



Indian Institute of Space Science and Technology (IIST) NEWSLETTER

www.iist.ac.in

Vol.7, No: 2, - Vol.8, No:1, 2022-2023



डॉ. उष्णिक्कृष्णन नायर एस
/ Dr. Unnikrishnan Nair S
निदेशक / Director

Message

It gives me great pleasure to present before you this issue of newsletter of IIST covering the period from January 2022 to December 2022. IIST, rejoicing in the glory of its crystal jubilee celebrations, continues its venture into newer territories pertinent to education and research. The academic curriculum of the institute is getting revamped in line with National Education Policy and initiatives are underway for implementing outcome based education for the engineering courses. Department of Physics has started a new course on M.Tech. in Quantum Technology in place of Solid State Technology. The institute responds with vigor and brilliance to inspire young minds and provides a platform for the space enthusiasts where they can be productive, contributing members of the space-science community. After degrees were awarded in the 10th convocation of IIST, the total degrees awarded by the institute is 1577 B.Tech, 86 Dual Degrees, 687 M.Tech, and 137 Ph.D. degrees. In the year 2022, 93 students who graduated from IIST were absorbed in the various DOS/ISRO centres with a total of 1235 joining ISRO so far. IIST has been ranked 44th in National Institute Ranking Framework (NIRF) and initiatives are planned to further improve the ranking.

On the research front, there has been an energetic thrust towards further excellence and expansion. The first student satellite, INSPIRESat-1, developed in the Small-spacecraft Systems and Payload Centre (SSPACE) at IIST in collaboration with, LASP, Nanyang Technological University, Singapore, and National Central University, Taiwan was launched on February 14, 2022. Work for ARIS-2 payload, RPA-V payload for Venus mission and for Gaganyaan mission are in progress in IIST. These projects were the output of the dedication and resilience of our

Congratulations



Shri. S. Somanath, Director VSSC/IIST has taken the charge of the Secretary, Department of Space / Chairman, ISRO. IIST fraternity, thank Shri. S. Somanath for his wonderful leadership as the Director, IIST, and wish him all success in his future endeavours.

students and faculty members. IIST has also proposed a student driven program on Hybrid Rocket Experiments to be mentored by ISRO scientists and faculty members of IIST. The research output of the institute has shown significant enhancement due to different initiatives like fostering collaborations with the ISRO Centres as well increasing the number of PhD students per faculty. Faculty members, research scholars and students continue to publish their work in peer reviewed journals, deliver invited lectures in various scientific and academic proceedings and also has active collaboration with other universities/institutes at the national and international levels. IIST has entered into MoUs with Jammu University, L&T and is also taking major steps to connect with other industries.

IIST library is continuously expanding its collection of books and subscriptions to databases and journals. The academic ambience of the institute is further enhanced by its sports facilities, fitness centres, its technical and cultural programs and the outreach activities. As IIST completes its 15 years, I look ahead with the community of IIST to new avenues of growth and excellence, hoping to meet the demands and expectations of the Nation in the coming years.


(Unnikrishnan Nair S)



Dr. B. N. Suresh Honourable Chanecellor, IIST addressing the audience of tenth convocation



Shri. G. Madhavan Nair, the Chief Guest, delivering the Tenth Convocation Address

IIST Convocation – 2022

IIST held its Tenth Convocation on 17th December 2022 at 10 AM in the LPSC Pearl Jubilee Auditorium. The convocation ceremony hosted in the crystal jubilee year of the institute was held in the presence of dignitaries who led India's space programmes, parents and other invitees. *Shri. G. Madhavan Nair*, Former Secretary, DoS/Chairman, ISRO, was the chief guest and delivered the Tenth Convocation Address. The ceremony was graced by *Dr. B. N. Suresh* (Honourable Chancellor, IIST), *Shri. S. Somanath* (President, GB, IIST / Secretary, DoS / Chairman, ISRO), *Dr. V. Narayanan* (Director, LPSC and Guest of Honour) and *Dr. S. Unnikrishnan Nair* (Director IIST/VSSC and Chairman, BoM, IIST).

In all, 271 degrees were conferred in this convocation. This consists of 112 B.Tech degrees (51 in Aerospace and 61 in Electronics & Communication Engineering (Avionics)), 20 Dual Degrees, 104 M. Tech degrees and 35 PhDs. 'Institute Gold Medal for the Best Academic Performer in UG Programme' awarded to *Shri. .Aditya Deevi*, B Tech in Electronics and Communicating Engineering (Avionics) and 'Institute Gold Medal for the Best Academic Performer in PG Programme' won by *Shri. Kiran L*, Master of Science in Astronomy and Astrophysics (Dual Degree). 'Cash Award and Excellent Certificate for the Best Academic Score in B. Tech Aerospace Engineering' won by *Shri. Subrahmanya V Bhide* and 'Cash Award and Excellent Certificate for All-rounder of UG Programmes' awarded to *Shri. Abhishek. A*,

M. Tech in Optical Engineering (Dual Degree). Convocation started with a majestic academic procession led by the Registrar. Hon. Chancellor, President, Governing Body, Chief Guest, Guest of Honour, Director, Deans, BoM Members and Heads of the Departments joined in the academic procession.

Dr S. Unnikrishnan Nair, Director, IIST, welcomed the gathering. He has presented a brief report on IIST by highlighting the achievements and progress that IIST has made in the last year in the academic, research and collaborations. This was followed by the address of *Dr V. Narayanan*, Guest of Honour. He touched upon the various space programmes and areas lined up for the graduating students to take up in the coming days.

In his speech, *Dr B.N. Suresh*, Hon. Chancellor recalled how the institute was started under the leadership of *Shri. G. Madhavan Nair* with the support of a dedicated team and also with political support. He emphasised the innovations and state-of-the-art technologies emerging in the space sector at national and international levels, the need for highly skilled engineers and the role that IIST can take up in this scenario.

Shri. S. Somanath, President, GB, mentioned achieving the cherished dream of conducting the IIST Convocation in the Pearl Jubilee Auditorium. He stressed the changing scenario in the space sector. He remarked that the role of

IIST is not only to give human power to ISRO alone but to the entire nation. He stressed the importance of learning from others and collaborations in a multidiscipline environment. He advised IIST to take up real problems in the space sector in addition to the academic programmes.



