

**INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
(AN AUTONOMOUS INSTITUTE UNDER DEPARTMENT OF SCIENCE AND
TECHNOLOGY, GOVT. OF INDIA), GUWAHATI, ASSAM**

**MINUTES OF THE TENTH MEETING OF SCIENTIFIC ADVISORY COUNCIL (GC) OF
INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY (IASST),
GUWAHATI HELD ON 17TH & 18TH JULY, 2020 (THROUGH VIDEO CONFERENCING).**

Members present:

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| 1. Prof. Padmanavan Balaram
Former Director,
IISc, Bangalore | Chairperson |
| 2. Prof. Dinakar S. Patil
Visiting Professor, Department of Metallurgical
Eng. and Mat. Sciences, IIT, Mumbai | Member |
| 3. Prof. Goutam De
Emeritus Professor,
S. N. Bose National Centre for Basic Sciences,
Kolkata | Member |
| 4. Prof. Niranjana Chakraborty
Former Director,
National Institute of Plant Genome Research,
New Delhi | Member |
| 5. Prof. Sibaji Raha
Former Director, Bose Institute,
Kolkata | Member |
| 6. Prof. Pranab Goswami
Department of Bio Science and Bioengineering
IIT Guwahati | Member |
| 7. Prof. U. C. Gupta
Department of Mathematics
IIT Kharagpur | Member |
| 8. Prof. Arun Chattopadhyay
Department of Chemistry
IIT Guwahati | Member |
| 9. Prof. H. Bailung
Director (Additional Charge)
IASST, Guwahati | Member Secretary |

Prof. Sibaji Raha joined the meeting on 17th and could not attend on 18th due to his preoccupation. **Prof. Kanury Venkata Subba Rao** and **Prof. Appa Rao Podile** could not attend the meeting due to their preoccupation.

AGENDA ITEM NO. 1: Welcome address by the Director (Additional Charge), IASST.

First of all, Prof. H. Bailung, Director (Additional Charge), IASST on behalf of all the staff of IASST welcomed Professor P. Balaram, Chairman, Scientific Advisory Council and the other esteemed members to 10th meeting of the Scientific Advisory Council of IASST. He then requested the Hon'ble Chairman to start the proceedings of the meeting. The Chairman welcomed the members and took up the agenda for discussion.

AGENDA ITEM NO. 2: Action Taken Report on the decisions/deliberations of the 10th meeting of the Scientific Advisory Council and Director's Report.

Director (Additional Charge), IASST made a brief presentation on the action taken report on the decisions of last SAC meeting.

Manpower recruitment: IASST recruited 10 faculty against vacant posts during 2018-2020 out of which 4 appointees could not join/resigned after joining. During this period 5 permanent faculty of the institute have retired and present strength of faculty at IASST remains at 18 against total sanctioned strength of 26. The present break up of manpower in each research program is as follows:

Basic and Applied Plasm Physics: 3

Advanced Material Sciences: 6

Mathematical and Computational Sciences: 3

Biodiversity and Ecosystem Research: 4

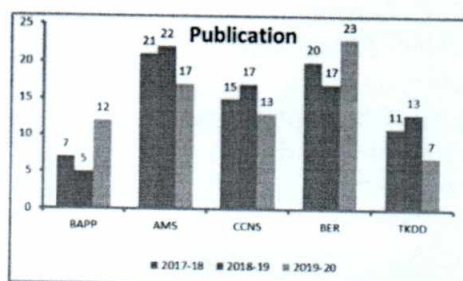
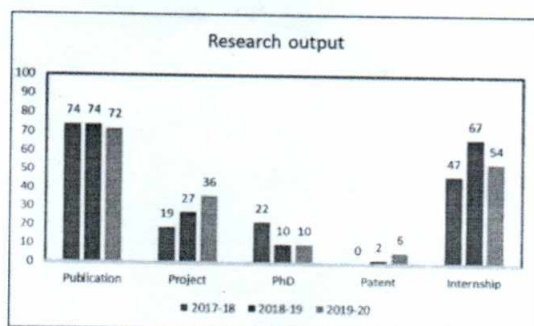
Traditional Knowledge Base Drug Development: 2

In addition 14 National fellows/PDF/Project Scientists and 86 research scholars are presently serving at IASST.

Purchase of equipment: As per recommendation of last SAC meeting 4 high end equipment have been procured during 2018-2019.

