



**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 TWELVE MEETING OF SCIENTIFIC ADVISORY COUNCIL (SAC)
OF INSTITUTE OF ADVANCED STUDY IN SCIENCE AND TECHNOLOGY (IASST),
GUWAHATI HELD ON 18TH & 19TH AUGUST 2022

Members present:

1. Prof. Seyed 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. Iyer 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. Rajlakhsmi Devi, IASST, Guwahati	Member
13. Prof. Neelotpal Sen Sarma, IASST, Guwahati	Member Secretary

Leave of absentia granted to:

1. Prof. Avinash Khare VC, Sikkim University, Sikkim,
2. Prof. Amalendu Chandra IIT, Kanpur,
3. Prof. Neela Natraj IIT Bombay, Mumbai and
4. Prof. Dhruva K. Bhattacharyya Tezpur University, Tezpur could not attend the meeting due to their preoccupations. The meeting was held in hybrid mode.

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

At the outset, Prof. A.K. Mukherjee, Director, IASST welcomed Professor Seyed E. Hasnain, Chairman, Scientific Advisory Council, and the other esteemed members to the 12th Scientific Advisory Council (SAC) meeting of IASST. Prof. Mukherjee briefly discussed about the recent visit of Dr. Srivari Chandrasekhar hon'ble Secretary, DST, GoI on 17th August, and the suggestions given by him. Prof. Mukherjee requested Prof. Hasnain, Chairman, GC to give his opening remark and suggestions for the institute.

AGENDA ITEM NO. 2: Opening remarks by Prof. Seyed E. Hasnain, Chairman, SAC, IASST

In his opening remark, Prof. Seyed E. Hasnain welcomed all the members of the SAC and the faculties of IASST. He reminded the decisions taken by the committee in its last meeting held on 22nd October 2021 on more visibility to organize scientific lecture series periodically, to have combined presentations for both the division of IASST, etc. However, for some urgent personal reason, he could not physically attend the 12th meeting of SAC. Still, he hoped that he would be able to participate in the next SAC meeting at IASST physically. The Chairman then requested the Director, IASST, to present last year's progress report

AGENDA ITEM NO. 3: Progress report of IASST presented by the Director, IASST.

Prof. A.K. Mukherjee, Director, IASST, made a brief PowerPoint presentation on the progress of IASST during the period from August 2021 to July 2022. In the introduction, he showed the major thrust areas of IASST adopted in the GC from its inception, its mandate, Vision, Mission, and, Objectives. The data showed that IASST had made remarkable progress in research activity during the last year, which is evident from an increase in the quality and quantity of publications. For example, the average Impact Factor of 2.4 for publications in 2020-2021 has increased to 4.3 with 82 publications in peer-reviewed national and international journals. There are two papers where the impact factor was more than 20. During this period, nine patents were granted, and 11 research scholars of IASST were awarded Ph.D. degree.

Further, as suggested in the last SAC meeting, IASST constituted two lecture series on its foundation day in the name of Dr. Dorothy C. Hodgkins and Sir C. V. Raman. He further mentioned that the socioeconomic responsibility of the region was also taken care of, and faculty members took steps to improve the students' scientific knowledge at the school and college students and teachers by arranging their regular visits to IASST laboratories. Further, IASST regularly organized classroom teaching for high school science students in the BTC areas and distributed scientific kits to them. The Director also presented the list of prizes/ awards that IASST has received during the period.




AGENDA ITEM NO. 4: Action taken report on the decisions of the last SAC meeting to be presented by the Member Secretary, SAC, IASST.

Prof. Neelotpal Sen Sarma, Member Secretary, SAC, IASST made a brief presentation of the action taken on the decisions of last SAC meeting. The report was as follows:

Action Taken Report on the decisions/deliberations of the 11th meeting of the SAC held on 22nd October 2021

