Dr Deka	DBT Project	-42,299						-42,299		-42,299																		
99	Dr Khataniar	Hydrogen	-26,362						-26,362		-26,362																		
100	Dr Borkotoky	Plant product	1,100				1,100		-		-																		
101	Dr Pathak	Material Physics	575,288						575,288		575,288																		
104	Dr Khataniar	Carbon Exchange	-137,361						-137,361		-137,361																		
105	Dr Borkotoky	Virus & Enzyme	-91,507	88,007					3,490	3,490	-																		
106	Dr. S.C. Sarma	Agrostis Biodiversity	-47,308						-47,308		-47,308																1,100		1,100
108	Dr Neelim Kotoky	DBT/ BT	-53,510						-53,510		-53,510																		
114	Dr Dilip Kumar Dutta	DBT Tea	-13						-13		-13																		
115	Dr Jibon Sarma	Thermal Ionic Liquids	-360						-360		-360																		
116	Dr Puyam Singha	Catalytic	-33,998						-33,998		-33,998																		
117	Dr Puyam Singha		-140,113						-140,113		-140,113																		
118	Dr Bhaskar Jyoti Bora	Microbial Activity Assessment Irrigation Water	-	1,000,000	-				1,000,000	1,000,000	1,770	-	-	-	-	-	-	-	-	955,170						1,043,550		1,998,720
119	Dr Bhaskar Jyoti Bora	DBT Metagenomics	-	3,772,100	-				4,772,100	47,284	4,725,816	-	-	-	-	13,700	-	34,700											48,284
120	Dr Pushpanjali Kumari	CSIR	-	370,000	-				370,000	117,239	366,761	117,239																	117,239
	Total		-10,990,898	15,162,723	3,787,914	83,966,366	271,629	5,561,000	98,780,257	42,483,884	67,315,481	10,894,322	1,382,410	5,951,483	304,998	2,360,555	611,754	270,238		3,334,582	3,101,139	36,500	274,219	1,961,560	284,271	33,300	139,300	1,043,550	15,000	10,639	43,483,884
112	Dr Khataniar	Herbal Medicine	120,000	-	31,000				150,000	140,415	13,585					5,000				140,415										140,415
113	MR Sheet	STEC Project	5,000	-	-				5,000	-	5,000																		
115	MR Sheet	STEC Project	36,197,335	-	980,000				37,177,335	37,134,173	43,162	2,100,000	44,200	500,000	207,754	2,260,555				1,000,000	79,335,179									37,134,173
	GRAND TOTAL		15,748,437	15,145,723	4,803,140	10,000,366	271,629	5,561,000	97,824,842	81,135,462	16,587,774	17,481,148	1,338,606	1,348,762	702,754	4,251,248	577,731	270,238		1,193,582	32,881,139	36,500	274,219	1,961,560	282,272	33,300	139,300	1,043,550	15,000	10,639	81,137,941

वित्त एवं लेखा अधिकारी
Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

कुलसचिव/Registrar
विज्ञान एवं प्रौद्योगिकी में उन्नत अध्ययन संस्थान
Institute of Advanced Study in
पश्चिम बड़ागाँव, गुवाहाटी-35, असम, भारत
Paschim Boragaon, Guwahati-35, Assam, India

U.K. RATHI & CO. CA GUWAHATI

निदेशक/Director
आई.ए.एस.एस.टी., पश्चिम बड़ागाँव
IASST, Paschim Boragaon
गुवाहाटी-35, असम, भारत
Guwahati-781035 Assam India

2022-23 (Project Status) Period From 01/04/2022 to 31/03/2023 (Annexure - II)

Sl. No	Faculty	Project	Opening Balance	Grant-in-aid	Interest	Received from Central Nodal Agency (Refund)	Total Receipt	Exp. (2022-23)	DBSA balance as on 31/03/2023 Transfer to CNA	Balance as on 31.03.2023	Salary	Contingency	Equipments	Travel	Consumable	Meeting/Training	Overhead	Adv.	Receivable	Receivable from Extramural Project	Total
1	Dr M.K. Phair	SRIG Project	0	0	0	2923671	2923671	2423668	500003	0	129473	196791	1254480	337481	9166		0	0		139645	2423668
2	Dr R. Das	Improvement of Tribal Pop	0	3000000	0	115240	3115240	1252818	866422	0	783965	94231	0	43815	157799	62911	100000			1999	1252819
	Total PFMS SCHEME 1879 (Union Bank)		0	3000000	0	3044760	3144760	3545232	1366422	0	2047420	291023	1254480	381296	9323704	62911	1000000	0	0	737644	3545232
3	Manisha Goswami	Women Scientist	0	666000	0	31964	697964	665244	33020	0	448787	13896	0	56390	96221		49000			3950	668344
4	Dr Raju Borah	Inspire Faculty	0	833904	0	12096	2346000	794402	1551598	0	465764	70000	0	30454	42839		25000		998.00	47321	794402
5	Pulakjyoti Bhagawati	Inspire Fellow	0	0	0	94820	54820	61172	3148	0	40260	20760									61172
6	Dr Anamika Kalita	Inspire Faculty	0	1112263	0	633787	2346050	1614850	1171200	0	662662	14356	0	33277	194381		35000			114736	1074800
7	Ms. Rishika Das	Women Scientist	0	0	0	59663	59663	11194	48469	0	1325	6972	0	3002							11194
8	Nasim Sultana	Inspire Fellow	0	526216	0	27746	546462	30000	516462	0		20000									30000
9	Pranami Bharadwaj	Inspire Fellow	0	30000	0	5080	35080	0	35080	0											0
10	Sunanupam Siddhi Das	Inspire Fellow	0	458960	0	0	458960	0	458960	0											0
11	Sandip Rabidas	Inspire Fellow	0	30000	0	0	30000	0	30000	0											0
12	Sanjib Das	Inspire Fellow	0	30000	0	0	30000	0	30000	0											0
13	Bidyut Kumar Jaiswal	Inspire Fellow	0	0	0	0	0	15080	-15080	0	14900									180	15080
	Total PFMS SCHEME 1817 (Bank of Maharashtra)		0	3691839	0	733426	4384252	3545802	3738378	0	1552225	147441	0	123563	288632	0	110000	0	998.00	142159	3545802
14	Dr. Jajati C Borah	DC & QA	0	0	0	1144839	1144839	0	1144839	0											0
15	Dr. A. Das	Engineered Nanomaterials	0	0	0	557029	557029	0	557029	0											0
16	Dr. Jajati Ch. Borah	Phytopharmacology Development	0	0	0	113340	113340	5388	107952	0	0	1888		3500							5388
17	Dr. R. Das	Evaluation of antioxidant	0	398511	0	99805	653316	461661	191655	0	412661			14000			35000				461661
18	Dr. D. Thakur	Understanding the mechanisms	0	0	0	231844	231844	0	231844	0											0
19	Dr. D. Thakur	Exploration and conservation	0	0	0	121671	121671	6972	114699	0	0			6972							6972
20	Dr. Raju Borah	Development of layered double	0	813988	0	120844	934016	390924	623388	0	162388				194998		33000				390924
21	DR. Lal R Baharia	NAF scheme	0	433826	0	0	433826	171644	262170	0	0	10000		71664			90000				171664
22	S M R Khan	Advance Biotech Hub	0	2709826	0	0	2709826	90000	2709826	0	0	0	0	0	0		90000				90000
	Total PFMS SCHEME 0156 (ICICI BANK)		0	3957426	0	2490672	6454098	1068700	5403398	0	574949	51888	0	94399	134998	0	165000	0	0	0	1068700
	GRAND TOTAL		0	11025265	0	3268106	14293371	2613802	10147397	0	4214585	490351	12544080	600928	9831953	62911	664000	0	998.00	880839	25138921