1. Transmission Electron Microscope JEOL, Japan (400 Lakhs)
2. Raman Spectrometer, Horiba, France (102 Lakhs)
3. Gas Chromatography- Mass Spectroscopy, Shimadzu, Japan (65 Lakhs)
4. Pico-second Fluorescence Life time Spectrometer, Edinburg Instruments, UK (55 Lakhs)

Director (Additional Charge), IASST highlighted the research achievements of IASST during last 3 years:



It has been informed to the Council that IASST has recently got the ISO 9001:2015 Certification. The institute has been adjudged the best performing Institute (2019) Award by Govt. of Assam and Prof. Joyanti Chutia, Former Director, IASST has been awarded Life Time Achievement in Science by the

Govt. of Assam. IASST set up a COVID 19 Testing and Research laboratory in collaboration with GMCH, NHM, GU, IITG (June 3, 2020, completed 20,000 sample testing).

The Council has also been informed that few new facility has been developed at the institute during this period which are nearing completion

1. Central Instrumentation Facility Building (3684 sq.m @ Rs. 17 Crore) to house
 - Quality Control and Quality Assurance laboratory
 - BioNEST Bio-incubation Hub
 - Common Sophisticated Instruments
 - COVID Testing and Research Laboratory
2. GLP Compliant Animal House Facility (630 sq.m; @ Rs. 3.25 Crore) with state of the art facility for preclinical animal trail data.
3. Residential Campus for faculty (19 Nos. @ Rs. 7.1 Crore)

AGENDA ITEM NO. 3: Presentation by the faculties:

Faculties of Advanced Material Sciences (6), Traditional Knowledge Based Drug Development (2) and Basic and Applied Plasma Physics (3) programs have presented their research activities and future plan of research before the Council. The Council members interacted with the faculty and their suggestions were noted (Annexure – I)

The presentation ended at 2:30 pm on 17th July, 2020. The meeting ended for the day.

The SAC Meeting resumed on 18th July at 10:00 am

AGENDA ITEM NO 3: (Contd)

Faculties of Biodiversity and Ecosystem Research (4) and Mathematical and Computational Sciences (3) programs have presented their research activities and future plan of research before the Council. The Council members interacted with the faculties and their suggestions were noted.

AGENDA ITEM NO. 4: Presentation on the new facilities at IASST by Dr. Devasish Choudhury: Dr. Devasish Choudhury Associate Professor, Physical Sciences Division made a presentation on the new facilities coming up at IASST with their aims and objectives.

1. Central Instrumentation Facility Building to accommodate
 - Quality Control and Quality Assurance laboratory to facilitate the researchers, entrepreneurs and medicinal plant farmers to test quality of their products and certification. This will be the first such facility in the North Eastern Region of the country.
 - BioNEST Bio-incubation Hub (under ISVEC, IASST) aiming at creating robust mechanism for translation of technology and encourage transformation in the culture of bio-entrepreneurship in the North East India.
 - Common Sophisticated Instruments (SEM, TEM, XRD, XRR, TRPL, CHN analyser, GC MS, LCMS etc.) will be housed.
 - Heritage Food and Beverage Research Centre.
 - COVID Testing and Research Laboratory is functioning in this building with all equipment (RT-PCR, centrifuge, deep refrigerators, biosafety cabinets, autoclaves etc.) are housed in this BSL II lab.
2. GLP Compliant Animal House Facility (630 sq.m) with state of the art facility is unique facility in the NE region for preclinical animal trail data.

AGENDA ITEM NO. 5: Presentation on procurement of new equipment (above 50 lakhs) and Commencement of Post-Doctoral Fellowship program at IASST

IASST faculty propose 4 new high end equipment for procurement during coming 2 -3 years. The following faculty made a presentation on the equipment justifying the need of the equipment before the Council.

1. X-ray Photoelectron Spectroscopy (XPS) : Presented by Dr. Biswajit Choudhury (A new equipment)
2. X-ray Diffraction Analyser with Grazing incidence: Presented by Dr. Sarathi Kundu (Replacement of 10 years old XRD without grazing incidence)
3. Cryo- Microtome for TEM (Biological sample preparation stage) by Dr. Rahul Hepat (as attachment for existing TEM)
4. Nuclear Magnetic Resonance Spectroscopy (NMR) by Dr. Neelotpal Sen Sarma (New equipment)

The members deliberated on the requirement of the equipment and commented that it is justified to procure the proposed high end equipment as the research activities of the institute have grown manifold and it is time to strengthen the research infrastructure. Members however commented that extreme precaution must be taken in laying down the terms and conditions of including insurance etc during purchase negotiations.