Item	Suggestions	Action Taken
AGENDA ITEM NO. 7 (of last SAC meeting): Remarks by SAC member:	1. Prof. P.K. Iyer opined that there is a vast scope for interaction and collaboration among the scientists of IASST and faculties of IITG, and other research institutes, colleges, and universities of NE India to improve the quality of research. Further, he opined that delivering scientific lectures from distinguished faculties of other institutions will significantly enhance the research activities of IASST.	This suggestion has been well taken. The faculty members, including the Director, IASST, interact and collaborate with the faculty members from IITG and other institutes. As a result, several research papers and review articles are jointly published in peer-reviewed journals. IASST has signed MoU with several regional institutes, for example, IIT Guwahati, NEIST, Jorhat, NIPER, Guwahati, Guwahati University and Cotton University, Guwahati. Some collaborative research project proposals were undertaken with some institutes and submitted for funding. Recently, a proposal on collaboration among the Institutes and Universities of NE India was discussed in the North East Research Conclave organized by IIT, Guwahati. IASST was the co-organizer of this event.
	2. Prof. A Chandra opined that the Physical Sciences Division focuses more on material synthesis, so the dynamical aspect is missing in few cases. He suggested creating a medium to the large-scale in-house computational research facility at IASST.	Following the suggestion, work has been initiated on materials simulation based on the requirement of experiments on material synthesis. A few good-quality research papers with in-house and external collaboration have been published. Also, a new medium-scale computational research facility has been established in the SAIC building.



	3. Prof. B.N. Goswami advised improving the computational facility with proper planning in basic/fundamental research with the computational theoretical framework. He emphasized giving importance to basic/fundamental analysis, 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 an investigation in this area.	We have initiated working on materials simulation based on the requirement of experiments on material synthesis, and a few good quality papers with in-house and external collaboration have been published. This effort has added momentum to basic/fundamental research, addressing big science questions. In the MCSD Lab, four high-end workstations and 1 DELL EMC R740XD server for analyzing complex computational tasks have been successfully installed. In addition, a new medium-scale computational research facility has been established in the SAIC building, where one Dell Power Edge R940 Server has been purchased, and installation is about to complete. It is expected that the addition of all these facilities will positively impact the overall research quality and publications of IASST.
	4. Prof. A.K. Mukharjee has suggested increasing the number of institutional fellowship (JRF) to improve the quality of research, quality publications in peer-reviewed journals, and the necessity to build a research eco-system.	The number of Institutional fellowships (JRF) from the core grant of the Institute has been increased by allowing the scientists to take more students as per Institute's guidelines. Further, four institutional PDFs were also appointed, and recruitment of new PDFs for the FY 2022-2023 is in the process.
AGENDA ITEM NO. 8 (of last SAC meeting): Remarks by the Chairman	1. The SAC approved the procurement of two high-end equipment, (i) Isothermal Titration Calorimetry (ITC) and (ii) Spectroscopic Ellipsometry, with an approximate budget of Rs. 97 lakhs and Rs. 80 lakhs, respectively, to strengthen the research infrastructure at IASST.	In the financial year 2021-22, the purchase process for NMR was completed (as recommended in the 10th SAC meeting). The purchase process for Isothermal Titration Calorimetry (ITC) and Spectroscopic Ellipsometry was initiated for their procurement in 2022-2023. Moreover, the process for the purchase of a new XRD equipment (as recommended in the 10th SAC meeting) was also initiated.
	2. Prof. Hasnain advised combining the two areas of presentation i.e. LSD and PSD together,	This suggestion will be followed. 

	3. Possibility of Contractual appointments against the regular positions to prevent the lapsing of positions.	The process has been initiated and advertisement for the recruitment of one post already submitted. Process for the revival of five more posts is under way.
	4. More focus on patenting, publishing high-quality research papers, start-up initiatives, and forming companies like the IITs is to be given.	During the year 2021-22, 111 papers with a cumulative impact factor of 441.51. (average IF-3.98/paper) were published in peer-reviewed refereed journals. Three patent applications were filed, and IASST was granted five patents. Many more patent applications are under preparation. Further, a committee is constituted to frame the rules and regulations for the faculty and student entrepreneurship at IASST.
	5. Annual presentations in the name of pioneering scientists and a series of lectures by eminent scientists/faculties throughout the year.	IASST is organizing National Lecture Series as part of the <i>Azadi Ka Amrit Mahotsav</i> , a Celebration of the 75th Year of India's independence. Every month, one distinguished research scientist is invited to deliver a lecture and interact with the faculties and students of IASST. Eminent scientists like Dr. Manmohanjit Singh, Punjab Agricultural University, Dr. Atya Kalpey, CSIR- NEERI, Nagpur, Prof. Vinod K Tiwari, BHU, Prof. Bhagat Oinam, JNU, New Delhi and several other from the region presented lecture via on-line and off-line during the period. Further, two foundation day lectures viz. Dr. Dorothy Dodgkins's foundation day lecture, and Sir. C. V. Raman foundation day lecture were constituted. The talks were delivered by Dr. N. Sastri, Director, NEIST, Jorhat, and Prof. D. J. Chattopadhyay, VC, Sister Nivedita University, Kolkata, on 3rd November 2021 at IASST.
	6. Faculty members should be encouraged for quality publication(s) and be awarded /appreciated for their outstanding research work.	This process has been initiated, and one publication with an impact factor of nearly 20 has been published by one of the faculty members. He was given a certificate of appreciation on the last Foundation day of IASST.
	7. The committee endorsed the proposal of the Director, IASST, to increase the institutional fellowship.	The number of Institutional fellowships (JRF) has been increased by allowing the scientists to take many students as per the Institute's guidelines.

