



Review of Progress of Work in Research Laboratories

The committee consists of Dr. P. Subbaraj (Dean – Research – Electrical Sciences)/Convener, Dr. S. Jayakumar/Internal Expert and Dr. A. Kandaswamy/External Expert, reviewed the progress of research work in six research laboratories in all departments and the utilization of research funds received (external/internal) for research laboratories as on 24th October 2020. Respective research laboratory faculty in-charges presented their progress of work in their research laboratories in-terms of new products developed, patents filed, research articles published, consultancy work undertaken, external projects sanctioned and action plan for the next one year. The committee members appreciated the accomplishments and progress of research work in all research laboratories and gave their valuable inputs/suggestions for the future.



Prof. M. Alagar, Visiting Research Consultant and his team member, Dr. A. Hariharan demonstrated the developed products in-front of the panel of experts (Committee members from left to right: Dr. Dr. A. Kandaswamy, Dr. S. Jayakumar, Dr. P. Subbaraj, Dr. G. Chandramohan, Dr. P.V. Mohanram)



Research Seminar

PSG Institute of Technology and Applied Research, Coimbatore in collaboration with the Institution of Engineers (India) [IEI] organized a **Research Seminar** on 25th September 2020 in the college premises. Around 27 senior members of faculty from various departments participated in the research seminar. Dr P Subbaraj, Dean (Research-Electrical Sciences), welcomed the participants. He made a presentation listing all the agencies, which fund research projects.

In the first session, Dr.P.V.Mohanram, Principal, made an insightful presentation on “Applying for Funded Projects: A Sample Preparation”. Before the commencement of the session, the need to explore and experience the innate consciousness of every individual was emphasized by one of the songs penned by Thayumanavar, a famous Tamil philosopher and saint. The first session was divided into three sections:

- Industry-Institute Interaction Strategies
- Research and Development Work Strategies
- A Sample DST project presentation that was approved for funding in 2010

During the session, members of faculty were encouraged to involve in industry-relevant projects and engage in dialogue with industry experts for collaborative project works. Also the following points were emphasized:

- The need for electrically-driven equipments and developing control systems based on latest technologies like Machine Learning (ML), Artificial Intelligence (AI), Internet of Things (IoT) was stressed to uplift the research profile of the institution. Later, participants were requested to contemplate on the action plan for continuing the research work in their area.
- They were sensitized on step-by-step method of developing in-house technologies for addressing the challenges faced by the industries and societies, in general.
- It was also suggested to organize project contests for school students to instil research interests.

Besides, the importance of doing ground-level study and demonstrative capability to share the complete research design were also emphasized during the presentation. For enhancing the quality of project presentation, participants were suggested to prepare a detailed and animated block-diagrammatic representation along with a working model. Conduct of periodic review meetings along with development work was recommended and researchers were strongly advised to conduct reliability test of critical components pertaining to the development work without fail. In addition, finding an industry partner for effective development and marketability of products was insisted for effective outcome of the product. Finally, the session was concluded with some fruitful strategies like flexibility and credibility in preparing the budget and other technical data related to the project.



Principal Dr PV Mohanram interacting with the participants on “Applying for Funded Projects: A Sample Preparation” during the first research seminar held on 28.9.2020

In the second session entitled **“Innovation and Patent Filing”**, Prof.M.Alagar, Visiting Research Consultant (Chemistry), spoke about the three important components of leading a successful life from *Thirukkural*: gaining knowledge, material life, and enjoying a peaceful life.

At the outset, the distinction between innovation and invention was discussed with a technical example. He also stressed about the importance of patent filing and product development with novel ideas, which are complementary in nature. The roles and responsibilities of an effective teacher, especially mentoring, were also discussed. Citations, h-indexes, and impact factor,

which are considered to be the three important components that defines the quality of academic institution, was underscored.