Director (Additional Charge), IASST informed the SAC that Academic Committee of IASST has decided to introduce Institutional Post-Doctoral (PDF) Program at IASST, initially with one PDF per program to strengthen the research in high priority areas. The expenditure will be borne from the salary/fellowship head of core budget.

The members deliberated on the proposal and commented that the fellowships should be sourced separately and not at the expense of the fellowship of research scholars.

AGENDA ITEM NO. 6: Discussion on the engagement of retired Directors/Scientists beyond superannuation (matter brought into discussion by Prof. Arun Chattopadhyay, Member SAC).

Prof. Arun Chattopadhyay, Member, SAC, IASST brought this point into discussion that Scientists of the institute need to be supported to continue their work if they so desired beyond superannuation. He pointed out the example of former Director (Prof. Joyanti Chutia) who was offered Emeritus Professorship beyond her superannuation and that her scientific contribution as Emeritus Professor has helped the institute. Prof. Chattopadhyay also wanted to know the Governing Council's recommendations in favour of Dr. N. C. Talukdar (outgoing Director, IASST) in keeping his status as Co-PI of externally funded projects.

Director (Additional Charge), IASST informed the SAC that Dr. Talukdar has shown his willingness to contribute as a scientist and applied for an Honorary Professorship to the Governing Council of IASST. The last Governing Council meeting held on 15-02-2020 deliberated on his application and commented that there is no provision in the Bye Laws of IASST for obtaining service of retired person. However, the Council resolved that Dr. Talukdar can continue to carry out research work of his externally funded projects at IASST as Co-PI. (Dr. Talukdar has three externally funded research projects and one institutional project which will end by 2021). The Governing Council suggested that Dr. Talukdar transfer the PI-ship & infrastructure facilities of the projects to the Co-PIs (before his retirement).

Governing Council also commented that Dr. Talukdar can submit research project under Professor of Eminence/Science Chair Professor schemes as per the provision in the draft bye laws of IASST after approval of the same by DST, Govt. of India which will be subjected to expert review for decision. (The last Governing Council meeting was attended by Dr. Talukdar as Director, IASST). The para of minutes of the last Governing Council is annexed (Annexure –II).

Director (Additional Charge), IASST informed the SAC that DST, GoI is formulating common Bye-Laws/Rules and Regulations/Recruitment & Promotions Rules etc. applicable to all Autonomous Institutions (AI) under DST. The draft Bye laws etc. has been circulated for signature and the process is under final stage for seeking approval by the Cabinet through an act of Parliament. The draft Bye laws has the provision for Professor of Eminence/Science Chair Professorship (02 positions per institute, for a maximum period of 5 years coterminous to the age of 70 years or completion of tenure whichever is earlier) and Governing Council is the appointing/approval authority for the Professor of Eminence/Science Chair Professorship.

Director (Additional Charge), IASST also informed the SAC that Dr. Talukdar (outgoing Director) was attending/working at IASST laboratory till June 1, 2020 after his superannuation. The transferring of the projects owned by Dr. Talukdar to the respective Co-PIs and official communication allowing him to act as Co-PI as recommended by the Governing Council is under progress and will be completed within a week.

The Scientific Advisory Council after deliberations recommended that adequate provisions may be made by the Governing Council of IASST to engage retired scientists of the institute to utilize their service beyond superannuation.

AGENDA ITEM NO. 7: Remarks by SAC member:

Prof. Sibaji Raha appreciated the work done by Basic and Applied Plasma Physics group. He advised that two young members of this programme be nurtured, encouraged and supported. He advised IASST to join Indian ITER activities.

Prof. Raha also appreciated the activities done by Traditional Knowledge Based Drug Development & Delivery research group. However, he advised to strengthen the program by attracting people in the field to join IASST.

Prof. Raha also observed that the Advanced Material Science program have critical strength and the faculties are active & have good record of publications. However, there were no concerted plan for collaborative work among themselves. He recommended that a program should be evolved where most of the members would collaborate and relate to local issues.

AGENDA ITEM NO. 8: Remarks by the Chairman

Prof. Balaram thanked all the SAC members for their active participation in the meeting both days. He also thanked all the faculty members of the institute for the presentation on ongoing research activities and future plan of research. Chairman endorsed the approval of the SAC on the following proposals.

1. The SAC approved the procurement of four high end equipment (XPS, XRD, Microtome and NMR) to strengthen the research infrastructure at IASST.
2. The SAC recommended that adequate provisions may be made by the Governing Council of IASST to engage retired scientists of the institute enabling them to make scientific contribution beyond superannuation.