Shri. S. Somanath, President, GB, IIST/Secretary, DOS/Chairman, ISRO, addressing the audience.



Dr. S. Unnikrishnan Nair, Director IIST/VSSC presenting report on IIST



Address by **Dr. V. Narayanan**, Director, LPSC/ Guest of Honour

Shri. G. Madhavan Nair started the Tenth Convocation Address by recalling the establishment of IIST. He narrated how the space programmes started from scratch, progressed and later became self-reliant when the developed countries denied access to the technologies. He recounted how difficult it was to learn new technologies and how ISRO learned from the failures and progressed in developing PSLV, GSLV etc. He mentioned the Chandrayaan-1, MOM and Chandrayaan-2 missions. He opined that ISRO had fulfilled the dreams of its founding father – *Dr Vikram Sarabhai* – to have self-reliance, have the technology and use it for the common man's welfare. He advised graduating students to look around, see what issues have to be solved, where to focus, and how knowledge can be used to solve day-to-day problems of society. He hoped that the synergy between IIST and ISRO would help achieve both institutions' future targets. He asked students not to be satisfied with what is seen around, solutions and engineering available now, but to do better than what is available now for the benefit of the country and the entire world.



Graduating students of tenth IIST Convocation with invited dignitaries and members of the faculty



Dr. YVN Krishna Murthy, Registrar, IIST inspecting the guard of honour and delivering the Republic Day Speech

IIST community came together to celebrate the 73rd Republic Day with patriotic fervour. *Dr. Y. V. N Krishna Murthy*, Registrar IIST unfurled the National Flag and delivered the Republic Day address. *Dr. Krishna Murthy* briefed about the significant achievements that IIST has made during the last year. He thanked faculty, students and staff for their contributions in taking the institute ahead. He has inspected the guard of honour and distributed prizes to CISF personnels. Students arranged various programmes in connection with the celebration. The event concluded with prize distribution to the Department / Section for Hindi implementation and certificates to winners of the Hindi competitions.

Dr APJ Abdul Kalam Lecture & Inauguration of Crystal Jubilee Celebrations

Dr. APJ Abdul Kalam's lecture series was instituted in IIST in fond memory of *Dr. APJ Abdul Kalam*, first Chancellor of IIST. The 8th lecture in this series was delivered by *Dr. K. Radhakrishnan*, Member, Space Commission and Former Secretary, DoS/Chairman, ISRO on the topic "Life Lessons in Leadership" on October 12, 2022. His talk included the essence of leadership and his experiences with lessons in leadership in ISRO. The event also witnessed the inauguration of the "Crystal Jubilee Celebrations of IIST" by *Shri. S. Somanath*, Secretary, DoS/Chairman, ISRO, President GB, IIST. He said that ISRO and IIST have to remodel themselves to adapt to the transformations taking place in the space ecosystem. *Dr. B.N. Suresh*, Hon. Chancellor, IIST also addressed the gathering. *Dr. Unnikrishnan Nair. S.*, Director, IIST & VSSC, welcomed everyone and *Prof. Kuruvilla Joseph*, Registrar, IIST, proposed the vote of thanks. *Shri. S. Somanath*, unveiled the IIST plaque, laid

foundation stone for the Crystal Jubilee Hostel Block and inaugurated the Transport Operation and Maintenance Facility as part of the Crystal Jubilee Celebration.



Inauguration of eighth Dr. APJ Abdul Kalam Lecture



Dr. K. Radhakrishnan, Member, Space Commission / Former Secretary, DOS/Chairman, ISRO delivering the Eighth Dr. APJ Abdul Kalam Lecture

Conscientia – 2022

The 12th edition of Conscientia, the Annual Astronomy and Technology Festival of IIST, Conscientia 2K22 - was inaugurated by *Dr. V. P Joy*, Chief Secretary, Government of Kerala, on 5th November 2022. The programme started with the opening remarks of *Prof. Kuruvilla Joseph*, Dean (SA, SW & Outreach). *Dr. Unnikrishnan Nair. S*, Director VSSC/IIST and *Dr. CVS Kiran*, SKYROOT, addressed the gathering.



Inauguration of Conscientia - 2022

Annual Sports Day - 2022



The Annual Sports Meet was conducted during 22-23 April 2022 at the Magudagiri ground. *Shri. Jiji Thomson*, Former Chief Secretary, Govt. of Kerala and Director General, Sports Authority of India, inaugurated the Sports Meet. He inaugurated the sports meet by hoisting the IIST flag and lighting the torch. The chief guest received salute from the march pasts of various sports teams of IIST. Followed by the formal inauguration, finals of different track and field events were conducted. The students participated in the sports

events under the flags of five houses: Akashganga, Devyani, Kritika, Saptrishi and Sharmista. *Dr. Y. V . N. Krishna Murthy*, Registrar and *Prof. Kuruvilla Joseph*, Dean, Students Activities, IIST, delivered felicitation addresses. *Prof. N. Sabu*, Chairman IIST Sports Committee, presented the vote of thanks.

Independence Day celebrations

IIST celebrated the 76th Independence Day with various programmes. Faculty, students, staff and invited school students attended the colourful programme adhering to the Covid-19 protocols. *Dr. D. Sam Dayala Dev*, Director, IIST hoisted the flag in front of the administration building. Director delivered the 76th Independence Day Speech and inspected the Guard of Honour. He distributed prizes to winners of various competitions. Everyone



Dr. D. Sam Dayala Dev, Director, IIST delivering the Independence Day Speech



enjoyed and appreciated the skill demonstration by the CISF. *Dr. Sam Dayala Dev* led the programme 'From Roots to Shoots', planting 75 selected trees in the campus. Following this, Director flagged off the Independence Day Rally in which faculty, students, staff and others participated. After the refreshment, everyone assembled in the Students Activities Centre to watch the programmes organised by the IIST Cultural Committee and IIST Music Club

Birth Anniversary of Dr. B. R. Ambedkar

IIST celebrated the 131st Birth Anniversary of 'Bharat Ratna' Dr. B. R. Ambedkar on 29th April 2022. The portrait of Dr. B. R. Ambedkar placed in the Library building was garlanded in the morning to pay homage to the founding father of the Constitution. IIST also organised a webinar by *Dr. Anitha C. Kumar*, Professor, School of Chemical Sciences, Mahatma Gandhi University, Kottayam, Kerala. *Dr. Y. V. N. Krishna Murthy*, Registrar, IIST delivered the welcome address which was followed by the address of the Chief Guest. *Prof. Kuruville Joseph*,



Dean (SA,SW&OR), IIST and Chairman SC/ST Cell delivered the felicitation address. *Shri Thilakan T.S*, Technician – G.proposed the Vote of Thanks.

