Indian Institute of Technology Madras

Office of Alumni and Corporate Relations

IITM Deakin CoE in Advanced Materials and Manufacturing

The Centre of Excellence drove collaborative research in Automotive Lightweighting, Sustainable Energy Materials and Health Care Materials and Devices, in response to challenges faced by India and Australia in redressing climate change and the crisis in healthcare brought forth by the pandemic. The CoE was successful in bringing together faculty with complementary skill sets so that major industry level problems could be addressed comprehensively. Deakin had excellent skill sets in Deformation processing, advanced steels and processing of composites, topology . IITM had skills in ICME, advanced light weight alloys, and Generative design. Similarly in Sustainable Energy, while IITM had the ecosystem for EVs and battery prototype manufacturing, Deakin had excellent skills in predictive tools for new battery chemistries. In health care materials and devices, India brought in capabilities in new biomaterials (hydrogels, implants, membranes) while Deakin had skill sets in additive manufacture. The CoE is now a go-to for critical problems that require the best skill sets to drive research and solutions, in Light weighting, Sustainable energy materials and health care materials and devices

Noteworthy projects emerged from this collaboration

The CoE was accorded a leadership responsibility to partner with the industry and pull together a comprehensive road map for INAE. Dr. Anand, in partnership with Dr. Shankar (Mahidnra) and Dr. Gautham (TCS) pulled together a comprehensive road map incorporating Generative design (IITM), Topology (Deakin), advanced steels and composites (Deakin), advanced light alloys (IITM and H) and ICME tools (Cutting across IIT and Deakin) along with a prototype manufacturing approach (Clayton). The road map has been discussed extensively with other OEMs including Tata Motors, Ashok Leyland, TVS as well as primary metals manufacturers including Tata steel and Hindalco as well design houses such as ANSYS, This has been well received by the Government of India.

Lightweighting Symposium 2019. Most events went on line after COVID,

Major Achievements accomplished by the Centre of Excellence since its inception

- INAE Road Map on lightweighting submitted
- MTech in ICME initiated in IIT H with ideas flowing from the CoE workshops led by IITM, IITH, Deakin with participation from industry majors (GE, ANSYS)
- MTech in Lightweighting being incubated at IITH with guidance from CoE
- Multi pollutant sequestration MTech project from GE
- Proposal on silk as a biomaterial for membranes in dental surgery recovery · developed between CoE and Rajan Dental Care
- Ideation sessions, proposals with Renault, Mahindra, Godrej, MOICL covering polymers, steels, electrochemical refining
- Chaired a session on lightweighting in IIM 2022 at Hyderabad
- Panelist in ARAI on advanced materials and manufacturing for automotive industry
- Spearheading a program on thermal spray powder manufacturing for strategic, automotive and energy sectors with IITM and ARCI

The Centre of Excellence has contributed to educational initiatives especially in terms of student engagements

The collaboration between IIT Madras and Deakin University as on 2021-2022 has jointly brought in over 8 Ph.D students to cover more areas of research post covid.

CoE has run three batches of Natesan internship program aimed at improving access to research ecosystems for students from smaller Tier 2/3 engineering colleges in Materials and Manufacturing, and a fourth is underway. Such programs are a game changer for students of such backgrounds.

2019 Batch of Natesan Student Interns at the Celberatory Lunch at Taramani Guest House

IITM-MME, Departmental Lab's Demonstration

Natesan Summer Interns @Taramani Guest House-IITM, on 11-06-2018

Left to right standing: 1. Vishal, 2. Gopi, 3. Kishore, 4. Dr. Anand, 4. Dr. Arunachalam, 5. Prof. Sampath Kumar, 6. Prof. Samuel, 7. Prof. Murty, 8. Gayatri, 9. Swetha, 10. Vineetha, 11. Sangeetha, 12. Anila, 13. Sibisha, 14. Joshua Left to right sitting: 1. Irfan, 2. Navneeth, 3. Ilayas

Donor contributions have supported the establishment and growth of CoE

Natesan Synchrocones Pvt. Ltd. has contributed towards the IITM Alumni fund which is being used by the CoE to run the Natesan Internship Program. The internship program helps IIT faculty explore new research areas, while allowing their current PhD students to stay focused. The presence of young interns also allows PhD students to learn new mentorship skills.

Impact created on the overall success of the initiative:

Informal surveys have indicated that all the graduating Natesan interns have either found employment or are pursuing higher studies either in India or overseas.

Thank you so much for your generous contributions. Your contributions have created a huge impact in the lives of many people.

THANK YOU!

Indian Institute of Technology Madras, Chennai – 600036
www.iitm.ac.in
For more information, please contact:
Office of Alumni and Corporate Relations
T: +91-44-2257 8390 | acr.iitm.ac.in

March, 2024