



INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
(AN AUTONOMOUS INSTITUTE UNDER DEPARTMENT OF SCIENCE AND
TECHNOLOGY, GOVT. OF INDIA) PASCHIM BORAGAON, GARCHUK
GUWAHATI- 781035

MINUTES OF THE ELEVENTH MEETING OF SCIENTIFIC ADVISORY COUNCIL
(SAC) OF INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY
(IASST), GUWAHATI HELD ON 22ND OCTOBER, 2021

Members present:

1. Prof. Sayed E. Hasnain, IIT Delhi, New Delhi	Chairman
2. Dr. Arun Sharma DG, NECTAR, Shillong	Member
3. Prof. Pulok Mukherjee Director, IBSD, Imphal	Member
4. Prof. Amalendu Chandra IIT, Kanpur	Member
5. Prof. Parameshwar K. Iyar IIT Guwahati	Member
6. Prof. B. N. Goswami, Cotton University, Guwahati	Member
7. Prof. Mahan Maharaj TIER, Mumbai	Member
8. Prof. Neela Natraj IIT Bombay, Mumbai, member	
9. Prof. Dhruva K. Bhattacharyya Tezpur University, Tezpur	Member
10. Prof. A.K. Mukherjee, Director, IASST	Member
11. Prof. H. Bailung, IASST, Guwahati	Member
12. Dr. Rajlakhmi Devi, IASST, Guwahati	Member
13. Prof. Neelotpal Sen Sarma, IASST, Guwahati	Member Secretary

Leave of absentia granted to:

Prof. Avinash Khare VC, Sikkim University, Sikkim, could not attend the meeting due to his preoccupation.

AGENDA ITEM NO. 1: Welcome address by the Director, IASST

At the outset, Prof. A.K. Mukherjee, Director, IASST welcomed Professor Sayed E. Hasnain, Chairman, Scientific Advisory Council, and the other esteemed members to the 11th meeting of the Scientific Advisory Council of IASST. He made a presentation in Powerpoint showing the genesis of IASST from its inception in the year 1979, including details on IASST its mandate, Vision, and Mission. 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: Opening remarks by Prof. Sayed E. Hasnain, Chairman, SAC, IASST

In his opening remark, Prof. Sayed E. Hasnain welcomed all the member of the SAC and the faculties of IASST. He then requested all the SAC member to give their brief introduction and then chair the meeting.

Prof. Hasnain insisted that progress in research should increase vertically and not horizontally. Similarly, research output through licensing of patent should be a good source of revenue. He stressed on the publication of good impact factor journal, work on human health related problem related to local people in North East. He urged that scientist should work with vision so that IASST can grow from an institute of eminence to a National Science and Technology University.

AGENDA ITEM NO. 3: Action Taken Report on the decisions/deliberations of the 10th meeting of the Scientific Advisory Council and Director's Report.

Prof. A.K. Mukherjee, Director, IASST made a brief presentation on the action taken on the decisions of last SAC meeting. The report was as follows:

Action Taken Report on the decisions/deliberations of the 10th meeting of the SAC held on 17th and 18th July 2020

Item	Suggestions	Action taken:
AGENDA ITEM NO. 7 (of	1.Prof. Sibaji Raha advised that two young members of Basic and Applied	The young faculty members of this group have been suggested to join the Indian ITER activity through project mode. Dr. Subir Biswas of the

last SAC meeting): Remarks by SAC member:	Plasma Physics group be nurtured, encouraged and supported. He advised IASST to join Indian ITER activities.	Basic and Applied Plasma research area is actively building his magnetized plasma device and DBD discharge setup. Dr. Biswas has been suggested preparing and submitting a project proposal in collaboration with the ITER scientists soon.
	2.Prof. Raha advised to strengthen the Traditional Knowledge Based Drug Development & Delivery research program by attracting people in the field to join IASST.	It is planned to strengthen the program by recruiting new faculty members (s) with experience and knowledge of the traditional medicine system. However, due to the Covid-19 pandemic, the process is delayed; nevertheless, the new Director has taken initiatives in this regard, and the proposal to revive and/or advertise the faculty positions is sent to DST through the Chairman, Governing Council. Recruitment of IASST sponsored PDF for strengthening this programme has been completed, and selected candidates have joined IASST and begun their research activity. Several training cum awareness programs have been conducted at different nearby villages for plantation of medicinal plants, for example, Musa balbisiana- a versatile medicinal plant of Northeast and having huge market potential. Undertaken Master's students from the academic institute for dissertation in pharmacological re-assessment of medicinal plants used as folk medicine to cure diseases. Further, we are also imparting a summer training program in this area.

