



The Science of Making...



www.cmti.res.in

VOLUME 2

ISSUE 1

● JULY 2025

PUBLICATIONS

- ◆ Megha Agrawal, Mahalakshmi S, Anila Puthoor, Varshini S, "Electroplated Copper Mask Based Glass Wet Etching for Development of Microfluidic Device", Springer Nature Recent Advances in Electrochemical Science and Technology, Lecture Notes in Mechanical Engineering. Springer, Singapore, 2025.
- ◆ S. Harsha, S. Mahalakshmi, and Adarsh Mathew Abraham, "Experimental Research on Silver Alloy Wire Bonding as an Alternate for Bare Copper or Gold Material in Conventional Wire Bonding", Springer Nature Recent Advances in Electrochemical Science and Technology, Lecture Notes in Mechanical Engineering. Springer, Singapore, 2025

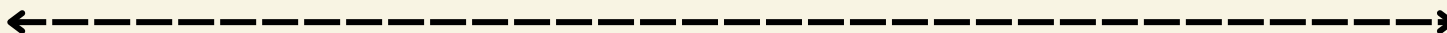
AWARDS/RECOGNITIONS

- ★ Mrs. Khushboo, Scientist-D and Group Head – Metrology, and Dr. Anusha Epparla, Scientist-C, were honoured with the prestigious Women Professional Achiever Award 2025 by eMERG (Engineering Manufacturers Entrepreneurs Resource Group) in recognition of their outstanding contributions to science and technology.



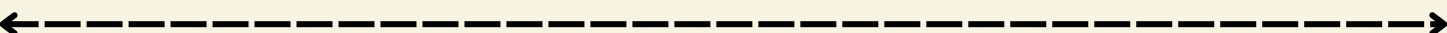


Mrs. Kusuma N, Scientist-E, CH(C-SVT), was honoured with the GCU Puraskar Award, organised by the Dr APJ Abdul Kalam School of Engineering, Garden City University, Bengaluru, on 23rd May 2025, in recognition of her outstanding contributions to STEM, excellence, innovation, and women's empowerment over the past 30 years at CMTI. The event brought together achievers who have made remarkable strides in technology and entrepreneurship, serving as an inspiration to the budding engineers of Garden City University. Chancellor Dr. Joseph V.G. honoured the awardees in a ceremony that reflected the university's dedication to recognising impactful contributions to industry and society.



MOU & NDA'S

- ◆ M/s. CMTI and M/s. L.V. Government Polytechnic Hassan entered the Academic Affiliation Programme (CAAP) MoU for the period of one year.
- ◆ M/s. CMTI and M/s. NoPo Nanotechnologies India Private Ltd. entered the NDA in connection with "Single Strand DNA for wrapping SWCNTs."



EVENTS/ CELEBRATIONS

➤ CMTI CELEBRATES INTERNATIONAL YOGA DAY 2025



On the occasion of International Yoga Day, the staff of CMTI Bengaluru came together on 20 June 2025 to participate in a guided yoga session held on the institute campus. The session was conducted by experienced instructors from Sri Patanjali Yoga Shikshana Samiti, who led participants through a series of asanas, breathing techniques, and mindfulness practices rooted in the ancient traditions of Sage Patanjali.



The event served as a reminder of the holistic benefits of yoga, encompassing physical well-being, mental clarity, and emotional balance. CMTI's enthusiastic participation reflected the institute's ongoing commitment to promoting a healthy and balanced work environment.



➤ CMTI CELEBRATES 134TH BIRTH ANNIVERSARY OF BHARAT RATNA DR. B. R. AMBEDKAR

CMTI commemorated the 134th birth anniversary of Bharat Ratna Dr. B. R. Ambedkar on 27 June 2025 with a special programme. The celebration paid tribute to Dr. Ambedkar's enduring legacy as a visionary jurist, social reformer, and chief architect of the Indian Constitution.

The event was graced by eminent personalities, including Shri Yogesh Master, renowned Kannada writer, director, and socio-cultural activist, and Shri K. Suchendra Prasad, President of Samskara Bharati, Karnataka South Province, acclaimed film artist and director. Both guests delivered insightful addresses highlighting Dr. Ambedkar's contributions to social justice, education, and nation-building. The programme reflected CMTI's respect for national icons and its commitment to promoting values of equality, inclusiveness, and intellectual growth among its staff and stakeholders.