AGENDA ITEM NO. 5: Presentation by the faculties

As suggested in the last SAC, the faculties members from the Life Sciences Division (LSD) and Physical Sciences Division (PSD) presented their research activity from 1 August 2021 to 31 July 2022. The following Faculty members/ Director presented their work:

- (i) Prof. Ashis K. Mukherjee (LSD)
- (ii) Prof. Neelotpal Sen Sarma (PSD)
- (iii) Prof. (Mrs) R. Devi (LSD)
- (iv) Prof. D. Chowdhury (PSD)
- (v) Dr. J.C. Borah (LSD)
- (vi) Dr. G. Choudhury (PSD)
- (vii) Dr. D. Thakur (LSD)
- (viii) Dr. A.R. Pal (PSD)
- (ix) Dr. M.R. Khan (LSD)
- (x) Dr. S. Kundu (PSD)
- (xi) Dr. (Mrs) A. Devi (LSD)
- (xii) Dr. (Mrs) L.B. Mahanta (PSD)
- (xiii) Dr. (Mrs) M.B. Sahariah (PSD)
- (xiv) Dr. S. Biswas (PSD)
- (xv) Dr. B. Choudhury (PSD)
- (xvi) Dr. (Mrs) Kamatchi S (PSD)
- (xvii) Dr. (Mrs.) Anamika Kalita (INSPIRE faculty, PSD)
- (xviii) Dr. Rajiv Borah (INSPIRE faculty, LSD)

Dr. Santu Das (PSD) did not present his work as he was in leave.

Remark/suggestions on the presentations:

- (i) Prof. Ashis K. Mukherjee (LSD)

The members appreciated the work carried out by Prof. Mukherjee. Prof. Pulok Mukherjee Director, of IBSD, specifically mentioned that the work carried out by Prof. Mukherjee has a direct societal impact, and IASST should take a lead role in the area of drug development from natural resources and Toxin research. He suggested that the traditional medicinal plants can also be pharmacologically re-assessed against snakebite and Scorpion stings to prove their potency and future therapeutic use. Dr. Arun Sarma, DG, NECTOR, opined that many of the products




developed at IASST can be transferred to the Industry-Industry conclave, may be in collaboration with NECTOR, and the Chairman supported the suggestions.

(ii) Prof. Neelotpal Sen Sarma (PSD)

The members appreciated the work. Prof. Pulok Mukherjee suggested that L-Dopa is present in several medicinal plants e.g., in Makhana; therefore, assessment of the presence of L-Dopa in medicinal plants can be done on a large scale. Prof. Hasnain stressed intra-faculty collaboration for a more fruitful outcome of the project.

(iii) Prof. (Mrs) R. Devi (LSD)

Prof Hasnain appreciated the work on *Musa balbisiana* and advised Dr. Devi to showcase the product to the industry, such as Dabar etc., and initiate the technology transfer process for revenue generation. Dr. Arun Sarma suggested plasma coating on a banana fiber and collaborating with the industry.

(iv) Prof. D. Chowdhury (PSD)

Prof Hasnain opined that biocompatible packaging materials have tremendous market demand; therefore, the PI should explore further avenues of this work. Prof. Pulok Mukherjee suggested studying the significant onion biomolecule peels and investigating the synergistic effect caused by the active phytochemicals.

