IGSTC
INDO-GERMAN SCIENCE AND TECHNOLOGY CENTRE

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From IGSTC Desk...

IGSTC continues to accelerate the Indo-German Research network through its programmes and schemes with a zeal and play a pivotal role in facilitating the area of collaborative research supporting various Indian & German institutes and industry.

This period witnessed changes in the Governing Body of IGSTC. Ms Kathrin Meyer has taken over as the new German Co-Chair of IGSTC. IGSTC welcomes the new Co-Chair of Governing Body. IGSTC also expresses its gratitude to the departing Co-Chair Dr Lothar Mennicken for his pivotal guidance to IGSTC for the past several years.

A marquee workshop on "Research and innovation towards leapfrogging in frontier technologies (RILEAP)" was funded by IGSTC. It was coordinated by CSIR, India and Fraunhofer, Germany and convened at various places in India. It will result in several long-standing, concrete and mutually beneficial collaborations in the areas of Sustainable Buildings, Water, Advanced Production Technologies and Battery Technologies.

IGSTC is also exploring various other strategies to start and initiate new programmes with German organizations like Helmholtz Association.

Editorial Team

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INSIDE

New German Co-Chair

Ms. Kathrin Meyer
Head of Division
Cooperation with Asia and Oceania
Federal Ministry of Education and Research

Ms Meyer was born in Berlin. She completed her Diploma in "Science theory and Science organisation" in 1990 from the Humboldt-University in Berlin. Subsequently she joined the Fraunhofer Institute for Innovation and System Research (ISI) in Karlsruhe. A year later she took up a position in the German Federal Ministry of Education and Research (BMBF). Within BMBF she has held several positions with a focus on innovation policy, including a deputation to the Ministry of Economic Affairs and Energy (BMWi). In July 2019 Ms Meyer was assigned the position as Head of Division "Cooperation with Asia and Oceania" in BMBF. Within that responsibility she is also Co-Chair of IGSTC ´s Governing Board.

WATERCHIP

DNA Biochip for on-site water pathogen detection including viability and antibiotic resistance testing

PROJECT INVESTIGATORS

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Ahmedabad

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Ahmedabad University
Ahmedabad

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Analytik-Consulting (Food)
Jena

Wolfgang Fritzsche
Leibniz Institute of
Photonic Technology
Jena

The joint annual project meeting was held at Leibniz Institute of Photonic Technology (IPHT), Nanobiophotonics Department, Beutenburg Campus, Jena, Germany, on 27-28 May 2019. Prof Rishi Shanker and Dr Somesh Mehra from India and Prof Fritzsche Wolfgang, Dr Andrea Csáki from IPHT and Dr Bernd Giese from Food GmbH Jena, Germany participated in the annual project meeting. The Indian partners also attended the International Symposium Molecular Plasmonics 2019 at Leibniz-IPHT, Jena during 23-25 May 2019.

This project aims at the development of robust, rapid and low-cost genetic analysis platform and test of a multiplexed chip on it for on-site water pathogen detection. During the meeting, discussion focused on the progress made in the project with respect to deliverables and work packages. A presentation was made by Dr Somesh Mehra, on the progress of the project by Indian partners. A demonstration was also made during the meeting by the Indian team, of the developed prototype WaterChip platform along with android app controlling the platform and the multiplexed chip. The sensitivity and specificity of genetic markers associated with selected waterborne pathogens, indicators, and antibiotic resistant bacteria was also discussed. The partners felt that more time and resources are needed to bring the validated platform to market.

Participants of the Annual Waterchip meeting – May 2019

Prof Rishi Shanker (AU) and Dr Somesh Mehra (ABC) demonstrated the Waterchip™ platform during the meeting.

LABELONIK

Roll-to-roll printed electronic labels for temperature, humidity and tampering detections

PROJECT INVESTIGATORS

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Indian Institute of Science Education and Research Kolkata

Rohitt D Mistry
Holographic Security Marking Systems

Frank Ellinger
Technische Universität Dresden

Moazzam Ali
Saralon GmbH

The project aims to establish a test production line for printed electronic labels by roll-to-roll gravure printing. The label comprises a first coil (to receive 13.56 MHz from a smartphone), a rectifier (to convert AC into DC), a ring oscillator (to generate 1-1000 Hz, ~10 mA), a resistive sensor (to control the output frequency of the ring oscillator) and a second coil (to generate magnetic field to be detected by the Hall sensor of the smartphone). The resistive sensor can detect a change in temperature or humidity or a damage in the label. The proposed label has huge market potential in the field of anti-counterfeiting, food packaging and biomedicine cold storage logistics. A proof-of-concept label has been successfully tested by the consortium partners using standard electronic components (TRL-4). The consortium brings experts of circuit design, functional inks, organic transistors and roll-to-roll gravure printing at one platform to guarantee the success of the project.

