Indian Institute of Technology Guwahati
भारतीय प्रौद्योगिकी संस्थान गुवाहाटी
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IIT Guwahati Ranks Third in Swachh Campus Ranking 2019

IIT Guwahati has been ranked Third in the category of 'Residential University – AICTE' in the third edition of annual 'Swachh Campus Ranking 2019' for Higher Educational Institutions organised by the Ministry of Human Resource and Development. The award ceremony was on, 3 December 2019, at AICTE Auditorium, New Delhi.

Both public and private institutes across the country participated in the annual event where Hon'ble Minister of Human Resource and Development, Shri. Ramesh Prokhriyal "Nishank", addressed the gathering via video call. Shri. R. Subrahmanyam, Secretary, Department of Higher Education, Ministry of Human Resource Development, Government of India, presented the award to Prof. T. G. Sitharam, Director, IIT Guwahati, and Prof. Parameswar K. Iyer, Dean of Public Relations, Branding and Ranking, IIT Guwahati.

Speaking about the award, Prof. T. G. Sitharam, Director, IIT Guwahati, said, "I am very pleased by this recognition bestowed upon IIT Guwahati by the MHRD and we hope to lead by example that academic excellence can be achieved by a sustainable balance of the surroundings and by being sensitive to the environment. IIT Guwahati will make every effort to be a leader in hygiene, sustainable development practices and preserving the ecological balance beyond our boundaries. I congratulate every person involved to

make IIT Guwahati a clean and smart campus and leading to this recognition."

The Institutes were evaluated on different parameters like swachhta within the campus, garbage management in the campus, hostel and residential areas, frequency & the procedure of disposal, any technology used for solid and liquid waste disposal & management, water harvesting and storage, pipeline systems, vegetation coverage & greenery in campus, canteen hygiene, renewable energy use and solar panels installed on the campus, swachhta culture in campus, facilities for specially-abled citizens and swachhta activities taken up outside campus.

A Swachhta Rankings team comprising of 3 external expert members had visited IIT Guwahati, one of the 36 shortlisted institute among approximately 6900 entries, and inspected the campus on these stringent and diverse parameters.

A sapling of Guazuma tomentosa (commonly known as mutamba or guacimo) has been planted by Adamya Chetana and Supported by AICTE to increase green cover on the mother earth in recognition of the Institute's performance.

IIT Guwahati Partners with Samsung to Set Up Samsung Innovation Labs under their Digital Academy Initiative

Indian Institute of Technology Guwahati launched the Samsung Digital Academy Programme by inaugurating the Samsung Digital Academy at the campus. The 14 week long course will be taught through classroom lectures, assignments and lab room sessions, self-study and mini projects. Extensive tutorials and approach documents will also be provided to students to facilitate practical exercises.

The curriculum at the Samsung Innovation Lab at IIT Guwahati will include Internet of Things (IoT), Embedded Systems (ES), Artificial Intelligence (AI) and Machine Learning (ML). The students will be trained on these industry-relevant skills in order to make them job-ready.

Speaking at the launch of the programme, Prof. T. G Sitharam, Director, IIT Guwahati, said, "IIT Guwahati is actively looking forward to the association with Samsung India to impart cutting edge education to the students of the institute. Such initiatives will help bridge the academia-industry gap and foster more collaborations that would be a win-win situation for both. The presence of Hon'ble Chief Minister of Assam, Shri Sarbananda Sonowal, along with the strong interest and support of the state government, will go a long way in extending the expertise of IIT-Guwahati and Samsung Innovation Lab to other parts of Assam. It would provide technical opportunities for academic excellence and development."

"I sincerely feel that Samsung Digital Academy Programme at IIT Guwahati would increasingly help Assam to emerge as a key player in the development of next-generation technology ecosystems and help the state in becoming a potential destination for skill development mission from a digital perspective. I further hope that the collaboration between Samsung and IIT Guwahati in rolling out this skill initiative will definitely play a crucial role in helping the government develop sustainable employment options in the state helping the government develop sustainable employment options in the state", said Hon'ble Chief Minister of Assam, Shri Sarbananda Sonowal.

