



## About IGSTC

The beginning of year 2019 leads to various new opportunities and collaborations for IGSTC. The year started with the 10th Governing Body meeting of IGSTC in Aachen, Germany in January to adopt the outlook related to its activities for the next year.

A major workshop, Helmholtz-Indian Platform on Science, Technology, Education and Research (HIPSTER) was organized in February in Bangalore to create a platform connecting young scientists of the Helmholtz Institutes with Indian counterparts. The workshop was organized by IGSTC on behalf of Department of Science & Technology (DST), Govt. of India and Helmholtz Association, Germany. The key outcome of the workshop is the White Paper in the topics viz. Georisks/Landslides-Marine Biochemistry, Physics of the Atmosphere, Plant Sciences, Epidemiology/Infectious Diseases/Oncology, Renewable Energy, Material Sciences and Artificial Intelligence.

Four workshops under the Open workshop call of IGSTC in the areas of Advanced Manufacturing, Membrane Technology, Waste Management and Nanotechnology were organized in various parts of India. Around 250 Indian & German scientists, policy officers, young researchers benefitted from the above workshops. Workshops will generate new associations and joint research projects among scientists/technologists between the two countries.

IGSTC look forwards to launch programmes like Industrial Fellowships, R&D Network Centres over the course of the year further strengthening the scientific communities in India & Germany.

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# Governing Body & Finance Committee Meetings



The Governing Body (GB) is responsible for the strategic development of IGSTC. The GB consists of 10 members from government, academia and industry which is led by the two Co-Chairs from DST and BMBF. The GB is supported by the Finance Committee (FC). The FC assesses the financial details and prepares the financial overview to be discussed in the GB. This includes the financial forecast for the coming years.

The meeting of GB and FC took place on 22nd-23rd January 2019 in Aachen (Germany). It was nourished by a presentation from Fraunhofer Center for International Management and Knowledge Economy concerning an evaluation of the 2+2 scheme. The presentation was followed by a lively discussion on possible advancements in the programme.

The 4th Finance Committee (FC) meeting took place on 22nd January 2019. FC comprised of Mr B Anand, Financial Advisor, DST (Indian Co-Chair of FC); Dr Chadaram Sivaji, DST; Dr Gerold Heinrichs, DLR-PT (German Co-Chair of FC) and Mr Maxmillian Jedemann, BMBF. Mr Manoj Kumar, Director Finance, DST (representing Indian Co-Chair); Dr Roshan Paul, Director, IGSTC; Dr Martin Goller, DLR-PT/IGSTC; Mr Sunil Kukreja, IGSTC; Mr Pravin Gupta, Financial consultant; Dr P V Lalitha, IGSTC; Ms Sara Sabzian, DLR-PT/IGSTC and Mr Pankaj Kothari, IGSTC also attended the meeting. Discussion focused on financials, audit report and budget estimates for IGSTC.



10th Governing Body (GB) took place on 23rd January 2019. The GB comprised of Dr Lothar Mennicken, BMBF (German Co-Chair); Mr Sanjeev K Varshney, DST (Indian Co-Chair); Dr Gerold Heinrichs, DLR-PT; Mr B Anand, DST; Prof Sandeep Verma, IIT Kanpur; Prof Eberhard Abele, TU Darmstadt; Mr Stephan Lanzinger, German Embassy, New Delhi; Dr G Padmanabham, ARCI; Mr Anjan Das, CII and Dr Clas Neumann, President, SAP. Mr Maxmillian Jedemann and Dr Chadaram Sivaji were the member secretaries for the GB. Dr Roshan Paul, Dr Martin Goller, Dr P V Lalitha, Mr Sunil Kukreja also attended the meeting. GB focused holistically on IGSTC 2 + 2 flagship programme, thematic areas for future grant calls, new programmes to be taken up, etc. There was a visit to RWTH Aachen University organized for the GB members in the afternoon of the 22nd January.



# 2+2 Projects Calls

IGSTC intends to catalyse innovation centric projects by synergising the strength of research/academic institutes and public/private industries from India and Germany. It is aimed at supporting joint R&D+I projects of industrial relevance by means of "2+2 Mode of Partnership" (R&D+I projects with the participation of at least one Indian and one German research institution as well as one Indian and one German industry partner).