	3. Prof. Raha also observed that in Advanced Material Science program 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.	This suggestion was well taken. Accordingly, Prof. Neelotpal Sen Sarma, a faculty member working in this area, has collaborated with Dr. Anamika Kalita, DST-INSPIRE Faculty, and published papers. Further, Prof. Sen Sarma has initiated collaborative work on plasmonic materials with Dr. A.R. Pal, another area faculty (Intra program collaboration). Notably, Dr. Devasish Chowdhury, PSD, has collaborated with Dr. Rajlakshmi Devi, LSD, on a Nanotechnology-based green approach towards the theragnostic application in inflammation, and a Ph.D. student is registered under their joint supervision. Prof. A. K. Mukherjee, Director, IASST, collaborates with Dr. Devasish Chowdhury, Dr. A.R. Pal of Advanced Material Science group, and Dr. Lipi. B. Mahanta of Computational Science group on the development of visual detection system of snake venom using nanomaterials. Snakebite is a severe problem for tropical countries, and WHO has declared this a neglected tropical disease. Prof. A. K. Mukherjee collaborates with Dr. M.R. Khan and Dr. J.C. Borah of LSD on peptidomimetics of snake venom nerve growth factor on cell lines and C. elegans model. Prof. N. Sen Sarma collaborates with Dr. Arundhuti Devi of Biodiversity and Ecosystem Research and has a joint Ph.D. student.
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AGENDA ITEM NO. 8 (of last SAC meeting): Remarks by the Chairman	1.The SAC approved the procurement of four high end equipment (XPS, XRD, Microtome and NMR) to strengthen the research infrastructure at IASST.	It was decided that only NMR and Microtome will be procured in the 2020-21 financial year. However, due to the COVID 19 pandemic, the procurement process was delayed, but recently, 400 MHz Proton NMR was purchased. For the Microtome, technical specification is prepared. The budgetary quotation will be invited from the reputed firms. The purchase process of XPS will be initiated in the next financial year, whereas XRD will be purchased in consecutive years.
	2.The SAC approved the commencement of PDF program of the IASST to engage fresh Ph. D. holders (One PDF in each program).	The process of the PDF program was initiated with the Adv. No 309, dated 27-07-21, published in the Newspaper and details on the website of IASST. After the last date of application, it was found that out of the five program of IASST, no candidate applied in Basic and Applied Plasma Physics program, and there were altogether 27 candidates applied in all other programs. The interview was held on 7th and 8th September 2021, and one candidate from each program was selected. Some of the selected candidates joined IASST as per the institute procedure.

AGENDA ITEM NO. 4: Presentation by the faculty

The presentation by the faculties was divided into two parallel sessions. In the 1st session, all the faculties from Life Sciences Division, including both Traditional and Modern Drug Discovery and Disease Diagnosis and Biodiversity and Ecosystem Research, presented their work via ZOOM Link 1 with the following SAC members;

- (i) Prof. Sayed E. Hasnain, Coordinator (Via Link 1)
- (ii) Prof. Pulok Mukherjee (Via Link 1)
- (iii) Prof. A.K. Mukherjee (Present physically)

Faculty members presented their research work:

- (i) Dr. (Mrs) R. Devi
- (ii) Dr. J.C. Borah
- (iii) Dr. D. Thakur
- (iv) Dr. M.R. Khan
- (v) Dr. (Mrs) A. Devi

Remark/suggestions on the presentation: Life Sciences Division

(i) Dr. (Mrs) R. Devi: Prof Hasnain encouraged and appreciated the work on Musa Balbisiana and advised Dr. Devi to publish a paper post applying for a patent on her invention. He opined that more in-depth studies are necessary for this area. Dr. Devi was also advised to discuss with local food manufacturers the steps to marketing the products. There should be a process like IITs for revenue sharing. Prof. Pulok Mukharjee, Director IBSD, advised relating her inventions with modern medicines and identifying the lead therapeutic molecules involved.

(ii) Dr. J.C. Borah: Prof. Hasnain encouraged and appreciated the work presented by Dr. J.C. Borah and advised to move forward with the SGLT2 therapeutic target with translation potential. Prof. Pulok Mukharjee advised exploring the Ayush mode of the drug along with phytopharmaceutical. Also, it was suggested to evaluate the activity of the molecules and their mode of action(s).

(iii) Dr. D. Thakur: Prof. Hasnain appreciated the work and technology transferred to the industry. However, he also opined that further in-depth studies are necessary.

(iv) Dr. M.R. Khan: Prof. Hasnain said that the work is motivating, and the microbiome is a great area to work. He also advised focusing on one or two microbiomes as the target.

(v) Dr. (Mrs) A. Devi: Prof. Hasnain said that it is an excellent effort to look into the local problem of the NE involving spillage of crude oil and treatment of effluent in industries

In the 2nd parallel session, members from Physical Sciences Division- Basic and Applied Plasma Physics, Advanced Material Sciences, and Mathematical and Computational Science have presented their research activities and future research plan via ZOOM Link 2 before the following SAC members.