3. The SAC approved the commencement of PDF program of the IASST to engage fresh Ph. D. holders (One PDF in each program).

Prof. Balaram commented that the institute's diverse field of research is due to its legacy, the purpose/way of its formation and the environment/way the institute has to carry out research with a small group of scientist. He pointed out that for such a small institute with wide range of research fields it will be difficult to make a major impact and emphasized on development of long range strategy on a niche area. Prof. Balaram also felt that Governing Council may plan to review the scientific institutions by an expert group to build up long term strategy for each institutions integrating their selective expert area. Prof. Balaram emphasized that biodiversity research is an important area for IASST to explore owning for its location and potential utilization for mankind.

Prof. Balaram finally thanked all the faculty of IASST and the members of SAC for their active participation during both days of meeting.

The meeting ended with a vote of thank by Director (Additional Charge), IASST to the Chairman and all members of the SAC.



Prof. P. Balaram
Chairman, Scientific Advisory Council
IASST, Guwahati



Prof. H. Bailung
Director (Additional Charge)
IASST, Guwahati

INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY

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PASCHIM BORAGAON, GARCHUK, GUWAHATI- 781035

10th Scientific Advisory Council (SAC) Meeting of IASST held through VC
Date: July 17 & 18, 2020; Time: 1000 hrs – 1330 hrs (through video conferencing)

Comments and suggestions of SAC members on the presentation of faculty members of IASST

Sl. No.	Name of faculty (Prof./Dr.)/Program	July 17 th , 2020
1	Neelotpal Sen Sarma Advanced Material Sciences	Commented that the High performance water-borne fluorescent acrylic based adhesives are useful in many applications like plasma applications as the adhesive is thermally stable up to 300 C. It was suggested that the adhesive material also should be transparent for UV light and suggested to work on this issue.
2	Devasish Chowdhury Advanced Material Sciences	The members appreciated the work done and found his work interesting and the toxicity aspect of carbon nanomaterials especially of carbon dots so that it can be used in biology. The toxicity issue of nanomaterials is still not fully known and more studies need to be done to come to any conclusion. Members also discussed on the selectivity of the sensor developed. On enquiry, it was informed that the animal study was done at IASST for developing hybrid cotton patch. Members made the following suggestions: 1. To undertake stability test under water of the conducting coating on fabrics developed 2. To look into the spectroscopic plasmonic shift obtained in case of developing bio-conjugates of Gold nanoparticles and advised that the shift can be result of other factors like dielectric and surrounding rather than merely size of the nanoparticles.
3	Arup Ratan Pal Advanced Material Sciences	Suggestions: 1. To improve the adhesion of graphene film with Atmospheric Pressure Glow Discharge Plasma the growth rate is to be lowered. 2. To initiate research jointly with Life Sciences Division for using Atmospheric Pressure Glow Discharge Plasma system for large area decontamination for use in hospitals.
4	Sarathi Kundu Advanced Material Sciences	Discussed on the size of polyelectrolyte nanoparticles and quenching nature. It was asked to explore the relation between the photophysical properties of the nanoparticles and their sizes.
5	Munima B. Sahariah Advanced Material Sciences	Discussed the condition to have materials with different moduli to construct the hetero structure so that the interface can act as a sink for point defects which otherwise causes damage to the material.