## Salient Features of 2+2 Partnership

**Project proposal is expected to produce insight and exploitable research results leading to new technologies, products and/or services.**

**Funding is provided in the form of grants amounting up to ₹ 230 lakhs per project from Indian side and up to € 450000 from German side, for a period of up to three years.**

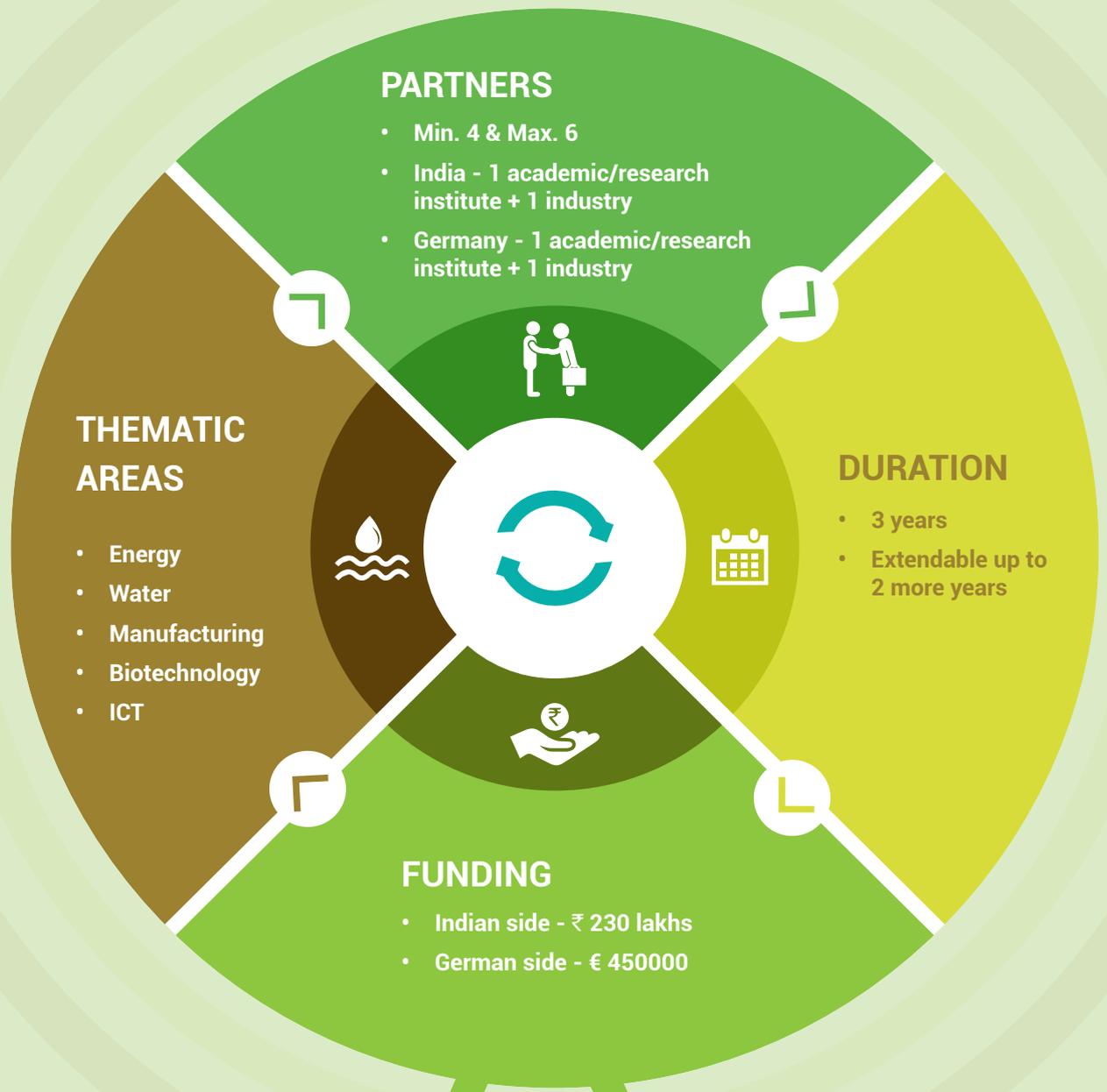
**Industry partners are expected to contribute 50% of their eligible cost.**

**Academic/research partners receive 100% of the eligible cost.**

**The proposal will be evaluated by a Joint Scientific Committee consisting of experts from both India and Germany.**

**Projects are evaluated on the following points:**

- (a) Novel innovativeness**
- (b) IPR sharing/protection**
- (c) Industrial relevance**
- (d) Scientific credential**
- (e) Relevance of partnership.**



## PROJECT INVESTIGATORS



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**Julia Singer**  
Sonnen GmbH, Wildpoldsried

# ECO-WET

## Project Title

**ECO-WET: Efficient coupling of water and energy technologies for smart sustainable cities**

Smart cities are envisioned to efficiently use two most critical resources: water and energy. In reality, water management and energy efficiency are complementary to each other. On one hand, electricity from the renewable sources can be used to run water pumps or other components of the water treatment. On the other hand, during the oversupply of electricity from the renewable sources, e.g. water pumps can be made operational to create a balance of energy demand-supply in the electrical distribution network.

Coupling of cross commodity infrastructure and integration of energy storage is a challenge for smart cities. With respect to ICT this project addresses the challenge to bring intelligence closer to the device, which leads to distributed design. In such a system, highly integrated components from different sectors interact with each other to use available resources more efficiently and increase the overall performance.