"Samsung R&D Institute India, Delhi has been working closely for many years with premiere engineering institutions of India to foster collaborations for joint teaching, mentoring and promoting research on advanced and emerging technologies. We are committed to work in the field of next generation technology development and participate in the growth of advanced research areas such as IoT through the network of Samsung Innovation Labs under the Samsung Digital Academy program," said Kiho Kim, Managing Director, Samsung Research & Development Institute, Delhi.

"At Samsung, our aim is to foster a culture of innovation amongst the students and provide them with the best possible infrastructure. We are confident that Samsung Innovation Lab, which is part of our citizenship initiatives, will help students leverage the growing digital technologies market and develop their talent," said Peter Rhee, Corporate Vice President, Samsung India.

The Samsung Innovation Lab at IIT Guwahati will carry out research on areas such as Pervasive Computing, Artificial Intelligence/ Machine Learning, IoT, Embedded Systems.

IIT Guwahati Researchers Develop Materials to Produce Energy from Water on a Small Scale

Indian Institute of Technology Guwahati Researchers have developed materials that can produce energy from water, on a small scale. These new ways of producing energy can be employed in household environments to support the concept of decentralization of energy sources. In the centralized energy generation model, one large plant produces energy for an entire region, in contrast, the decentralized energy model introduces a large number of small generation devices that can be employed to generate in every household. The excess energy produced in households can be transported nearby areas where there is an excessive need for energy. The researchers of IIT Guwahati employed the nanoscale phenomenon called "Electrokinetic streaming potential" to harvest energy from flowing water on the small length scale like water flowing through household water taps. Similarly, the "Contrasting Interfacial Activities" different types of semiconducting materials were employed to generate power from stagnant water.

A research team led by Dr. Kalyan Raidongia, Department of Chemistry, IIT Guwahati, along with his research team Ms. Jumi Deka, Mr. Kundan Saha, Mr. Suresh Kumar, and Mr. Hemant Kumar Srivastava worked on this novel research. Their findings were recently published in ACS Applied Nanomaterials.

The impending energy crisis that has arisen from the dual problems of dwindling fossil fuel reserves and environmental issues associated with the use of such fuel, has led to considerable research in alternative energy sources such as light, heat, wind, ocean waves, etc. The generation of energy from water in various forms – river flow, ocean tides, stagnant water, and even raindrops, is now known as "blue energy". While hydroelectric power from rivers is the traditional form of blue energy, there have been efforts to harness the power of water in other ways in recent years.

One out-of-the-box blue source is electrokinetic energy. "When fluids stream through tiny channels that are charged, they can generate an electrical voltage, which may be harnessed through miniaturized generators", explains Dr. Raidongia. Although the exploration of such electrokinetic phenomena and their possible use for energy conversion have been known for more than half a century, they have not been harnessed because of low efficiency arising from the unsuitability of channels for the fluid stream. The humble efficiency of electrokinetic streaming potential based energy generating devices is attributed to the trade-off between high flow-rate and nanofluidic confinement. The researchers of IIT Guwahati demonstrated that power output can be improved by thousand times by attaining the best out of these parameters through biconical nanofluidic channels that interconnect tetrahedral and octahedral voids in the close-packed silica spheres. Enhancement in the power density can be brought about through control of multiple parameters such as the diameter of the close-packed spheres, number of the spheres, the contact area of the electrodes, and pH of the streaming water, and the team is currently involved in such optimization efforts.

In order to extract power from stagnant water, devices were fabricated by employing doped graphene flakes. The complementary charge transfer activities of doped graphene flakes based devices generate power just upon dipping in any kind of water source, like lake, river or seawater.

Graphene is the sheet produced by oxidation followed by reduction of natural graphite flakes. "What we have done is modified graphene in such a way that its electron density is manipulated; even stagnant water in contact with this form of graphene can produce energy", added Dr. Raidongia.