Prof.M.Alagar, Visiting Research Consultant (Chemistry), Addressing The Participants On “Innovation And Patent Filing” During The First Research Seminar Held On 28.9.2020



Also, participants were motivated to inculcate different thinking skills that are required for doing effective research. Further, the members of faculty were suggested to understand the holistic process in developing and patenting a product successfully in the market. Few other essential qualities required for a researcher like dedication and devotion were also discussed briefly in the presentation. In addition to steadfast commitment, researchers were encouraged develop the spirit of questioning for achieving the desired research outcomes. Two of his current research projects, industrial waste utilization and solid waste management, were also briefly discussed during the presentation.

Finally, Dr G Chandramohan, Vice-Principal, shared his closing remarks and proposed the vote of thanks. In his address, the complementary role of science and engineering in developing technologies was briefed. Lastly, he thanked all the participants and appreciated the organizers for their efforts in organizing the research seminar.



PSG Institute of Technology and Applied Research

Approved by AICTE, New Delhi Image Affiliated to Anna University, Chennai

Research and Development

Research Interaction Meeting with Dr. K B R Varma

K B R Varma, Director – Research (PSG Institutions), has visited PSG Institute of Technology and Applied Research on 9th April 2021 (Friday). In the forenoon session, he addressed the faculty members of PSG iTech in the presence of Dr. B Ramamoorthy, Advisor (Academic), Dr. G. Chandramohan, Principal, Dr. P.V. Mohanram, Secretary, Dr. P. Subbaraj, Dean (Research-Electrical Sciences) and Heads of Engineering, Science & Humanities departments.



Dr. K B R Varma, Director – Research (PSG Institutions), interacted with faculty members

Dr. K B R Varma, has pointed out the diversified applications of Material Science in various engineering and allied fields. In Civil engineering, applications of Material Science like green building technologies, thermal comfort without air conditioners, heat reflecting tiles made out of waste materials, nanotechnology based heat reflecting coatings, thermo/electrochromic materials for smart window, etc., were highlighted. Further, applications of Material Science in Mechanical and Aerospace engineering in the areas of light weight metallic alloys and composites for automobile, defense and antifungal, anticorrosive coatings for naval applications were enlightened.

Also, he mentioned that both Engineering and Science faculty members doing research in Material Sciences are to collaborate to promote their research to higher levels. In addition, various funding agencies to fund the Material Science research were listed. In the afternoon session, following team of faculty members have discussed their ongoing research and got adequate inputs/suggestions from Dr. K B R Varma.

S. No.	Department	Faculty members	Discussion	Suggestions / Input given
1.	Electrical and Electronics Engineering	Dr. C.L. Vasu Dr. C.S. Subash Kumar Dr. B. Adhavan Dr.C.V. Pavithra Mr.M.Sathiyathan Dr M Mohamed Iqbal	Photovoltaic coating, solar paints for glass windows for energy harvesting	Nanomaterials may be incorporated to enhance the performance
			Piezoelectric ceramics to generate power	Super capacitors for storage of current generated from piezoelectric ceramics to be explored. Piezoelectric mate to belaid on the road surface to generate electricity
			Pulse wave response characteristics sensor study	Radial artery pulse sensor (<i>vatham, pitham, silethumam</i>) may be developed and once after getting the signals it will be interpreted for Ayurveda, Sidda traditional treatments

Research Workshops/Seminars

2.	Civil Engineering	Dr. M. Devasena	Surface water quality analysis and contamination identification	Fabricate low cost sensors for water treatment to replace costly analysis. Plant extracts may be studied for sewage water treatment
3.	Electronics and Communication Engineering	Dr. M. Jayasanthi	Nutrient content identification sensors for agricultural practices	Existing literature to be studied initially and DRAMS, FRAMS application related work to be studied
4.	Chemistry	Dr. G. Latha	To develop polymeric sensors from renewable bio-resources	Polar polymers, conducting polymers, donor and acceptor type of molecules to be studied to develop polymeric sensors.