LABELONIK project kick-off meeting was held at TU Dresden on 4th June 2019. The meeting was attended by the project partners Dr Debansu Chaudhuri, Dr Ratheesh K. Vijayaraghavan (IISERK); Rohit D. Mistry (Holographic); Dr Moazzam Ali, Rakesh Nair, Jan Joachim (Saralon GmbH) and Dr Tilo Meister, Dr Bahman K. Boroujeni (TU Dresden).

Discussions focused on the tasks and deliverables of each partner. Project goal, outlines for the subsequent months were discussed such as first ink supply by Saralon to HSMS for gravure printing, first printing of antenna by Saralon and testing by TUD, etc. Partners also visited Prof Ellinger's labs and Saralon facility at Chemnitz.

IDC-WATER

Integrated diagnostics of contaminants in water supply and management system

PROJECT INVESTIGATORS

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J Manjula
Bigtec Labs Pvt. Ltd.
Bangalore

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BAM
Berlin

Michael Voetz
Sifin diagnostics GmbH
Berlin

In India, water-related diseases account for around 80 % of premature deaths. The most common and widespread health risk associated with drinking water is from microbial contamination. The organisms, which cause water contamination, are many, out of which E. coli, Salmonella, Shigella and Rotavirus are being targeted in this project for their detection. We propose to develop a system for monitoring water quality in terms of specific bacterial cell/DNA and pharmaceutical residues. Target specification for detection of pathogen would be less than 100 cells in one CFU/mL and for nano-molar concentration of target DNA detection is within an hour. Target standards for detection of pharmaceuticals will be 100 ng/L in 10 min.

An integrated hardware platform with different microfluidic assays for pathogen cell/DNA and pharmaceuticals will be developed in this project. The hardware will be used as an IoT device for remote monitoring of water quality. Also, a portable micro-PCR device will be developed which will use samples from the online system and perform a more detailed analysis of the samples in terms of specific pathogen DNA. A prototype of water quality monitoring hardware incorporating water sampling, storage, pathogen culture and detection modules has been developed by IISc. The waterborne pathogens are detected using electrochemical impedance spectroscopy and optical sensing techniques (Fig.1a, b). The experimental data is currently being analyzed to enhance the detection sensitivity and specificity.

Bigtec's portable and point-of-care micro-PCR platform allows for a sample-to-result in 60 minutes. Primers/probes have been designed for the stx1 and stx2 of E. coli O_{157}:H_7 and Salmonella tested using the PCR system. The products obtained were run on an agarose gel electrophoresis to visualize the amplicon band (Fig.1 a-d). High specificity was observed

among E. coli O_{157}:H_7 and Salmonella versus human DNA, respectively. Further, the primers and probes have been designed by Bigtec for the detection of Shigella. PCR has been performed for these designed sets of primers to confirm their specificity with regard to the identification of the respective bacteria. The results of agarose gel test as well as the melting curve analysis of the PCR amplicons (Fig.2a-d) have confirmed that the designed primers are specific for the respective bacteria.