The researcher doped graphene oxide with boron and nitrogen, separately, loaded the two forms of graphene into two filter papers that served as electrodes in an electrochemical cell. Dipping the two filter papers into water produces potential up to 570 millivolt, which was stable for a few days (80 hours). "We improved the power generated by varying parameters like coating area, the extent of doping, annealing temperature, and ionic conductivity of the medium", said Dr. Raidongia.

"We use a lot of stagnant and flowing water in our daily lives", said Dr. Raidongia. Water stored in buckets and water flowing from taps can potentially be used to produce energy if such nanogenerators can be developed further. While the power generated currently is too small for practical applications, research such as those by Dr. Raidongia's team brings us a step closer to realising simple, safe and reliable alternative power sources that can eventually reduce the load on the centralised grid, and contribute to energy self-sufficiency.

Interaction with Alumni of 2000 Graduate batch of IIT Guwahati

A group of 2nd batch of IIT Guwahati alumni consisting of thirteen (13) members from 2000 graduate batch from the departments of Computer Science and Engineering, Mechanical Engineering and Electronics and Electrical Engineering, visited IIT Guwahati campus during 27-29 December 2019. In the evening of 27 December, a get-together was organized in the institute guest house and it was attended by the faculty members from the above three departments. The alumni also wished to interact with some of the faculty members who taught them during their initial years of academic journey.

Prof. Rakhi Chaturvedi, Dean of Alumni and External Relations (AER) and Prof. Aditya Panda, Associate Dean, AER, welcomed the alumni group to IIT Guwahati campus and addressed the gathering jointly. The alumni introduced themselves and narrated their personal and professional achievements. They expressed gratitude to the IITG faculty members and informed that how much useful was the training of IITG in their professional pursuit to excel in life. They shared their memories of the campus and nostalgic feelings and also mentioned their initial hiccups to go to the city to attend classes. They were overwhelmed to witness the infrastructure development and achievement of IIT Guwahati within these span of 20 years. They appreciated the world class laboratory and hostel facilities that IIT Guwahati has today. They all were very keen to come back to IIT Guwahati to share their experiences with the students and other members of the Institute.

The above get-together was followed by a short meeting of the alumni with the AER office team to discuss about the alumni data collection and to strengthen the alumni network, connections and interactions.

IEEE Workshop of Recent Advances in Photonics 2019

The Department of Physics, Indian Institute of Technology Guwahati organized 4th edition of biennial IEEE Workshop of Recent Advances in Photonics (WRAP) 2019 during 13 – 14 December 2019 to commemorate 25th year celebration of the Institute. The event was inaugurated by the honourable Director of IIT Guwahati, Prof. T. G. Sitharam. IEEE WRAP 2019 provided a platform to the global experts and researchers to disseminate and highlight novel contributions and challenges and, as an outcome, motivate innovation in the field of Photonics. The workshop received an overwhelming response from the scientific community working in optics and photonics. Several eminent professors, scientists, postdocs and students from all around the globe participated in this event. More than 30 eminent speakers from various parts of the world including the USA, Australia, United Kingdom, Canada, South Korea, Austria, etc. delivered lectures over the two days of the event, and around 180 researchers and scientist attended it. The IEEE Photonics Society President, Prof. Jagadish Chennupati delivered a plenary talk in the event. In the workshop, three events under the banner of IEEE Photonics society were held: Leadership meeting, the mentor-mentee program and the President's reception. The Department of Physics, IEEE Photonic Society Student Chapter, and the Institute of Technology Guwahati helped us for the successful organization of this event. This international event in photonics benefitted large number of researcher to get an international exposure with recent trends of photonics, especially in this geographical region of India. The fruitful discussions in the area of photonics and exchange of ideas during the events were key to the success of this workshop.