Further, Dr. K B R Varma, has requested all the heads of the departments to consolidate their department faculty member's research areas and send an email to address their research problems at the earliest. Dr. B Ramamoorthy, Advisor (Academic), also suggested that our research works are to be in the direction of development of products for commercial applications.



Guest Lecture on “Why is my paper not getting accepted?”

A guest lecture by Dr. C. Balaji, Professor, IIT Madras on the topic "Why is my paper not getting accepted" was arranged on 14th September, 2022 between 4.15 pm to 5.45 pm at E5 Civil Seminar Hall, PSGiTech. The nuances of paper writing and scientific publication were explained by Prof. C. Balaji. A total of 57 faculty members from PSGiTech and six research scholars from PSGCAS and PSGTech participated in the event.



Dr. C. Balaji, T.T. Narendran Chair Professor, Department of Mechanical Engineering IIT Madras



Glimpse of participants during the guest lecture

In this lecture, Prof. Balaji outlines the key attributes which can propel one to become a top notch researcher. Using several examples, key principles from contemporary thinkers on creativity and his own experiences, Prof. Balaji takes the audience through to a journey of what it takes to become a top researcher. The lecture is expected to be of use to budding as well as seasoned researchers.

Dos and Don'ts of writing a research article, dos and don'ts of publishing an article, the importance of language, how to choose a journal based on the research area were well explained by the speaker. The key learnings were

- While finding out something new is the inherent driver and the most important motivator for undertaking research, the ability to articulate and disseminate our findings is equally important
- Competence in the former does not guarantee competence in the latter
- The ability to communicate and articulate our ideas has to be assiduously built over the years
- #3 is the main reason why a supervisor may be required when an enthusiastic young researcher is beginning his/her research pursuit
- Peer review is the main stay of scientific publishing
- Peer review is done without a fee and authors must recognize that reviewer loads are exponentially increasing in all the journals
- To catch the attention of the reviewers and the editors, a very well prepared manuscript with crisp highlights, abstract and conclusions and very well done figures and tables are absolutely vital!
- Need to accept that some subjectivity is bound to be there in the whole process, as behind every activity there are human beings who have not only strengths but also limitations.



Workshop on Writing R&D Grant Proposal for Women Engineers at IIT Tirupati

Dr. C.V. Pavithra, Assistant Professor, Department of Electrical and Electronics Engineering attended the Workshop on Writing R&D Grant Proposal for Women Engineers at IIT Tirupati. IIT – Tirupati under the aegis of Indian National Academy of Engineering (INAE), Science and Engineering Research Board (SERB) conducted two day Workshop on 'Writing R&D grant proposal for Women Engineers' on Nov 10 & 11, 2022 at IIT – Tirupati. The workshop was organised for the benefit of women engineers from southern India states under the age of 45.

The number of participants was limited to 30. The workshop was divided into 10 technical sessions with group activities covering the research insights, research funding opportunities, writing and defending a research grant, and evaluation of research grants. Dr. Rajiv K Tayal, former scientist-G, DST Secretary and SERB Executive Director uncovered the areas of state of art review of grant proposal and discussed the expected outcomes in a research proposal. Dr. Sivaji Chakravorti, Professor of Electrical Engineering, Jadavpur University and Vice-President of INAE demonstrated the project based teaching-learning approach.



Research Workshops/Seminars

Dr. R. Prasada Raju, former scientist-G, DST presented the funding opportunities for extramural research and development. The workshop has given an insight into various nuances of grant writing and has emphasized the need to raise the quality of research and writing grant proposals for funding.