The outcome of this project will be a system focusing the energy-water nexus comprising:

- ▶ The integration of advanced energy storage technology and renewable energy sources to enable the coupling and modularization of electricity and water infrastructures.
- ▶ A software platform that allows real-time monitoring, analysis and controlling based on the IEC 61499 industrial standard with the grounding of systems engineering techniques.
- ▶ Optimization techniques for energy-efficient management of both water and electricity in the purview of the infrastructural constraints in the smart sustainable cities.

The consortium meeting for the project ECOWET was held from 23rd to 25th January 2019 at GIFT City, Gujarat, India. The meeting was attended by the project partners, IIT Gandhinagar, GIFT City and MMMUT Gorakhpur from the Indian side, fortiss GmbH and sonnen GmbH from the German side.





ECOWET Consortium at GIFT City, India



Visit to STP, GIFT City, India

The three days meeting was kicked-off with a short discussion on the project status and detailed discussions on use-cases combined with their field visits. The project partners visited the use-cases at the sewage treatment plant (STP), the water treatment plant (WTP) and the street lighting facility at Gyan Marg, GIFT City. During the visit, the strategic location for installing Lithium Iron Phosphate (LiFePO<sub>4</sub>) battery storage systems at the use-case levels were identified and finalized. Sonnen battery storage systems eco 8.0 and pro 2.0 having capacities 10kWh and 15kWh respectively will be installed at the use-case levels. During the meeting, the project timeline was revisited with contributions of each partner and project milestones. The meeting dates for the next consortium meeting was also finalized.



# HIPSTER Workshop

## Helmholtz-Indian Platform on Science, Technology, Education and Research (HIPSTER)

Helmholtz-Indian Platform on Science, Technology, Education and Research (HIPSTER) workshop was organised by IGSTC on 13th – 14th February 2019 in Bengaluru, India. HIPSTER results from an agreement between Dr. Harsh Vardhan, Hon'ble Minister of the Ministry of Science & Technology, Ministry of Environment, Forest and Climate Change, and Ministry of Earth Sciences, Government of India, and Prof. O. Wiestler, President of the German Helmholtz Association, the largest non-university research organization in Germany. The agreement was also subject of the 11th Meeting of the Indo-German Committee on Science & Technology (WTZ) in Berlin in May 2017, where both, the German Ministry for Education and Research (BMBF) and the Indian Department for Science and Technology (DST) acknowledged the agreement, and further entrusted its organisation and funding to IGSTC.



Prof Hüttel, Vice president, Helmholtz Association delivering the keynote

The overall idea of HIPSTER is to foster the bilateral collaboration with a special focus on young talents. It will provide the platform to discuss current developments in R&D in both countries and to work together on ideas on how to promote a cross-disciplinary exchange and on how to open new channels for research and innovation. The goal of the workshop is to develop future-oriented ideas for further interaction and research cooperation between the Helmholtz Association and Indian research institutes and universities. As a final result of the workshop, a “White Paper” will summarize the output of the discussions. It will be handed over to Helmholtz and DST as a potential agenda for future collaboration and/or further arrangements.

The workshop format consisted of a mix of keynote overview presentations and breakout sessions. To guarantee a structured discussion, seven promising subtopics from the Helmholtz portfolio – 1. Georisks/Landslides/Marine Biochemistry, 2. Physics of the Atmosphere, 3. Plant Sciences 4. Epidemiology/Infectious Diseases/Oncology, 5. Renewable Energy, 6. Material Sciences and 7. Artificial Intelligence with mutual interest were identified. Each subtopic was co-chaired by an Indian and German scientist.



Mr Sanjeev Kumar Varshney, Head, IBCD, Department of Science & Technology delivering the keynote



Dr Roshan Paul, Director, IGSTC welcomed the distinguished guests and the participants and briefed on the programme. Inauguration of the workshop was done by Prof Reinhard Hüttl, Vice President, Helmholtz Association and Mr Sanjeev Kumar Varshney, Head, IBCD, Department of Science & Technology, Government of India. Prof Hüttl welcomed the participants and gave an overview of the workshop. He stressed on the need for developing significant ideas to be taken up for future collaborations between India & Germany. Mr Varshney while welcoming the participants, talked about various initiatives and programmes of DST and role of IGSTC in furthering Indo-German collaborations. He emphasized on the need for preparing a White Paper and Vision Document to carry forward collaboration between DST & Helmholtz and also through IGSTC. Director, IGSTC presented an overview of IGSTC activities. He explained the various funding programmes of IGSTC and the role IGSTC playing in growing research partnership between India & Germany. Dr Ludwig Stroink, International Division, Helmholtz Association presented various funding opportunities available through Helmholtz. Dr Martin Goller, DLR-PT summarized the programmes of Federal Ministry of Science & Technology (BMBF), Government of Germany. Dr Heike Mock, German Academic Exchange Service (DAAD) Regional Office, New Delhi briefed on other funding opportunities existing for Indian students and researchers in Germany.