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Registrar
Institute of Advanced Study in
Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

SCHEDULE " 24 " **: SIGNIFICANT ACCOUNTING POLICES :**

1. **ACCOUNTING CONVENTION :**

The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of accounting.

2. **REVENUE RECOGNITION :**

(a) Income on Interest bearing securities and Term Deposits is recognised on accrual basis as and when these are realised.

(b) Income other than Interest Income are recognised on Cash basis.

3. **INVESTMENTS :**

Term Deposits with Banks are taken as Investments and valued at accrual basis.

4. **FIXED ASSETS :**

Fixed Assets are stated at cost of acquisiton, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisiton less depreciation.

5. **DEPRECIATION :**

(a) Depreciation on Fixed assets purchased/acquired/ constructed out of government grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

(b) Depreciation is charged to Capital Fund by way of reducing the net value of Fixed Assets.

6. **GOVERNMENT GRANTS/SUBSIDIES :**

(a) Revenue grants are shown realisation basis and expenditure thereof is charged to appropriate revenue heads. In the case Capital Grant, the Capital Fund is credited to the extent of the amount of acquisition of Fixed Assets.

(b) During the Financial Year, the Institute received some Grants or re-assignmentof Grants through Central Nodal Agency (CNA). The remaining unutilised grant as on 31 Mrach, 2023 has returned back automatically to CNA as per new revised procedure of fund flow system.

Director
Institute of Advanced Study in
Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

Director
Paschim Boragaon

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON,GUWAHATI- 781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON,GUWAHATI- 781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON,GUWAHATI- 781035

SCHEDULE " 25 " : CONTINGENT LIABILITIES & NOTES TO ACCOUNTS :

(i) Any surplus of Revenue Grant alongwith Other Income over Revenue Expenditure is transferred to Earmarked Fund.

(ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.

(iii) In the opinion of the Management, the Current assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.

(iv) Balances under Current Liabilities, Loans and Advances are subject to conformation /reconciliation /adjustments, if any.

(v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.

(vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.

(vii) As projects are earmarked funds, its transactions have not been included in the preparation of Consolidated Income & Expenditure Account.

13

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

Finance & Account Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035, Assam India

U.K. RATHI & CO.
Chartered Accountants
FRN with ICAI: 326124E

Block-B, 1st Floor
House No-56, Postal House
Near-DE TT Complex
R. K. Road Road
Bebejeet, Guwahati - 781008

GFR 12 - A
[See Rule 238 (1)]

FORM OF UTILIZATION CERTIFICATE
FOR AUTONOMOUS BODIES OF THE GRANTEE ORGANIZATION

UTILIZATION CERTIFICATE FROM 1st APRIL, 2022 TO 31st March, 2023
In respect of recurring/non-recurring
GRANTS-IN-AID/ SALARIES/CREATION OF CAPITAL ASSETS

1. **Name of the scheme** : The Institute of Advanced Study in Science & Technology

2. **Whether recurring or non-recurring grants** : Recurring and Non-Recurring Grants

3. **Grants position at the beginning of the Financial year** :

(i) **Cash in Hand/Bank** : 788,68,522.34
(ii) **Unadjusted Advances** : N/A
(iii) **Total** : Nil

4. Details of grants received, expenditure incurred and closing balances : (Actuals)

Unspent Balances of Grants received years (Rs.)	Interest earned thereon (Rs.)	Interest deposited back to the Government (Rs.)	Sanction Number	Sanction Date	Amount (Rs.)	Total Available funds (Rs.) (3+ (1+2+4-5)	Expenditure incurred (Rs.)	Unspent Balance Refunded through TSA	Closing Balances (Rs.) 7=(5-6)
1	2	3	4	5	6	7	8	9	10
78,868,522.34	2,373,815.41	2,442,775.00	Annexure-I	Annexure-I	437,200,000.00	515,999,562.75	438,610,119.96	72,053,506.00	5,335,926.79

Grant-in-aid-General	Grant-in-aid-Salary	Grant-in-aid-Creation of Capital Assets		Total
134,915,971.96	111,018,870.00	192,675,278.00		438,610,119.96

5. Details of grants position as on : 31/03/2023

(i) Cash in Hand/Bank : 53,35,926.79
(ii) Unadjusted Advances : N/A
(iii) Total : Nil

Note
(1) Unspent Balance of Grants received years includes Opening Bank Balance of Rs.288,68,522.34/- and Fixed Deposit of Rs.500,00,000.00/-

(2) During the FY 2021-22 Institute has earned Rs.27,17,681.80 as Interest and Rs.17,52,040.80 as Other Receipt. Utilisation Certificate does not have the provision for showing of Other Receipt separately, therefore this amount is added up in interest earned column. (Rs.23,73,815.41)

(3) Closing Balance of Rs.53,35,926.79/- includes 3nos. of bank balance Which are SBI Khanapara Core fund A/c Rs.47,08,866.73/-, SBI Khanapara Workshop A/c Rs.4,18,477.33/-, and SBI Khanapara Corpus A/c Rs.2,08,582.73/-

(4) Institute will refund the interest portion and unspent balance, if any, after finalization of its Books of Accounts for the FY 2022-23

Certified that I have satisfied myself that the conditions on which grants was sanctioned have been fulfilled/are being fulfilled and that I have exercised following checks to see that the money was actually utilized for the purpose for which it was sanctioned :

(1) The main accounts and other subsidiary accounts and registers (including assets registers) are maintained as prescribed in the relevant Act/Rules/Standing instructions (mentioned the Act/Rules) and have been duly audited by designated auditors. The figures depicted above tally with the audited figures mentioned in financial statements/ accounts.

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035, Assam India

U.K. RATHI & CO.
Chartered Accountants
FRN with ICAI: 326128E

Block-B, 1st Floor
Room No 05, Prasad House
Near SE TV Complex
R. G. Road Road
Bishnuti, Guwahati - 781008

(2) There exists internal controls for safeguarding public funds/assets, watching outcomes and achievements of physical targets against the financial inputs, ensuring quality in asset creation etc and the periodic evaluation of internal controls is exercised to ensure their effectiveness.