Guest Lecture on “Research Challenges and Opportunities”

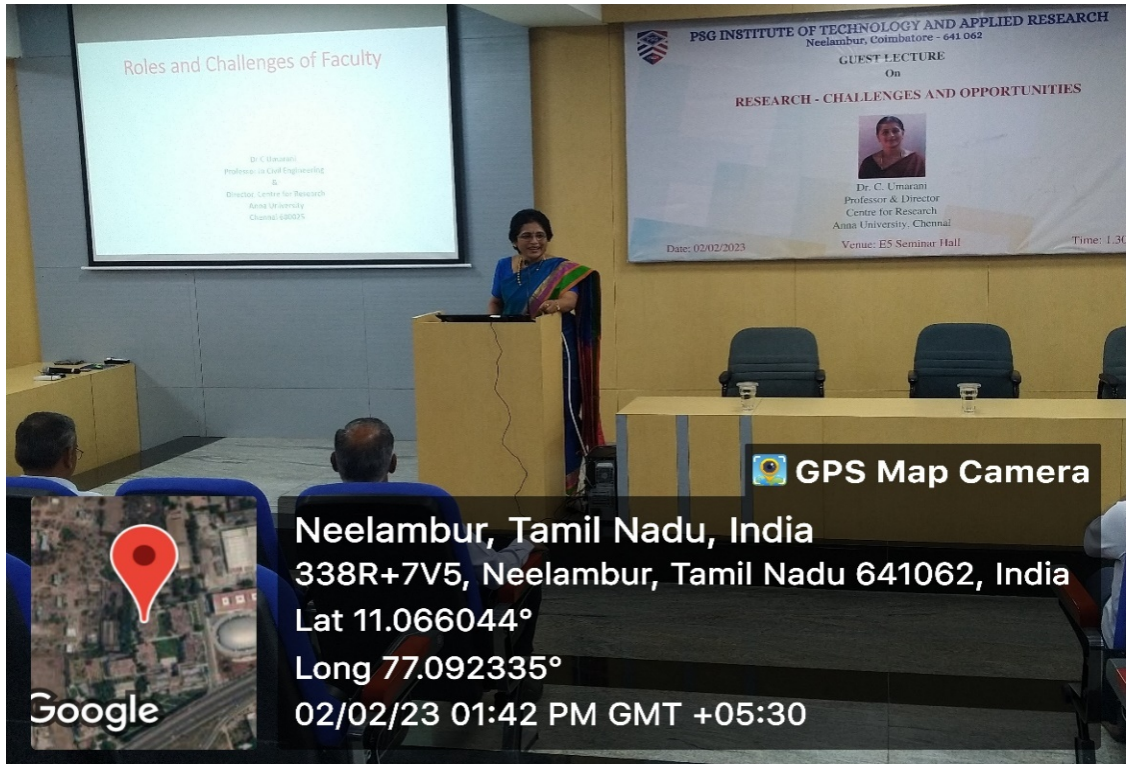
A guest lecture by Dr. C. Umarani, Professor & Director, Centre for Research, Anna University, Chennai was arranged on 02.02.2023 on the topic “Research Challenges and Opportunities” between 1.30 pm to 2.30 pm at E5 Civil Seminar Hall, PSGiTech.



Principal Dr. G. Chandramohan, Guest Prof. C. Umarani and Head of Civil Engineering Department Dr. M. I. Abdul Aleem are in the picture

The importance of research and scientific publication was explained by Prof. C. Umarani. A total of 37 faculty members from PSGiTech and six research scholars from participated in the interactive talk with Prof. C. Umarani. She shared her research experience which includes Structural analysis and design of major Grade Separators

– Perambur fly over bridge, Strength and condition assessment of 300 m high RCC TV tower at Rameshwaram and many other major research and consultancy work.



Guest Prof. C. Umarani, Professor & Director, Centre for Research, Anna University

Prof. C. Umarani explained the significance of consultancy work which should go in par with research activities. She shared her contribution in the Special Investigation Team for the Moulivakkam Building collapse case. Members of the faculty interacted about the research facilities at PSGiTech and the Institute’s initiatives in bringing up the research culture.