Sadbhavana Diwas



Sadbhavan Pledge taken on 18th August 2022

IIST observed the 'Sadbhavana Diwas' on 18th August 2022 - the birth anniversary of former Prime Minister Late Shri Rajiv Gandhi. *Prof. Kuruville Joseph*, Registrar, IIST, administered the 'Sadbhavana Pledge' in front of the administration block. Deans, Officers and Staff from the administration participated in the programme. Faculty, Students, Officers and Staff from other Department / Sections of the institute have taken the pledge from their respective Departments / Sections.

Vigilance Awareness Week

Vigilance Awareness Week is observed during the week in which the birthday of Sardar Vallabhbhai Patel falls. The spirit behind the observance of Vigilance Awareness Week is to sensitize the public against the menace of corruption. IIST observed Vigilance Awareness Week from October 31 to November 06, 2022, with the theme “Corruption free India for a developed Nation”. The celebration commenced with the “Integrity Pledge” on October 31, 2022 at 1100 hours by faculty and staffs of IIST



International Women's Day Celebration

A formal function was organised on March 9th, 2022, to celebrate International Women's Day. The function was held in a contained manner in view of the pandemic situation. *Dr Vinitha V Nair*, Cardio Thoracic Surgeon, Thiruvananthapuram Medical College was the chief guest. Her talk was inspiring as she described her fight to establish herself in a maledominated field of Cardiac Surgery right from the admission to the post-graduate program. She advised the students that everything is possible if we have the passion for excelling, and we should not be deterred by the obstacles that stand in our path towards our dream. *Dr. Nirmala Rachel James*, Professor, Department of Chemistry and Chair Person, Gender Sensitization Cell, IIST welcomed the gathering. *Dr Sam Dayala Dev*, Director, IIST, delivered the Presidential address. *Dr. Y. V. N. Krishna Murthy*, Registrar, IIST felicitated the



Dr. Vinitha V Nair addressing the audience on International Women's Day celebration

function, and *Ms. Febna Raheem*, Research Scholar, IIST, proposed the vote of thanks

As part of International Womens' Day celebration, Dept. of Mathematics, IIST has organised talks by two women mathematicians. First talk was by *Prof. Jaya. N. Iyer*, Institute of Mathematical Sciences, Chennai, on 'Topology of Algebraic Varieties' on 7th March 2022. The second talk was by *Prof. Sujatha Ramdorai*, University of British Columbia, Canada, on 9th March 2022

Azadi Ka Amrit Mahotsav Programmes

Inauguration of “Azadi Ka Amrit Mahotsav Programmes” and closing ceremony of first year PG/PhD induction programme was organised on 12th August 2022.

Prof. Kuruvilla Joseph, Registrar, IIST welcomed the gathering. *Dr. D. Sam Dayala Dev*, Director, IIST inaugurated the programme. The enthralling dance performance by *Dr Neena Prasad*, famous dancer, artist and researcher, enchanted the audience. Musical performance by Neptunes, IIST was a fest for the audience. The soulful evening in a decorated and



colourful campus witnessed the IIST family gathering, where faculty, staff and their family members participated.

Felicitation and Book Release



Felicitating Dr. B.N. Suresh, Hon. Chancellor, IIST

by Prof. A. Chandrasekar, Dean (Academic & CE) and published by Cambridge University Press, was released by Dr. B. N. Suresh. Dr. A. Salih, Professor, Dept. of Aerospace Engineering, introduced the book to the audience. Dr. Y. V. N. Krishna Murthy, Registrar, IIST proposed the vote of thanks.

IIST has felicitated its Honourable Chancellor and Founding Director, Dr. B. N. Suresh, for getting elected as an International Member of the United States of National Academy of Engineering. The honour was bestowed upon him in recognition of his distinguished contributions in engineering, advances in technologies for space exploration, and leadership in promoting peaceful uses of outer space. Dr. Y.V.N. Krishna Murthy, Registrar, IIST, presented a memento to the Honourable Chancellor on behalf of the institute. Dean HoDs, members of faculty, officers, students and staff joined in offline and online mode.

A book titled "Numerical Methods for Atmospheric and Oceanic Sciences", authored

Research & Innovation

Space Technology Innovation and Incubation Cell (STIIC)



Shri. S. Somanath, inaugurating the STIIC office

STIIC is established in the campus to facilitate incubation of new enterprises with innovative technologies. STIIC would facilitate and support product innovations and developments, simulation and prototyping, pilot experimentation, software testing, training and other technology-related works. It would also back the start-ups in their investment search processes. While the STIIC emphasises space-related innovations/technologies, it also covers all areas of Science and Technology in harmony with the Nation's interests.

(a) M/s Vashishtha Research Pvt. Ltd.

Vashishtha Research Pvt Ltd is a start-up founded and incubated at IIST, with an aim to support and develop indigenous machine and instrument technology. Vashishtha Research Pvt. Ltd. believe that the research and development in indigenous manufacturing and inspection technology is very much necessary for the rise of a high-tech industrial ecosystem that is not completely dependent on imported machines. This will contribute to the industry 4.0 and the vision of 'Atmanirbhar Bharat' or a self-reliant nation. They have received following awards and grants in 2022;

- Kerala Start-up Research and Development Grant 2022
- DRDO Technology Development Fund (TDF) Grant for the development of Propellant Machining Robot

Ongoing research projects include

- Integrated Robotic Non-Destructive Testing of composite panels using Thermography
- Manufacturing of composite structures using Filament Winding and Automated Fiber placement
- Solid Propellant machining using Robotics

Deliveries completed in 2022

The following deliveries were successfully completed in December 2022

Filament Winding Machine – Delivered to IIT Jammu



This is a 4 axis filament winding machine with up to 6 spools capacity and 1.5L heated resin bath. It is capable of winding mandrels up to 1.5m long and 0.4m in diameter at speeds of upto 20000 mm/min. Indigenously developed filament winding pattern generation software is also supplied with the product.