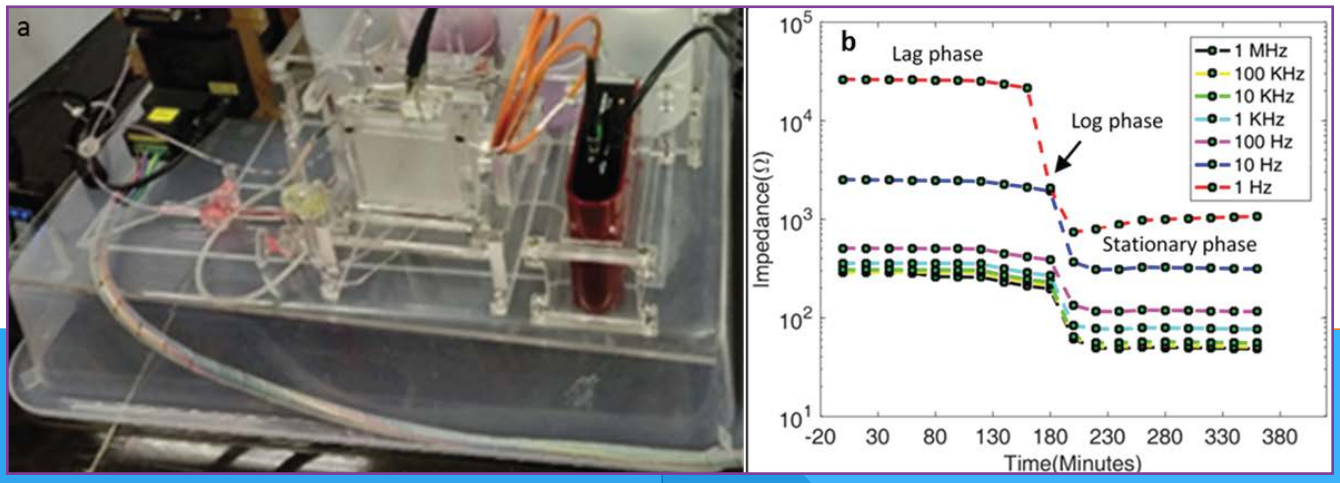

Fig.1: (a) Laboratory experimental test set-up for testing of pathogen culture and detection cartridge to be used in online water quality monitoring system and (b) electrochemical impedance change showing the growth of pathogenic E. coli strain

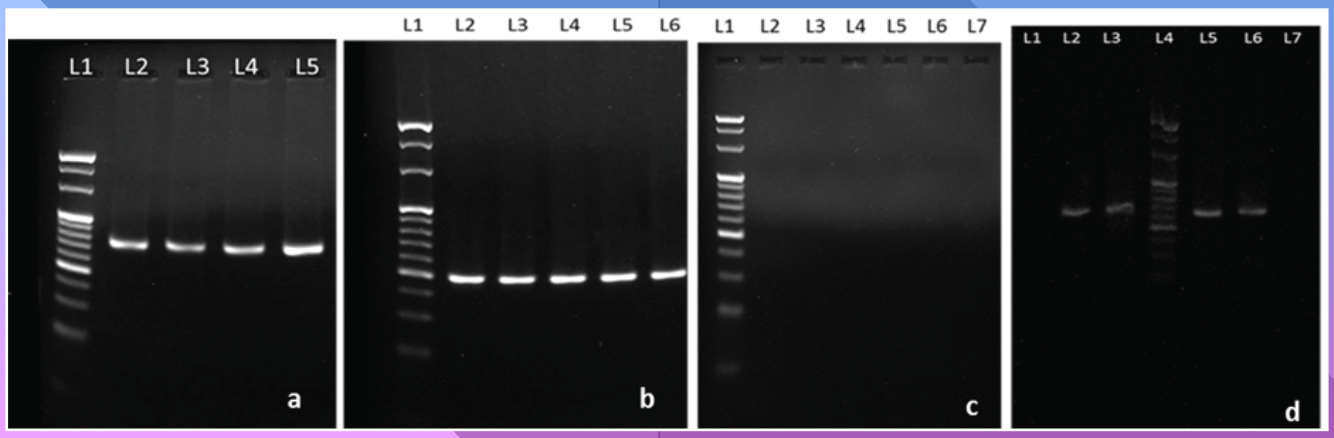

Fig.2: Gel profile of PCR product (a) stx1, (b) stx2, (c) no template control (NTC) for stx1 and stx2 gene of E. coli O_{157}:H_7 and (d) Salmonella.

The German partners are developing immunochemical detection methods for the pharmaceuticals, especially for diclofenac (a common painkiller) and amoxicillin (a beta lactam antibiotic). Protein G beads and magnetic beads are used to immobilise the antibodies, once in the sample enrichment immunoaffinity column and on the electrode in a microfluidic channel, respectively. For amoxicillin, monoclonal anti-amoxicillin antibodies are being investigated for reactivity in the ELISA format with amoxicillin-BSA and amoxicillin-HSA antigens to evaluate their binding strength and selectivity. The same has been done for diclofenac and other pharmaceuticals in order to select the immunoreagents required for the detection module.

