REPRESENTATIVE UT FACULTY & STAFF, ORNL, IACMI-THE COMPOSITE INSTITUTE & INDUSTRY COLLABORATORS AT INNOVATION SOUTH

(Day-to-day interactions, Partial list)

5 February 2025

(This is a dynamic list and continually updated)

THE UNIVERSITY OF TENNESSEE KNOXVILLE

Unity in strength…

when there is teamwork

and collaboration,

wonderful things can be

achieved…

-Mattie Stepanek

INNOVATION SOUTH VALUE PROPOSITION

Innovation South is a unique facility located on a signature university campus in conjunction with Oak Ridge National Laboratory (ORNL), Manufacturing USA Institute for Advanced Composites Manufacturing Innovation (IACMI-The Composites Institute), workforce development from K-12 and beyond, start-up companies, and a large industry network. They all form an ecosystem that enables TRL 1-3 leading to TRL 4-7 R&D and commercialization.

Highlights of the value proposition are:

- **UT Significant footprint in advanced materials & manufacturing**
- **Collaboration between units – Engineering, Agriculture, UT Medical Center**
- **Highly collaborative faculty (UT & beyond)**
- **Major student engagement ~ 50+ grad, 100+ undergrads**
- **IACMI-HQ**
- **Major Work-force Development (WFD) – ACE, METAL, MEEP, etc.**
- **ORNL – MDF, BTO, CFTF, CF Group, CMD**
- **Core partners – ORNL-IACMI-Industry**
- **Commercial partners co-located**
- **Retail space (coffee shops etc.)**

University of Tennessee Innovation South

Philip Barnett, PhD
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Dr. Barnett's focus is on composites manufacturing, advanced materials, carbon fiber, additive manufacturing, recycling, natural fibers, hybrid materials, vitrimers, phase change materials, stochastic modeling, and crashworthiness. Barnetts seeks to change the end-of-life and waste paradigms for fiber-reinforced composites by developing low-cost, high-performance composite materials with integrated functionality. Our current interests are in finding solutions to waste from composite structures such as aging aircraft and wind turbine blades, decreasing the energy usage and cycle time required for manufacturing advanced composites, and creating structural materials capable of functions such as damage sensing and stimulus response. The team, consisting of 1 graduate student and several undergraduates, is actively growing.

Chad Duty, PhD
Professor, MABE, UTK
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Dr. Duty serves as the CEO for IACMI-The Composites Institute. As CEO he oversees IACMI across its five core technology areas – Materials & Processing (TN), Wind (CO), Automotive (MI), Gas storage & Aerospace (OH) and Modeling & Simulation (IN) – and 170 industry members. Duty's core research area is in large scale additive manufacturing of polymer composites, 3D printing of recycled materials, thermal distortion, high temperature printing, carbon-carbon composite preforms, sensing and process control including AI and machine learning, rheology and viscoelasticity, and mechanical and microstructural characterization. The Polymer Composite Additive Manufacturing (PCAM) Lab conducts research focusing on the characterization and development of additively manufactured fiber reinforced composites. The lab specializes in material extrusion additive manufacturing systems, including small-scale fused filament fabrication, and in single screw extrusion platforms such as the Big Area Additive Manufacturing (BAAM) system. The team leverages extensive resources at Oak Ridge National Laboratory's Manufacturing Demonstration Facility (ORNL-MDF) as well as the Institute for Advanced Composites Manufacturing Innovation (IACMI).

Dustin Gilmer, PhD
Assistant Professor, Material Science and Engineering at the UT Space Institute
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Dr. Gilmer's expertise is in Advanced Manufacturing, Advanced Materials, Additive Manufacturing, Materials for Extreme Environments, Composites, Ceramics, Ceramic Matrix Composites, Casting, Powder Metallurgy, advanced ceramic matrix composites design, manufacturing, hybrid materials, product development, and advanced product development. His current work focuses on advanced materials and manufacturing for extreme environments. This includes work in metal casting, ceramics, ceramic matrix composites, powder metallurgy, and additive manufacturing. Major efforts in workforce development are also integrated into this work. The team leverages the TN ecosystem - UT Space Institute, UT Fibers and Composites Manufacturing Facility (FCMF), industry partners, and the Manufacturing Demonstration Facility (MDF). The aerospace, defense, marine, and industrial sectors are beneficiaries.

Ryan S. Ginder, PhD
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Dr. Ginder's expertise is in composites recycling, advanced manufacturing, circular economy, glass and carbon fibers, aerial and ground transportation, building materials and infrastructure, energy production and storage, materials testing, materials processing, product development, lifecycle assessment, and technoeconomic analysis. Ginder was the co-founder of Carbon Rivers, an innovation crossroads company focused on wind blade recycling. His work focuses on advanced composites recycling and practical implementation of a circular economy for US domestic manufacturing. Ginder's group researches the conversion of production scrap and end-of-life materials from various industries (e.g., energy production, automotive, aerospace) into new value-added products such as rockets, drones, electric vehicle components, and infrastructure materials. His team leverages the East Tennessee system extensively for different viable solutions addressing this grand challenge. Ginder actively mentors undergraduate and graduate student work at UT and related sponsored efforts.