(3) To the best of our knowledge and belief, no transactions have been entered that are in violation of relevant Act/ and scheme guidelines.

(4) The responsibilities among the key functionaries for execution of the scheme have been assigned in clear terms and are not general in nature.

(5) The expenditure on various components of the scheme was in the proportions authorized as per the scheme guidelines and terms and conditions of the grants-in-aid.

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Dinesh Rathi)
Partner
Membership No: 064719

Date: 30/05/2023
Place : Guwahati
UDIN :

Chief Finance Officer
Head of the Finance

Head of the Organization

Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35, Assam, India

Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35, Assam, India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Grants-in-Aid received for the year 2022-23

Annexture: I

Sl. No.	Sanction Letter No.	Date	Amount (₹)
1	AI/IASST/GEN/003/2022/1	13/06/2022	5,000,000.00
2	AI/IASST/GEN/003/2022/2	08/08/2022	20,000,000.00
3	AI/IASST/GEN/003/2022/3	09/11/2022	35,000,000.00
4	AI/IASST/GEN/003/2022/4	28/12/2022	20,000,000.00
5	AI/IASST/GEN/003/2022/5	09/03/2023	22,800,000.00
6	AI/IASST/SAL/003/2022/1	13/06/2022	32,500,000.00
7	AI/IASST/SAL/003/2022/2	07/10/2022	66,400,000.00
8	AI/IASST/SAL/003/2022/3	28/12/2022	17,500,000.00
10	AI/IASST/CAP/2022/1	13/06/2022	10,000,000.00
11	AI/IASST/CAP/003/2022/2	08/08/2022	20,000,000.00
12	AI/IASST/CAP/003/2022/3	09/11/2022	14,000,000.00
13	AI/5/23/IASST/2022	30/11/2022	100,000,000.00
14	AI/IASST/CAP/003/2022/34	28/12/2022	74,000,000.00
	Total G.I.A. received (Gross)		**437,200,000.00**
Less:	**G.I.A. Refunded through TSA**		
	Refund to RBI	31/03/2023	37,844,948.00
	Refund to RBI	31/03/2023	3,298,921.00
	Refund to RBI	31/03/2023	30,909,647.00
	Total (G.I.A. refund)		72,053,516.00
	Total G.I.A, Received (Net)		**365,146,484.00**

Finance & Account Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Registrar
Institute of Advanced Study in
Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

IASST, Paschim Boragaon
Guwahati-781035 Assam India

6

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

BALANCE SHEET OF DST GENERAL FUND AS ON 31ST MARCH, 2023

PARTICULARS	Schedule	Amount (₹) 2022-23
CAPITAL FUND & LIABILITIES		
Corpus/Capital Fund	1	667,914,135.15
Reserves & Surplus	2	0.00
Earmarked/ Endowment Funds	3	0.00
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	200,396,523.51
TOTAL :		868,310,658.66
ASSETS		
Fixed Assets	8	659,708,717.41
Investments - From Earmarked/Endowment Funds		0.00
Investments - Others (FDR)		0.00
Current Assets, Loans and Advances	9	208,601,941.25
Miscellaneous Expenditure (To the extent not written off or adjusted)		0.00
TOTAL :		868,310,658.66
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25	

In terms of our report of even date annexed hereto.

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

INCOME AND EXPENDITURE ACCOUNT OF DST GENERAL FUND FOR THE YEAR ENDED 31ST MARCH 2023

PARTICULARS	Schedule	Amount (') 2022-23
INCOME		
Income from Sales/Services	10	0.00
Grant/Subsidies	11	178,056,131.00
Fees/Subscriptions	12	0.00
Income from Investments (Income on Invest. From earmarked/endow. Funds transferred to Funds)	13	0.00
Income from Royalty, Publication, etc.	14	0.00
Interest earned	15	189,734.41
Other Income	16	977,197.00
Increase/(decrease) in stock of Finished goods and work-in-progress	17	0.00
TOTAL (A) :		**179,223,062.41**
EXPENDITURE		
Establishment Expenses	18	114,593,544.00
Other Administrative Expenses, etc.	19	80,196,678.60
Expenditure on Grants, Subsidies, etc.	20	45,634,884.16
Interest	21	0.00
TOTAL (B) :		**240,425,106.76**
Balance being excess of Expenditure over Income (B-A)		**61,202,044.35**
Transfer to Unutilised Grant		(62,368,975.76)
Transfer to / from General Reserve		0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		**1,166,931.41**
SIGNIFICANT ACCOUNTING POLICIES	22	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	23	

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

RECEIPT AND PAYMENT ACCOUNT FOR THE PERIOD 01/04/2022 TO 31/03/2023 (DST CORE FUND)

Receipt	Amount	Amount	Payment	Amount	Amount
Opening Balance		28868522.34	**Establishment**		111018870.00
i) Savings accounts	28868522.34		Salary	80497058.00	
Grant-in-Aid		437200000.00	N.P.S. Contribution	17349727.00	
Revenue Grant	219200000.00		Gratuity	3411758.00	
Capital Grant	218000000.00		Children Education Allowances	1080000.00	
			Medical Expenses	3596652.00	
Interest Received		1232956.41	Leave Travel Concession	1880526.00	
Bank Interest received (Other)	26072.41		Leave Encashment (Retirement)	1549790.00	
Bank Interest received (Refundable to DST)	1206884.00		Telephone, Internet & Newspaper	434580.00	
			Uniform Allowances	100000.00	
Investments and deposits made		50000000.00	Incentive for Promoting official Hindi La	40000.00	
Investment	50000000.00		Leave Salary Contribution (Prof. A.K. Mu	261910.00	
			Pension Contribution (Prof. A.K. Mukher	661331.00	
Other Income	1140859.00	1140859.00	GPF Contribution (Prof. A.K. Mukherjee	155538.00	
			Administrative Expenses/ Expenses on Grant		134915971.96
			Contingency	22328778.16	
			Consumables	17237017.00	
			Works & Service	41655887.00	
			Fellowship to Scholars/IPDF	25498124.00	
			Salary to Contractual Staff	11232536.00	
			Institutional Project	8381527.00	
			Security Expenses	6078166.00	
			Training & Conference	1604598.00	
			Travel	899538.80	
			Expenditure on Fixed Assets & Capital WIP		192675278.00
			Building & Site Development	90149414.00	
			Computer & Peripherals	2858192.00	
			Books & Journal	1343092.00	
			Furniture & Fixtures	5305400.00	
			Equipment	91796399.00	
			Air Conditioner	1189281.00	
			Machinery & Tools	33500.00	
			Other Payments		74496291.00
			Bank Interest (Refunded to DST)	2442775.00	
			Grant-in-aid refund through TSA(Revenu	41143869.00	
			Grant-in-aid refund through TSA(Capital	30909647.00	
			CLOSING BALANCE :		5335926.79
			a) Cash in hand	0.00	
			b) Bank Balances		
			i) In current accounts		
			ii) In deposit accounts		
			i) Savings accounts	5335926.79	
	518442337.75	518442337.75		518442337.75	518442337.75