Participants at the Workshop



Overview presentations - given by the respective Co-Chairs - introduced the specific subtopics



Artificial Intelligence team



Epidemiology/Infectious Diseases/Oncology team



Plant Sciences team



Material Sciences team



Renewable Energy team



Physics of the Atmosphere team

The sub-topics were further discussed in-depth around the following lines:

Identification of promising topics, tailor-made for a successful and sustainable bilateral collaboration.

Design of first concepts for joint research projects (e.g. within the framework of 2+2 calls of IGSTC).

Preparation of an overview on existing (large scale) research infrastructures, as a platform for potential joint projects.

Ways to establish partnerships between institutions, taking the collaborative efforts beyond the usual PI-based bilateral interactions.

Industrial research and involvement of companies.

Discussion on potential and innovative funding opportunities.



Group photo of the participants

# Workshops

## Additive Manufacturing of Metals: Current Issues and Way Forward



Inaugural function at CSIR-National Metallurgical Laboratory, Jamshedpur

An Indo-German bilateral workshop on “Additive manufacturing of metals: Current issues and way forward” was held at CSIR-National Metallurgical Laboratory (CSIR-NML), Jamshedpur during 4th-6th February 2019. The workshop was supported by IGSTC under its ‘open call for Indo-German bilateral workshops’ fostering interaction between scientists/researchers from industry and academia. The coordinators of the workshop were Dr Volker Uhlenwinkel, Leibniz-IWT, Bremen and Dr Vikas C. Srivastava, CSIR-NML, Jamshedpur. The Chief Guest, Professor Indranil Manna, AJC Bose Fellow and Institute Chair Professor, IIT Kharagpur inaugurated the workshop. Dr Debashish Bhattacharjee, Vice President, Technology and New Materials Business, Tata Steel was the Guest of Honor and Dr G. Padmanabhan, Director, ARCI Hyderabad, was the Guest Mentor. Dr I. Chattoraj, Director, CSIR-NML welcomed the experts/participants and stressed upon the fact that the workshop has assumed immense importance as additive manufacturing represents a process paradigm in the development of new and intricate products. Director, IGSTC, addressed the participants and highlighted the aims and scope of IGSTC, its activities and opportunities for further cooperation between India and Germany.

This bilateral workshop brought together Indo-German scientific, educational and industrial fraternity, working on different aspects of additive manufacturing, on a common platform and provided an opportunity for the dissemination of knowledge and learning in the still emerging additive manufacturing technologies. The workshop consisted of 25 expert talks as well as a poster session for young researchers; culminating into cross-fertilization of ideas, networking for cooperation and discussion on important current issues on additive manufacturing of metals and alloys. The major points of the discussion and reflections were spread over six technical sessions, namely, additive manufacturing technologies; materials and metallurgical characteristics; feedstock materials for metals and alloys; defects in additively manufactured materials; modeling, simulation and automation; industrial outlook on additive manufacturing: issues and prospects. The contributions of young researchers were recognized and two best posters were awarded.



The internationally renowned scientists deliberated on various topics during a panel discussion e.g. important current challenges in additive manufacturing, metallurgical issues and defects in additive manufacturing, requirement for new alloy design, way forward for sustainable production of cost effective good quality powder production and possibility of further cooperation between various research groups and industrial establishments in Germany and India. The panel unanimously agreed on the fact that unavailability of cost effective good quality powders is an impediment to the extensive proliferation of this technology. The experts also emphasized on the new opportunities in the areas of microstructural modeling, software development, post-processing of additively

manufactured parts, understanding metallurgy of microstructural development and criteria for qualification of products for application. The difficulty of product qualification, in absence of a standard for machines, processes and products, has been identified to be a hurdle, specifically for the industrial establishments catering to aerospace, defence and medical applications. The interaction between the panel and the participants led to identification of burning challenges in additive manufacturing of metals, in particular. The panel discussed the opportunities available for research cooperation and agreed that joint project proposals, joint student supervision and exchange programmes should be explored.

## Opportunities and Cooperation

The presence of over 100 participants from academia, industry, national laboratories and the active involvement of research students led to lively interactions bringing synergistic discussions among stakeholders. The participation of major institutions, actively involved in additive manufacturing, from Germany (Leibniz-Institut für Werkstofforientierte Technologien, Bremen; Helmholtz-Zentrum Geesthacht, Geesthacht; Fraunhofer Institute for Mechanics of Materials IWM, etc.) and India (CSIR-NML, Jamshedpur; IIT Kharagpur; IIT Madras; CSIR-CMERI, Durgapur, etc.) ensured fruitful knowledge networking and active interactions. The event was truly aligned to the activities and mandate of IGSTC and was successful in achieving all its aims. It is expected that the outcome of this platform would further promote bilateral cooperation in the area of additive manufacturing at different levels.



Participants in the workshop

# Membranes for Water and Energy

Indo-German bilateral workshop on Membranes for Water and Energy was organized at CSIR-Central Salt and Marine Chemicals Research Institute, Bhavnagar (CSIR-CSMCRI) during 18th-20th February 2019. The workshop coordinators were Dr Vinod K. Shahi, Senior Principal Scientist, CSIR-CSMCRI and Prof Mathias Ulbricht, Universität Duisburg-Essen.