Modulated Thermal Excitation System – Delivered to ISRO-CMSE (NDT division)



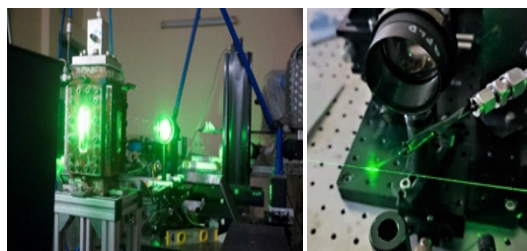
This is a halogen lamp based thermal excitation system capable of generating thermal loading profiles of step, sinusoidal, frequency modulated and coded excitation. The system also includes our indigenously developed lamp controller board and software GUI. It can be

used for thermographic inspection of aerospace structures.

(b) M/s Specrule Scientific Pvt. Ltd

A newly formed R&D company named Specrule Scientific Pvt Ltd is being incubated in the STIIC, IIST. The company focuses on the development of optical and laser-based spectroscopic systems for flow diagnostic applications. Specrule Scientific is working in close collaboration with the Advanced Propulsion and Laser Diagnostics (APLD) Lab, Department of Aerospace Engineering. The founding team includes experts from laser applications and applied optics background. In long term, the company does not want to limit its activities to the aerospace industry. The techniques developed by the company will find applications in a variety of fields including biology, plasma research and environmental monitoring.

Currently, the company is working on the development of a velocity measurement system for high-speed flow applications. The technique is based on Interferometric Rayleigh scattering. The company is also developing tunable diode laser absorption spectroscopic (TDLAS) systems for velocity and temperature measurements in various aerospace and space applications.



(c) M/s InterCosmos

Major activities from M/s InterCosmos, incubated at IIST, mentored by faculty from Department of Aerospace, include

1. Design and built an in-house small scale reactor to synthesize High Test Peroxide (HTP).
2. Developed proprietary blend of non-toxic hypergolic fuels, as part of HyperX green propulsion development program.
3. Conducted Ignition Delay Time (IDT) Evaluation tests to qualify the green hypergolic propellants.

INAE-ISRO Engineers Conclave 2022

IIST actively participated in the exhibition arranged as a part of INAE-ISRO Engineers Conclave-2022 during 13-15 October 2022 at LPSC Valiamala. Major theme of exhibits from IIST were the following:

- Small Satellite and Payload Centre (SSPACE) activities
- Sensors/ Electric Propulsion and other R&D activities
- Climate Observatory @ IIST Ponmudi
- Start-up and Innovations at IIST
- Overview of IIST, by Library and Information Services



Conferences/Symposia

National Conference in Material Sciences and Technology (NCMST) – 2022

The 8th edition of the National Conference on “Recent Trends in Materials Science and Technology” (NCMST) and the 10th in the series of the International/National conference, NCMST-2022, was organized by the Department of Chemistry, IIST during 28-30 December 2022. This edition of NCMST aimed in bringing together Scientists and Researchers from different parts of the country to share their current research in the area of Materials Science and Technology, with the focal theme of “Energy Storage Materials”. The conference highlighted the latest advances and strategies for the design and development of novel materials and processes. NCMST-2022 brought together scientists, engineers, academicians, researchers and industry experts across the country and provided the opportunity to exchange new ideas for research and business collaborations. The three days conference was inaugurated by eminent scientist Prof. Chandrabhas, Director, RGC B, Thiruvananthapuram. More than 250 delegates actively participated in the conference. There were 3 keynote lectures and 13 plenary lectures delivered by eminent experts in the field of Energy Materials, Polymers & Blends, Smart Functional materials, Sensors, High

Temperature materials, Metals & Alloys, Optoelectronics, Composites, Soft & biomaterials, and Nanomaterials. The students and researchers from 8 different states across the country energetically participated with 15 contributory lectures and 132 poster presentations. Nine best poster awards were awarded during the valedictory function of the conference which was presided by *Dr. Ilango van*, VSSC, eminent scientist who works on battery electrode materials. The feedback from the delegates and participants attested the grand success of the NCMST 2022.



Geospatial Technology Conference



Participants of Geospatial Technology Conference

Dr. Ramiya received funding support of Rs 3 Lakhs for conducting Geo-Innovation Challenge as part of National Geospatial

Capacity Building program from the Department of Science and Technology. The theme of the conference was “Geospatial Technology: Geo-enabled technological solution for realizing smart cities”. The event was held between April 20-22, 2022. There were 18 individual teams competing participating in the challenge with innovative topics. The winners were given an opportunity to participate and present in the UNWGIC conference, Second United Nations World Geoinformation Congress at Hyderabad between 10-14 October, 2022.

Workshop / Lecture / Outreach Programmes



Participants of Episteme - 2022

1. Episteme 2022, a camp for the highly abled students was conducted by IIST in association with Pravaha- Agastya Foundation from 6th to 17th June 2022. Thirty six students who have demonstrated capabilities much ahead of their age in fields such as Science and Mathematics were selected for the camp. The camp conducted in the green and serene campus of IIST was an expedition into the world of space science, math and natural sciences. The camp included expert lectures, scientific experiments, demonstrations, cultural events and visits to certain places of academic importance. A balloon experiment carrying a Radiosonde payload to measure atmospheric Temperature, Pressure, and Relative humidity up to 100 M was carried out as part of Episteme 2022.

2. The First National Workshop on “Electric Aircraft and Allied Technologies” was organized by National Aerospace Laboratories (CSIR) in association with IIST and Aeronautical Society of India at Bangalore from 28-29 April 2022. IIST team lead the sessions on All-Electric Powertrain Technologies for Electric Aircraft.