➤ CMTI CELEBRATES ITS 64TH FOUNDATION DAY WITH NEW MILESTONES AND VISION FOR THE FUTURE



On 28 June 2025, CMTI marked a proud moment in its journey with the celebration of its 64th Foundation Day. The event was graced by the presence of Shri H.D. Kumaraswamy, Hon'ble Union Minister for Heavy Industries and Steel, whose participation reflected the government's continued support for indigenous technology development in manufacturing. During the celebration, the Hon'ble Minister also inaugurated CMTI's newly established Certified Reference Materials (CRM) Facility, a significant national milestone that positions the institute at the forefront of precision standards and materials metrology in India.

This inauguration underscores CMTI's expanding role in enabling quality infrastructure, supporting industry and research organizations in traceable and reliable material characterization, a step aligned with India's broader mission of enhancing self-reliance in strategic manufacturing domains.

Key Highlights from FY 2023–24: A Year of Innovation and Impact:

As CMTI completed its 63rd year of service to the nation, the institute achieved several notable milestones that reinforce its position as a premier R&D and technology development organisation under the Ministry of Heavy Industries.

- **16 New Machines and Products Developed:** A wide array of indigenous technologies was conceptualised, engineered, and delivered, showcasing CMTI's core strength in machine tool and precision manufacturing solutions.
- **Delivered a 10-Ton Planetary Mixing Machine to ISRO:** This custom-engineered system is a critical asset for India's space missions, furthering CMTI's legacy of contributions to the aerospace and defense sectors.
- **Collaborated with 13 Industries Under MHI's Industry Accelerator Program:** Supporting the Atmanirbhar Bharat vision, CMTI worked with leading industrial partners to accelerate commercialization and deployment of advanced technologies.
- **Established Second-Line Hydraulic Pump Test Rigs at HAL–LCA Division:** Enabling real-time testing of flight-critical components, this infrastructure directly supports India's indigenous fighter aircraft program.
- **Implemented Industry 4.0 Solutions at BEL, TATA Power, and Others:** Demonstrating leadership in smart manufacturing, CMTI delivered end-to-end IIoT, automation, and real-time monitoring systems to several public and private sector partners.
- **Provided over 1,700 Testing, Inspection, & Calibration Services:** Serving 590 customers across India, CMTI's NABL-accredited facilities ensured trusted metrology support to critical industries.
- **Received 6 Prestigious Awards:** CMTI's excellence in innovation and diversity was recognised through multiple awards, including the CII Technology Innovation Award and accolades for promoting Women in STEM.
- **Secured 4 Patents and Filed 7 More:** Reflecting a strong intellectual property strategy, the institute continues to expand its portfolio of protected technologies across manufacturing domains.

Looking Ahead: Building Capabilities for Emerging Sectors

With a strong foundation and momentum, CMTI is now focused on creating next-generation capabilities in areas such as:

- Battery manufacturing and energy systems
- Semiconductor fabrication and equipment
- Indigenously developed CNC controller technologies
- Advanced robotics, AI, and cyber-physical systems



These strategic initiatives will help position India as a global leader in advanced manufacturing, while enabling MSMEs and strategic sectors to adopt future-ready solutions

CMTI extends heartfelt thanks to its dedicated teams, industry collaborators, R&D partners, and government stakeholders who continue to support its mission. The 64th Foundation Day is not just a celebration of legacy, it is a reaffirmation of CMTI's commitment to technological leadership, national service, and impactful innovation.

Together, we shape the future of Indian manufacturing.



EVENTS/ WORKSHOPS

- Mr. Bishnu Prasad Sahu and Mr. Raghu B. attended the virtual workshop on "Strengthening IP commercialisation through IP Valuation: India-Denmark IP Valuation Strategies" on 18 June 2025.
- Mr. Vinod A R (Scientist D & Group Head - AM), Mr. Manjunath B N (Scientist C), and Dr. Anusha Epparla (Scientist C) attended the workshop titled "Build it Right the First Time: with Ansys Additive Manufacturing Simulation", held at ANSYS Software Pvt. Ltd., Prestige Tech Park, Bengaluru, on June 24, 2025.
- CMTI team participated in the Centralized Walk-in Interview for Apprenticeship as part of Udyoga Utsava 2025, held on 25 June 2025 at the Chanakya University Global Campus, Bengaluru.



★ Mr. Bishnu Prasad Sahu attended a webinar on Drones & UAVs – Powering India's Aerospace & Defense Renaissance on 26 June 2025.

★ Mr. Anil Kumar, Scientist-D, presented an overview of the career guidance and training programmes offered at CMTI, highlighting initiatives aimed at skill development, industry readiness, and 'professional growth for whom and when?'.



★ CMTI participated in the Future Factory Forum 2025, held on 27 June 2025, which brought together a distinguished gathering of manufacturing experts, policymakers, industry leaders, and researchers. The event was organized by Small Enterprise India, in collaboration with NASSCOM, SME Connect, K-Tech Centre of Excellence for Data Science & AI, and the Karnataka Digital Economy Mission.



During the forum, CMTI Director, Dr. Nagahanumaiah, shared key insights during a session on "Skilling Human Resources for Future Manufacturing". He emphasized the importance of aligning academic curricula with emerging industrial needs, building hands-on digital skills, and fostering collaborative ecosystems for continuous upskilling. His address underscored CMTI's commitment to enabling a future-ready workforce equipped to drive innovation in smart and sustainable manufacturing.



TRAINING INITIATIVES

➤ TRAINING PROGRAM ON "INDUSTRY 4.0 AND QUALITY 4.0"



A four-day training programme on "Industry 4.0 and Quality 4.0", held from June 16–20, 2025 and coordinated by Mr. Narendra Reddy T (Scientist-D), covered key technologies driving smart manufacturing. Topics included IIoT, digitalisation of legacy machines, AI/ML in manufacturing, digital twins, smart sensors, automated defect detection, QA 4.0, remote inspection, predictive maintenance, and machine vision. Demonstrations were

provided on data acquisition, smart tool holders, PLC automation, collaborative robots, and augmented reality applications. The programme also featured lab visits, practical use cases, and concluded with a Q&A and participant feedback.

➤ **TRAINING PROGRAM ON "ADDITIVE MANUFACTURING"**

A three-day training programme on “Additive Manufacturing” was organised at CMTI from June 16-18, 2025 for participants from GKN Aerospace Engine Systems India Pvt. Ltd., Bengaluru; BrahMos Aerospace, New Delhi; DLRL-DRDO, Hyderabad; NITK, Surathkal; Ramco Institute of Technology, Rajapalayam and Molex, Bengaluru. The training covered comprehensive topics including various Additive Manufacturing technologies, Microstereolithography, Design for Additive Manufacturing, In-situ Process Monitoring and Control, Standardisation and Characterisation of AM Raw Materials and



Parts, and Post-Processing for AM Components. The program also included laboratory demonstrations on metal AM processes, in-situ monitoring systems, smart manufacturing technologies, and guided visits to the characterisation and post-processing labs. A total of 11 participants from the aforementioned organizations attended and benefited from this training programme.

➤ **TRAINING PROGRAM ON “ROTOR VIBRATION AND DYNAMIC BALANCING”**



From June 16-18, 2025 a training programme on Rotor Vibration and Dynamic Balancing was conducted, coordinated by Mr. Girish Kumar M (Scientist E). The programme provided comprehensive coverage of key technical areas, including the fundamentals of noise and vibration, vibration analysis in turbomachinery, and the use of

instrumentation for noise and vibration measurements. Participants were given extensive hands-on experience in vibration diagnostics and dynamic balancing of rotors, both on dedicated balancing machines and through in-situ balancing techniques.

The training also included machinery fault analysis and the simulation of various fault conditions using a machinery fault simulator. A total of seven engineers from Dheya Engineering Technologies Pvt. Ltd., Bengaluru, attended the programme, which featured in-depth practical sessions aligned with real-world industrial scenarios.



UPCOMING TRAINING PROGRAMS

- ◆ “Uncertainty of Measurements for Dimensional Measurements”, Course Code: 4104, from 20 – 22 August 2025, at CMTI, Bengaluru.
- ◆ “Part Programming of CNC Machines”, Course Code: 6101, from 18 to 22 August 2025, at CMTI, Bengaluru.
- ◆ “Non Destructive Testing”, Course Code: 1303, from 05 – 06 August 2025, at CMTI, Bengaluru.
- ◆ “Microscopy & Analysis: SEM, AFM, STM, Confocal Microscope, Optical Profiler, etc.”, Course Code: 2304, from 04 – 06 August 2025, at CMTI, Bengaluru.



Editorial Team

Dr. Debeshi Dutta - 8670958202

Dr. Anusha Epparla - 7382413886

Ms. Pallavi M

write to us: directoroffice@cmti.res.in



Central Manufacturing Technology Institute

Tumkur Road, Bengaluru - 560022,

Karnataka, India Tel: +91-80-23372048

E-mail : director@cmti.res.in 

Website : www.cmti.res.in