6	Biswajit Choudhury Advanced Material Sciences	Discussed the significance of the works in context with the available research and publications in the field. It was noted that process of photo-catalysis is dependent on several factors, including the catalyst amount taken, concentration dye in solution, light intensity on the solution, etc. Members commented that FDTD simulation shown for Ag-C3N4 and Au-C3N4 is not absolute and several factors will arise in the bimetallic formation. A DFT study may resolve the issue.
7	Subir Biswas Basic and Applied Plasma Physics	Suggested to make a survey on various dielectric barrier discharge schemes for bio-medical application.
8	Kamatchi Sankaranarayanan Basic and Applied Plasma Physics	Appreciated her work on protein self-assembly aided by plasma radiation, proteins-inorganic co-assembly, bio-compatible ionic liquids.
9	H. Bailung Basic and Applied Plasma Physics	Suggested to develop large a cold atmospheric pressure plasma device for utilization a disinfection of bacteria, virus on large surfaces. Dr. Patil also had expressed his willingness to help in designing large area DBD electrode for such applications.
July 18th, 2020		
10	Gautam Choudhury Mathematical and Computational Sciences	Suggested to do some possible collaboration with members of Life Sciences Division' besides doing his regular research works on stochastic process.
11	Lipi B Mahanta Mathematical and Computational Sciences	Members appreciated the presentation and suggested to use her expertise in AI in the domain of drug discovery.
12	Santu Das Mathematical and Computational Sciences	Suggested to explore different computation techniques other than neural network to be implemented into the Brahmaputra flood prediction model. Members suggested that prediction of soil erosion locations in the Brahmaputra bank based on the hydrodynamic based prediction technique would help the government to take preventive action.
13	Rajlakshmi Devi Traditional Knowledge Based Drug Development and Delivery	Members appreciated the work and suggested to extend the study in the field of Gut microbiome.
14	Jagat Bora Traditional Knowledge Based Drug Development and Delivery	Appreciated the work on phyto-pharmaceutical drug development from folk / Indian Systems of Medicine for management and treatment of Diabetes and Diabetic Nephropathy. Standardization of active fraction with isolation and characterization from selected medicinal plants. Suggested to explore the commercial aspects of the medicinal plants. Commented that such plant based wok is going on globally, but it is very difficult to characterize the constituents as ultimate quantity is very less. On the other hand, isolation and characterization, the compound may not be active. Suggested to follow proper protocol for the analysis and to have NMR facility at IASST.
15	Debajit Thakur Biodiversity and Ecosystem Research	Suggested to evaluate the diversity of tea endophytic microorganisms prevalent in different cultivated and non-cultivated Tea species metagenomics study may be included. It was informed that IASST has been exploring actinobacteria with antimicrobial potential prevalent in the soil of protected forest ecosystems of North-East India. These precious actinobacterial isolates having antimicrobial activity against methicillin resistant <i>Staphylococcus aureus</i> (MRSA), multi drug resistant clinical pathogens, plant pathogens and plant growth promoting actinobacteria

		need to be preserved and utilized in a systematic way to develop a Web-based curated "Antimicrobial Metabolites Producing Actinobacterial Database (AMPAD)" at IASST, Guwahati, Assam. Members suggested to take help of an NMR scientist to identify the chemical structures of the potential drug compounds being isolated under the project.
16	Rahul Hapat Biodiversity and Ecosystem Research	Members applauded the work of Seri-biotechnology group work and happy to see anti-viral activity of titanium dioxide nanoparticle (TiO ₂) against cypovirus isolated from <i>Antheraea assamensis</i> . He suggested group to prepare TiO ₂ nanoparticles at lower-temp using sol-gel method for synthesis and characterization. Discussed the transmission modes of the Muga virus and novelty of TiO ₂ NPs as it was studied in BmCPV-1 and mechanism.
17	Arundhuti Devi Biodiversity and Ecosystem Research	Discussed cost effective production of ZnO nanoparticles used for degradation of hydrocarbon contaminated soil.
18	Mojibur Khan Biodiversity and Ecosystem Research	Appreciated the work on gut microbiome as it is related to human physical and mental health. Suggested to work with Dr. R. Devi to investigate the effect of consumption of banana (<i>Musa balbisiana</i>) on gut bacteria.

Annexure - II

AGENDA ITEM NO. 15: Any other item(s) with the permission of the Chair.

A. Application of Dr. N. C. Talukdar for serving as Honorary Professor at IASST and request to provide a small accommodation inside IASST campus after his retirement

Dr. N. C. Talukdar, Director, IASST submitted an application to the Governing Council on the subject mentioned above. The Council deliberated on the application and commented that there is no provision in the Byelaw of IASST for obtaining service of retired person. However, the council resolved that Dr. Talukdar can continue to carry out research work of his externally funded projects (EFP) at IASST as Co-PI. Dr. Talukdar will transfer all the projects to the respective Co-PIs who will become PI after his retirement. Similarly, the infrastructure facilities created under these projects will also be transferred in the name of the respective Co-PI turned PIs. The Council considered the request of Dr. Talukdar for accommodation inside the campus as per rule. The Council commented that Dr. Talukdar can submit research project under Professor of Eminence/Science Chair Professor scheme as per the provision in the draft byelaws of IASST after approval of the same by the DST, Govt. of India which will be subjected to expert review for decision.

The Council also noted that immediately after retirement of Dr. Talukdar, the senior most scientist of IASST, Prof. H. Bailung shall take additional charge of Director, IASST.

B. The Governing Council has congratulated and put on record exceptional services rendered by Dr. N. C. Talukdar and his immense contribution in the growth and development of the IASST during his tenure as Director of IASST.

There being no other item for discussions, the meeting ended with thanks to the chair.

Chairman
Governing Council, IASST

Member Secretary
Governing Council, IASST