3. On the occasion of World Space Week, one day workshop **Nabh-Sparsh** was organised by *Dr. Sarita Vig* for college students on 10 Oct 2022. Nearly 45 students (Bachelors and Masters in Physics) from 11 Govt. and Govt-aided colleges



Rubber balloon hoisting during Episteme 2022

of Thiruvananthapuram participated in the workshop. The workshop was supported by sponsorship from the SERB project of *Dr. Sarita Vig* and IIST.

4. Twenty five students from IIST participated in the 'Swachh Sagar, Surakshit Sagar' campaign organised at the Kovalam beach. The 'Swachh Sagar, Surakshit Sagar' campaign was launched by the Ministry of Earth Sciences in association with the Indian Coast Guard, Ministry of Environment, Forest and Climate Change, National Disaster Management Authority, Seema Jagran Manch, Students for Development, and other organisations.

5. With a will to “demystify” Science to the less privileged students, the social outreach club of IIST- NIRMAAN organized science camps for

the students of the Government UP School, Ponmudi, every weekends from 13th August 2022 to 3rd December 2022 and a three-day camp for the students of Villumala tribal settlement of Thenmala forest division from 31st December 2022 to 2nd January 2023. This was organized in



Photographs of Nabh-Sparsh workshop

collaboration with the Forest department, Government of Kerala. Such camps are an attempt to transform a routine curriculum subject into a lifelong passion for the students hailing from rural communities and also for the forest-dependent communities in the State.

6.NIRMAAN, IIST donated kits of essential household items worth ₹. 30,000 to families of the school students at Ponmudi, who was isolated from the mainland because of soil erosion and non-availability of transport facility due to damage of roads.



IIST students participating in Swachh Sagar, Surakshit Sagar

International Academic Collaborations

1. Indo-German Meeting between IIST and PTB

A group of delegates led by *Dr. Detlev Markus*, Head of the Department 3.5 - Explosion Protection in Energy Technology, Physikalisch Technische Bundesanstalt (PTB), Germany, visited the IIST on 26th October 2022. PTB is the National Metrology Institute in Germany. The visit is part of the Indo-German initiative on deploying and trading green hydrogen and its derivatives in India. The Federal Ministry for Economic Cooperation and Development (BMZ), Germany, funded the project through the International Cooperation (Internationale

Zusammenarbeit, Gruppe 9.3) from PTB. As part of this initiative, the group from PTB and industry representatives visited IITs, CSIR labs, NPL, IIST, and TERI (Goa). As Germany and India are moving towards the widespread use of green hydrogen in the future, the visit aims to bring together stakeholders working with and using hydrogen in both countries (production, storage, transport, quality control, fundamental research etc.). Research institutes/academia/companies and policymakers from both Germany and India are involved in this initiative. The build-up of such a

consortium can facilitate multi-national research/project collaborations in the future.

2. Academic Visit to French Space Institutes

Dr. Shine S.R., Faculty from the Department of Aerospace, IIST visited various French Space Institutes in Toulouse, ISAE SUPAERO, CNES, IRAP, and MEDES, during 3-10 December 2022. This visit was a perfect opportunity to discuss the deepening of collaborations in training and research between the institutions. ISAE-SUPAERO and IIST have already been cooperating for four years in the framework of

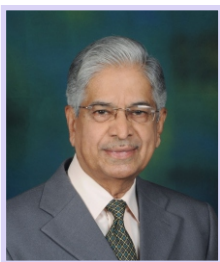


Franco-Indian collaborative academic projects on subjects related to space exploration missions and with the participation of experts from CNES, IRAP - Institut de Rechercheen Astrophysique et Planétologie and the ISRO.

Awards / Recognition / Excellence / Fellowship

International

Dr. B. N. Suresh, Hon. Chancellor and Founder Director, IIST has been elected as an International Member of the United States of National Academy of Engineering (INE).



The International Commission for Optics (ICO) awarded the prestigious GALILEO GALILEI Award 2022 to **Prof. C S Narayanamurthy**, Senior



Professor, Dept. of Physics, IIST, for his outstanding contributions to research on Applied and Adaptive Optics. Prof. Narayanamurthy is the sixth Indian and first Non-IIT faculty to receive this award since its inception in 1994. Prof. C S Narayanamurthy has to deliver a plenary talk at the next ICO meeting and will receive a Silver Medal and USD 1000.

National

Dr Palash Kumar Basu, Associate Professor, Department of Avionics was awarded 2022-2023 INAE-SERB/DST Abdul Kalam Technology Innovation National Fellowship to carry out his research proposal on “Design and Development of Low Power, Low Cost, High-Performance Gas Sensor Array for Exhale Breath analyzer: A Point-of-Care based Non-Invasive Early Detection and Prognosis of Cardiovascular Diseases” for a period of 3 years from 1st October 2022.





Dr. A.M. Ramiya, Asst. Professor, Dept. of Earth & Space Sciences and Dr. C.S. Anoop, Asso. Professor, Dept. of Avionics bagged the Kerala State Young Scientist Award for 2021. Kerala Government has instituted the KSYS Award to honour talented young Scientists in recognition of their outstanding contribution in Science and Technology from the state. Award was presented by Shri Pinarayi Vijayan, Hon. Chief Minister of Kerala, during Kerala Science Congress on Feb 10, 2022. Chief Minister's Gold Medal was also presented during the ceremony.

National Library Week Celebration

IIST library celebrated the National Library Week during 14-20 November 2022. As part of the celebration "Training on paper bag making" was arranged for the students. Webinars on "Stress Management through Reading" (Dr. Shabu B Raj, Counsellor, IIST), "Application of AI in Information Management" (Dr. Deepak Mishra, Professor, Dept. of Avionics, IIST), "Effective Communication in the Workplace" (Dr. Gigy J Alex, Asso. Professor, Dept. of Humanities, IIST) and "IT Infrastructure for Library & Information Services" (Shri. Mohan Sukumar, Computer System Administrator, IIST) were also organised.

IIST Alumni News

1. Bengaluru Chapter of IIST Alumni Association organised a webinar on 'A Guide to MBA :Applications, Courses & Jobs' on 30th January 2022. Parth Sharma and Pranjal Prateek shared their experience, answered queries and gave an insider's view of the business and entrepreneurial world.

2. As a part of laptop donation drive, a request was made for an additional laptop for a student in need. A laptop worth ₹. 40,490 has been purchased and given to a B. Tech student.