SMART & WISE

Smart and reliable water and wastewater infrastructure systems for our future cities in India and Germany

PROJECT INVESTIGATORS

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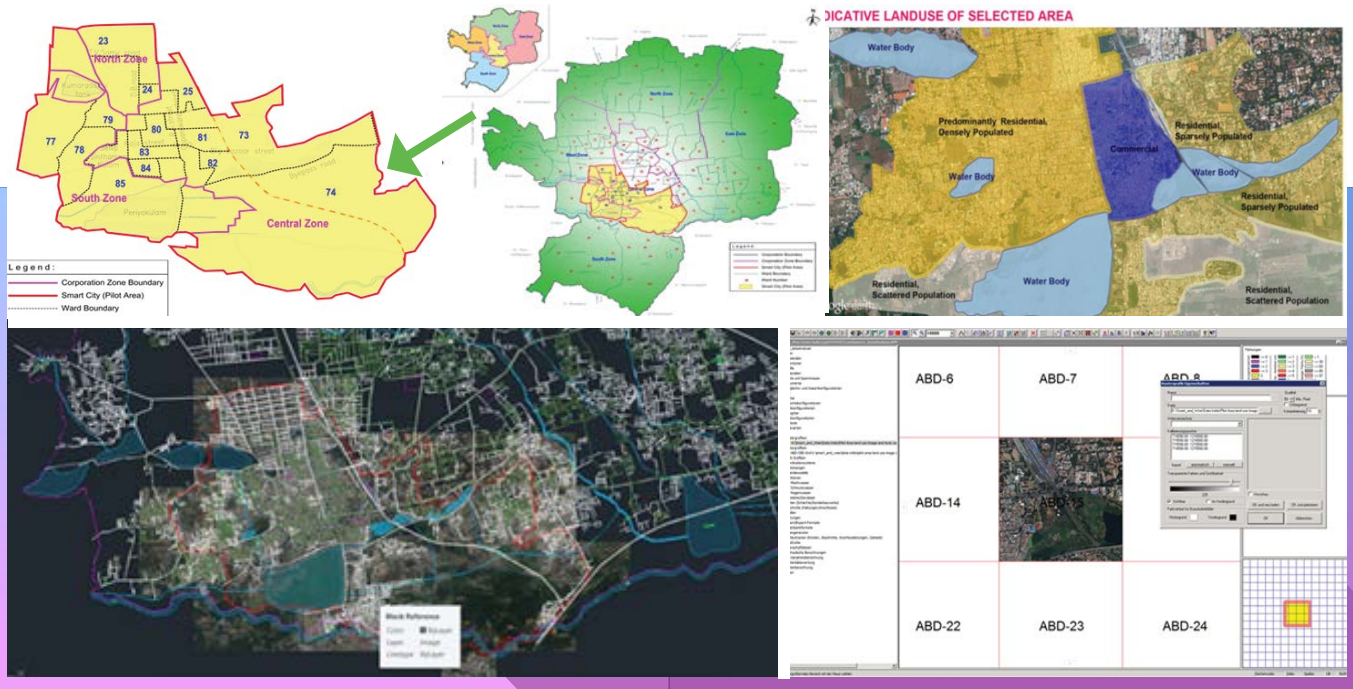
Overall project goal is to support the implementation of reliable and sustainable water and wastewater infrastructure systems with added value in terms of smart cities. The main targets of the project are to develop planning methods and tools to face current and future challenges on the three linked levels of conventional, advanced and smart water and wastewater infrastructures. The methods and tools will be sampled in pilot areas in India (e.g. Coimbatore) and Germany.

As a continuous process to achieve the project targets, periodic project meetings between the 5 consortium project partners through webinar meetings were held between May to August 2019. There were about 10 webinar meetings were held during the period between May to August 2019. During the project webinar meetings, the evaluation criteria tool with variants that are to be considered in the planning tool, developing flow charts for various water and wastewater infrastructures, Status on Indian Pilot area Data collections and German pilot area were discussed. A sample data of pilot areas was inputted in to the ++systems, the programming Design tool of tandler.com which is to be used under this project. The exercise is carried out to understand the gaps in the pilot area data that are required for planning tool. Details of Indian and German pilot case project area and their data availability status which is to be used for the planning tool were exchanged between all the project partners.

In all webinar meetings, water and wastewater infrastructure planning processes, evaluation criteria and appropriate sustainable country specific planning approaches were discussed and opinions of the project partners were recorded in the form of Minutes of meeting systematically. The work on Indian and German pilot studies is attempted in this project with the objective of transferring of the expected scientific results from the pilot case to future projects that can be practised in field on real time basis.

The periodic webinar meeting discussions amongst the five consortium partners has helped to focus on the project objective and prioritize the specific tasks which are to be carried out to achieve the project mile stones. In addition to that it also helped in understanding of the country specific challenges in planning the water and wastewater infrastructures and data availability & ways to address the gaps in data that are to use in ++ systems in the planning models to develop a planning tool. The webinar meetings were definitively a step forward in achieving the project goals.