Guest talk on “Research Opportunities at Deakin University”

Department of Civil Engineering organized a guest talk on “Research Opportunities at Deakin University” on 06.04.2023 at E5 seminar hall between 02:00 and 03:00 PM. Dr. G. Chandramohan Principal welcomed the faculties and the guest Prof. Mahmud Ashraf, Associate Head of the School (Research), School of Engineering, Deakin University, Australia. Dr. T. Sakthivel, Assistant Professor, Department of Civil Engineering introduced the guest to the participants.

During his talk the guest emphasised the importance of bilateral research between PSG iTech and Deakin University. He briefly gave a short talk on the various laboratories, centre of excellence and the present research areas (work) in the Deakin University. Prof. Ashraf also gave a positive impact on the student exchange program for the present III year and the opportunity for internship at Deakin. The talk was very informative for the faculty and the post graduate students of the institute.



Prof. Mahmud Ashraf, Associate Head of the School (Research), School of Engineering, Deakin University, Australia



Talk by Dr. Asokan Pappu, Chief Scientist & Head, Green Engineered Materials and Additive Manufacturing, CSIR-AMPRI, Bhopal

Meeting with Dr. Asokan Pappu, Chief Scientist & Head, Green Engineered Materials and Additive Manufacturing, CSIR-AMPRI, Bhopal was arranged on 28th April 2023 at PSG CARE Seminar hall between 2.30 pm to 4.30 pm

Dr. Asokan gave a comprehensive talk on all the major research areas where PSG Institutions could collaborate with CSIR-AMPRI, Bhopal. Major research works are carried out in the sectors such as Energy and Environment, Water and Wastewater treatment, Advanced materials including biomaterials, Additive manufacturing and Energy storage materials.

Dr. Asokan invited everyone to attend the ONE WEEK ONE LAB programme (14-18 MAY 2023), a Nationwide Campaign by CSIR to showcase its Technological Legacy and Innovations at CSIR-AMPRI, Bhopal.

Based on the discussions, the following are to be initiated in collaboration with CSIR - AMPRI: "Centre of Excellence on Natural Fibres" at PSG Institutions. A team from PSG institutions in this regard shall be identified in a month by PSGIIRC to take up this work



Dr. Asokan Pappu, Chief Scientist & Head, Green Engineered Materials and Additive Manufacturing, CSIR-AMPRI, Bhopal



Guest lecture on “Nanostructures and Nitride compounds in Energy and Environmental Research”

PSG Institute of Technology and Applied Research organised a guest lecture on 2nd May 2023 on the topic "Nanostructures and Nitride compounds in Energy and Environmental Research" by Dr. Tiju Thomas, Associate Professor, Metallurgical and Materials Engineering Department, IIT Madras between 11 am to 12.30 pm in online mode. A total of 20 faculty members (from PSG institution and various institutions) attended the program.

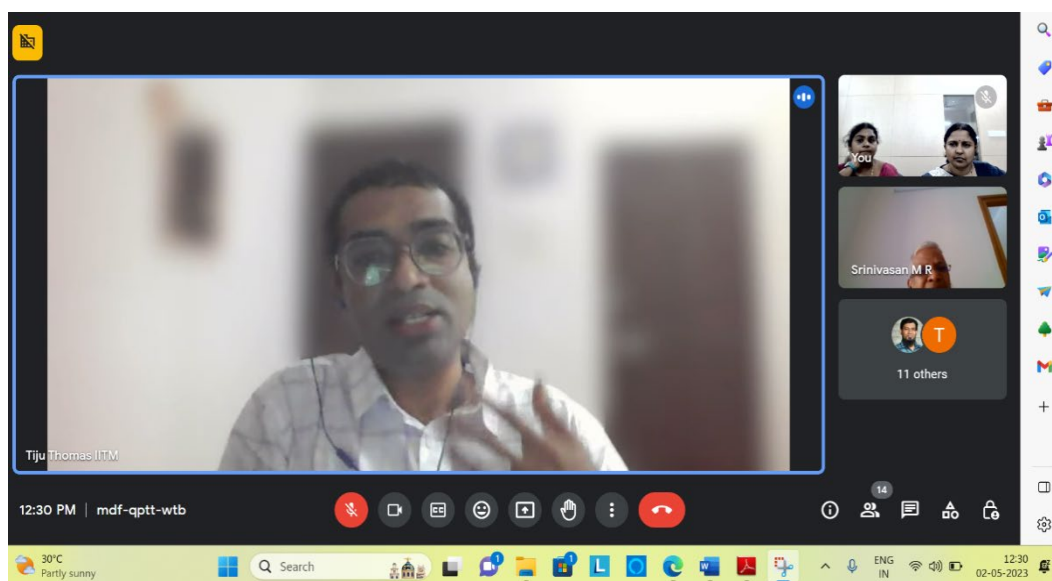
Dr. Tiju Thomas presented detailed information on functional properties of materials (electrical and electronic, optical, magnetic; applied surfaces and interfaces) are of abiding interest to us. In particular solar energy harvesting, efficient light emission systems, and remediation materials have been the group's recent focus. Much of the science we do is easily extensible to sensor materials research as well. Eco-friendly, green engineering perspectives guide the synthetic chemical and fabrication routes that the group develops for fulfilling its goals. Furthermore correlations between synthesis, materials processes, and device performance is an increasingly common theme in the group's activities.