0.00000000

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : Guwahati

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Details of Income & Expenditure

Details 1 : Salary and Allowances :	**Amount(₹) 2022-23**
General Fund :	
Children Education	1,080,000.00
Gratuity	3,411,758.00
Leave Salary Contribution (Prof. A.K.Mukharjee)	261,910.00
Leave Encashment (Retirement)	1,549,790.00
LTC	2,114,782.00
Medical Expenses	3,595,952.00
NPS	17,058,667.00
Incentive for Promoting official Hindi Language	40,000.00
Salary	84,284,774.00
Pension Contribution (Prof. A.K. Mukharjee)	661,331.00
Telephone, Internet & Newspaper	434,580.00
Allowances and Bonus	
Uniform Allowances	100,000.00
	114,593,544.00

Details 2 : Contingency Expenses :	**Amount(₹) 2022-23**
General Fund :	
Schedule - 21	
Advertisement	455,814.00
Animal Welfare	48,960.00
Audit Fees	35,000.00
Computer Stationeries	130,725.00
Postage	108,906.00
Electricity & Power	11,302,736.78
Telephone Charges	40,522.00
Repairs & Maintenance - Vehicle	1,881,405.00
Printing & Stationery	2,677,609.00
Hospitality	2,930,228.00
Conveyance	79,709.00
	19,691,614.78
Schedule - 22	
Meeting Expenses	1,051,135.00
Computer Stationery	889,040.00
Legal Fees	88,674.00
Newspapers & Periodicals	158,223.00
Paper Publication Charge	594,100.00
Sitting Fees	12,991.16
Bank Charges	**2,794,163.16**

4

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Details of Income & Expenditure

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Details of Income & Expenditure

Details 3 : Laboratory Consumables :

	Amount(₹) 2022-23
General Fund :	
Schedule - 22	
Laboratory Gas Refilling	340,919.00
Chemicals & Glassware	7,272,567.00
Sample Analysis	365,894.00
Sample Collection	352,484.00
Renewal/Other Fee Payments	3,835,431.00
Experimental Animal Maintenance	354,657.00
	12,521,952.00

Details 4 : Works & Services :

	Amount(₹)
Schedule - 21	
Repairing & Maintenance (General)	14,616,589.02
Consultancy Fees	676,187.00
	15,292,776.02

Schedule - 22	2022-23
General Fund :	
Repairing & Maintenance (Equipment)	13,400,870.00
Outsourcing of Manpower Services	8,908,115.00
Gardening & Landscaping	126,200.00
Repairing & Maintenance (Electrical)	611,123.00
Repairing & Maintenance (SSH)	51,391.00
	23,097,699.00

Details 5 : Institutional Projects :

	Amount(₹) 2022-23
General Fund :	
Schedule - 22	
Continuation of Institutional Bioinformatics Inf.	204,498.00
Empowerment of Sc/St People Horticulture at Rani	6,600.00
Institutional Contribution to BIONEST Project	369,040.00
Institutional Project A Comparative Study of Al Ass	179,459.00
Institutional Project Carbon Based Nanocomposit	640,760.00
Institutional Project Cold Atmospheric Plasma Activ	404,608.00
Institutional Project Exploration of Endophyte..Tea	406,648.00
Institutional Project Exploration of Traditional	909,643.00
Institutional Project Feasibility of Greener..Water	765,671.00
Institutional Project Investigation on Cold Atmosph	77,365.00
Institutional Project Phytochemical Character NE In	892,668.00
Institutional Project Preclinical Evaluation	1,174,498.00
Institutional Project Structure & Morphology..Films	473,482.00
Institutional Project Studies of Waves Plasme	378,288.00
Institutional Project Study of Few Polyelectrolytes	5,035.00
Institutional Project Study on Charge Extraction	185,729.00
Institutional Project Two Dimensional Graphitic Car	146,878.00
	7,221,070.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 1 - CORPUS/CAPITAL FUND		(Amount - Rs.) Current Year
Balance as at the beginning of the year		689,298,421.74
Add : Contributions towards Corpus/Capital fund	66,279,253.00	
Add/(Deduct) : Balance of Net Income/(Expenditure) transferred	1,166,931.41	
Less : Depreciation for the year	88,830,471.00	(21,384,286.59)
		667,914,135.15

6

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS:

(Amount - Rs.)

	Current Year	
A. CURRENT LIABILITIES		
1. Acceptances		0.00
2. Sundry Creditors:		
a). For Goods	277,184.00	
b). Others	0.00	277,184.00
3. Advances Received		0.00
4. Interest accrued but not due on:		
a). Secured Loans/Borrowings	0.00	
b). Unsecured Loans/Borrowings	0.00	0.00
5. Statutory Liabilities:		
a). Overdue	0.00	
b). Professional Tax	35,400.00	35,400.00
6. Other Current Liabilities:		
Unutilised Grant in Aid	186,419,369.51	
Security Deposit/EMD	10,167,324.00	
Other Current Liabilities	3,497,246.00	200,083,939.51
Total (A)		200,396,523.51
B. PROVISIONS		
1. For Taxation		0.00
2. Gratuity		0.00
3. Superanuation/Pension		0.00
4. Accumulated Leave Encashment		0.00
5. Trade Warranties/Claims		0.00
6. Others		0.00
Total (B)		0.00
Total (A+B)		200,396,523.51

7

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35, Assam India

Finance Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE - 8 : :: **FIXED ASSETS** ::

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01/04/22	Additons/(Deletion) >180 days	Additons/(Deletion) <180 days	Total	Depreciation	W.D.V on 31/03/23
Block "A" : 0%						
Land	0.00	0.00	0.00	0.00	0.00	0.00
Block "B" : 10%						
Building & Site Developmen	470,433,435.66	7,323,391.00	3,202,753.00	480,959,579.66	47,935,820.00	433,023,759.66
Furniture & Fixtures	36,380,638.00	3,297,253.00	2,023,469.00	41,701,360.00	4,068,963.00	37,632,397.00
Block "C" : 15%						
Equipments	152,158,424.73	21,748,071.00	23,229,061.00	197,135,556.73	27,828,154.00	169,307,402.73
Air Conditioner	3,995,171.00	592,495.00	591,306.00	5,178,972.00	732,498.00	4,446,474.00
Refrigerator	5,636.00	0.00	0.00	5,636.00	845.00	4,791.00
Projector	41,122.00	0.00	0.00	41,122.00	6,168.00	34,954.00
Vehicles	1,229,822.00	0.00	0.00	1,229,822.00	184,473.00	1,045,349.00
Plant and Machinery	1,702,773.00	24,000.00	33,500.00	1,760,273.00	261,528.00	1,498,745.00
Block "D" : 40%						
Library	2,774,588.00	1,263,904.00	79,188.00	4,117,680.00	1,631,234.00	2,486,446.00
Computer	13,537,826.02	956,426.00	1,914,436.00	16,408,688.02	6,180,588.00	10,228,100.02
Printer & Xerox Machine	260.00	0.00	0.00	260.00	104.00	156.00
Computer Software	239.00	0.00	0.00	239.00	96.00	143.00
	682,259,935.41	35,205,540.00	31,073,713.00	748,539,188.41	88,830,471.00	659,708,717.41

Finance & Accounts Officer
IASST, Paschim Boragaon

Registrar
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35

8

U. K. BAGHI & CO. CHARTERED ACCOUNTANTS

निदेशक/Director
आई.ए.एस.एस.टी, पश्चिम बड़गाव
IASST, Paschim Boragaon

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 9 - CURRENT ASSETS, LOANS, ADVANCES ETC.