Inaugural Session

The workshop is organized in the backdrop of high demand for the membranes with better selectivities, less electrical resistance, high chemical, mechanical and thermal stability as well as good durability. For social and economic growth across the world, need of clean potable water and green energy source (without carbon footprint) have always been crucial, and require sustainable technologies to fulfil the social and industrial demand. Rapid growth of water and energy sectors and fuels the demand for the need of reliable green membrane technologies, which play significant roles in sustainable water desalination/purification and energy generation. These include water desalination/purification by reverse osmosis, nano-filtration, ultra-filtration, electrodialysis, and energy conversion devices such fuel cells, redox-flow batteries, storage batteries and reverse electrodialysis for concentration gradient energy, etc.

This three-day workshop provided an opportunity for membrane technocrats/researchers to discuss stable membrane and sustainable membrane technologies, their potential applications and current status; and development challenges for membrane materials in this field. Further, active synergy and collaboration between Indian and German membrane researchers provided greater clarity in membrane criteria targets, industrial end-users with emerging membrane technologies and reinforce the engagement between researchers and application aspects.





Technical Session



**The Indian Express, Ahmedabad Ed., page No. 07**  
**Date: 19/02/2019**

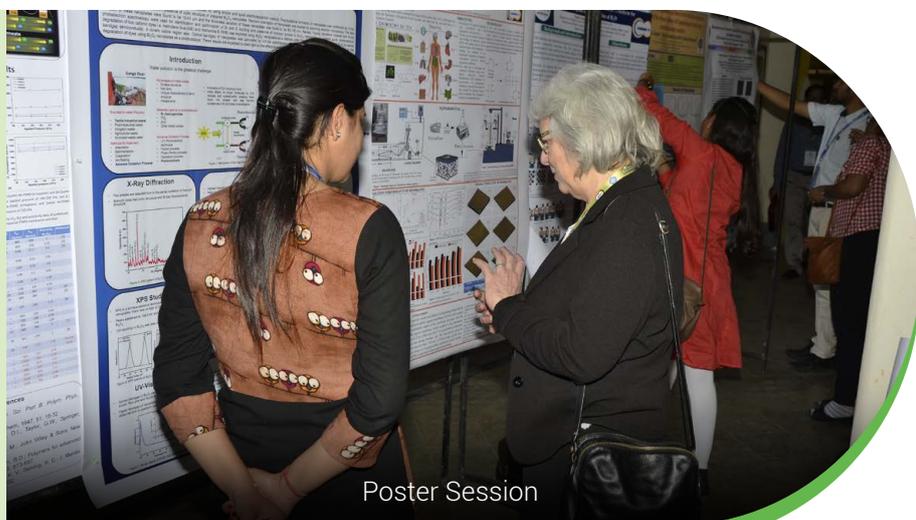
**3-day science workshop begins**

**Rajkot:** The three-day Indo-German Joint Scientific workshop on "Membranes for Water and Energy" began at the Central Salt and Marine Chemicals Research Institute (CSMCRI) in Bhavnagar on Monday. Addressing the inaugural session, Sanjeev Katti, director general of ONGC Energy Centre elaborated on the need for membrane-based green technology for water purification. **ENS**

The workshop had technical sessions on following topics : water desalination/purification; pressure-driven membrane based technologies (RO, NF, UF, and hollow fiber); electro-membrane processes for water desalination and production of nutrient water; anti-fouling membrane, membrane transport phenomenon and tailoring of high performance membrane; membranes based bio-reactors and bio-remediation; membranes for energy: fuel cell, redox flow batteries and reverse electrodialysis and membranes electrolysis and water splitting. The technical sessions brainstormed on various aspects of current research, prospects and to build-up future collaborations of bilateral nature.

**There was media coverage of the workshop in local newspapers.**

Scientists from leading Indian and German universities such as ICT Mumbai, IIT Kharagpur, IIT Bombay, CSIR labs, central universities, TU Munich, Karlsruhe institute of Technology, RWTH Aachen, Helmholtz Centres, etc. participated in the event. Director, IGSTC attended for a day and gave a talk on the programmes and activities of IGSTC.



Poster Session

# Waste to Wealth

The Indo-German workshop on waste to wealth was jointly organised by CSIR-Advanced Materials and Processes Research Institute (CSIR-AMPRI), India and Martin-Luther-Universität Halle-Wittenberg, Germany. The workshop was held in CSIR-AMPRI premises during 25th-26th February 2019. Dr A.K. Srivastava, Director, CSIR-AMPRI welcomed the audience and stressed on the need to dispose of waste in an environmentally friendly way. Commodore K Srinivas, Commanding Officer, INS, Shivaji, Indian Navy, Lonavala was the chief guest of the function. He appreciated the theme of the workshop which is important both for India & rest of the world. Director, IGSTC also addressed the participants and briefed on the activities of IGSTC.