3. Ahmedabad Chapter of IISTAA organised a webinar on, "Mapping the Universe in 3D", on 26th February 2022. The discussion was led by

Prof. Anand Narayanan, Professor, Department of Earth and Space Sciences at IIST.

4. "Women and Spaceflight: Charting the Future" was organised on 27th March 2022

5. IISTAA conducted an online Panel Discussion on Women and Spaceflight : Charting the Future, in connection with International Women's Day 2022, on 27th March 2022., Shri. S. Somanath, Chairman, ISRO, the Chief Guest and Keynote Speaker, Dr. V. R. Lalithambika, Former Director, DHSP, shared their views on the topic with the audience.

6. "Life beyond IIST" was an informational

session conducted for students of IIST by IISTAA's Trivandrum chapter, at IIST, in coordination with the IIST Placement Cell on April 8th, 2022.

7. Two IIST Alumni Ph D scholars from the Department of Humanities - *Dr. Sabu M* and *Dr. Anu Kuriakose*, have been awarded the first-ever Chief Minister's Nava Kerala Post-Doctoral Fellowships 2022 introduced by the Govt of Kerala.

8. IISTAA grieved the loss of *Shri. Niharranjan Pradhan*, a B.tech Aerospace Engineering graduate 2016 batch. *Shri. Niharranjan* was a Scientist/Engineer 'SC' in Vikram Sarabhai Space Centre. A virtual condolence meet was held on 22nd May 2022, in memory of *Shri. Niharranjan* - a diligent son, a loving brother and a caring friend.

9. T + 10 Years : Vyom: IISTAA organised a session on 5th June 2022, to celebrate the 10 years

and reflect back on how the efforts of the team culminated into the historic rocket launch. The Presidential address was given by *Dr. B. N. Suresh*, Hon. Chancellor, IIST. *Dr. K. N. Ninan*, Former DD, VSSC and Emeritus Professor, IIST delivered the Keynote address, sharing the journey of the first Sounding Rocket team of IIST. The event was attended by Former Director, ISRO engineers, faculty, alumni and students of IIST.

10. IISTAA conducted an online session on, "Working for ISRO/DOS : Things you need to know" on 28th August 2022, for the graduating batch of 2022. Various chapter representatives presented slides on the center of their cities. Alumni across the chapter addressed queries and the graduating students. This helped students to gain an insight into the work-life at various ISRO Centers.

Projects

Dr. Shaijumon C S Initiated a project along with *Dr Lekshmi V Nair* on Impact of Indian Space Programme on Indian Industrial Sector in Collaboration with VSSC

Dr. Gigy J Alex - Initiated a project on 'Tribal Cuisines, Cultural Mapping of Tribal Cuisine form Kerala for Food Safety and Food Sufficiency'

Professional Society News

1. *Dr. Chinmoy Saha*, Associate Professor, Department of Avionics, has been nominated as the Region-10 (Asia and Pacific) coordinator of IEEE Microwave Theory and Techniques Society.

2. *Dr. B. S. Manoj*, Professor, Dept. of Avionics was elected as Chair of IEEE, EMBS (Engineering in Medicine and Biology Society) Kerala Chapter for 2022. He was also selected as Associate Editor of the Green Technologies and Sustainability Journal.

3. *Dr. R. Sudharshan Kaarthik*, Associate Professor, Dept. of Avionics was awarded the Outstanding Researcher Award by IEEE Kerala Section. He was given this award in the Annual General Meeting held during February 2022 for his significant contributions in Power Electronics and Electric Drives

राजभाषा संबंधी गतिविधियाँ

हिंदी कार्यशालाओं का आयोजन

1. तकनीकी क्षेत्र के कर्मचारियों के लिए मार्च 2 एवं 3, 2022 को हिंदी कार्यशाला का आयोजन किया गया। श्री. आर. जयपाल, भूतपूर्व वरिष्ठ हिंदी अधिकारी, आईआईएसटी ने सरकार की राजभाषा नीति कार्यान्वयन एवं बोलचाल की हिंदी विषय पर सत्र संचालन किया तथा डॉ. हरींद्र शर्मा, सहायक निदेशक (रा.भा.), दूरदर्शन केंद्र ने हिंदी की संरचना विषय पर अभ्यास कराया।

2. आईआईएसटी में राजभाषा कार्यान्वयन की गतिविधियों के भाग के रूप में, संस्थान के कार्यपालकों के लिए जून 14, 2022 को एक अर्ध दिवसीय हिंदी कार्यशाला का आयोजन किया गया। सत्र का संचालन श्री. मनोज कुमार, सहायक निदेशक (रा. भा.), एलपीएससी, वलियमला ने किया। उन्होंने 'संसदीय राजभाषा समिति - निरीक्षण प्रश्नावली' के बारे में प्रस्तुतीकरण दिया।

3. संस्थान के संकाय सदस्यों के लिए सितंबर 28, 2022 को एक अर्ध दिवसीय हिंदी कार्यशाला का आयोजन किया गया। कार्यशाला का उद्घाटन डॉ. कुरुविला जोसफ, डीन (छात्र गतिविधियाँ, छात्र कल्याण एवं आउटरीच) ने किया। सत्र का संचालन श्री. ए. सोमदत्तन, भूतपूर्व सहायक निदेशक (राजभाषा), आयकर विभाग ने किया। उन्होंने संकाय सदस्यों को 'भारत सरकार की राजभाषा नीति : बुनियादी बातें' विषय पर अवगत कराया।

4. सहायकों, वरिष्ठ सहायकों, वैयक्तिक सहायकों तथा लिपिक वर्गीय कर्मचारियों के लिए 19, दिसंबर 2022 को एक दिवसीय हिंदी कार्यशाला का आयोजन किया गया। श्रीमती सिमी असफ़, सहायक निदेशक (रा.भा.), आईआईएसटी ने 'राजभाषा नीति कार्यान्वयन - अद्यतन आदेश/निर्धारित लक्ष्य' एवं 'कंप्यूटर के सहारे राजभाषा हिंदी में कार्य' विषय पर अभ्यास कराया तथा श्रीमती आर. महेश्वरी अम्मा, भूतपूर्व उप निदेशक (रा. भा.) ने 'हिंदी व्याकरण' पर सत्र संचालन किया।