A. CURRENT ASSETS:	Current Year	(Amount - Rs.)
1 Inventories:		
a) Stores and Spares	0.00	
b) Loose Tools	0.00	
c) Stock-in-trade:		
Finished Goods	0.00	
Work-in-progress	0.00	
Raw Materials	0.00	0.00
2 Sundry Debtors:		
a) Debts Outstanding for a period exceeding six months	0.00	
b) Others	0.00	0.00
3 Cash Balances in Hand: (including cheques/drafts & imprest)		0.00
4 Bank Balances:		
a) With Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts		
SBI Khanapara Branch	4,708,866.73	
SBI Khanapara Branch - Workshop	418,477.33	
Bank of Baroda - Travel	0.00	
SBI Garchuk - International Conference	0.00	
SBI - IASST Corpus Fund	208,582.73	5,335,926.79
b) With Non-Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts	0.00	0.00
5 Post Office Savings Accounts:		0.00
Total (A)		5,335,926.79

9

HE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOG
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 9 - CURRENT ASSETS, LOANS, ADVANCES ETC. (Contd.)

B. LOANS, ADVANCES & OTHER ASSETS:

(Amount - Rs.)

	Current Year	
1 Loans:		
a) Staff	422,940.00	
b) Other entities engaged in activities/objectives similar to that of the entity	0.00	
c) Others	0.00	422,940.00
2 Advances and other amounts recoverable in cash or in kind or for value to be received:		
a) On Capital Account	0.00	
b) TDS Receivable	0.00	
c) Others	0.00	
Advances against Expenditure of Grants	20,853,727.22	
Advances against Fixed Assets	181,989,347.24	202,843,074.46
3 Income Accrued:		
a) On Investments from Earmarked/Endowment Funds	0.00	
b) On Investments - Others	0.00	
c) On Loans & Advances	0.00	
d) Others (includes income due unrealised - Rs._____)	0.00	0.00
4 Claims Receivable		0.00
Total (B)		203,266,014.46
Total (A+B)		208,601,941.25

U.K. RATHI & CO. CHARTERED ACCOUNTANTS

10

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

(Amount - Rs.)

		Current Year
SCHEDULE 11 - GRANTS/SUBSIDIES		
(Irrevocable Grants & Subsidies Received)		
1) Central Government (Salary & General Grant)		
Amount Received during the year	219,200,000	
Less : Grant Refunded through TSA	41,143,869	178,056,131.00
2) State Government (s)		0.00
3) Government Agencies		0.00
4) Institutions/Welfare Bodies		0.00
5) International Organisations		0.00
6) Others		0.00
Total		178,056,131.00

11

'HE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOG'
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 15 - INTEREST EARNED	(Amount - Rs.) Current Year
1) On Term Deposits:	
a) With Scheduled Banks	0.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
2) On Savings Accounts:	
a) With Scheduled Banks	26,072.41
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
3) On Loans:	
a) Employees/Staff	163,662.00
b) Others	0.00
4) Interest on Debtors and Other Receivables	0.00
Total	189,734.41

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 16 - OTHER INCOME

(Amount - Rs.)

	Current Year	
1) Profit on Sale/Disposal of Assets:		
a) Owned Assets	0.00	
b) Assets acquired out of grants, or received free of cost	0.00	
2) Export Incentives Realised	0.00	
3) Fees for Miscellaneous Services	0.00	
4) Miscellaneous Income		
Penal Interest	0.00	
Bus Fare	23,600.00	
Hostel Accomodation	664,995.00	
Other	194,222.00	
Licence Fees	94,380.00	977,197.00
Total		977,197.00

SCHEDULE 18 - ESTABLISHMENT EXPENSES

a) Salaries & Wages (Details as per Annexure '1')	114,593,544.00
b) Allowances & Bonus	0.00
c) Contribution to Provident Fund	0.00
d) Contribution to Other Fund (Specify)	0.00
e) Staff Welfare Expenses	0.00
f) Expenses on Employees' Retirement and Terminal Benefits	0.00
g) Others	0.00
Total	114,593,544.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 19 - OTHER ADMINISTRATIVE EXPENSES ETC.

		(Amount - Rs.) Current Year
a)	Contingency Expenses	19,691,614.78
b)	Works and Services	15,292,776.02
c)	Training and Conference	1,436,153.00
d)	Travelling and Conveyance Expenses	910,738.80
e)	Security Services	6,078,166.00
f)	Financial Assistance for Seminar/Workshop	0.00
g)	Salary (Contractual Employees)	11,234,412.00
h)	Fellowship (JRF/SRF/IPDF)	25,552,818.00
	Total	80,196,678.60

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED 31ST MARCH 2023

SCHEDULE 20 - EXPENDITURE ON GRANT, SUBSIDIES ETC. (Amount - Rs.)

		Current Year	
a)	**Grants given to Institutions/ Organisations (DST)**		
	Contingency Expenses	2,794,163.16	
	Laboratory Consumables	12,521,952.00	
	Works and Services	23,097,699.00	
	Institutional Projects	7,221,070.00	45,634,884.16
b)	**Subsidies given to Institutions/ Organisations :-**		0.00
		Total	45,634,884.16

U.K. RATHI & CO. CHARTERED ACCOUNTANTS

Financial Advisor Officer IASST, Paschim Boragaon Guwahati-781035 Assam India

Registrar IASST, Paschim Boragaon Guwahati-781035 Assam India

Deputy Director IASST, Paschim Boragaon Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

SCHEDULE " 24 " **: SIGNIFICANT ACCOUNTING POLICES :**

1. **ACCOUNTING CONVENTION :**

The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of accounting.

2. **REVENUE RECOGNITION :**

(a)Income on Interest bearing securities and Term Deposits is recognised on accrual basis as and when these are realised.

(b) Income other than Interest Income are recognised on Cash Basis.

3. **INVESTMENTS :**

Term deposits with Banks are taken as Investments and valued at accrual basis.

4. **FIXED ASSETS :**

Fixed Assets are stated at cost of acquisiton, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisiton less depreciation.