(v) Dr. J.C. Borah (LSD)

The work has been appreciated by the members. Further, the members opined that the synergistic effects of other molecules present in the herbals formulation should be determined. Dr. Borah also suggested applying for SERB and other funding agencies for funding his good work.

(vi) Dr. G. Choudhury (PSD)

Good publications and he was advised to apply Que theory to biological problems of the institute. Prof. Mahan Maharaj TIER, Mumbai, stressed that interaction/collaboration with the scientists of the field is necessary to improve the quality of work.

(vii) Dr. D. Thakur (LSD)

Chairman appreciated the presentation and suggested that the commercial potency of the results (biopesticide) be explored. Prof. Pulok Mukherjee opined that the database developed by the PI is highly useful.

(viii) Dr. A.R. Pal (PSD)

Chairman appreciated the work and publications. Dr. Arun Sarma suggested connection with industry is necessary and he can help in this area.

(ix) Dr. M.R. Khan (LSD)

All the members appreciated the work. Prof. Pulok Mukherjee appreciated the work for its unique content and therapeutic values of the regional foods. He also offered joint collaboration so that repetition of the work may be avoided in IBSD and other Institutes of the region.

(x) Dr. S. Kundu (PSD)

Excellent publications and work appreciated by the chairman.

(xi) Dr. (Mrs) A. Devi (LSD)

Chairman said that the presentation was wonderful.

(xii) Dr. (Mrs) L.B. Mahanta (PSD)

Prof. B. N. Goswami, Cotton University, Guwahati asked about the efficiency of the software developed for the Gamocha Project, any collaboration with industry and whether anything went to market or not?

(xiii) Dr. (Mrs) M.B. Sahariah (PSD)

Chairman appreciated and said it was an impressive work.

(xiv) Dr. S. Biswas (PSD)

Prof. B. N. Goswami, Cotton University, Guwahati asked to avoid any duplication and said that connection with industry is necessary. He also enquired about the design of the instrument and asked whether the machine has any use or can be applied in industry?

(xv) Dr. B. Choudhury (PSD)

There was no comment on his work.

(xvi) Dr. (Mrs) Kamatchi S (PSD)

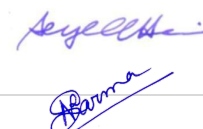
Chairman appreciated the application oriented work. Industry interaction necessary.

(xvii) Dr. (Mrs.) Anamika Kalita (INSPIRE faculty, PSD)

The Chairman appreciated the work. Dr. Arun Sarma from NECTOR offered collaboration with NECTOR. She was advised to organize Seminar / Conference on plasma field.

(xviii) Dr. Rajiv Borah (INSPIRE faculty, LSD)

Chairman appreciated the work.



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

Arup Ratan Pal, Head, SAIC and Associate Professor, PSD, in his presentation, gave a brief idea of the activities of SAIC during the last year, instruments present in SAIC, including their operational status, instruments procured in 2021-2022, and instruments to be procured during 2022-2023 including the list of the approved instrument in the last SAC meeting along with procurement status. IASST faculties also propose the following two new high-end instruments for procurement during the coming 2 -3 years.

AGENDA ITEM NO. 6.1: Circular Dichroism Spectrophotometer with an approximate budget of Rs. 70 lakhs.

It was presented by Dr. S. Kundu, Associate Professor, PSD, IASST. The instrument will be used by most of the faculty members of IASST for research on materials science and life science. The facility will also be made available to colleges/universities/industry/BioNEST incubatees on a chargeable basis.

AGENDA ITEM NO. 6.2: Inductively Coupled Plasma – Optical Emission Spectroscopy (ICP-OES) with an approximate budget of Rs. 70 lakhs.

It was presented by Dr. A. Devi, Associate Professor, LSD, IASST. The instrument will be helpful in the following research areas: Environmental Chemistry, Materials Science, Biophysics, Chemistry, etc. Faculties from LSD and PSD will get benefit from the equipment.

This facility will also be available to colleges/universities/industry/BioNEST incubates on a chargeable basis.

The members deliberated on the requirement of the instruments and commented that it is justified to procure the proposed high-end instruments as the research activities of the institute have grown manifold, and it is time to further augment the research infrastructure.