ICANN2019

IITG The 6th International Conference on Advanced Nanomaterials and Nanotechnology (ICANN2019) was organized by Centre for Nanotechnology at the Indian Institute of Technology Guwahati (IITG), India during 18-21 December 2019. The ICANN2019 conference was focused on Advanced Nanomaterial for Nano engineering and recent advances in nanotechnology, covering fields from theory and experiment to applications of nanostructured materials in technology. Many eminent scientists, technologists and young researchers across the globe took part in this International conference and made this conference a huge success by sharing their achievements of research. The scientific program was contained of 12 plenary sessions, 24 invited talks, 24 oral talks, 30 short talks and 192 poster presentations. There were 10 poster awardees of which 05 awards were sponsored by ICANN and the remaining 05 awards were sponsored by different journals of American Chemical Scociety (ACS) namely: 1. ACS Applied Nano Materials, 2. ACS Omega, 3. Nano Letters, 4. Chemistry of Materials and 5. ACS Materials Letters.

There was also a talk organized on 18 December 2019 morning session to celebrate the International Year of Periodic Table (IYPT-2019). It was sponsored by the Royal Society of Chemistry (RSC) who also supported ICANN2019 with lanyards. The talk was given by Prof. Kankan Bhattacharyya of Department of Chemistry IISER Bhopal with the title "Mendeleev's Periodic Table: Searching Sanskrit Grammar in Chemistry". The talk was attended was many high school students among other participants. Quiz was also arranged for the school students at the end of the talk.

Participants of ICANN 2019 posing for a group photograph in front of the administrative building.

Dr. S. M. Suresh
Registrar, IIT Guwahati

Dr. Biranchi Narayan Panda
Assistant Professor
Mechanical Engineering

Dr. Amal Dev Parakkat
Assistant Professor
Computer Science and Engineering

Dr. Atul Kumar Soti
Assistant Professor
Mechanical Engineering

Modern Trends in Inorganic Chemistry (MTIC-XVIII)

Modern Trends in Inorganic Chemistry (MTIC-XVIII) is a biennial international symposium focused primarily on inorganic chemistry. The 18th version of this event was jointly organized by the Department of Chemistry, Indian Institute of Technology Guwahati (IIT Guwahati), Gauhati University and Department of Chemical Sciences, Tezpur University during 11 – 13 December, 2019 at the IIT Guwahati campus.The organization of MTIC as a part of silver jubilee celebrations at IIT Guwahati made this event much more special. The conference was inaugurated on 11 December 2019 by the Chief Guest Prof. T. G. Sitharam, Honorable Director, IIT Guwahati. The event was also graced by Prof. Gopal Das (convener). Prof. Biplab Mondal (co-convener) and Prof. Manabendra Ray, Head-in-charge, Department of Chemistry, IITG. The conference provided a unique platform to bring together the leading researchers from academia and industries across the globe to discuss the latest and most exciting aspects of various areas of Inorganic Chemistry. During the conference, many international and national delegates including industrialists delivered several plenary, invited and short lectures. Some of the eminent personalities who attended the conference included Prof. Wolfgang Kaim (University of Stuttgart, Germany), Prof. Michael Schmittel (University of Siegan, Germany), Prof. Alan. S. Goldman (Rutgers-The State University of New Jersey, United States), Prof. G. Mugesh (IISc Bangalore), Prof. R. Mukherjee (IIT Kanpur), Prof. A. R. Chakravarty (IISc, Bangalore), Prof. A. G. Samuelson (IISc, Bangalore), Prof. R. Murugavel (IIT Bombay) and Prof. S. Sarkar (IIT Kanpur). Names of other scientists, industrialists and pioneers who graced the event are available on our website https://mtic2019.org/. Apart from this, opportunity was also provided to students to showcase their work in form of flash presentations and poster presentations. In addition, events were being organized during the conference to facilitate the interaction of these budding researchers with eminent personalities from academia and industry. The conference successfully concluded on December 13, 2019 with a valedictory function where five students who performed the best in poster presentations were awarded with a one year free membership from American Chemical Society.

XVI Workshop on High Energy Physics Phenomenology (WHEPP2019)

Indian Institute of Technology Guwahati hosted the 16th edition of the "Workshop on High Energy Physics Phenomenology" (WHEPP2019) during 1-10 December 2019. WHEPP is a series of international workshops on particle physics, with the main focus being on particle physics phenomenology and its relation to both formal theory and experiment. It is held in every alternate year and constitutes the most important international event in particle physics phenomenology which is held regularly in India.