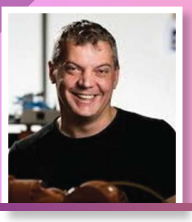


Coimbatore Pilot Area Map

TRANSLEARN

Robot skill transfer from simulation to real world deployment in manufacturing industries and warehouses

PROJECT INVESTIGATORS



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Industry 4.0 will be driven by two basic technologies: AI and Robotics – and especially the combination of both – allowing robots to learn skills and tasks without explicitly programming them. Learning and optimizing complex and interactive robot manipulative skills through reinforcement learning algorithms is a multifaceted challenge and an unsolved problem. With the goals of (i) significantly reducing robot programming costs and (ii) reducing robot cycle times, project plans to developing reinforcement learning algorithms running in massively parallelized, cloud-based physics engines. This system learns and optimizes task-specific robot and machine skills that can be transferred to and deployed on physical robots. Project plans to develop concrete demonstrations of novel solutions for real use cases stemming from the manufacturing industry and warehouse automation. The solutions will rely on robot learning in a cloud-based simulation environment as well as optimization during real-world execution.

The following papers have been presented at "Workshop on Closing the Reality Gap in Sim2real Transfer for Robotic Manipulation" at R:SS 2019 (Freiburg, Germany) on June 22-23, 2019. R:SS is an open, high-quality, single-track conference. It spans a wide spectrum of robotics, bringing together researchers working on the algorithmic or mathematical foundations of robotics, robotics applications, and analysis of robotics systems.

- PaintRL: Coverage Path Planning for Industrial Spray Painting with Reinforcement Learning Kiemel, Jonas C.; Yang, Peiren; Meißner, Pascal; Kröger, Torsten, Workshop on Closing the Reality Gap in Sim2real Transfer for Robotic Manipulation, R:SS 2019
- Reinforcement Learning with Cartesian Commands and Sim to Real Transfer for Peg in Hole Tasks Manuel Kaspar, Jurgen Bock, Workshop on Closing the Reality Gap in Sim2real Transfer for Robotic Manipulation, R:SS 2019

The following two papers have been accepted for publication at IEEE International Conference on Robot & Human Interactive Communication (IEEE RO-MAN) 2019 conference. The IEEE RO-MAN will be held in Delhi from October 14-18, 2019. Project Translearn will hold a workshop at the conference.

- Model & Feature Agnostic Eye-in-Hand Visual Servoing using Deep Reinforcement Learning with Prioritized Experience" by Prerna Singh, Virendra Singh, Samrat Dutta, and Swagat Kumar. IEEE Ro-MAN 2019, New Delhi, October 14-18, 2019.
- SMAK-net: Self Supervised Multi-level Spatial Attention Network for Knowledge Representation towards Imitation Learning" by Kartik Ramachandruni, Madhu Babu Vankadari, Anima Majumder, Samrat Dutta, and Swagat Kumar. IEEE Ro-MAN 2019, New Delhi, India, October 14-18, 2019.

ECO-WET

Efficient coupling of water and energy technologies for smart sustainable cities

PROJECT INVESTIGATORS

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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.

Project consortium meeting at Wildpoldsried

The 3rd consortium meeting for the project ECOWET was held during July 10-12, 2019 at Wildpoldsried in Bavaria, Germany. The meeting was hosted by Sonnen GmbH at its headquarters. All the principle investigators and key stakeholders of the project had attended the meeting.

Research article – Conference proceeding Sachinkumar Suthar and Naran Pindoriya, "Cost-effective Energy Management of Grid-connected PV and BESS: A Case Study," 2019 PES IEEE Innovative Smart Grid Technologies Asia (ISGT Asia), Chengdu, China, 21-24 May 2019.

This three-day meeting was kicked-off with a short discussion on the project status and detailed discussions on use-case implementation. The project partners had presented demos related to some of the use cases of the project. Fortiss had presented a demo of its Energy Management Software called "iEMS" and Sonnen has presented battery switching use case. IIT Gandhinagar team from India had presented its forecasting algorithms and key criteria for developing optimization algorithms. During the meeting, the project timeline was revisited with contributions of each partner and project milestones. The emphasis of this meeting was on implementation plan of shortlisted use-cases and hardware deployment at the test bed. The meeting dates for the next consortium meeting were also finalized. The project partners also attended a Guided tour at Energiedorf Wildpoldsried on the final day of the meeting. Wildpoldsried is particularly famous nationally and internationally for being an energy village that uses renewable energy to generate about five times as much electricity as it consumes itself.

Dr Roshan Paul, Director, IGSTC visited IIT Gandhinagar and reviewed the project progress and also the ECOWET project test bed at GIFT City on August 13, 2019. It was a very productive meeting with the brief discussion on use-case implementation and overall project status.