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

Prof. B.N. Goswami opined that outstanding presentation, improvement of both quality and quantity of publications, and scientific output are very encouraging. However, IASST needs more faculties to continue the excellent work. IASST has more potential, and there is enough scope to improve its visibility. IASST should continue to work hard toward fulfilling its fundamental and societal commitment. He also opined that IASST needs to do some international collaboration, and foreign scientists' regular visits are encouraged.

He emphasized stressing basic/fundamental research, addressing big science questions not only in the region but globally, and publishing the findings in high-impact journals. Steps may be taken to commercializing a few products developed by scientists is




recommended.

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 its effect on biodiversity; IASST may initiate an investigation in this area.

Prof. P.K. Iyer: Prof. Iyer appreciated the research work carried out during the period and the quality of the paper published. He also appreciated the authority's decision about the research scholars of IASST to run different sophisticated instruments of IASST to support the regular operators. He suggested connecting with the defense persons to get the list of medicinal plants smuggled from the northeast. He advised approaching the Ayush Ministry and ARI to submit a funding proposal. The activity of Bionest has to be increased with more hubs in the region and coalition with IITG Biopark and NIPER Guwahati. Research scholars are to be encouraged to initiate start-up businesses.

Prof. Mahan Maharaj: Prof. Mahan Maharaj of TIER, Mumbai, appreciated the work and social responsibility of the Institute and opined that doing research in isolation will not be helpful for the Institute. IASST needs to prepare a roadmap to work on global issues with emerging local problems.

Prof. Pulok Mukherjee: Prof. Pulok Mukherjee of IBSD, Imphal, appreciated the work done at IASST during the period and its interdisciplinary work in Physical, Chemical, and Biological Sciences. There is a boom in herbal research in the region, and IASST needs to specify the medicinal plants of the NE region they want to work with, thus avoiding duplication of research. Some of the very costly medicinal plants available in the region are not used in our Ayurvedic medicine but are exported to foreign countries. These plants are explored for their therapeutic potential, and efforts may be made for indigenous drug development from such plants.

Prof. A.K. Mukharjee informed that in a few subject/research areas, suitable candidates are not found even after four repetitions of the advertisement. He cited the example of the study Muga silk (extracted from the cocoons of *Antheraea assamensis*) at IASST, which is now hampered due to the non-availability of candidates in the subject. He also emphasized the necessity of recruiting a pharmacologist. He stressed the need to revive the lapsed scientific/faculty positions and give more faculty positions at the Assistant Professor level. All the members supported the view of Prof. Mukherjee.

AGENDA ITEM NO. 8: Concluding Remarks by the Chairman

The Chairman thanked all the SAC and faculty members for actively participating in the meeting. He appreciated that such a small institute has done reasonably well. He felt that the institute is going on the right path and opined that its incremental growth is visible. IASST is



doing excellent in terms of investment and size. He was also pleased to see that all the suggestions of the last SAC meeting were considered and implemented. However, there is a scope for improvement. IASST can initiate a few steps to accelerate the activity by inviting lectures from world-class scientists and noble laureates via online mode.

He further suggested the following:

1. He advised that the presentation time of the faculties may be increased to 20 minutes (15 minutes presentation + 5 minutes discussion) and can be continued for two days.
2. Collaboration with scientists other than North East on medicinal plants may be initiated. Probiotics made from local and ethnic foods can be developed, database on this and on medicinal plants can be made.
3. A big project may be proposed to Ayush Ministry from IASST in collaboration with other Institutes of the region. Ayurvedic medicine may be helpful for COVID patients, and many local medicinal plants can be used against such an epidemic. It is now time for IASST to propose a research project fund of 5 crores or more.
4. IASST needs Industry-Institution interaction, which can correlate with FICCI and PM Fellowship program.
5. He advised that let the foundation day of IASST be an open day to showcase the strength to mass. Inviting the Prime Minister or Hon'ble President of India to some of the events, if possible.
6. For IASST, a global connection is vital, and a conference can be organized by inviting noble laureates and distinguished scientists in the field. IASST needs to recruit more faculties for its growth.
7. Prof. Hasnain also advised that the patents on products developed by IASST may be transferred to the industry.

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:

(Seyed E. Hasnain)

Chairman

(Neelotpal Sen Sarma)

Member Secretary