- (i) Prof. B. N. Goswami, Coordinator (Present physically)

- (ii) Prof. Avinash Khare (Via Link 2)
- (iii) Dr. Arun Sharma (Via Link 2)
- (iv) Prof. Amalendu Chandra (Via Link 2)
- (v) Prof. Parameshwar K. Iyar (Via Link 2)
- (vi) Prof. Mahan Maharaj (Via Link 2)
- (vii) Prof. Neela Natraj (Via Link 2)
- (viii) Prof. Dhruba K. Bhattacharyya (Via Link 2)

Faculty members presented their work:

- (i) Prof. H. Bailung
- (ii) Prof. N. Sen Sarma
- (iii) Dr. G. Choudhury
- (iv) Dr. D. Chowdhury
- (v) Dr. A.R. Pal
- (vi) Dr. (Mrs) L.B. Mahanta
- (vii) Dr. (Mrs) M.B. Sahariah
- (viii) Dr. S. Biswas
- (ix) Dr. B. Choudhury
- (x) Dr. Santu Das
- (xi) Dr. (Mrs) Kamatchi S

Remark/suggestions on the presentation: Physical Sciences Division

- (i) Prof. H. Bailung: Prof. Amalendu Chandra of IIT, Kanpur appreciated the work and suggested clarification few things.
- (ii) Prof. N. Sen Sarma: Good work advised to apply for a patent by Prof. Amalendu Chandra.
- (iii) Dr. G. Choudhury: Prof. Neela Natraj of IIT Bombay appreciated the work and clarify doubts.
- (iv) Dr. D. Chowdhury: Dr. Arun Sharma advised to initiate collaboration with industries.
- (v) Dr. A.R. Pal: The presentation was appreciated by Prof. Amalendu Chandra.
- (vi) Dr. (Mrs) L.B. Mahanta: Dr. Bhupen Goswami, Cotton University, Guwahati, advised Dr. Mahanta to translate her research works for the benefit of society.
- (vii) Dr. (Mrs) M.B. Shariah: Prof. Amalendu Chandra appreciated the work.

- (viii) Dr. S. Biswas: Dr. Bhupen Goswami appreciated the work and suggested exploring the importance of wave instability studies infusion and astrophysics.
- (ix) Dr. B. Choudhury: There was no comment/ suggestion on his presentation
- (x) Dr. Santu Das: Prof. Neela Natraj appreciated the work.
- (xi) Dr. (Mrs) Kamatchi S: Prof. Chandra appreciated the work carried out by Dr. Kamatchi S., and suggested that she should carry out theoretical modeling for the ongoing experiments.

AGENDA ITEM NO. 5: Brief presentation on the new facilities at IASST by Prof. N. Sen Sarma, Head, R&D:

Dr. Neelotpal Sen Sarma, Professor, Physical Sciences Division, and Head, R & R&D, presented the new facilities at IASST with their aims and objectives. Following new facilities were described by Prof. N. Sen Sarma.

1. BioNEST Bio-incubation Hub (under ISVEC, IASST) aims to create a robust mechanism for translation of technology and encourage transformation in the culture of bio-entrepreneurship in North East India.
2. Sophisticated Analytical Instrumentation Facility (SAIF) Building.
3. Quality Control and Quality Assurance laboratory facilitates the researchers, entrepreneurs, and medicinal plants growers to test the quality of their products for certification.
4. GLP Compliant Animal House Facility (630 sq.m) with a state-of-the-art facility is a unique facility in the NE region for preclinical animal trail data.
5. COVID Testing and Research Laboratory is functioning in this building with all equipment are housed in this BSL II lab and completed 1,50,000 sample testing.
6. Scientific Staff Residence with six nos. Type IV, five nos. Type V staff quarters and eight nos. Studio Apartments
7. Observatory Building with a 14" astronomical telescope along with its dome has been installed. For astronomical imaging, a camera (Celestron Skyris 236 Camera) is also attached with the telescope.
8. The Hon'ble Director IASST inaugurated Children's Park on 15th August 2021 to benefit the children of the IASST staff residing on the campus.

AGENDA ITEM NO. 6: Presentation on procurement of new instruments by Dr. A.R. Pal, Head, CIF

1. Dr. Arup Ratan Pal, Head, SAIF and Associate Professor, PSD, in his presentation, gave a brief idea of the SAIF, Management of SAIF, IASST, real instruments present in SAIF including their operational status, sample booking procedure/ portal, list of approved instruments in last SAC meeting, its procurement status, before the SAC. IASST faculty propose two new high-end pieces of equipment for procurement during the coming 2 -3 years. Dr. Pal made a presentation justifying the need for the following equipment.