NEARNETMAC

Design and development of near-net-shape manufacturing process for light weight high strength aluminium composite and engineering components by squeeze infiltration technique for automotive and aerospace applications

PROJECT INVESTIGATORS

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Dr H. Sundaramurthy
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Prof Thomas Gries
RWTH Aachen University
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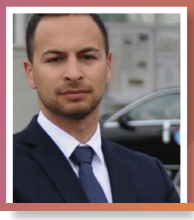


Dr. Farbod Nezami
CIKONI GmbH
Stuttgart

As a part of the Indo-German initiative for promoting bilateral technology development and transfer, an international project to manufacture high performance components using metal matrix composites has been launched. This project brings together two premier institutes and two premier industry partners from Germany and India together towards addressing the growing need for development of lightweight, high-strength and cost effective components for the global aerospace and automotive markets. The participating members are: Institut für Textiltechnik at the RWTH Aachen University (Germany), CSIR-National Institute for Interdisciplinary Science and Technology (NIIST India), CIKONI GmbH (Germany) and Fenfe Metallurgicals (India).

This Indo-German Science and Technology Centre (IGSTC)-funded collaborative project focuses on the development and commercialisation of Near Net Manufacturing of Aluminium Composites .

'Near net shape' is an industrial manufacturing approach that consists of manufacturing the product with little or no deviation from its final form. This implies that the initial production of an item is very close to the final (net) shape thus reducing the need for surface finishing and eliminating expensive scrap material that would otherwise result from conventional manufacturing techniques.

The projects have the following goals

To develop light weight near-net shape carbon fibre-reinforced aluminium composites and components for automotive and aerospace applications

To create new processes of material development for making connecting rods and thermal management heat sinks for the small aircraft and automotive sector.

To develop components with superior mechanical and physical properties

A mini symposium on advanced composite materials held following the programme launch saw Philipp Huber, Goezdem Dittel and Yanick Schlesinger, research scientists from RWTH Aachen University, deliver technical lectures. Dr S Savithri, Chief Scientist and Head, Materials Science and Technology Division and Dr Amool Raina presented keynote speeches to commemorate the occasion.

This project was official kicked off on 1 April 2019 and the first meeting was held in India on 18 July 2019. The meeting discussed the deliverables, goals and project planning.

Information retrieval informetric & scientometrics (IRIS)

Indo-German Joint workshop on Information retrieval, informetric & scientometrics (IRIS) (IRIS) was organized on 11th -13th June 2019 at GESIS – Leibniz Institute for the Social Sciences, Cologne, Germany. The workshop was coordinated by Dr Vivek Kumar Singh, Banaras Hindu University and Dr Philipp Mayr, GESIS-Leibniz Institute for Social Science.

In the modern connected world full of digital information and scholarly content, identifying the most relevant resources has become a challenge. A researcher in any discipline of knowledge now has to depend on online portals, digital libraries and electronic repositories for reporting as well as finding scientific articles in an area. Till now this has been provided by various search engines by treating the task of scholarly article search as a web search problem. This has completely ignored the bibliometric information and associated metadata of scholarly articles. The idea of this workshop is to bring together concepts from Information Retrieval and Scientometrics to identify scholarly articles relevant to a given information need (or a context) and rank them based on their relevance to the information need as well as their scholarly quality. The workshop brought together researchers working on this task from different perspectives (namely Computer Science, Informatics and Bibliometrics). The workshop had invited presentations, posters and intensive panel discussions on the area and had set a direction of future research including strengthening the bilateral cooperation between India and Germany in this area.

Technical Session

The workshop started by an inspiring keynote by Dr Gangan Prathap, APJ Abdul Kalam Technological University on "The Pinski-Narin Influence Weight and the Ramanujacharyulu Power-Weakness Ratio indicators revisited" and by Dr Norbert Fuhr, Universität Duisburg-Essen on "Modeling Interactive Information Retrieval and Social Media Interaction as Stochastic Processes".

The workshop involved interaction and detailed discussions between research groups from both the countries. The academic program was so designed that it allowed for exploring possibilities of research collaborations between researchers from the two countries. A pairing session was held just after a session detailing the available joint collaborative project funding opportunities. Participating researchers realized the opportunities that exist for collaboration. and welcomed the initiative and efforts. It is expected that there would be some joint project proposal submissions to different collaborative calls very soon.