Dr Tiju Thomas is presenting in online mode

Dr Tiju Thomas discussed about the funding opportunities and ways to write for any collaborative work with IITM. This would motivate our faculty members to apply for more projects and receive funding from DST, DBT and similar funding agencies. Also, it helps to make collaborative research across various institutions.

Students and faculty members desirous of doing research in nanotechnology, complex and hybrid materials, functional ceramics, quantum nanostructures, and devices, are welcome to write to Dr. Tiju Thomas.



Dr. Tiju Thomas is presenting in online mode

Dr. Tiju Thomas invited faculty members to collaborate with his team as they have research work with chemists, physicists, electrical engineers, chemical and polymer engineers, materials and metallurgical engineers, mechanical engineers. The guest lectured ended with fruitful discussions.



Product launch by Prof. VS. Raju, former director, IIT Delhi

PSG INSTITUTE OF TECHNOLOGY AND APPLIED RESEARCH, COIMBATORE in association with A & A Consulting Services Ltd, UK launched GWAT a portable device which generates drinking water from air.

GWAT was launched at PSGiTech by Prof. VS. Raju, former director, IIT Delhi in the presence of former principal of PSGiTech Dr. G.Chandramohan, Dr. Prasada Raju, former scientist, DST SERI, Delhi, Dr. N. Saravanakumar, Principal, PSGiTech and Mr. Vivek Subramanian, Director, A&A Consulting Services Ltd, UK on 5th June 2023.

Mr. Vivek Subramanian has initiated this project as a part of CSR activities of A&A Consulting Services Ltd. Dr. M. Devasena, Professor and Lead Research, and Dr. P. Manoj Kumar, Professor, Department of Mechanical Engineering were instrumental in the development of air to water generator which is intended to find solutions to the existing water scarcity.



Prof. V.S. Raju and Dr. Prasada Raju during the launch programme

The primary focus is to produce safe and clean drinking water through a four step process. The machine needs a minimum humidity level of 50% to achieve optimal results.

It is expected that 15-20 litres of water can be generated in a day. The product could also be used in pharmas, hospitals, hotels and in any other water stressed area.



Prof. V.S. Raju during launch of GWAT



Interaction with Prof. V.S. Raju and Dr. Prasada Raju



Interaction with Prof Abir De Sarkar, Scientist F and Dean, Institute of Nano Science and Technology, Mohali

Prof Abir De Sarkar, Scientist F and Dean, Institute of Nano Science and Technology, Mohali visited PSGiTech for an interaction with HoDs and few faculty members on the research areas in Nano Science and Technology. The meeting was held between 3 to 4 pm on 23rd June, 2023 (Friday) in the board room followed by visit to Polymer Engineering Lab and Nano - Crystal Design & Application Lab between 4 to 5 pm.