2. **AGENDA ITEM NO. 6.1:** Isothermal Titration Calorimetry (ITC) with an approximate budget of Rs. 97 lakhs.

The equipment will be used by most of the faculty members of IASST helpful in drug development from natural resources, protein-ligand interaction study, and diagnostic kit development. However, the facility will be made available to colleges/universities/industry/BioNEST incubatees on a chargeable basis.

1. **AGENDA ITEM NO. 6.2:** Spectroscopic Ellipsometry with an approximate budget of Rs. 80 lakhs.

The equipment will be helpful to study in the following research areas: Plasma-based synthesis of materials, Experimental plasma physics, Ionics, LC polymers, gels, sensors, high-value polymers, Carbon Nanomaterials, Polymer Nanocomposites, Fundamental Study and Applications of Semiconductors, Biophysics, Environmental Chemistry, Materials Science, Chemistry. Faculties from Physical Sciences Division and Environmental Section will get the benefit from the equipment.

The facility will be available to colleges/universities/industry/BioNEST incubates on a minimum charge basis.

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.

AGENDA ITEM NO. 7: Remarks by the members of the SAC

Prof. P.K. Iyer: Prof. Iyer support the inclusion of two new instruments to increase further the good instrument facility of the institute and its interdisciplinary work. He also stressed that there is a vast scope for interaction among the scientist of IASST and IITG and other institutes,

colleges, and universities, and scientific lectures from distinguished faculties of other institutions will improve the research activities of IASST.

Prof. A Chandra expressed that all the presentation was excellent and IASST has a good facility for research and recommended the purchase of new instruments. He observed that the Physical Sciences Division focuses more on material synthesis, so the dynamical aspect is missing in cases. He also stressed creating medium to the large-scale in-house computational research facility at IASST.

Prof. B.N. Goswami opined that IASST had done excellent work, and all faculty members have given good quality presentations. He also supported the requirement for the two new pieces of equipment presented in the meeting. He advised improving the computational facility with proper planning in basic research with the computational theoretical framework. He emphasized giving more stress to basic/fundamental research, addressing big science questions, and improving the quality of publications. In North-East India, IASST has ample opportunity to take the lead in scientific temper and attitude. He said that IASST could add some new, budding areas of research. NE India has enough scope for climate change study, and IASST may initiate research in this area.

Prof. A.K. Mukharjee suggested increasing the institutional fellowship to improve the quality of research, many quality publications in peer-reviewed journals, and the necessity to build a research eco-system. All the members supported the view of Prof. Mukherjee.

AGENDA ITEM NO. 8: Remarks by the Chairman

Prof. Sayed E. Hasnain thanked all the SAC members for their active participation in the meeting. He has also thanked all the institute faculty members for presenting ongoing research activities and the research plan. However, he advised combining the two areas of presentation i.e. LSD and PSD, together. The presentation may be presented in two parts in a year; a presentation from half of the faculties in each part. At the same time, addressing suggested that IASST can recruit contractual positions against the regular position to prevent the lapsing of positions. He appreciated the work done by IASST on local problems and insisted on giving more focus to patenting. Though IASST publishes many research papers; nevertheless, researchers should try to publish high-quality research papers. He encouraged the scientist to begin with start-up initiatives and to form companies like the IITs.

Prof. Hasnain suggested that there is enough scope for improving the poor visibility of IASST in national and international platforms by adopting some strategies. He advised to create great presentations annually or create a series of lectures in the name of pioneering scientists, such as Madam Dorothy Hodgkin Memorial lecture, and Sir C.V. Raman Memorial lecture series inviting Noble Laureates and other distinguished scientists on different occasions throughout the year. He said that faculty members of IASSTs might be encouraged on improving the quality of their publication(s), and they should be awarded for their outstanding work in a function like Foundation day.

Prof. Hasnain endorses the inclusion of two new instruments and the proposal of Prof. A.K. Mukharjee to increase the institutional fellowship. Further, Prof. Hasnain also advises that vertical research rather than horizontal research is essential for improving the quality of publications and emphasized that the BSL-II facility of IASST may be upgraded to BSL-III laboratory. He stressed that the model adopted by IITs might be followed for revenue sharing from patents and consultancy services. IASST should work hard to be recognized as an institute of national eminence to the next level of eminence.

Prof. Hasnain also advised expanding the SAC committee by forming subcommittees adopting selected local people and top alumni of the institute.

AGENDA ITEM NO. 9: Vote of Thanks by the Member Secretary, SAC, IASST

Vote of thanks was given by Prof. Neelotpal Sen Sarma, Head R&D and Member Secretary, SAC, IASST.

Approved by:

(Sayed E. Hasnain)

Chairman



(Neelotpal Sen Sarma)

Member Secretary