Group photo of the participants

In addition to the objective of promoting collaboration, the workshop discussed on research advances in the broader area of IR and Informetrics & Scientometrics. New advances in Information Retrieval models were discussed and interesting ideas for IR in Scholarly article domain emerged out of the discussions. Advances in Quantitative studies of Science, including process of Science production, were discussed in detail. Approaches for S&T evaluations in both countries were discussed by the participants. These discussions resulted in emergence of useful insight and ideas for the S&T evaluation exercises. The workshop included in-depth discussions on various issues in the research area and the participants benefitted from it a lot. It is expected that workshop will result into the starting of new research collaborations between different research groups from both countries. Dr Roshan Paul, Director, IGSTC gave a special address on IGSTC activities, schemes and different avenues bilateral collaboration between Indian & German researchers.

Two special issues of the following journals on the theme of the workshop are confirmed:

1. Journal of Scientometric Research, Special issue on "Quantitative, Network-theoretic and Altmetric Analysis of Scholarly Big Data"
2. Scientometrics, Special Issue on "Bibliometrics and Information Retrieval"

Research and innovation towards leapfrogging in frontier technologies (RILEAP)

Indo-German joint scientific workshop on Research and innovation towards leapfrogging in frontier technologies (RILEAP), was organized by International S&T Affairs Directorate (ISTAD), CSIR with Fraunhofer e. V., Germany during 22-23 July and 29 July-1 August 2019 at CSIR-CECRI, CSIR-NCL, CSIR-CBRI, CSIR-NEERI and CSIR-New Delhi.

The workshop aims to develop concrete project proposals in the areas of common interest viz. Sustainable Buildings, Water, Advanced Production Technologies, Battery Technologies and share the same with Industry, Government and other stakeholders. CSIR in consultation with Industry stakeholders would provide the basic research ideas and identify topics and problem statements related to the Indian conditions. Fraunhofer would provide the expertise and support to take the research ideas to the next level (TRL 6-9) in a collaboration with CSIR, and Industry would take it to commercialisation. In addition, thematic areas such as big data analytics, artificial intelligence, automation, mathematical modelling etc. can also be explored to improve services particularly to government stakeholders.

A workshop session on Battery Technologies at CSIR-CECRI, Chennai on 22-23 July 2019 was conducted.

Three parallel workshop session were held simultaneously on 29-30 July at the following topics and CSIR labs:

1) Sustainable Buildings at CSIR-CBRI, Roorkee
2) Water at CSIR-NEERI, Nagpur
3) Advanced Production Technologies at CSIR-NCL, Pune

Around 60-70 scientists, researchers, faculties, industry persons from India & Germany participated in various workshop sessions mentioned before on mutual topics of collaboration.

The concluding workshop session was held on 1st August in new Delhi at India Habitat Centre where results of all the previous sessions were summarized and future course of action was pondered upon. Dr Rajiv Kumar, Vice Chairman, NITI Aayog addressed the session Indo-German Collaboration in Research & Innovation and encouraged the scientists to innovate for India specific solutions. Dr K Vijayraghavan, Principal Scientific Adviser, Govt. of India; Dr Jasper Wieck, Deputy Chief of Mission, German Embassy, New Delhi and Dr Shekar Mande, DG, CSIR also addressed the session. Director, IGSTC also attended the session.

Dr Rajiv Kumar, Vice Chairman, NITI Aayog addressing the session

Participants in the workshop

The workshop helped to prepare the concrete projects for joint implementation by Indian and German scientists.

CONFERENCES, TALKS & MEETINGS

University of Cologne Talk

Director, IGSTC gave a talk at Department of Inorganic Chemistry, University of Cologne on 14th June 2019. He spoke on the programmes of IGSTC such as 2+2 projects and IGSTC Workshops and industrially relevant projects. Scientists, researchers and faculties from various departments participated in the session.