David P. Harper, PhD
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Dr. Harper's expertise is in plant derived materials, biobased composites manufacturing, carbon capture, polymer processing, thermal analysis, carbon materials, recycling, circular economies, mechanics of materials, adhesion, electrochemical energy storage, multifunctional materials, and combined experimental and computational modeling for rapid materials development. Our work focuses on solving environmental, safety, and societal challenges through sustainable materials solutions. Most of our work uses plant-based materials to provide solutions to global challenges in CO2 emissions and capture, energy storage, automobile manufacturing, biomedical applications, efficient building materials, and environmental remediation. The vision is to bring prosperity to rural areas by keeping agricultural and forest lands productive while collocating manufacturing near the material source. Our group takes a wholistic approach to engineer sustainability and end of life solutions into new material. We also engineer the materials to keep the carbon in the use phase to maintain circularity while minimizing the long term environmental and human health risks.

Bruce LaMattina, PhD
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Dr. Bruce LaMattina, the lead PI for SERVE, is the son of Army veteran, Joseph LaMattina. He is the Senior Director for Space and Defense Programs at the University of Tennessee Space Institute (UTSI), an internationally recognized graduate education and research institution located in Middle Tennessee adjacent to the U.S. Air Force Arnold Engineering Development Complex. Prior to accepting the UTSI appointment he served as the Associate Vice Chancellor for Strategic Research Initiatives from 2019 to February 2021 at UT Knoxville. Before joining the UT family, he served in the same position at The University of North Carolina. LaMattina has more than 25 years of experience spanning academia, government, and corporate research and defense.

Dayakar Penumadu, PhD
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Dr. Penumadu's focus is on fiber reinforced polymeric composites and sandwich structures, materials in extreme and thermal protection systems, energetic materials and additive manufacturing, solid state additive manufacturing, environmental degradation, multi-scale (nano, micro, meso, continuum) characterization and mechanics, multi-axial (axial-torsional) stress-strain-time behavior of multi-phase materials, non-invasive characterization and residual stress using neutron and x-ray tomography and diffraction, direct numerical simulations and multiphase transport, and net-zero manufacturing using recycling and upcycling. Penumadu's work focuses on developing next generation light-weight materials for extreme leveraging IACMI-The Composites Institute, NSF Materials Research Center on Extreme Materials (CAMM), NSF-IUCRC centers (Manufacturing and Materials Joining Innovation Center (Ma2JIC) & Center for Composite and Hybrid Materials Interfacing (CHMI)), ORNL, MDF, HFIR, SNS, UT FCMF, and industry partners.

Tony Schmitz, PhD
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Dr. Schmitz leads the machine tools and machining work–force efforts for UT and IACMI–-The Composites Institute. Dr. Schmitz leads the Machine Tool Research Center (MTRC) and America's Cutting Edge (ACE) which is a national workforce program in machine tools. The mission of MTRC is to operationalize machining science to serve the discrete part manufacturing community and enable next-generation Smart Manufacturing. The overall focus is improving the practicing engineer's ability to produce accurate components in a timely manner; this has important ramifications for both the private and defense sectors. Schmitz's approach is to perform fundamental research in support of this goal while taking care to consider the practical implementation of our research efforts. Through this combined agenda, students from the high school to graduate levels are trained to have strong analytical/numerical modeling capabilities coupled with fundamental experimental techniques and data analysis skills including physics-based machine learning. Schmitz is leading the ecosystem efforts in hybrid manufacturing, where additive manufacturing is combined with other processes.

Uday Vaidya, PhD
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Dr. Uday Vaidya is the University of Tennessee, Knoxville and Oak Ridge National Laboratory (UT-ORNL) Governor's Chair in Advanced Composites Manufacturing. Vaidya serves as the Chief Technology Officer for IACMI-The Composites Institute. Vaidya has led the planning and vision for the Innovation South facility since its inception. Vaidya has over three decades of experience in engineered plastics and composites. Vaidya works in applications development for automotive, defense/military, aerospace, infrastructure and sporting. He leads the composites R&D in the East Tennessee ecosystem. Vaidya serves as the Editor in Chief for Elsevier's Composites Part B: Engineering journal. Vaidya is the author of four books- *Composites for Automotive, Mass Transit and Truck*, *Advanced Composites – Innovation and Experiential Learning, Composites for Elementary Schools*, and *Composites for Middle Schools.* Vaidya is a Fellow of the Society for Plastics Engineers (SPE) and Society for Advanced Materials and Process Engineering (SAMPE). Vaidya has over 300 publications in peer-reviewed journals in the broad area of composites.

Krishnan Veluswamy, PhD
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Dr. Veluswamy is an Assistant Professor at UT Knoxville. His areas of work include Composites Manufacturing, Process-Structure-Property relationships in Composites and Nanocomposites, Process Development and Optimization, scale-up, Polymer Rheology, Materials Characterization, Thermoplastic Composites with both continuous and discontinuous fibers, Advanced reinforced materials, Carbon Fibers, Natural Fibers, Composite Recycling, Circular Economy; Composite Molding techniques for both thermoplastics and thermosets, and Design and Product development in Automotive, Infrastructure and Aerospace applications.

Lu Wang, Ph.D.
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Dr, Wang's expertise is in Biocomposites, Natural fibers, Nanocellulose, Biopolymers, Recycling, Large-format additive manufacturing (LFAM), Plant Nanotechnology, Agriculture, Packaging, Construction, and Textile. Wang is a sustainable materials scientist specializing in cellulose materials and biodegradable polymers. He uses green chemistry to improve the interfacial interaction among natural fibers and matrices to form strong fiber-reinforced-polymer (FRP) composites. Wang's research has given him a wide range of processing skills from conventional molding to advanced manufacturing techniques such as 3D printing, roll-to-roll coating, and electrospinning. The application areas of his research include traditional construction materials, emerging 3D-printed plastic houses, biodegradable packaging materials, automotive components, and nanocellulose-based agrochemicals. He is committed to the circular bioeconomy by utilizing renewable resources and exploring material recycling to reduce their carbon footprint.