Principal (I/c) Dr.N.Saravankumar felicitating the guest Prof Abir De Sarkar

A total of 10 faculty members participated in the interactive talk with Prof Abir De Sarkar. He shared his research experience which included Nano science in energy conversation and next generation electronics.



Interaction with Prof Abir De Sarkar, Scientist F and Dean, Institute of Nano Science and Technology, Mohali

Research clusters such as Computational nanoscience's, valleytronics, piezo-spintronics were briefed to the group of faculty members; Possible avenues of research in computational nanoscience's, energy conversion and next generation electronics were discussed. Funding opportunities and collaborative research with Institute of Nano Science and Technology, Mohali were also discussed.



Interaction with Dr O R Nandagopan, Director, DRDO Industry Academia-Ramanujan Centre of Excellence

An interaction with Dr O R Nandagopan, Director, DRDO Industry Academia-Ramanujan Centre of Excellence, IIT Madras Research Park has was arranged between 11.00 am to 12.15 pm on 21st August, 2023 (Monday). Dr O R Nandagopan interacted with the faculty members and research scholars on formulating the project proposals to be submitted to DRDO.



Interaction with Dr O R Nandagopan, Director, DRDO Industry Academia-Ramanujan Centre of Excellence, IIT Madras Research Park

Dr O R Nandagopan gave insight on

- a. Providing new impetus to pursue Directed Research in the frontier areas of Defence R&D required for DRDO,
- b. Fostering futuristic research in the fields of military technology and create an eco-system for innovation research in the cutting edge weapons technology through the involvement of academia, industry and R&D laboratories
- c. Various modes of projects sanction to faculty.
- d. Five vertical areas and application of
- e. Cognitive technology and quantum technology in these five verticals.
- f. Establishing eco system for development of defence technology and systems.



Felicitation to Dr O R Nandagopan, Director, DRDO Industry Academia-Ramanujan Centre of Excellence, IIT Madras Research Park



Visit to CSIR-AMPRI, Bhopal

Dr. R. Sasikumar and Dr. K. Arunkumar visited CSIR-AMPRI from 28.08.2023 to 01.09.2023 for research collaboration as per the earlier signed MoU. Research was carried out with respect to synthesis of benzoxazine resin and polymerization methods, and (ii) extraction of cellulose pulp from paddy/wheat straw and making paper from the pulp.

Instrumentation facilities were observed and steps and to make possible collaboration with other research teams of CSIR-AMPRI were discussed. A presentation about the polymers and its composites was given to the Ph.D. students at AMPRI



Visit to CSIR - AMPRI Bhopal



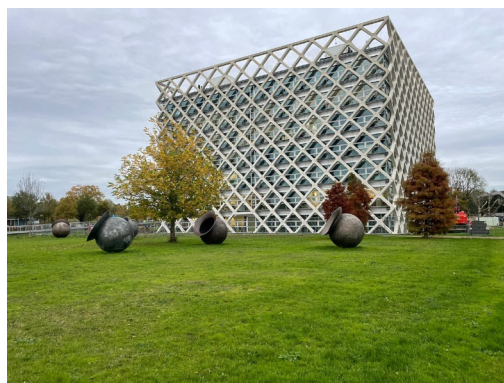
International Visits

Dr. M. Devasena, Professor, Department of Civil Engineering and Lead (Research) visited the following Universities for exploring the research potentials.

1. INSA University at Lyon, France
2. Wageningen University – Netherlands
3. Fraunhofer Institute – University of Stuttgart - Germany



Visit to INSA University LYON – France



Visit to Wageningen University – Netherlands

Fraunhofer IGB develops processes, technologies and products for health, sustainable chemistry as well as the environment and climate protection.



***Meeting with Dr. Marius Mohr, Head of Innovation Field Water Technologies & Resource Recovery
Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB***