



# SUMMER MEMBERS MEETING

July 23-25, 2019 | Sheraton Downtown Denver

## AGENDA

Sheraton Downtown Denver | 1550 Court Place, Denver, CO 80202

Agenda is subject to change. Visit the Event website at [iacmi.org/summer-2019-members-meeting](http://iacmi.org/summer-2019-members-meeting) for more details.

TUESDAY, JULY 23		
8:00am – 12:00pm	Registration Open	<b>Sheraton Downtown</b> Tower Bldg., 2 <sup>nd</sup> Floor, South Convention Lobby
8:00am – 1:00pm	Pre-Scheduled Project Meetings Email <a href="mailto:jblue@iacmi.org">jblue@iacmi.org</a> for more information.	<b>Sheraton Downtown</b> 1550 Court Place, Denver, CO 80202
12:00pm – 1:00pm	Lunch	<b>Sheraton Downtown</b> Tower Bldg., 2 <sup>nd</sup> Floor, South Convention Lobby
12:45pm – 1:00pm	Shuttles depart the Sheraton in 5 minute intervals for NREL National Wind Technology Center (NWTC) Must be preregistered for tour to attend. No last minute additions will be allowed. U.S. citizens will need valid proof of identification.	<b>Sheraton Downtown</b> Shuttles load at the corner of Court Pl and 16 <sup>th</sup> St outside of the Sheraton Tower Building
2:00pm – 3:30pm	NREL National Wind Technology Center (NWTC) Tour	<b>National Wind Technology Center</b> 18200 CO-128 Boulder, CO 80303
3:30pm – 3:35pm	Shuttles depart NWTC for Vartega Global Headquarters	<b>National Wind Technology Center</b> 18200 CO-128 Boulder, CO 80303
4:00pm – 6:00pm	Vartega Global Headquarters Open House and Ribbon Cutting Food trucks and beverages will be provided on site	<b>Vartega Global Headquarters</b> 15000 W 44th Ave., Unit F Golden, CO 80403
5:45pm – 6:30pm	Shuttles depart from Vartega to return to Sheraton Downtown Denver	<b>Vartega Global Headquarters</b> 15000 W 44th Ave., Unit F Golden, CO 80403

# AGENDA

## WEDNESDAY, JULY 24

7:00am – 9:00am	<b>Project Meetings, Breakfast, Registration</b>	<b>Sheraton Downtown</b> South Convention Lobby
9:00am – 9:20am	<b>Institute Update</b> John Hopkins, IACMI Joannie Harmon Heath, IACMI	<b>Sheraton Downtown</b> Ballroom
9:20am – 9:40am	<b>Welcome to the State of Colorado</b> Colorado Governor Jared Polis Johney Green, National Renewable Energy Laboratory	<b>Sheraton Downtown</b> Ballroom
9:40am – 10:30am	<b>IACMI 2020 Planning</b> John Hopkins, IACMI   Tom Drye, Techmer PM   Ross Brindle, Nexight Group	<b>Sheraton Downtown</b> Ballroom
10:30am – 11:00am	<b>Break and Exhibits</b>	<b>Sheraton Downtown</b> South Convention Lobby

11:00am – 12:30pm	<b>Breakout Sessions:</b>	<b>Recycling</b>	<b>Additive</b>	<b>Wind</b>	<b>Simulation</b>
		Location: Windows Moderator: Soydan Ozcan, ORNL	Location: Ballroom Moderator: Brian Rice, UDRI	Location: Tower Court D Moderator: Derek Berry, NREL	Location: Silver (Mezzanine level) Moderator: John Unser, IACMI
11:00am – 11:25am	<b>IACMI Project 6.20 – Closing the Loop on Automotive Carbon Fiber Prepreg Manufacturing Scrap</b> Alice Havill, Vartega		<b>Hybrid Tooling for Large Composite Structures</b> Scott Huelskamp, UDRI	<b>Evaluating Inherent Strain of Cured Resin in Resin Areas of Wind Blade Laminates</b> Matthew Davis, Luna Innovations; Timothy Cowley, TPI Composites	<b>Design Workflow for Prepreg-Platelet Molding Compound</b> Johnathan Goodsell, Purdue University
11:30am – 11:55am	<b>Options for Recycling Mixed Fiber Composite Scrap Materials</b> Dan Coughlin, ACMA		<b>Development of Automotive Grade Carbon Fiber Composite Performance Standards</b> Tom Hollowell, ACC	<b>Techno-Economic Wind Blade Manufacturing Model to Identify Opportunities for Cost Improvements</b> Stephen Johnson, UMASS Lowell	<b>Creating Virtual Universes to Serve the Composites Industry</b> Tonya Cole, Dassault Systèmes
12:00pm – 12:25pm	<b>Development of rCF Thermoplastic Non-woven Prepreg for Automotive Class A Body Panels via Compression Molding</b> Mark Cieslinski, BASF		<b>Development of Large-Scale Extrusion Deposition for Structural Applications</b> Charles Hill, Local Motors	<b>Optimized Carbon Fiber Composites for Wind Turbine Blades Project Summary</b> Brandon Ennis, Sandia National Lab	