5. विश्व हिंदी दिवस समारोह - 2022

आईआईएसटी में विश्व हिंदी दिवस समारोह - 2022 के उपलक्ष्य में संस्थान के छात्रों के लिए जनवरी 10, 14 व 15, 2022 तथा कर्मचारियों के लिए जनवरी 11, 12 व 13, 2022 को विविध हिंदी प्रतियोगिताओं का आयोजन किया गया।

6. अंतर – केंद्र हिंदी तकनीकी संगोष्ठी में भागीदारी

10 -11 फरवरी 2022 को वीएसएससी द्वारा “भारत में अंतरिक्ष अनुसंधान तथा अनुप्रयोगों की भावी दिशाएं” (तकनीकी विषय) पर ऑनलाइन रूप से आयोजित अंतर – केंद्र हिंदी तकनीकी संगोष्ठी में संस्थान के दो तकनीकी अधिकारियों द्वारा लेख प्रस्तुत किए गए।

7. हिंदी पखवाड़ा – 2022

संस्थान में इस वर्ष सितंबर 19 से 30, 2022 तक हिंदी पखवाड़ा मनाया गया। प्रतिदिन हिंदी भाषा के संबंध में प्रमुख हस्तियों की सूक्तियों में से एक वेब मेल से प्रदर्शित की गई। हिंदी पखवाड़ा समारोह - 2022 के उपलक्ष्य में संस्थान के कर्मचारियों के लिए सितंबर 19, 20 व 29 को तथा सितंबर 22 व 23, 2022 को छात्रों के लिए विविध हिंदी प्रतियोगिताओं का आयोजन किया गया। कर्मचारियों के लिए सॉफ्टवेयर प्रशिक्षण कार्यक्रम का भी आयोजन किया गया।

8. हिंदी तकनीकी संगोष्ठी- 2022

इस वर्ष अंतरिक्ष विभाग के पूल सी (वीएसएससी, एलपीएससी, आईपीआरसी, आईआईएसयू एवं एपीईपी) के केंद्रों, यूनिटों के सहयोग से आईआईएसटी में नवंबर 25, 2022 को “अंतरिक्ष अनुसंधान में हाल की प्रगति - नवाचार और उद्भव के अवसर” विषय पर हिंदी तकनीकी संगोष्ठी का आयोजन किया गया। श्री. निलेश एम. देसाई, निदेशक सैक ने संगोष्ठी के तकनीकी सत्र का मुख्य भाषण दिया। संगोष्ठी के दौरान वीएसएससी, एलपीएससी, आईपीआरसी, आईआईएसयू, एपीईपी एवं आईआईएसटी से अंतरिक्ष विज्ञान और अनुसंधान के विभिन्न पहलुओं पर चालीस लेख हिंदी में प्रस्तुत किए गए जिनमें आईआईएसटी के छह लेख भी शामिल थे। छह तकनीकी सत्र और एक पोस्टर सत्र रखे गए। प्रत्येक सत्र में उत्कृष्ट लेख प्रस्तुतकर्ता को पुरस्कार भी दिया गया। सभी लेखों पर संगोष्ठी में सार्थक चर्चा हुई तथा अद्यतन ज्ञान का आदान प्रदान हुआ जिससे सभी प्रतिभागी लाभान्वित हुए।



दीप प्रज्वलित करते हुए



लेख संग्रह का विमोचन



श्री. निलेश एम. देसाई, निदेशक सैक मुख्य भाषण देते हुए



समापन समारोह में श्री. एस. सुरेश, नियंत्रक, एलपीएससी मुख्य अतिथि से प्रमाण पत्र ग्रहण करते हुए डॉ. श्रीजा लक्ष्मी

9. नगर राजभाषा कार्यान्वयन समिति द्वारा आयोजित संयुक्त राजभाषा उत्सव में भागीदारी

नगर राजभाषा कार्यान्वयन समिति, तिरुवनंतपुरम (कार्यालय -2) के तत्वावधान में 'संयुक्त राजभाषा उत्सव 2021-2022' के सिलसिले में सदस्य कार्यालयों के अधिकारियों और कर्मचारियों के लिए आयोजित प्रतियोगिताओं में आईआईएसटी की श्रीमती बिंदिया के. आर, उप कुलसचिव ग्रेड - I, प्रशासन ने 'तस्वीर क्या बोलती है' प्रतियोगिता में प्रथम पुरस्कार और डॉ. अशोक कुमार, सहायक आचार्य, भौतिकी विभाग ने प्रोत्साहन पुरस्कार जीते।

10. जाँच बिंदुओं की स्थापना

राजभाषा अधिनियम 1963, राजभाषा नियम 1976 और राजभाषा विभाग द्वारा समय समय पर जारी किए जाने वाले संबंधित आदेशों का अनुपालन सुनिश्चित करने के लिए जाँच बिंदु पुनः स्थापित किए गए।

11. हिंदी वार्तालाप कक्षा का आयोजन संस्थान के सभी छात्रों तथा नियमित एवं संविदा कर्मचारियों के लिए ऑनलाइन रूप से हिंदी मौखिक कक्षाओं का आयोजन किया गया। श्री. आर. जयपाल भूतपूर्व वरिष्ठ हिंदी अधिकारी, आईआईएसटी ने सत्र का संचालन किया।

12. नराकास राजभाषा पुरस्कार योजना वर्ष 2020-2021 के अधीन पुरस्कार

- राजभाषा हिंदी के उत्कृष्ट कार्यान्वयन के लिए नराकास राजभाषा पुरस्कार (श्रेणी - 3) में आईआईएसटी को तीसरा पुरस्कार
- उत्कृष्ट हिंदी पत्रिकाओं के लिए नराकास राजभाषा पुरस्कार - आईआईएसटी की हिंदी पत्रिका 'अंतरिक्ष धाराएं' को दूसरा पुरस्कार

Students Corner

Mr. Shashank Tomar, the topper of B.Tech (Aerospace Engineering) from IIST, has been awarded the prestigious "The Kalam Prize for Aerospace Engineering" by



the California Institute of Technology, USA. The above prize is awarded by California Institute of Technology to a student in the Aerospace Engineering Master's Programme whose academic performance is exemplary and who has shown high potential for future achievements at CalTech.