Merck Visit

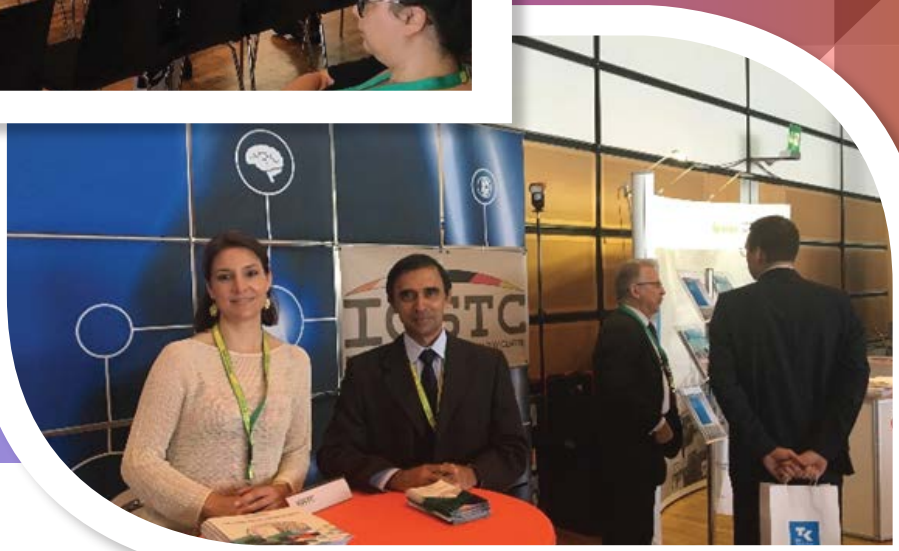
Director, IGSTC visited Merck at Darmstadt on the 19th June 2019 and held talks with Dr Ulrich Betz, Vice President Innovation. Discussions were mainly focused on creating meaningful and successful collaborations between academia and industry, including IGSTC Fellowships. Dr Betz also discussed on the possibilities of collaborating with IGSTC on an Indo-German workshop under the aegis of IGSTC in CURIOUS – FUTURE INSIGHT, a worldwide conference of Merck scheduled for 2020.

Friedrich- Schiller-Universität Jena Talk

A Workshop on "Shaping the cooperation with India" was organized by Friedrich Schiller University Jena International Office on 18th June 2019. Director, IGSTC was invited to give a talk on "Funding Schemes for the Cooperation between Science and Companies" under the aegis of IGSTC. He explained on different funding mechanism and collaborations available in the schemes of IGSTC.

IGSTC Participation at IGCC Meet

IGSTC participated in the Annual General meeting of Indo-German Chamber of Commerce (IGCC) with an information booth display. The meet was held on 26th June 2019 at Cologne. Representing IGSTC, Dr Paul, Director and Ms Merk, DLR-PT participated in the event. The booth displayed various programmes, schemes and project related activities of IGSTC. Several other participants including IGCC delegation, Indian and German bureaucrats, policy decision makers visited the booth and enquired about different activities of IGSTC.



Science Team of US Embassy, New Delhi Visits IGSTC

Deputy Minister Counselor for Economic, Environment, Science and Technology Affairs Ms. Isabella Detwiler, US Embassy, New Delhi and her team visited IGSTC office on 9th July 2019. The objective of the meeting was to learn about the Indo-German Science and Technology Centre and its programmes. Director and Dr P V Lalitha, Sr. Scientific Officer apprised them on various bilateral programmes of IGSTC, modalities and implementation strategies of successful scientific programmes. Discussions also focused on bilateral programmmes of India & USA creating mutual sharing of knowledge.

Industry Visits

Director, IGSTC visited Ford India at Sanand Vehicle Assembly & Engine Plant on 12th August 2019. He held discussions with Mr. Girish Kumar, General Manager and his team on collaborative research between industry & academia. Ford team expressed their interest in the completed IGSTC projects on Solar energy harvesting.

Director, IGSTC also visited the Arvind Denim at Ahmedabad on 13th August 2019. He apprised the Arvind about the various schemes, possibilities of collaboration in the context of Indo-German research partnerships. Director also had a factory tour of Arvind Denim.

Invited Talk at Jyothy Institute of Technology

Director, IGSTC delivered an invited lecture on the "Growing Research Partnership of Industrial Relevance between India and Germany" at Jyothy Institute of Technology on 19th July 2019. He presented the details of IGSTC programmes such as 2+2 Projects with a focus on Bioeconomy call, workshops, etc. Several faculty members, scientists and deans attended the talk.

Margit Hellwig-Bötte, Consulate General of the Federal Republic of Germany, Bengaluru speaking at the TIA summit

Audience at the summit

TIA Summit

The India Advantage Summit (TIA) has emerged as a key platform to showcase innovative city-based solutions and facilitate partnerships for sustainable urban development.

The 3rd edition of The India Advantage Summit (TIA Summit) was held on 18th & 19th of July 2019 at The Taj Westend, Bengaluru. The 2019 edition aimed to deliberate on Society 4.0 and discuss the key aspects driving the future cities. Summit topic focused on Efficient & Effective Governance, Urban Mobility & Seamless Transit, Urban Planning, Design & Resource Management, Geo-spatial technologies, Health & Well-Being in Cities and Community Building & Inclusive Cities. The summit brought together 350 delegates representing 10 countries with the sessions designed to promote in-depth interactions, exchange of opinions, and networking.

Director, IGSTC participated in the summit.

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