Inaugural session of the workshop

During the workshop, 29 lectures on various waste recycling and utilization techniques such as fly ash, red mud, steel slag, blast furnace slag, plastic, agro waste, bio-waste, e-waste, municipal waste, other mineralogical waste, nuclear waste, glass industrial waste, solar assisted waste water treatment, etc., were held. Industries such as NTPC Ltd (India), H&R Johnson (India) Division, Ecoreco (India) and BauMineral GmbH (Germany) have presented the challenges existing in the utilisation of various waste. 140 participants were benefitted out of this workshop. Here are the some of the important points addressed during the technical session:

- ▶ The use of pozzolans in construction industries has to be increased because it emits less CO<sub>2</sub> and economically viable.
- ▶ The artificial pozzolans like fly ash, slags, pond ash, rice husk ash, etc., can be a better replacement for the currently used cements.
- ▶ Fly ash can be used to fabricate bricks, hume pipes, tetrapod, paver blocks, roads, etc., through alkali activated binders through proper optimization of its pH and composition.



Technical Session

Apart from the technical session, 1 hr poster session was organized for the participants to present their work. 46 participants presented their work.



Group photo of the participants

## Outcomes

Several projects on various pressing issues were discussed and being planned out of interactions and deliberations held at the workshop.

To get rid of the accumulated solid waste, people in the Himalayan region have adopted informal means of disposal by open burning and dumping in the gorges and rivers polluting the freshwater streams. A project for the development of an integrated solid waste management model for an alternative to open burning in the Indian Himalayan Region (IHR) is being planned and proposed for further collaborations.

Burning of agro-waste is one of the main issues which cause severe pollution every year in India, especially in New Delhi and surrounding regions. During the technical discussion session, this issue has been further discussed and participants have decided to submit a common proposal on the extraction of biofuels from the municipal and agro-waste along with German collaborators to various funding agencies.

During the fly ash session, participants addressed large scale utilization of fly ash for the fabrication of paver blocks, tetrapod, roads, etc., through alkali activated binders. After seeing their works, Prof. Herbert Pöllmann has requested to contribute two book chapters regarding the status of Indian fly ash in his current book on "Industrial Waste."

Some part of the workshop was also covered by the local newspapers.