Shri. Janaki Raman Babu and Dr. Prosenjit Das bagged the A. K. Agarwal Award for their paper "Structure of S^2 fibrations having fixed point free locally nilpotent derivatives" doi.org/10.1016/j.jpaa.2021.106763



Ms. Gopika, Department of Avionics, has received the International Research Award from IEEE Antennas and Propagation Society for carrying out research work on the topic entitled "Far-field wireless power transfer". This award consists of USD 5000 award money and an invitation to attend the IEEE AP-S symposium in the USA. (Guide: Dr. Chinmoy Saha)

Shri. Kundan Surse, B.Tech. student, Department of Avionics received UG research award from IEEE Antennas and Propagation Society, amounting 3000 USD



for his work on wireless power transfer. (Guide: Dr. Chinmoy Saha)

Ms. Aishwarya.B, M.Tech Power Electronics student received national level INAE Innovative Student Project Award - 2022, from Indian National Academy of



Engineering for her project titled 'Advanced Control Schemes for Current Source Inverter fed Induction motor drives', (Guide: Dr. Rajeevan.P.P)

Mr Balwant Kushwaha (M.Tech Power Electronics, 2020-2022 batch) has been declared as the winner of the National Symposium and Research Colloquium (NSRC)



conducted on 8 October 2022. (Guided: Dr. Sudharshan Kaarthik)

Sri. Rishab, M. Tech Materials Science and Technology student, won the best oral presentation (third prize) during the National Metallurgist's Day



celebrations for the paper titled 'Effect of grain size on the heat affected zone (HAZ) cracking in nickel base super alloy XH67', November 2022. The paper is co-authored by Dr. Chakravarthy, Dr. Jobin Cyriac, Shri. Raviranjana Kumar, Shri. Santhosh, Dr. SVS Narayana Muty.

Sri. Aryadutt Oamjee, PhD Scholar has been selected as one of the recipient of the INAE Innovative Student Projects Award for 2022 in the Doctoral level category.

(Guide: *Dr. Rajesh Sadanandan*)



Ms A. V. Chitra, M. Tech Student, Machine Learning and Computing, IIST bagged the IAPR Best Student Paper Award for her paper "Multi-modality fusion for Siamese

Network based RGB-T Tracking" at the 7th International Conference on Computer Vision & Image Processing, VNIT, Nagpur 4-6 November 2022. (Guide: *Dr. Chinmoy Saha*)



Australian National University Future Research Talent (ANU-FRT) 2022 Internship Awards:

Shri. Rushikesh Patil
M.Tech (VLSI and Microsystems)

Shri. Aakash Chaudhary
MoS (A & A)

Ms. Yashowardhini
MoS (A & A)

Shri. Utkarsh Rajput
PhD (Mathematics)

Shri. Dilip M
M.Tech (Machine Learning and Computing)

Shri. Bhargav Cheekati
M.Tech (Optical Engineering)

Festivals

Garba night is surely one that everyone eagerly waits for during Navratri. The music is loud, and the people's energy is through the roof. On the evening of 4 October 2022, students gathered in the basketball court of IIST to celebrate the victory of good over evil. The bhajans and pooja filled the air with peace and serenity. This was followed by the celebration of Bathukamma. This truly showed how IIST celebrates its students' diverse cultures. The students were then given the dandiya sticks and asked to make concentric circles in which they would all dance. The traditional garba songs brought in the true

essence of the night and got the people swirling in its melody.



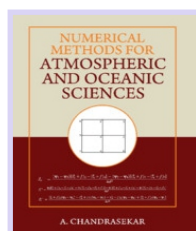
Dr D. Sam Dayala Dev, Distinguished Scientist / Director, IISU assumed the additional charge of the post of the Director, IIST on 20th January 2022. He led the institute as the Director till 28th September 2022. As a veteran in the field of design, analysis and simulation of inertial sensors, actuators and mechanisms, he has proven his mettle in Rotor dynamics of turbo rotors and momentum wheels. At present, he leads his team in developing autonomous navigation systems with ultra-stable inertial sensors. During his tenure at IIST, he has initiated several R&D activities and programmes for the development of the institute.



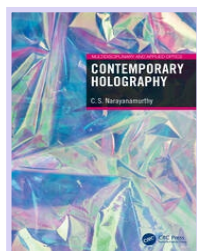
Dr. S Unnikrishnan Nair, Distinguished Scientist / Director, VSSC, assumed the charge of the Director, IIST on 20.9.2022. He was the first Director of the Human Space Flight Centre, Bangalore. He is an expert in the field of Space Capsule Recovery Experiment. He has proven his expertise in launch vehicle mechanisms, acoustic protection systems, payload fairing and reusable launch vehicle development. He is not only a technocrat but a voracious reader and an excellent author as well. IIST proudly marches forwards under his tutelage. His expertise in the decision-making process and the progressive and path-breaking policies and programmes help the institute to move beyond its horizons.



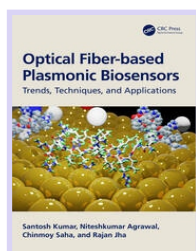
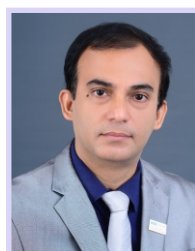
Books Authored by IIST Faculty



Prof. A. Chandrasekar, A. Numerical Methods for Atmospheric and Oceanic Sciences. Cambridge University Press, 2022.



Prof. Narayanamurthy, C.S. Contemporary Holography CRC Press, 2022



Dr. Chinmoy Saha et al, Optical Fiber-based Plasmonic Biosensors: Trends, Techniques and Applications, CRC Press, 2022

Official Social Media platforms



Editorial Committee

Prof. C. S. Narayanamurthy - Chairman
Dr. V. S. Sooraj - Member
Dr. Shaijumon C. S. - Member
Dr. R. Sudharshan Kaarthik - Member
Dr. Sreejalekshmi K. G. - Member

Dr. Solomon Ivan - Member
Dr. P. R. Sinha - Member
Dr. E. Natarajan - Member
Shri. A. Abdunnasar - Convenor