The workshop covered almost the entire area of particle physics, divided into five different worksing groups, namely, 'Standard Model and Beyond the Standard Model physics', 'Flavour Physics', 'Neutrino

Around 250 participants from India and abroad participated in the workshop at IITG, that provided a common platform to interact, present results from research work and initiate new collaborative research ideas on emerging issues in particle physics. The workshop comprised of invited talks in plenary sessions from several world-renowned physicists from India and abroad.

One of the significant highlights of this year's workshop was the participation of a delegation from Japan, led by, Professor Y. Okada, Executive Director of KEK and Professor T. Saeki, both from High Energy Accelerator Research Organization, KEK as well as Professor K. Kawagoe from Kyushu University, Fukuoka with an objective further fostering the Indo-Japan collaboration in scientific research in particle physics. KEK is one of the world's major particle physics research organizations located in Japan, which has a long tradition of National and International Collaborations. The International Linear Collider (ILC) is the next generation of proposed major international particle physics programe with Japan being the leading collaborator and the host of this facility. It is pertinent to mention that India and Japan have several major collaborations in the many areas such as skill development and other infrastructure development activities. Enhancing the scientific ties between the two countries through projects like ILC will further enhance the overall Indo-Japan collaboration.

Also importantly, Professor Rohini Godbole of the Centre for High Energy Physics, Indian Institute of Science (IISC), Bangalore, the winner of the prestigious Padma Shri award in 2019 delivered a colloquium in the Bhupen Hazarika auditorium of IITG on 7th December which was open to the general public.

The workshop was organized by the Department of Physics with Professor Bipul Bhuyan as the Convener and Dr. Debasish Borah as the co-Convener.

1st Departmental Retreat (Biotech Express)

21 December 2019, on a cold winter day, commenced the First Department Retreat, christened as Biotech express. An event aimed to bring a change from daily lab culture, culminated intellect, joy and prospered harmony among students, staff, and faculties. The event was marked by a welcome address by the Head of the Department, followed by a talk on the history of department establishment "The wonderful journey that began at IITG", by the former and first HOD of the department. The faculties enlightened the occasion with their intellect and talks on "finding passion and purpose in research", "the art of writing scientific papers" and "the industrial integration of biotech research". Further followed an inspiring and motivating alumni talk by one of the pioneers of the department. The students actively took part in the scientific culture of the program with Oral and Poster presentations which was highly informative, providing insights to their respective lab modules and domains.

Post lunch, the session embraced music, art, and leisure. An online Mobile-based Quiz was highly enthralling where not only intelligence but the speed and cognitive ability were tested, the fastest person who answered correctly wins it all. This was followed by "The Secret Journey of DNA" a skit depicting the hidden story behind the DNA structure prediction elegantly played by the collaboration of Faculties, staff, and students. 2nd and final round of the quiz was a brainstorm and a test of intelligence and memory. The top 10 contestants sorted out from round one was called up on stage and the top 3 winners were rewarded with prizes. The students showcased their talents in the form of self-composed Hindi and English poems which were a real delight for the audience, the harmony of guitar and flute took us over to a mesmerizing journey of soulfulness.

The short crisp event came to a close with a token of appreciation for various events (prize distribution) and closing remarks by the convener. The smiles and cheers bestowed were the key highlights of the event which were reflected on the whiteboard. This light and happy event truly ended with connections and bonding among students, staff and faculties and scripts a humble beginning ……

The 26th Inter IIT Staff Sports Meet 2019 was held at IIT Kharagpur from 24 - 28 December, where Team IITG managed to secure Gold Medal in Basketball, Gold Medal in Long Jump (Women), Silver Medal in 100m (Women), Silver Medal in 200m (Women), Silver Medal in 100m (Men), Bronze Medal in Shotput (Men) and Bronze Medal in Discus Throw (Men).

IITG Student Contingent for the 54th Inter IIT Sports Meet at IIT Kharagpur, Co-hosted by IIT Bhubaneswar from 14-22 December 2019

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