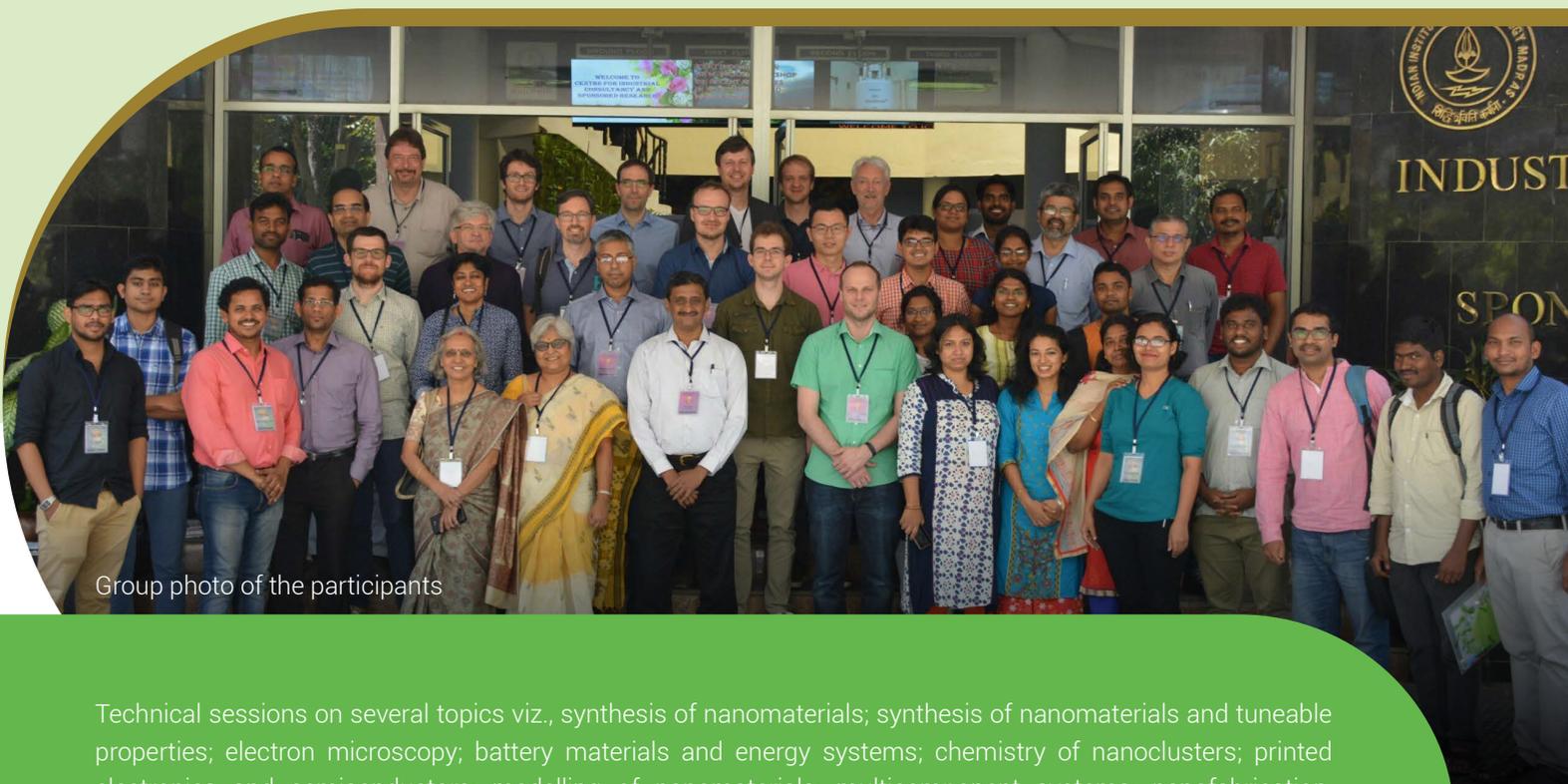


## Recent Advances in Nanoscience and Nanotechnology

Joint Indo-German workshop on recent advances in Nanoscience and Nanotechnology was held at IIT Madras under the aegis of Open Workshop Call of IGSTC during 25th – 27th March 2019. The workshop coordinators were Prof S.S. Bhattacharya, Department of Metallurgical & Materials Engineering, IIT Madras and Prof Horst Hahn, Institute of Nanotechnology, Karlsruhe Institute of Technology. After the inaugural session, Director, IGSTC addressed the gathering and elaborated on the programmes.

Several independent research efforts in nanoscience and nanotechnology are taking place in India and Germany

with some academic exchanges and engagements between the two but a coordinated and focused effort is needed to look for strong collaborative research in order to synergize the available expertise and capabilities. With this basic premise, this high-level workshop was organized which brought leading experts under one umbrella to present their research results and showcase some of the recent advances. Emphasis was given to the science and technology of (a) purification and removal of toxic substances to mitigate pollution, (b) energy materials for greener battery applications, (c) multicomponent systems as novel materials, (d) printed electronics, and (e) nanoelectronics and nanophotonics. In addition, a discussion session was scheduled to see how to take already existing collaborative research activities forward and to seek out opportunities for future research collaborations between India and Germany in general and IIT Madras and KIT in particular. Discussions also focused on how to identify research groups and exchange programmes to work on the topics identified.



Group photo of the participants

Technical sessions on several topics viz., synthesis of nanomaterials; synthesis of nanomaterials and tuneable properties; electron microscopy; battery materials and energy systems; chemistry of nanoclusters; printed electronics and semiconductors; modelling of nanomaterials; multicomponent systems; nanofabrication, sensors and nanophotonic were conducted during the workshop. Poster session was also organized on above research topics. Participants ranged from pan Indian & German institutions such as IIT Madras, IIT Bombay, IIT Kharagpur, IIT Guwahati, ARCI, IISc Bangalore, JNCASR Bangalore, NIIST-CSIR, IISER TVM, Karlsruhe Institute of Technology, Darmstadt University of Technology, University of Ulm, University of Saarland, etc.

# Conferences, Talks & Meetings

## Informative Session at Humboldt Kolleg, Nagpur



Inauguration of the Humboldt Kolleg

Humboldt Kolleg on Comparative Endocrinology and Physiology was held during 7-9 January 2019 in Nagpur, Maharashtra, India. Department of Zoology, RTM Nagpur University organised Humboldt Kolleg on Comparative Endocrinology and Physiology under the auspices of Indian Society for Comparative Endocrinology (ISCE) & International Association of Stress Physiology (IASP) in association with Alexander von Humboldt (AvH) foundation. Humboldt Kolleg provided a strong platform for professionals from both academic and industrial sections to make exchanges around the world. The scientific programme of Humboldt Kolleg on Comparative Endocrinology and Physiology consisted of state of the art lectures, plenary and invited talks, oral communications, poster presentations and panel discussions, exhibition booths which covered all the main endocrinological and physiological aspects and gave the opportunity to update the knowledge in the area of endocrinology and physiology of animal sciences.

Director, IGSTC was invited to participate in an informative session for the scientists and talked on various aspects and activities of IGSTC. He also briefed the audience on the areas of collaboration with AvH, particularly the joint IGSTC-CONNECT Plus programme.



Informative session for scientists

## Talks at ICAR Institutes for Cotton Research, Nagpur

Director, IGSTC gave a talk at Central Institute for Cotton Research (CICR) on 8th January 2019. He explained about the programmes of IGSTC like 2+2 projects, etc. and industrially relevant projects. Scientists from the Biotechnology department participated in the talk.

Director also visited the Ginning Training Centre (GTC), Nagpur of ICAR-Central Institute for Research on Cotton Technology (CIRCOT) on the same day and interacted with the technical team.

## METNETWORK Project Visit

Director, IGSTC visited the 2+2 project site of "Nanostructured hybrid transparent network electrodes for large area visibly transparent solar cells (METNETWORK)" at Tata Steel, Jamshedpur on 6th February 2019. The project is partnered by Centre for Nano and Soft Matter Sciences (CeNS), Bangalore; Tata Steel, Jamshedpur from Indian side & University of Bayreuth, Bayreuth; Papierfabrik Louisenenthal, Gmund am Tegernsee from German side. The goal of the project is to develop large area TCE metal network using high-efficiency Nanomaterials. Director had a discussion on the goals, objectives and progress of the project. He also visited different labs in the facilities of Tata Steel plant.



## Talk at RRCAT, Indore

Director, IGSTC was invited to present the programmes and research schemes of IGSTC at Raja Ramanna Centre for Advanced Technology (RRCAT), Indore on 27th February 2019. It is India's foremost research centre for laser physics, particle accelerators and associated technologies. Several scientists of the Centre along with various department heads and the dean attended the talk.



## 3<sup>rd</sup> Industry Innovator Meet at CSIR-NIIST

CSIR – National Institute for Interdisciplinary Science and Technology (NIIST), Thiruvananthapuram organized 3rd Industry Innovator Meet on 12th April at its premises. Director, IGSTC was invited to deliver the special address on the industry-oriented R & D projects. He further talked on the IGSTC activities briefing on how industry can collaborate with academics under IGSTC programmes.

## Visit of Deputy Consul General, Bangalore

Deputy Consul General, Mr Karl Ehlerding of Bangalore Consulate, along with Dr Manjula Mundakana, Scientific Officer held a meeting with Director, IGSTC on 20th March 2019 at IGSTC Secretariat, Gurgaon. Director apprised him on the activities of IGSTC and different projects of IGSTC in the fields of Advanced manufacturing, Biotechnology/Bioeconomy, Biomedical technology, Water & wastewater technology, etc. Discussions on various avenues of co-operation and possibilities between India & Germany in the science & technology were also held.

## Visit of German Embassy Economic & Global Affairs Head

Dr Renate Schimkoreit, HoD, Economic & Global Affairs, Embassy of Germany visited IGSTC Secretariat on 28th March 2018. Mr Stephan Lanzinger, Science Counsellor was also present. Director gave a brief of IGSTC through the lens of its industrially oriented 2+2 projects, workshops, etc. Dr Schimkoreit also discussed on further strengthening Indo-German collaboration through IGSTC.



## Meeting with IT and Startup Communities

Director, IGSTC held discussions with Technopark CEO, Mr Hrishikesh Nair on 12th April 2019 on various aspects of IGSTC programmes and how Technopark companies can participate in collaborative research through IGSTC. Technopark is India's one of the largest IT parks incubating various IT businesses and companies. He also visited one of the startups incubated in Technopark viz. Nanoguru, a nanotechnology-based startup working on Imaging techniques.

Director also held discussions with Kerala Startup Mission CEO, Dr. Saji Gopinath on the startup landscape in India. He also discussed on IGSTC programmes and bilateral research. Kerala Startup Mission is the nodal agency of Government of Kerala for entrepreneurship development and incubation activities in Kerala.

## Invited Lecture at Kerala University

Director, IGSTC had an invited lecture on the Indo-German Research partnership at Kerala University on 17th April 2019. He presented the details of IGSTC programmes like 2+2 Projects, workshops, etc. Director also held discussions with Kerala University Vice Chancellor, Dr Mahadevan Pillai on bilateral collaborations and research.

## Travancore Titanium Visit

Director, IGSTC visited facilities of Travancore Titanium Products Pvt. Ltd. and held discussions with the Managing Director, Mr Georgee Ninan on IGSTC schemes. Travancore Titanium is the largest manufacture of titanium dioxide (TiO<sub>2</sub>) in India.

## Multi-WAP Project and Other Visits

Director, IGSTC visited the project site of "Multi-WAP. Multiplexed, label-free fiber optic biosensor array system for waterborne pathogen detection (Multi-WAP)" at ubio Biotechnolgy Pvt. Ltd., Kochi on 17th April 2019. The project is partnered by IIT Madras; ubio biotechnology from Indian side and TU Braunschweig; Lionex GmbH from German side. The main aim of the project is to develop cost-effective, multiplexed label-free fiber optic array biosensor system for simultaneous detection of up to 7 or more waterborne pathogens that are prevalent in Indian sub-continent. Discussions focused on progress and outcomes of the project.

Director also visited the factory of Modern Food Enterprises Pvt. Ltd. and held discussions with Mr Ravindran Nair (Executive Director) and Mr Joy AK (QA Manager). Further, he also had a visit to an aviation startup, Glorod Avionics Pvt. Ltd. and held discussions with Mr Sheen Thomas (Managing Director).



# Indo-German Science & Technology Centre

## IGSTC Secretariat

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