STAFF

Thomas Drye
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Thomas Drye is a seasoned engineering plastics manufacturing professional with 10+ years of experience. His expertise includes quality control, process optimization, technical service, and product development. Thomas is skilled in collaboration, problem-solving, and adapting to industry trends.

Romeo S Fono-Tamo, PhD
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Dr. Fono-Tamo's expertise is in Polymer Composites Manufacturing, Materials Development and Characterization, Sheet Molding Compound (SMC), Thermography, Cure Kinetics Analysis, Life Cycle Analysis, Automotive, Advanced Materials, Circular Economy, Workforce Development, and STEM/STEAM promotion. Fono-Tamo mentors and trains graduate and undergraduate UT and visiting students and staff. Fono-Tamo is vested in the conceptualization, fabrication and testing (Both destructive and Non – Destructive) of novel materials and components. Fono-Tamo is extensively engaged in workforce development through the ACE, METAL and other programs sponsored by DOE, NSF and DoD. Fono-Tamo collaborates with ORNL MDF in research such as SMC, compression molding, and related manufacturing processes. He is also engaged with circular economy with recycling, reuse and remanufacture is a focus point in his current activities. He is also vested in energy use minimization as well as carbon footprint reduction via Life Cycle Analysis.

Gladys Ghossein
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Ms. Ghossein provides administrative support in terms of assisting project managers in preparing budgets and financial reports, managing accounting records, and handling payments. She manages daily accounts reports, project support protocols, supports the Business Office with their client work and with management responsibilities.

Vanina Ghossein
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Ms. Ghossein's focus is on Workforce Development and Program Management. She has expertise in Educational Curriculum and Program Development and special sponsored programs. As the NSF IUCRC Program Administrator, her work focuses on collaborating with academic partners - Georgia Institute of Technology and Oakland University - and industry members. As for the Workforce Development, her work focuses on designing and executing the program/curriculum for Composites from K-12, community college, early worker training offered by IACMI – The Composites Institute, and UT units.

Alexis (Lexi) Rice
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As the administrative specialist for the Fibers and Composites Manufacturing Facility (FCMF), Lexi's primary focus is on ensuring smooth day-to-day operations within the lab. Lexi performs routine office tasks that contribute to the overall functioning of the lab, schedules tours of the facility, work with graduate and undergraduate students for any issues that arise, and support the various staff members. She also coordinates with MDF and IACMI for any involvement that may be required by FCMF.

Umar Saeed, PhD
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Umar Saeed holds a Ph.D. in Mechanical Engineering from the University of Tennessee, specializing in energy science and engineering. His doctoral research focused on developing advanced graphene materials for electrochemical energy storage. He joined FCMF as a Research Associate where he is working on carbon fiber composites for high-performance applications.

Stephen Sheriff
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Mr. Sheriff's expertise is in composites manufacturing, advanced materials, carbon fibers, bio and natural materials, workforce development and STEM education in composites and metal casting and forging, automotive, transportation, security applications, and facilities management and maintenance. As the staff engineer, Sheriff's 20+ years of work experience in manufacturing, construction, fabrication, and research allows for real world input and guidance to students' research. In addition to supporting research activities, he oversees the facilities and equipment at the UT Fibers and Composites Manufacturing Facility (FCFM), the IACMI – The Composites Institute Collaboration Facility, multiple other research spaces across UT campus, and supports activities at the ORNL MDF. He shares the role of safety chair at FCMF. He is heavily involved in workforce development and STEM education through the Innocrate, METAL, and Skillcrafters programs.

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Amy Wheelock works with the METAL and Workforce Development programs to develop and implement STEM education in metal casting. She has a Bachelor of Science in Mechanical Engineering from Tennessee Technological University, specializing in machine design and materials & manufacturing. Amy has extensive experience in manufacturing engineering where she was responsible for both custom manufacturing and high-volume electronics production lines. She also has experience as a Product Engineering Supervisor in charge of process development, line design, production equipment, tooling design, safety procedures, and product & process drawings. She is a member of Pi Tau Sigma and American Society of Mechanical Engineers.

Stephen A. Young, PhD, PMP
UT Professor Dayakar Penumadu's Research Group Project Manager, CEE
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Dr. Stephen Young's research investigates the microstructural and mechanical properties of fiber composites manufactured by various low-cost and high-volume production processes including extrusion and compression molding. Additionally, Stephen focuses on how these fiber-reinforced composites behave when mechanically deformed using tension, compressive loading, and flexural loading. Stephen studies the single filament fibers and fiber composites using radiation-based characterization, micro-XCT, structural health monitoring, optical, and electron microscopy methods and their relationship to mechanical behavior of the composites. For additively manufactured materials, process-structure property relationships are investigated using non-destructive evaluation techniques and various mechanical characterizations. Stephen also provided support to manage the Institute for Advanced Composites Manufacturing Innovation (IACMI) projects in the past decade.

Pritesh Yeole, PhD
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Dr. Yeole focuses on product development, design, manufacturing, testing, and modeling of advanced composites and engineered plastics. His entrepreneurial efforts have been recognized by the Chancellor's innovation funds to commercialize and launch a technology-based startup, Aligned Composites Technology. Dr. Yeole leverages the East Tennessee Ecosystem by collaborating with IACMI - The Composites Institute, Oak Ridge National Laboratory (ORNL), Spark Cleantech Accelerator, Innovation Crossroads, and industry partners. His major efforts include insulation retrofit cladding envelopes, sustainable (bio and natural) composites, hybrid/sandwich materials, and smart components. The automotive, transportation, sporting goods, infrastructure, aerospace, defense, and marine industries are major beneficiaries of his work.

OAK RIDGE National Laboratory

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Dr. Clarkson's research at ORNL comprises the development of sustainable material feedstocks and the integration of these materials into advanced manufacturing processes. Her research in bio-based materials is in the development of natural fiber-reinforced composites and hybrid composites, as well as the formulation of bio-based composite feedstock for the material extrusion process known as large-format additive manufacturing (LFAM). Her research focuses on utilizing cellulose nanomaterials as composite additives and how to tune the interfacial properties of bio-based materials with dissimilar polymer matrices through reactive extrusion, commercial coatings, and chemical pre-treatments. Dr. Clarkson's research also includes development of circular economies for unwanted, high-volume waste streams: post-consumer recycling (PCR) and automotive shredder residue (ASR) where they are looking at how to mechanically recycled polymers into 3D-printing feedstock. Her work supports the creation of composite feedstocks for applications in LFAM, automotive, and more. Clarkson actively mentors UT students in various aspects complementing her research & interests.

Katie Copenhaver, PhD
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Dr. Copenhaver has expertise in fiber-reinforced composites, composite manufacturing, natural fiber processing and modification, energy efficient materials for construction and automotive, large area additive manufacturing. Her work primarily focuses on the development, optimization, and characterization of natural fiber-reinforced polymer composites for manufacturing and use in industrial applications. This includes thermomechanical fiber processing, chemical surface treatments, and functional additives in composite formulations. Additional work focuses on valorization and upcycling of waste biomass and end-of-life. I work with numerous industrial partners in the chemical processing, automotive, and construction sectors on the development of sustainable materials and manufacturing technologies. Copenhaver serves as a mentor to UT graduate & undergraduate students.

Corson L Cramer, PhD
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Dr. Cramer has been performing research and development in processing, characterization, and testing of high temperature materials, including ceramics, cermets, ceramic matrix composites, heat exchange, and high temperature thermoelectrics. He is a R&D scientist with extreme environment materials and manufacturing has led projects on reaction-bonded ceramics, metal-matrix composites, cermets, binder jet additive manufacturing, and ceramic lithography printing for next generation of ultra-high temperature, harsh environment ceramic, composite and hybrid materials for use in aerospace, aero-engine, nuclear and advanced energy applications throughout his postdoctoral research assignment. Cramer's current areas of research include ceramic and composite materials development for additive manufacturing (including binder jetting, carbon-carbon composites, extrusion robocasting, and lithography), development of new metal-matrix and ceramic-matrix composites, processing of ceramics, conditioning/coating of ceramic powders, and novel processing and printing of continuous fiber ceramic matrix composites.

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Sana is responsible for evaluating and aligning industry partners with core research activities in the Manufacturing Demonstration Facility (MDF) for the Sustainable Manufacturing Technologies and Composites Innovation Group's at ORNL. Develop technical collaborations focused on industry partner problems while directly aligning with Department of Energy initiatives. In developing the industry partnerships, she directly aligns potential industry partners with the Department of Energy (DOE) initiatives in the areas of additive manufacturing, compression molding, injection and over-molding, extrusion, bio-based materials, composites, hybrid materials, circular economy, clean energy technology, simulation tools, and digital manufacturing as it relates to the U.S. industry. Her background is in adv. composite materials and manufacturing processes, program management, and new product introduction at multiple start-ups along with strong industry connections in the US., Europe, and South Asia. She serves on the leadership role in Society for the Advancement of Materials and Process Engineering (SAMPE) North America Executive Cabinet.

Ahmed Hassen, PhD
Group Leader for the Composites Innovation (CI) Group in the Manufacturing Science Division (MSD) at Oak Ridge National Laboratory (ORNL)
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Dr. Hassen is the Group Leader for the Composites Innovation (CI) Group in the Manufacturing Science Division (MSD) at Oak Ridge National Laboratory (ORNL). He is leading ORNL's development efforts in high-rate manufacturing of advanced composites structures, molds and dies manufacturing portfolio for the composite manufacturing industry. His work impacts U.S. competitiveness in the global market of manufacturing. Dr. Hassen contributed to the creation of new markets for Additive Manufacturing (AM) technologies. He has expertise in a wide variety of composite manufacturing, characterization, and qualification methods and he is currently leading/managing several technical research efforts with a large funding portfolio in this field. Dr. Hassen is mentoring, supporting, and managing a group of undergraduate and graduate at UT, postdoctoral fellows, and staff.

Diana E. Hun, PhD
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Diana Hun's research includes integrating the latest developments in materials and manufacturing techniques into building envelopes. She leads several interdisciplinary teams that are developing autonomous self-healing sealants; pre-installed sealants for prefab construction; overclad panels for building envelope retrofits; low-carbon, recyclable, biobased foam insulation; and lighter and thinner precast insulated panels. She is also a member of teams that are investigating active envelope systems, non-intrusive building envelope diagnostic tools, and low-carbon concrete mixes. Under Hun's leadership, ORNL has expanded its capabilities to include the Advanced Construction Lab and the Sustainable Materials Lab.

Seokpum “Pum” Kim, PhD
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Dr. Seokpum "Pum" Kim is a Senior R&D scientist at Oak Ridge National Laboratory's (ORNL) Manufacturing Demonstration Facility. He specializes in digital manufacturing with polymer composites, focusing on material processing and design optimization. His research covers several composite manufacturing processes such as additive manufacturing, compression molding, injection molding, resin transfer molding, thermoforming. Dr. Kim has contributed to the field by developing optimization methods and algorithms for design and processing, which resulted in 60 publications with an h-index of 22, 7 granted patents, an R&D 100 Award, and two CAMX Awards. In collaborations with multiple industry partners, Dr. Kim's work combines research insights with practical applications in composite manufacturing technology.

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Dr. Korey specializes in the development and industrialization of novel, sustainable manufacturing technologies for plastics and plastic composites. His work focuses on designing products with low-carbon and/or inherently recyclable materials, mechanical, chemical, biological, and thermochemical methods of plastics recycling, and the use of advanced re-processing techniques and repurposing to recycle industrial plastics wastes. Korey has several R&D portfolios aiming at minimizing the carbon footprint of the plastics industry. He is developing sustainably derived plastics made from renewable, waste-derived, and greenhouse gas-based plastics. Matthew Korey additionally focuses on mechanical, chemical, biological, and thermochemical methods of composite recycling and the use of advanced re-processing techniques and repurposing to recycle industrial composites waste. He also focuses on the upgrading of recycled materials to increase their lifetime through functional additives and use of recycled materials. In addition to his role at the University of Tennessee, Knoxville, he is currently an Associate R&D Scientist at the Manufacturing Demonstration Facility at ORNL and is the co-chair of the Circular Economy Working Group at IACMI-The Composites Institute.

Vipin Kumar, PhD
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Dr. Kumar has expertise in Integrated high-rate Composites manufacturing, Additive Manufacturing, Multi-functional Composites, Carbon Fibers, Composite Joining, and Lightning Strike Protection of Composites. Dr Kumar's current research area includes developing new composite manufacturing techniques using large-scale polymer additive manufacturing (AM) and traditional & advanced manufacturing processes. He also has expertise in the CFRP composites' response to direct lightning strikes and is engaged in designing novel materials to mitigate lightning strike damage. His other research focus areas are Multi-functional Composites, Carbon Fiber Manufacturing, and Composite Joining. He is a winner of the 2023 R&D 100 award, and a winner of the CAMX-combined strength award 2022. He also won the SME 2022 Outstanding Young Manufacturing Engineer and SAMPE 2021 Young Professionals

Vlastimil Kunc, PhD
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Dr. Vlastimil Kunc is the Section Head for Composites Science and Technology Section within the Manufacturing Science Division at Oak Ridge National Laboratory. Dr. Kunc also serves as an adjunct professor at Purdue University. This section consists of four groups with physical and human resources capable of all composite manufacturing steps starting from fiber pre-cursor synthesis to part manufacturing and recycling across multiple scales. Within this large team, the Advanced Fibers Manufacturing Group focuses on scale up of carbon and silicon carbide fiber manufacturing and selected intermediate feedstock forms. The Composites Innovation Group focuses on scale-up of additive and high-rate composites processes. The work of the Sustainable Manufacturing Technologies Group centers around bio-derived composite materials and composites recycling. The Extreme Environment Materials Process Group investigates carbon-carbon and ceramic composites.

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Greg Larsen is a Group Leader within the Extreme Environment Material Process group at ORNL's Manufacturing Demonstration Facility. After earning a BS in Physics from Rice University and a PhD in Materials Science and Engineering from Penn State, Greg spent several years in industry working in composites and aerospace before joining ORNL. Since joining ORNL, Greg has focused on scaleup of thermoset additive manufacturing and generally material and system development for thermal protection systems (TPS). Most notably, he printed the first additively manufactured TPS to re-enter from low earth orbit in 2021.

Umesh Marathe, PhD
Postdoctoral Research Associate at Sustainable Manufacturing Technology Group,
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Dr. Marathe's focused is on high performance composites, nano-adhesives, composite manufacturing, bio and natural material, recycling, polymer/composite tribology, hybrid processing, composite over-molding, fiber sizing – fiber matrix interface, ultra conductive composites. Among the aforementioned areas, major efforts are concentrated in composite manufacturing, bio-materials, sizing, recycling, and ultra-conductive composites. Marathe collaborates with UT students and staff and his work leads to technology commercialization and product development. Marathe is progressing into new areas including carbon nanoscale materials, fiber matrix interface – sizing, surface treatment, sensors in composites and hydrogen storage and production.

Kaustubh Mungale, PhD
Postdoctoral Research Associate
Oak Ridge National Laboratory (ORNL)
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Kaustubh Mungale holds a PhD in Mechanical Engineering from the University of Tennessee, focusing on advanced composite materials. His research involved the development and characterization of rare earth polymer bonded magnets, particularly for applications in additive manufacturing and materials science. Kaustubh has collaborated with institutions such as Oak Ridge National Laboratory (ORNL) and the Institute for Advanced Composites Manufacturing Innovation (IACMI), contributing to projects in aerospace, automotive and biomedical fields. With skills in process engineering, engineering design, and material characterization, Kaustubh has gained valuable experience in solving complex engineering challenges. His work has focused on developing practical solutions for composite materials used in real-world applications. Alongside his research, Kaustubh has mentored undergraduate students and participated in STEM outreach programs, reflecting his interest in supporting education and encouraging future engineers.

Amit K Naskar, PhD
Group Leader and Senior R&D Staff
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Dr. Amit Naskar is a Group Leader at ORNL as well as a senior research and development staff. His areas of interest for research include sustainable materials, carbon fibers & carbonaceous materials, high performance fibers, polymers and liquid crystals, composites and their interfacial chemistry, ceramic and polymer-based energy materials and electronic applications, polymer recycling, porous materials, and printable composites.

Soydan Ozcan, PhD
Distinguished Scientist and Group Leader
Sustainable Manufacturing Technologies
Oak Ridge National Laboratory
ORNL/UTK Joint Professor
Mechanical Engineering Department
University of Tennessee at Knoxville
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Dr. Soydan Ozcan is the Group Leader for Sustainable Manufacturing Technologies Group at Oak Ridge National Laboratory (ORNL). This group specializes in advancing bio-based materials and products, promoting a circular economy for polymers and composites, securing critical materials and supply chains, and developing intelligent equipment for smart, sustainable manufacturing. Dr. Ozcan is also the co-founder and leader of the Sustainable Materials and Manufacturing Alliance for Renewable Technologies, known as SM2ART sponsored by DOE. Ozcan's team engages over thirty industrial partners, delivering research with direct societal applications Ozcan has held a joint professor appointment in the Mechanical Engineering Department at the University of Tennessee–Knoxville.

Parans Paranthaman, PhD
Corporate Fellow, Chemical Sciences Division, Nanomaterials Chemistry Group
Oak Ridge National Laboratory (ORNL)
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Dr. Parans Paranthaman is a Corporate Fellow in the Chemical Sciences Division at ORNL. Paranthaman is also a fellow of the National Academy of Inventors, and fellows of Materials Research Society, AAAS, American Physical Society, American Ceramic Society, ASM International and the Institute of Physics, London, UK. He has authored or co-authored more than 475 journal publications with > 24,879 citations and an "h-index" of 78 and a total of >90 inventions including 58 issued U.S. Patents related to his research. He has licensed his technologies to eight industries for commercialization. His present research focuses on the Recovery of Platinum Group Metals from Minerals, Development of Additive Manufacturing of N95 Fabrics and Antiviral Coatings, Additive Manufacturing of Permanent Magnets and Motors, Lithium Separation from Geothermal Brine, Recovery of Carbon From Recycled Tires for Clean Energy Applications, and Development of Electrode Materials for Energy Storage Applications.

Subhabrata Saha, PhD
Postdoctoral Researcher, Manufacturing Science Division,
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Dr. Saha's expertise is in synthesis and processing of functional polymer blends/nanocomposites, fiber-reinforced composites, fiber orientation, hydrogen storage, composite recycling, printed wind blades, lightning strike protection, electrical and thermal conductivity, UV assisted thermoset printing, EMI shielding. Saha has been working on advance manufacturing of functional composites for automotive, wind, and aerospace industries aiming to reduce production time and cost, minimize carbon footprint, achieve intricate designs and high performance, and find solution for afterlife recycling. Saha conducts foundational research that addresses the challenges and opportunities of state-of-the-art composite manufacturing. The ultimate goal is to increase the energy efficiency of U.S. manufacturing through the industry adoption of improved processes.

Halil Tekinalp, PhD
Senior R&D Staff at the Manufacturing Science Division at Oak Ridge National Laboratory (ORNL)
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Dr. Halil is a Senior R&D Scientist at the Manufacturing Science Division at ORNL and works on the development of sustainable materials and manufacturing technologies. His research focuses on development of bio-derived fiber-reinforced composite systems for additive manufacturing and understanding the microstructure-property relationship of these materials, as well as development of composite recycling technologies. In addition to bio-composite development for extrusion deposition, he also has experience in polymer processing, supercritical fractionation of petroleum pitch, and production and characterization of activated carbon fibers. His work yielded awards, including an R&D 100, SME and multiple CAMX awards, multiple patents, and he has co-authored more than 50 journal papers and technical reports.

Merlin Theodore, PhD
Group Leader for the Advanced Fibers Manufacturing Group in the Manufacturing Science Division at Oak Ridge National Laboratory (ORNL)
Joint UT-ORNL faculty, MABE Department
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Dr. Merlin Theodore is the Group Leader for the Advanced Fibers Manufacturing Group in the Manufacturing Science Division at Oak Ridge National Laboratory. She guides material research efforts at two Department of Energy national user facilities – the Carbon Fiber Technology Facility and the Manufacturing Demonstration Facility - where she helps industry overcome the barriers associated with advanced fibers such as cost, technology scaling, and product and market development. Theodore is a member of the US President's National Science Board (NSB). Her efforts allow technologies to advance from the research and development stage to validation and deployment. Merlin has served as the Materials Technology Area for IACMI-The Composites Institute.

REPRESENTATIVE STARTUPS / COMPANIES

Vinit Chaudhary
Co-founder, Aligned Composites Technology
Email: Vinit@alignedcomposites.com | Phone: 865-333-0187
URL: https//Alignedcomposites.com (Website coming soon)

Chaudhary focuses on composites design and manufacturing, advanced materials, carbon and glass fibers, bio & natural materials, Nonwovens and Yarns, cost effective and energy efficient product development, current focus on automotive, transportation and Infrastructure applications. He is the co-founder of Aligned Composites Technology (ACT), an Innovation Crossroads awardee. ACT specializes in the production of nonwovens and yarns specifically designed for fiber reinforced composites. At ACT we create high performance nonwovens and yarn intermediates with consistent and uniform fiber distribution. ACT works closely with UT students and staff in composites and applications development,

Hicham Ghossein, PhD
Endeavor Composites, Inc CEO
Innovation Crossroad Cohort 2 fellow
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Dr. Ghossein's expertise is in nonwoven fabric, composites manufacturing, advanced materials, carbon fibers, bio & natural materials, energy efficient product development, automotive, transportation and security applications. Endeavor Composites was founded as an Innovation Crossroads awardee in 2019. Ghossein/s company focuses on repurposing excess fibers from advanced materials processes into nonwoven reinforcement, while preserving an extended fiber length above 1 inch. This approach enabled nonwovens to act as reinforcement for various composites providing sustainability, lightweight, energy efficiency, lower carbon footprint, and a circular economy approach. The company leverages the East TN ecosystem - the IACMI-The Composites Institute, ORNL MDF and UTK Fibers and Composites Manufacturing Facility (FCMF) and industry partners. With over 50 projects spanning across multiple sectors such as automotive, mass transit, aerospace, infrastructure, defense, and marine.

Jeff McCay
President/Principal partner, Top Five Inc.

Jeff McCay currently serves as President /Principal Partner of Top Five Inc. Top Five is a Chattanooga Tennessee based private equity company which has been in operation since 2006. Top Five's business model includes both majority and minority investments in mature industrial markets as well as emerging technologies. Jeff also serves as President and Founder of Composite Applications Group. CAG is a leading consortium working to commercialize composite solutions in various markets. Prior to forming Top Five Inc. with his other two partners, Jeff served as General Manager / Managing equity partner of Modern Industries, a Tier 2 automotive component products company.

Ryan Spencer, PhD
CEO and Founder, ThermaMatrix, Inc.
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URL: https//fcmf.utk.edu

Dr. Spencer's expertise is in composites manufacturing, quality control and inspection, nondestructive evaluation, automation and robotics. Spencer was awarded by Innovation Crossroads in the 2023 cycle., founding ThermaMatrix. His company offers an innovative vision inspection technique designed to characterize a diverse range of materials, supporting clean-manufacturing processes. Established in early 2023 by Ryan Spencer, who transitioned his Ph.D. research from the University of Tennessee into a commercial venture, ThermaMatrix addresses a critical technical gap in the nondestructive evaluation (NDE) and material characterization field. ThermMatrix's primary markets include the composite, aerospace, and semiconductor industries. ThermaMatrix has actively participated in the NSF I-Corps Regional Program, UT-Spark Accelerator, and the ORNL Innovation Crossroads incubator. Spencer serves as a mentor for students in the NDE and related areas.

Alex Stiles, PhD
Co-founder/CEO of Vitriform3D
Email: alex@vitriform3d.com
URL: https://vitriform3d.com/

Alex Stiles graduated from The University of Tennessee with his PhD in 2022 where his research focused on large-scale additive manufacturing of photopolymeric composites. He then co-founded Vitriform3D a few months later which focuses on 3D printing hard to recycle glass materials into new materials. His company was chosen for Innovation Crossroads, a very prestigious program based in Oak Ridge National Laboratory (ORNL) for start-up companies.

John F. Unser
VP Technology & Program Management
Composite Applications Group
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John Unser is the VP of Technology and Project Management at Composite Applications Group. Unser is a 35-year veteran of the composite industry, drawing from previous work experiences with both large OEMs and small businesses, including IACMI, Caterpillar, Firefly Energy, Inc., and GMI Composites. Unser has built a strong base in a wide variety of aspects in composites manufacturing, with hands on engineering experience in compression molding, autoclave curing, filament winding, injection molding, resin transfer molding, vacuum infusion, hand lay-up, recycling and pultrusion. Unser holds a Bachelor of Science in chemical engineering from Iowa State University in Ames, Iowa, and an MBA from Maryville University in St. Louis, Missouri. Unser is an ACMA Certified Composite Technician Instructor. CAG provides composite solutions for OEMs looking to replace traditional materials with composites and advanced materials. The OEM's focus is on reducing weight, improving thermal efficiency, extending battery life, enhancing corrosion resistance, and delivering other valuable propositions. CAG collaborates with supply chain companies, technology partners, and OEMs to ensure these solutions are commercially viable and meet the economic demands of OEM markets. Understanding that transitioning to composites can be complex, CAG guides OEMs through this process by leveraging its extensive network of technology members across the supply chain. Notable successes include projects with Wabash National and Trinity Rail. CAG harnesses creativity and collaboration to achieve stronger more profitable outcomes for all the companies involved.

IACMI-The Composites Institute is a Manufacturing USA institute with over 170 member partners and five technology areas. In addition to CEO Chad Duty and CTO Uday Vaidya previously listed, the IACMI leadership team includes:

Dale Brosius
Executive Vice President & Chief Commercialization Officer
Email: dbrosius@iacmi.org

Dale Brosius focuses on partnerships and technology commercialization. With a strong background in the composites industry, Brosius is dedicated to bridging the gap between research and market adoption. His leadership roles in various composites companies have equipped him with the expertise needed to drive business growth and innovation. At IACMI, Brosius continues to facilitate the transition of advanced composites technologies into practical applications across industries, emphasizing competitiveness and sustainability.

Heather Castleberry
Chief Financial Officer
Email: hcastleberry@iacmi.org

Heather Castleberry provides management and oversight of all financial and budgetary controls for IACMI, GAAP financial reporting and analysis, managing and reporting indirect costs and rates, and corporate financial strategic planning. With over 15 years in leadership roles in various government contractor organizations and certification as a Nonprofit Accounting Professional (CNAP), she is equipped with the expertise needed to provide guidance to the accounting and finance staff who work closely with IACMI's project participants and other research and development partners. Heather is a CPA and has an MBA and B.A. in Accounting and Business Administration.

Erin Brophy
Chief Operating Officer
Email: ebrophy@iacmi.org

Erin Brophy oversees daily operations and strategic initiatives. With a background in operations management, Brophy brings valuable expertise to ensure the effective implementation of IACMI's mission. Her leadership roles in various sectors have equipped her with skills in project management and organizational development. Brophy's commitment to collaboration and innovation drives the organization's efforts to advance composite manufacturing technologies.

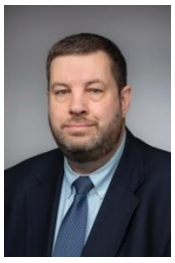
Mark Morrison
Vice President, Communications & Outreach
Email: mmorrison@iacmi.org

Mark Morrison leads IACMI's public relations and external affairs responsibilities. He also plays a critical liaison role in leveraging the key capabilities of the organization's 170+ members made up of industry, academia, and government agencies. Mark has more than 25 years of industrial communications experience. Prior to joining IACMI, he held communication and marketing positions for global companies involved in automotive, manufacturing, and building products. Most recently he held positions of Corporate Communications Director for LP Building Solutions in Nashville, Tenn. and senior manager of corporation communications for Honda North America based in Marysville, Ohio. Mark has a B.A. in journalism and communications from The University of Alabama.

Andrew Pokelwaldt
Education & Workforce Director
Email: andrewp@iacmi.org

Andrew Pokelwaldt has extensive experience in workforce development and leads our workforce team, overseeing strategic planning and the execution of key initiatives and programs. He has served as Director of Workforce Training and Credentialing at the American Composites Manufacturing Association and as Training and Development Manager at Brunswick Recreational Boat Group in Knoxville. Andrew joined IACMI from Newell Brands in Maryville where he served as the corporate technical training manager, overseeing diverse workforce programs in the U.S., Europe, and Latin America. Andrew, who has a master's degree in education from the University of Tennessee, Knoxville, is a former dual career retired military veteran of the U.S. Marine Corps and U.S. Army with 20 years of service.

In addition to Vlastimil Kunc listed above, who specializes in Materials and Processing, these are IACMI's Technology Area Directors:



Derek Berry
Wind Energy
National Renewable Energy Laboratory (NREL)
Email: derek.berry@nrel.gov
Website: https://www.nrel.gov/

Derek Berry is a Senior Engineer at NREL (National Renewable Energy Laboratory) and the Director of the Wind Turbine Technology Area for IACMI. He leads the NREL/IACMI team in the research of innovative composite materials and manufacturing for wind turbine blades and other components. Previously, he was the NREL Engineering Supervisor at the Wind Technology Testing Center in Boston, Massachusetts, where he was responsible for large-scale wind turbine blade test engineering operations. He also serves as the Operating Agent for the International Energy Agency (IEA) Wind TCP Task 45: Recycling Wind Turbine Blades. Prior to joining NREL, Derek spent 15 years as a wind blade design, manufacturing, and testing engineer at TPI Composites. Derek is a graduate of the U.S. Air Force Academy with a degree in aeronautical engineering.

Ray Boeman, PhD
Vehicles
Scale-up Research Facility, Detroit
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Ray Boeman serves as the Director of Advanced Mobility Solutions at IACMI's Scale-up Research Facility (SuRF) in Detroit. Before joining IACMI, Boeman had a distinguished 27-year career at Oak Ridge National Laboratory (ORNL), where he held various leadership roles, including Director of Energy Partnerships for the Energy and Environmental Sciences and Director of the Sustainable Transportation Program—the largest transportation program in the DOE system and ORNL's largest EERE program. He was instrumental in acquiring ORNL's $35 million Carbon Fiber Technology Facility (CFTF), the first open-access, pre-production scale facility of its kind. Boeman earned a Ph.D. in Engineering Science and Mechanics from Virginia Polytechnic Institute and State University. His research has spanned a wide range of areas, including composite materials and manufacturing, fracture mechanics, adhesive bonding, photomechanics, mechanical properties, materials processing, damage mechanisms, and non-destructive evaluation.

R. Byron Pipes, PhD
Design, Modeling & Simulation
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R. Byron Pipes, Ph.D., is a highly regarded figure in engineering and academia, known for his significant contributions to materials science. With extensive experience spanning decades, Pipes has made notable advancements in materials development and manufacturing techniques. Holding a Ph.D. in Mechanical Engineering, he has held various academic roles and authored numerous scholarly works. Pipes' research has had a profound impact across industries such as aerospace, automotive, and defense, solidifying his reputation as a pioneering force in materials engineering.

Brian Rice
High Rate Aerostructures & Compressed Gas Storage
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Brian Rice is a distinguished engineer with the University of Dayton Research Institute, having served in various technical, management, and business development roles for 37 years. Brian's focus areas in advanced composites include processing science, nano-enhanced composites, smart structures, and advanced manufacturing. Current applications of interest include advanced air mobility, airborne wind energy, hypersonics, hydrogen storage, manufacturing in space, and material and manufacturing technology integration across the supply chain.

Additional staff across various functions – Workforce, Operations, Finance, Contracting, and Communications – provide essential support for IACMI.

TEAMWORK…

Coming together is a beginning

Keeping together is progress

Working together is success…

- Henry Ford

THE UNIVERSITY OF TENNESSEE KNOXVILLE

For additional information and to direct questions, please contact:
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