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<b>12:30pm – 1:30pm</b>	<b>Lunch and Exhibits</b>	<b>Sheraton Downtown</b> South Convention Lobby
<b>1:30pm – 3:00pm</b>	<b>Thermoplastic Composites for Wind Turbine Blades and Beyond</b> Derek Berry, NREL   Mark Aubart, Arkema   Steve Nolet, TPI Composites   Zhang Mingfu, Johns Manville   Dylan Cousins, Colorado School of Mines   Dayakar Penumadu, University of Tennessee, Knoxville   Ryan Beach, NREL   Robynne Murray, NREL   Johnathan Goodsell, Purdue University   David Koester, Vanderbilt University	<b>Sheraton Downtown</b> Ballroom
<b>3:00pm – 3:30pm</b>	<b>Break and Exhibits</b>	<b>Sheraton Downtown</b> South Convention Lobby
<b>3:30pm – 4:00pm</b>	<b>Development of a Class A Lightweight SMC Liftgate</b> Hendrik Mainka, Volkswagen	<b>Sheraton Downtown</b> Ballroom
<b>4:00pm – 4:30pm</b>	<b>Air Force 10 Year Plan for Composites Manufacturing</b> Andrea Helbach, United States Air Force	<b>Sheraton Downtown</b> Ballroom
<b>4:30pm – 5:00pm</b>	<b>Highlighting IACMI SME Members</b> Moderator: Dale Brosius, IACMI Allan Wood, Analyswift   Chris Oberste, WEAV3D   Casey Hoffman and Jaron Koppers, Vistex   Jeff McCay, Composites Applications Group	<b>Sheraton Downtown</b> Ballroom
<b>5:00pm – 5:05pm</b>	<b>Closing Remarks</b> Dale Brosius, IACMI	<b>Sheraton Downtown</b> Ballroom
<b>5:30pm – 6:00pm</b>	<b>Shuttles to Reception</b> View shuttle schedule on page 14	<b>Sheraton Downtown</b> Shuttles load at the corner of Court Pl and 16 <sup>th</sup> St outside of the Sheraton Tower Building
<b>6:00pm – 9:00pm</b>	<b>Reception at Wings Over the Rockies Air and Space Museum</b>	<b>Wings Over the Rockies</b> 7711 E Academy Blvd. Denver, CO 80230
<b>8:30pm – 9:00pm</b>	<b>Shuttles Return to the Sheraton</b> View shuttle schedule on page 14	<b>Wings Over the Rockies</b> 7711 E Academy Blvd. Denver, CO 80230

## THURSDAY, JULY 25

<b>7:30am – 9:00am</b>	<b>Registration and Breakfast</b>	<b>Sheraton Downtown</b> Tower Bldg., 2 <sup>nd</sup> Floor, South Convention Lobby
<b>8:00am – 9:00am</b>	<b>Technical Advisory Board Meeting</b> Invitation only	<b>Sheraton Downtown</b> Tower Court A
<b>8:00am – 9:00am</b>	<b>Workforce Advisory Board Meeting Invitation only</b>	<b>Sheraton Downtown</b> Tower Court B

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<p><b>9:00am – 9:15am</b></p>	<p><b>Welcome</b> Robin Pate, IACMI</p>	<p><b>Sheraton Downtown Ballroom</b></p>
<p><b>9:15am – 9:45am</b></p>	<p><b>Vertical Axis Wind Turbine made with Thermoplastic Carbon Fiber Composites</b> Kaushik Mallick, Steelhead Composites Don Radford, Colorado State University</p>	<p><b>Sheraton Downtown Ballroom</b></p>
<p><b>THURSDAY, JULY 25 (continued)</b></p>		
<p><b>9:45am – 10:45am IACMI Intern Breakout Sessions</b> Learn about the research projects from the 40+ IACMI interns learning at host locations across the U.S. Download the IACMI mobile app to view intern profiles.</p>		
<p><b><u>Materials and Processing &amp; Wind Energy</u></b> Location: Windows</p> <p><b>Development of Thermoplastic Induction Welding for Joining of Wind Turbine Blades &amp; Resistance Welding of Gaps</b> Ryan Clark, NREL &amp; Logan Unser, UTK</p> <p><b>Structural Validation of a 13-meter Thermoplastic Wind Turbine Blade</b> Casey Nichols, NREL</p> <p><b>Drop Weight Impact Effect on Strength Properties Between Thermoset and Thermoplastic Composite Panels</b> Liam Herrera, NREL</p> <p><b>The Effects of Defects in Elium-Based Thermoplastic Fiber Reinforced Composites</b> Andrew Patchen, UTK</p> <p><b>Estimation of Residual Thermal Stresses in Curing Composites</b> Chris Nash, Vanderbilt University</p> <p><b>Mechanical Testing and Down-Selection of Resin Matrix System for Use in UAV Carbon Composite Components</b> Caroline Ellis, UDRI</p> <p><b>Optimizing a Nylon-Carbon Composite via Twin Screw</b> Cole Franz, UTK</p>	<p><b><u>Recycling &amp; Sustainability</u></b> Location: Ballroom</p> <p><b>Embodied Energy (EE) of the Pyrolysis Process and Comparison of Virgin and Recycled Carbon Fiber Composites</b> Hayley Coughlin &amp; Samantha Ford, UTK</p> <p><b>Embodied Energy and Cost Modeling of Recycling CFRP using Supercritical Solvolysis</b> Sabrinna Rios Romero &amp; Isaac Sloan, UTK</p> <p><b>Flexural Testing on Short-Fiber Reinforced Polymer Injection Molded Plaques for CAE Modeling</b> Ryan Spencer, DuPont/UTK</p> <p><b>Quasi-Static Tensile Testing for CAE Modeling</b> Susan Schickling, DuPont/UTK</p> <p><b>Modeling Thermal Conductivity Variations in 3D-Printed Parts</b> Kailey Newcome, DuPont/Vanderbilt University</p> <p><b>New Approach Improves Understanding of FFF Materials Properties</b> Tony Wente, DuPont</p> <p><b>Mechanical Characterization of Micro Compounded and Injection Molded Recycled Carbon Fiber Reinforced Nylon</b> Kaitlyn Nagel, Vartega</p>	<p><b><u>Additive &amp; Automotive</u></b> Location: Tower Court D</p> <p><b>Geometry Analysis for Big Area Additive Manufacturing</b> Logan Greenlee, Additive Engineering Solutions</p> <p><b>Shear Strength of 3D Printed Materials Using Single Lap Shear Testing</b> Sam Smith, DuPont</p> <p><b>Printed Polymer Matrix Composite Creep Behavior Characterization Using Time-Temperature Superpositioning</b> Joseph Gauspohl, Local Motors</p> <p><b>Interlaminar Fracture Toughness of LSAM Printed Material</b> William Henken, Local Motors</p> <p><b>Determination of Poisson's Ratio for Large Scale 3D Printed Carbon Fiber Reinforced Thermoplastic</b> Alex Rowe, Local Motors</p> <p><b>Effects of Poplar Fiber Compounded with Epoxy and Nanomaterials</b> Alexandria Banta, ORNL</p> <p><b>Mechanical Testing of Additive Manufactured Cementitious Materials</b> Morgan Jenkins, ORNL</p>

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<p><b>Carbon Fiber Interface Characterization Using Single Fiber Fragmentation</b> Javier Garcia, UTK</p> <p><b>Techniques for Characterizing Fiber Reinforced Cement Based Composites and Tensile Response</b> Colby Gilbert, UTK</p> <p><b>Plasma Oxidation of PAN Fiber</b> Taylor Hamrick, 4X Technologies</p> <p><b>Evaluation of Carbon Fiber Sizing Affects using Single Fiber Pull-out Tests</b> Bailey Millett, UTK</p> <p><b>A Study of Carbon Fiber Sizing Effects Using Single Fiber Fragmentation</b> Tessa Patton, UTK</p> <p><b>Revision of PRISMA Preform Panel Machine</b> Robert Schickling, Structural Composites Inc.</p>	<p><b>Mechanical Property and Composition Correlations of Carbon Fiber Test Bars</b> Dillon Garcia-Wright, Vartega</p> <p><b>Non-Wovens From Carbon Fiber</b> Foster Greer, Vartega</p> <p><b>Materials Characterization and Identification of Unknown Prepreg Carbon Fiber Material</b> Brayden Aller, CRTC</p> <p><b>Driving Process Improvement with Lean 5S</b> Colin Kahler, CRTC</p> <p><b>Chop Fiber Production Line</b> David Lambert, CRTC</p> <p><b>Prototyping and Design of Biodegradable Regenerative Orthopedic Implants</b> Ryan Ogle, UTK</p>	<p><b>Print Head Design for Additive Manufacturing of Continuous Fiber Polymeric Composites</b> Brian Roberts, UTK</p> <p><b>Rheology of Sheet Molding Compounds (SMC)</b> Zach Cook, UTK</p> <p><b>In-Depth Analysis of Rheological Property Differences Within Spindle Surface Area (SMC)</b> Justin LaBelle, UTK</p> <p><b>High Pressure-Resin Transfer Molding</b> Kevin Blossfeld, IACMI SURF/MSU</p> <p><b>Optimization of Carbon Fiber SMC Composite Curing Time</b> Jennifer Smith, IACMI SURF/MSU</p>
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## THURSDAY, JULY 25 (continued)

10:45am – 11:00am	Break	Sheraton Downtown Ballroom
11:00am – 11:30am	Progress on Textile Grade Carbon Fiber, Intermediates and Process/Product Opportunities Uday Vaidya, IACMI	Sheraton Downtown Ballroom
11:30am – 12:00pm	Closing Remarks John Hopkins, IACMI Ross Brindle, Nexight	Sheraton Downtown Ballroom
12:00pm – 1:00pm	Lunch and Exhibits	Sheraton Downtown South Convention Lobby
12:00pm – 1:00pm	Roadmapping Working Group Lunch Invite only	Sheraton Downtown Windows
12:00pm – 5:00pm	Pre-Scheduled Project Meetings	Sheraton Downtown Visit Registration Desk for Details