NSF Industry-University Cooperative Research Center (IUCRC)

Composite and Hybrid Materials Interfacing (CHMI)

Georgia Institute of Technology | OAKLAND UNIVERSITY | THE UNIVERSITY OF TENNESSEE KNOXVILLE

Comprehensive Solutions for Joining and Repair of Dissimilar, Composite, Hybrid, and Metamaterials.

www.iucrc-chmi.org

CHMI Academic Leadership

Georgia Institute of Technology (Lead Site)

- Christopher Muhlstein (Center Director & Site Co-PI)
- Donggang Yao (Site Director & PI)

Oakland University (Site)

- Sayed Nassar (Site Director & PI)
- Lianxiang Yang (Site Co-PI)

University of Tennessee, Knoxville (Site)

- Uday Vaidya (Site Director & PI)
- Dayakar Penumadu (Site Co-PI)
- Krishnan Veluswamy (Site Co-PI)

For additional information, please contact the Site Director or Program Managers at any of the CHMI institutions

- Donggang (Dong) Yao, Georgia Institute of Technology
  yao@gatech.edu
- Vanina Ghossein, The University of Tennessee, Knoxville
  vghossei@utk.edu
- Zhijun (Jason) Wu, Oakland University
  wu@oakland.edu

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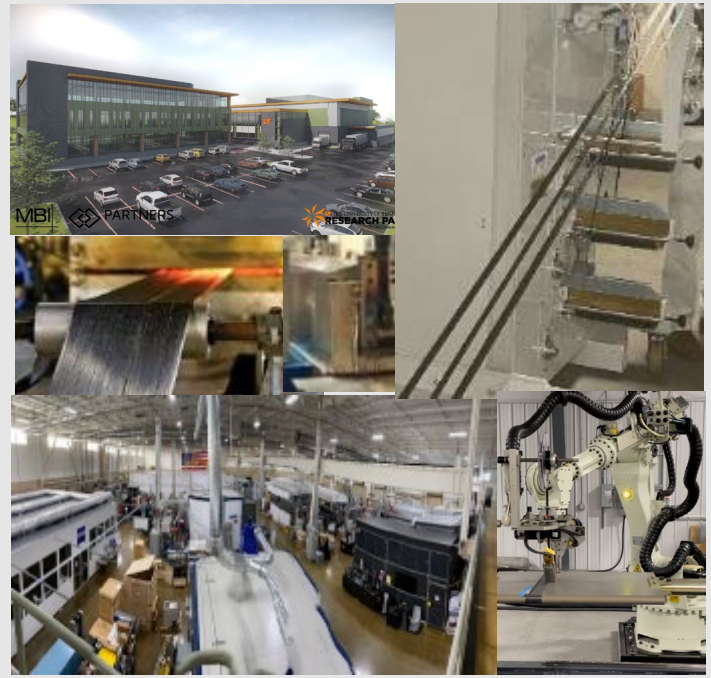
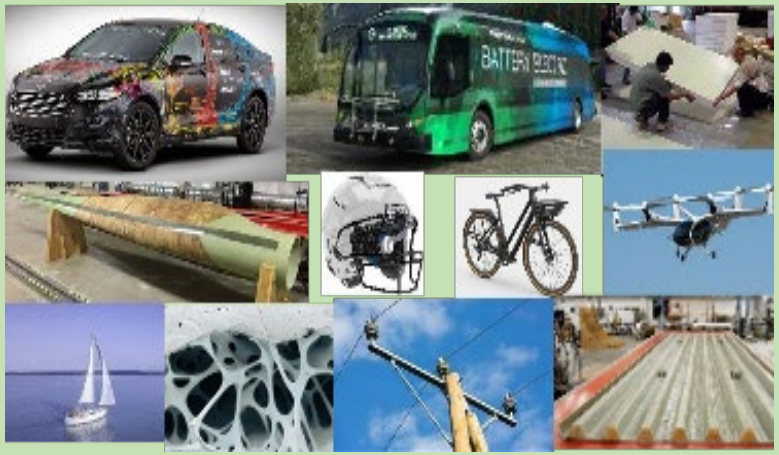
Facilities & Asset at each CHMI site

CHMI members have access to a broad range of state-of-the-art facilities, assets and personnel at all three collaborating university sites of CHMI. That includes design, analysis, testing, characterization, modeling and simulation, innovations in manufacturing, advanced and hybrid materials to name a few. Please contact us for specific information on your area of interest.



CHMI Highlights

- Multi-material (MM) and dissimilar material (DM) joining is a critical need for US industry.
- MM and DM joining of composites-metals-ceramics-polymers and hybrids are in need of practical solutions rooted in basic science.
- Three core CHMI partners are:
  - Georgia Institute of Technology
  - Oakland University
  - The University of Tennessee, Knoxville
- CHMI Research benefits sectors in:
  - Aerospace, Automotive, Defense
  - Infrastructure, Wind, Healthcare
  - Sporting, Power & Energy
  - Oil & Gas



Technologies at Play

The technologies are driven by member partners / industry in addressing industry relevant needs. Examples of CHMI projects and future directions include, but not limited to

- Dissimilar materials joining – polymer composites, thermosets - thermoplastic, Metals to composites, composites to ceramics etc.
- Artificial intelligence (AI) in joints performance
- Discontinuous & continuous fiber composites joints
- Smart embedded sensors in interfaces
- High fidelity testing from nano to full scale
- Static & fatigue performance of composite joints
- Nondestructive testing, joints inspection
- Kissing bonds in sandwich structures
- Modeling & simulation prediction of joint strength
- Carbon fiber and hybrid composites joining
- Effect of sizing on joint design and performance
- Standardization of composite joints and repair
- Repair methodologies and high-rate manufacturing
- Work force development and training/education in advanced composites and interfaces
- Reversible joints, sustainable Joints
- Mechanical testing and test methods for conventional and unconventional joints
- Design of joints for manufacturing
- Ultrasonic, laser, mechanical, hybrid joining

IAB Membership (2025-2026)

❑ Full	$35,000/year
❑ Associate	$17,500/year

Membership Benefits

- Seat at the table: Industry Advisory Board (IAB) | Full member has 1 vote, Associate member has ½ vote
- Steer and propose research projects of interest to industry
- Participate in technology roadmapping
- Access to pre-competitive and cutting-edge technologies
- Access to potential employees from CHMI
- Access to state-of-the-art R&D facilities and testbeds at all partnering university sites of CHMI
- Access to onsite Certificate Training

Representative CHMI member companies (as of Sep. 2025)

- Air Force Research Lab
- DB Tech
- Delta Air Lines
- Dominion Energy
- Endeavor Composites
- Hexcel
- Hyundai-Kia America
- IACMI
- Lockheed Martin
- Mussel Polymers
- One Power Company
- ORNL
- SensorData Technologies
- Smacar Solutions
- Specialty Materials
- Syensqo (formerly Solvay)
- UT Space Institute
- and others……