5. **DEPRECIATION :**

(a) Depreciation on Fixed assets purchased/acquired/ constructed out of Government Grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

(b) Depreciation is charged to Capital Fund by way of reducing the net value of Fixed Assets.

6. **GOVERNMENT GRANTS/SUBSIDIES :**

(a) Revenue Grants are shown as income on realisation basis and expenditure thereof is charged to appropriate revenue heads. In the case Capital Grant, the Capital Fund is credited to the extent of the amount of acquisition of Fixed Assets.

(b) During the Financial Year, the Institute received Grant-in-Aid through Tressury Single Account (TSA) mode. The remaining unutilised grants as on 31 Mrach, 2023 has returned back automatically to TSA as per new revised procedure of fund flow system.

16

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON,GUWAHATI- 781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Annexure "A" - Unutilised Grant

	Amount(₹)
Opening Balance	127,977,245.27
Add : Capital Grant received during the year	218,000,000.00
	345,977,245.27
Less : Contribution towards Capital Fund (Addition to Fixed Assets)	66,279,253.00
Less : Refund of Grant through TSA (Capital Grant)	30,909,647.00
Less : Unutilized Revenue Grant for the year	62,368,975.76
Closing Balance	186,419,369.51

Annexure "B" - Security Deposit/EMD

	Amount(₹)
Security Deposits (Works)	9,767,324.00
Earnest Money	400,000.00
	10,167,324.00

Annexure "C" - Other Current Liabilities

	Amount(₹)
Bank Interest Refundable to DST, Govt. of India	1,206,884.00
Donation to PM Care Fund	8,453.00
EPF Payable	37,800.00
Festival Advance Refundable	1,000.00
Payable to Extramural Projects	75,781.00
Benevolent Fund	7,440.00
CM Relief Fund	118,580.00
IASST Misc Account	2,041,308.00
	3,497,246.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

Annexure "D" - Advance against expenditure on grant : Amount(₹)

Current year unadjusted advance :

Salary (Against House Building)	422,940.00	
Salary (Other Advance)	158,037.00	
Institutional Project	109,368.00	
Contingency	35,586.22	
Works and Services	3,572,753.00	
Advance to Extramural Project	4,097.00	
Training	250,000.00	
Consumables	190,273.00	4,743,054.22

Earlier years unadjusted advance :

Salary	6,632,721.00	
Contingency	327,194.00	
Training & Conference	755,775.00	
Others	21,093.00	
Works and Services	6,559,216.00	
Advance to Extramural Project	240,035.00	
Consumables	1,997,579.00	16,533,613.00

TOTAL : **21,276,667.22**

Annexure "E" - Advance against Fixed Assets : Amount(₹)

Current year unadjusted advance :

Equipment	170,558,224.24	
Dedicated Power Supply	0.00	
Computer & Peripherals	0.00	
Books & Journals	0.00	170,558,224.24

Earlier years unadjusted advance :

Equipment	5,260,013.00	
Building & Site Development	1,355,248.00	
Furniture & Fixtures	34,324.00	
Plant & Machinery	54,360.00	
Development of BCH	20,000.00	
Construction of Director Quarter	10,300.00	
Dedicated Power Supply	3,407,156.00	
Computer & Peripherial	1,289,722.00	11,431,123.00

181,989,347.24

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

BALANCE SHEET OF Miscellaneous, SSH, Benevolent & Corpus Fund AS ON 31ST MARCH, 2023

PARTICULARS	Schedule	Amount (₹) 2022-23
CAPITAL FUND & LIABILITIES		
Corpus/Capital Fund	1	91,507,289.16
Reserves & Surplus	2	11,532.00
Earmarked/ Endowment Funds	3	0.00
Secured Loans and Borrowings	4	0.00
Unsecured Loans and Borrowings	5	0.00
Deferred Credit Liabilities	6	0.00
Current Liabilities and Provisions	7	5,459,889.23
TOTAL :		**96,978,710.39**
ASSETS		
Fixed Assets	8	38,874,555.45
Investments - From Earmarked/Endowment Funds	9	0.00
Investments - Others	10	53,471,798.00
Current Assets, Loans and Advances	11	4,632,356.94
Miscellaneous Expenditure (To the extent not written off or adjusted)		0.00
TOTAL :		**96,978,710.39**
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUN	25	

In terms of our report of even date annexed hereto.

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED INCOME & EXPENDITURE ACCOUNT OF Miscellaneous, SSH, Benevolent & Corpus Fund FOR THE YEAR ENDED 31ST MARCH 2023

PARTICULARS	Schedule	Amount (') 2022-23
INCOME		
Income from Sales/Services	12	0.00
Grant/Subsidies	13	0.00
Fees/Subscriptions	14	0.00
Income from Investments (Income on Invest. From earmarked/endow. Funds transferred to Funds)	15	0.00
Income from Royalty, Publication, etc.	16	0.00
Interest earned	17	1,570,834.00
Other Income	18	7,804,240.25
Increase/(decrease) in stock of Finished goods and work-in-progress	19	0.00
TOTAL (A) :		9,375,074.25
EXPENDITURE		
Establishment Expenses	20	0.00
Other Administrative Expenses, etc.	21	1,704,003.50
Expenditure on Grants, Subsidies, etc.	22	0.00
Interest	23	0.00
TOTAL (B) :		1,704,003.50
Balance being excess of Income over Expenditure (A-B)		7,671,070.75
Transfer to Benevolent Fund		0.00
Transfer to / from General Reserve		0.00
BALANCE BEING SURPLUS/(DEFICIT) CARRIED TO CORPUS/CAPITAL FUND		7,671,070.75
SIGNIFICANT ACCOUNTING POLICIES	24	
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	25	

For U K Rathi & Co
Chartered Accountants
FRN.: 328128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

CONSOLIDATED RECEIPTS & PAYMENTS ACCOUNT OF Miscellaneous, SSH, Benevolent & Corpus Fund FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS		Amount (₹)	PAYMENTS		Amount (₹)
I Opening Balances :			**I EXPENSES :**		
a) Cash in hand	0.00		a) Establishment Expenses		0.00
b) Bank Balances			b) Administrative Expenses/ Expenses on Gr		2,418,791.33
i) In current accounts	0.00				
i) In deposit accounts	0.00				
i) Savings accounts	7,699,300.19	7,699,300.19			
II Grants Received			**II Payments made against funds for various projects**		0.00
a) From Government of India		0.00			
b) From State Government		0.00			
c) From other sources (details)		0.00	**III Investments and deposits made**		
(Grants for capital & revenue exp. to be shown separately)			a) Out of Earmarked/Endow. Funds		0.00
			b) Out of Own Funds		10,000,000.00
III Income from Investments from			**IV Expenditure on Fixed Assets & Capital WIP**		
a) Earmarked/Endow. Funds)		0.00	a) Purchase of Fixed Assets		0.00
b) Own Funds (Oth. Investments)		0.00	b) Expenditure on Capital WIP		0.00
IV Interest Received			**V Refund of Surplus money/Loans**		
a) On Bank deposits	209,960.00		a) To the Government of India		0.00
b) Loans, Advances, etc.	0.00	209,960.00	b) To the State Government		0.00
			c) To other providers of Funds		0.00
V Other Income			**VI Finance charges (Interest)**		0.00
Other Income	6,605,407.26				
Mess Dues	1,597,247.32	8,202,654.58	**VII Other Payments**		
			Bank Charges		442.50
			Loans and Advances		78,300.00
VI Amount Borrowed		0.00			
			CLOSING BALANCE :		
VII Any Other receipts		0.00	a) Cash in hand	0.00	
			b) Bank Balances		
			i) In current account	0.00	
			i) In deposit accoun	0.00	
			i) Savings accounts	3,614,380.94	3,614,380.94
		16,111,914.77			16,111,914.77

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i
Date : 30/05/2023
UDIN : 23064719BGVCTC8885

U.K. RATHI & CO. CHARTERED ACCOUNTANTS

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Assistant Registrar
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Assistant Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

(Amount - Rs.)

		Current Year
SCHEDULE - 1 :	**:: CORPUS/CAPITAL FUND ::**	
Part A Capital Fund		
Balance as at the beginning of the year	51,417,229.36	
Add : Contribution towards Corpus/Capital Fund	0.00	
Less : Depreciation for the year	4,626,729.00	46,790,500.36
Part B Corpus Fund		
Balance as at the beginning of the year	37,045,718.05	
Add : Balance of net income/(expenditure) transferred from the Income and Expenditure Account	7,671,070.75	44,716,788.80
		91,507,289.16

		Current Year
SCHEDULE - 2 :	**:: RESERVES & SURPLUS ::**	
1. Capital Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00
2. Revaluation Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00
3. Special Reserve -IASST Employees Benevolent Fund (664178)		
As per Last Account	11,532.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	11,532.00
4. General Reserve		
As per Last Account	0.00	
Addition during the year	0.00	
Less: Deductions during the year	0.00	0.00
		11,532.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 7 - CURRENT LIABILITIES AND PROVISIONS: (Amount - Rs.)

		Current Year
A. CURRENT LIABILITIES		
1. Acceptances		0.00
2. Sundry Creditors:		
a). For Goods	0.00	
b). Others	20,372.00	0.00
3. Advances from Extramural Projects	4,877,495.00	4,897,867.00
4. Interest accrued but not due on:		
a). Secured Loans/Borrowings	0.00	
b). Unsecured Loans/Borrowings	0.00	0.00
5. Statutory Liabilities:		
a). Overdue	0.00	
b). Others	38,069.00	38,069.00
6. Other Current Liabilities:		
a). Security Deposit (SSH)	4,392.23	
b). Earnest Money (Misc./Overhead)	486,200.00	
c). Payable to Core fund	33,361.00	523,953.23
	Total (A)	5,459,889.23
B. PROVISIONS		
1. For Taxation		0.00
2. Gratuity		0.00
3. Superanuation/Pension		0.00
4. Accumulated Leave Encashment		0.00
5. Trade Warranties/Claims		0.00
6. Others		0.00
	Total (B)	0.00
	Total (A+B)	5,459,889.23

5

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULE - 8 : :: **FIXED ASSETS** ::

PARTICULARS OF DEPRECIATION ALLOWABLE AS PER THE IT ACT, 1961 IN RESPECT OF EACH ASSET OR BLOCK OF ASSETS, AS THE CASE MAY BE, IN THE FOLLOWING FORM

Particulars	W.D.V on 01/04/22	Additons/(Deletion >180 days	<180 days	Total	Depreciation	W.D.V on 31/03/23
Block "A" : 10%						
Building & Site Developmer	37,636,024.00	0.00	0.00	37,636,024.00	3,763,602.00	33,872,422.00
Furniture & Fixtures	333,246.45	0.00	0.00	333,246.45	33,325.00	299,921.45
Block "C" : 15%						
Equipments	2,995,473.00	0.00	0.00	2,995,473.00	449,321.00	2,546,152.00
Vehicles	2,536,541.00	0.00	0.00	2,536,541.00	380,481.00	2,156,060.00
	43,501,284.45	0.00	0.00	43,501,284.45	4,626,729.00	38,874,555.45

6

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 10 - INVESTMENTS - OTHERS:		**Current Year**
1. In Government Securities		0.00
2. Other Approved Securities		0.00
3. Shares		0.00
4. Debentures and Bonds		0.00
5. Subsidiaries & Joint Ventures		0.00
6. Others - Investment in FDR		
Opening Balance	42,247,012.00	
Add: Current Year Investment (Net)	10,000,000.00	
Add: Current Year Interest	1,360,874.00	
Less : TDS	136,088.00	
Less: Interest Received	0.00	53,471,798.00
	Total	53,471,798.00

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

SCHEDULE 11 - CURRENT ASSETS, LOANS, ADVANCES ETC.

A. CURRENT ASSETS:		(Amount - Rs.) Current Year
1 Inventories:		
a) Stores and Spares	0.00	
b) Loose Tools	0.00	
c) Stock-in-trade:		
Finished Goods	0.00	
Work-in-progress	0.00	
Raw Materials	0.00	0.00
2 Sundry Debtors:		
a) Debts Outstanding for a period exceeding six months	0.00	
b) Others	0.00	0.00
3 Cash Balances in Hand: (including cheques/drafts & imprest)		0.00
4 Bank Balances:		
a) With Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts		
SBI - IASST Employees Benevolent Fund	25,017.00	
SBI - Students & Scientist Home (IASST)	340,455.82	
Vijaya Bank - Overhead/Miscellaneous	3,248,908.12	3,614,380.94
b) With Non-Scheduled Banks:		
On Current Accounts	0.00	
On Deposit Accounts (including margin money)	0.00	
On Savings Accounts	0.00	0.00
5 Post Office Savings Accounts:		0.00
Total (A)		3,614,380.94

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF BALANCE SHEET AS AT 31/03/2023

B. LOANS, ADVANCES & OTHER ASSETS:

		Current Year	
1	Loans:		
	a) Staff	0.00	
	b) Other entities engaged in activities/objectives similar to that of the entity	0.00	
	Empowerment of Tribunal Project	0.00	
	Receivable from SC/ST Project	0.00	
	IASST EMP Project Fund	710,230.00	
	c) Others (Specify) Security Deposit (SSH)	0.00	710,230.00
2	Advances and other amounts recoverable in cash or in kind or for value to be received:		
	a) On Capital Account	0.00	
	b) Prepayments	0.00	
	c) Others	307,746.00	307,746.00
3	Income Accrued:		
	a) On Investments from Earmarked/Endowment Funds	0.00	
	b) On Investments - Others	0.00	
	c) On Loans & Advances	0.00	
	d) Others (includes income due unrealised - Rs._____)	0.00	0.00
4	Claims Receivable		0.00
		Total (B)	1,017,976.00
		Total (A+B)	4,632,356.94

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED ON 31ST MARCH 2023

SCHEDULE 17 - INTEREST EARNED

	(Amount - Rs.) Current Year
1) On Term Deposits:	
a) With Scheduled Banks	1,360,874.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
2) On Savings Accounts:	
a) With Scheduled Banks	209,960.00
b) With Non-Scheduled Banks	0.00
c) With Institutions	0.00
d) Others	0.00
3) On Loans:	
a) Employees/Staff	0.00
b) Others	0.00
4) Interest on Debtors and Other Receivables	0.00
Total	1,570,834.00

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

9

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED ON 31ST MARCH 2023

SCHEDULE 18 - OTHER INCOME

	(Amount - Rs.) Current Year
1) Profit on Sale/Disposal of Assets:	
a) Owned Assets	0.00
b) Assets acquired out of grants, or received free of cost	0.00
2) Export Incentives Realised	0.00
3) Fees for Miscellaneous Services	0.00
4) Miscellaneous Income	7,804,240.25
Total	7,804,240.25

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

SCHEDULES FORMING PART OF INCOME & EXPENDITURE FOR THE PERIOD ENDED ON 31ST MARCH 2023

SCHEDULE 21 - OTHER ADMINISTRATIVE EXPENSES ETC.

		(Amount - Rs.) Current Year
a)	Hospitality Expenses	1,703,561.00
b)	Bank charges	442.50
c)	Consultancy/Professional Fees	0.00
d)	Interest Expenses	0.00
e)	NPS	0.00
f)	Building & Site Development Expenses	0.00
	Total	1,704,003.50

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF OVERHEAD/MISCELLANEOUS FUND FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS		Amount (₹)	PAYMENTS		Amount (₹)
To **OPENING BALANCE :**			By **PAYMENT :**		
Unspent as on 01/04/2022		7,237,480.19	Extramural Project	710,230.00	
			Round off	0.33	710,230.33
" **OTHER RECEIPTS :**					
Bank Interest	194,551.00				
Institute Facility	3,858,867.26				
Sales/Services	819,431.00				
SSH/Guest House	1,584,059.00				
Security	329,000.00		" **SECURITY REFUND :**		78,300.00
Other Income	14,050.00	6,799,958.26			
			" **INVESTMENT :**		10,000,000.00
			" **CLOSING BALANCE :**		
			Unspent as on 31/03/2023		3,248,908.12
		14,037,438.45			14,037,438.45

For U K Rathi & Co
Chartered Accountants
FRN : 324128E

(CA Utpesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035 Assam India

Director
Institute of Advanced Study in Science & Technology
Paschim Boragaon, Guwahati-35 Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF STUDENT AND SCIENTIST HOME FUND FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS		Amount (₹)	PAYMENTS		Amount (₹)
To **OPENING BALANCE :**			By **PAYMENTS :**		
Unspent as on 01/04/2022		437,467.00	Hospitality Expenditur	1,708,561.00	
			Bank & POS Charges	442.50	1,709,003.50
* **OTHER RECEIPTS :**			*		
Bank Interest	14,745.00				
Mess Dues	1,597,247.32	1,611,992.32			
			* **CLOSING BALANCE :**		
			Unspent as on 31/03/2023		340,455.82
		2,049,459.32			2,049,459.32

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i

Finance & Accounts Officer

Director

13

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF UPGRADING FUND FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
To **OPENING BALANCE :**		By **PAYMENT :**	
Unspent as on 01/04/2022	0.00	Transfer to DST Core Fund & amount utilized for Building & Site Development Expenditure	0.00
* **OTHER RECEIPTS :**			
Bank Interest	0.00	* **CLOSING BALANCE :**	
		Unspent as on 31/03/2023	0.00
	0.00		0.00

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i

U.K. RATHI & CO. CA GUWAHATI

Registrar

Director

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

RECEIPTS & PAYMENTS ACCOUNT OF EMPLOYEES BENEVOLENT FUND FOR THE YEAR ENDED 31ST MARCH 2023

RECEIPTS	Amount (₹)	PAYMENTS	Amount (₹)
To **OPENING BALANCE :**		By **EXPENDITURES :**	
Unspent as on 01/04/2022	24,353.00	Employees Benevolent Fund	0.00
" Bank Interest	664.00	**CLOSING BALANCE :**	
		Unspent as on 31/03/2023	25,017.00
	25,017.00		25,017.00

For U K Rathi & Co
Chartered Accountants
FRN : 326128E

(CA Umesh Rathi)
Partner
Membership No. 064719
Place : G u w a h a t i

Finance & Accounts Officer

Director
IASST, Paschim Boragaon
Guwahati-781035 Assam India

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

SCHEDULE " 24 " **: SIGNIFICANT ACCOUNTING POLICES :**

1. **ACCOUNTING CONVENTION :**

   The Financial Statements are prepared on the basis of historical cost convention, unless otherwise stated and on the Accrual method of accounting.

2. **REVENUE RECOGNITION :**

   (a) Income on interest bearing securities and term deposits is recognised on accrual basis as and when these are realised.

   (b) Income other than interest income are recognised on cash basis.

3. **INVESTMENTS :**

   Term deposits with Banks are taken as investments and valued at accrual basis.

4. **FIXED ASSETS :**

   Fixed Assets are stated at cost of acquisiton, inclusive of inward freight, duties and taxes and incidental and direct expenses related to acquisiton less depreciation.

5. **DEPRECIATION :**

   (a) Depreciation on Fixed assets purchased/acquired/ constructed out of government grants is charged on WDV Method as per the rates specified under the Income Tax Act, 1961.

   (b) Depreciation is charged to Capital Fund by way of reducing the net value of fixed assets.

16

THE INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

PASCHIM BORAGAON,GUWAHATI- 781035

SCHEDULE " 25 " : CONTINGENT LIABILITIES & NOTES ON ACCOUNTS :

(i) No provision has been made in respect of Leave Salary.

(ii) Purchase of consumable items during the year are treated as expenditure and charged to revenue.

(iii) In the opinion of the Management, the Current Assets, Loans and Advances have a value on realisation equal or atleast to the aggregate amount shown in the Balance Sheet.

(iv) Balances under Current Liabilities, Loans and Advances are subject to conformation /reconciliation /adjustments, if any.

(v) No provision is made for Contingent Liability, except for cases where provision needs to be made, based on expert opinion.

(vi) Previous years figure have been rearranged and regrouped wherever considered necessary to facilitate comparison.

(vii) Any surplus balance that remains in Income & Expenditure A/c after adjusting the expenditure with the income is transferred to Capital/Corpus Fund.

U.K. RATHI & CO.

Finance & Accounts Officer
IASST, Paschim Boragaon
Guwahati-781035, Assam India

Director
IASST, Paschim Boragaon
Guwahati-781035,Assam India