

CAMX

THE COMPOSITES AND ADVANCED MATERIALS EXPO

WE FORM THE FUTURE

COMBINED STRENGTH. UNSURPASSED INNOVATION.

OCTOBER 17-20 | **2022**

ANAHEIM CONVENTION CENTER

ANAHEIM, CA

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AIRTECH

LARGE SCALE 3D PRINTING



Airtech introduces our new large scale additive manufacturing capabilities along with newly formulated resins for low and high temperature 3D printing

PRINT-TECH®

Additive Manufactured Tooling for Composites

BENEFITS

- **Large Scale**
40ft x 10ft (12m x 3m)
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- **High Quality Print**
Easily machines parts to accurate profiles with vacuum integrity.
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DAHLPRAM®

Purging Compounds for Additive Manufacturing FDM Extruders

BENEFITS

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Protects extrusion equipment by reducing carbon build up.
- **Versatility**
One-stop shop for all large scale purging needs covering a broad temperature range (490°F to 770°F / 254°C to 410°C).
- **Ensures Quality**
Prevents material cross contamination during material change overs.



DAHLTRAM®

Tooling Resins for Additive Manufacturing

BENEFITS

- **Resin Selection**
Range of resins available for high and low temperature applications.
- **Resin Properties**
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More than a manufacturer... A technical partner !

Welcome to CAMX — the only industry event that brings together all aspects of the composites and advanced materials communities to ignite fresh, bold ideas and fruitful business connections that will create the materials and products of the future. On behalf of CAMX's volunteers and staff, we are very excited to welcome you back to beautiful Anaheim, California. We have an amazing experience planned, including a robust exhibition hall with nearly 500 exhibitors from around the world, exciting networking events, knowledge sharing opportunities, and comprehensive education sessions from the industry's leading experts.

Network and collaborate with your colleagues, partners and clients throughout the event. CAMX Park Place, presented by CompositesWorld, features designated zones for learning, networking and inspiration. CAMX Park Place is a fresh Exhibit Hall experience that offers opportunities to exchange ideas and make new connections with like-minded professionals.

Download the mobile app and access the MyCAMX Planner to navigate the Exhibit Hall and to search for sessions you want to attend and exhibitors you want to visit. To create your own custom agenda, login to your MyCAMXPlanner account using your registration email and click the "+" sign on the sessions and exhibitors you are interested in. Find your areas of interest, exhibitors and live demonstrations in the Conference Program found in this Show Directory.

CAMX has grown to become the largest, most comprehensive composites and advanced materials event in North America for products, solutions, networking and advanced industry thinking. This year we are proud to be recipients of *Trade Show Executive's* Top 100 Award acknowledging CAMX as one of the top tradeshow in the U.S. We remain committed to developing and advancing the composites and advanced materials industry, and we gladly welcome attendees from all backgrounds, roles and market segments representing the depth and breadth of our fast-growing industry. There are countless opportunities to learn, network and grow your business with industry professionals from various backgrounds and roles.



As you explore new industry innovations and continue to grow your professional network this week, please use the hashtag - #CAMX2022 - when you share and post, and remember to give us your honest feedback by completing the evaluations. We greatly appreciate your support in continuing to make CAMX the premier event for the composites and advanced materials industry. Again, thank you for attending, and I look forward to seeing you on the show floor!

Best,

Lucy Houchin, Norplex-Micarta, Committee Chair

SCHEDULE AT A GLANCE

CAMX offers the largest composites-related education program with robust, comprehensive technical content led by industry experts and leaders.

Convenient Access with the MyCAMX Planner and CAMX App

The CAMX app is the best way to see schedule updates and last-minute CAMX news. Download it today to access convenient app features like a customized personal event planner, an interactive exhibit hall floor plan, a searchable exhibit hall directory and conference program, and local Anaheim information.

Monday, October 17**8:00 a.m. - 4:00 p.m.**

Registration Open

8:00 a.m. - 5:00 p.m.

Exhibitor Move-in

9:00 a.m. - 12:00 p.m.

Conference Tutorials

1:00 p.m. - 4:00 p.m.

Conference Tutorials

5:00 p.m. - 7:30 p.m.

SAMPE Awards Ceremony & Reception

5:30 p.m. - 7:30 p.m.

ACMA Membership Awards Ceremony & Reception

Tuesday, October 18**7:00 a.m. - 5:00 p.m.**

Registration Open

7:45 a.m. - 8:30 a.m.

First Time Attendee Orientation

8:30 a.m. - 10:00 a.m.

General Session with Keynote Address

10:00 a.m. - 5:00 p.m.

Exhibit Hall Open

12:00 p.m. - 1:00 p.m.

CAMX Award Winner Presentations

1:00 p.m. - 5:00 p.m.

Conference Programming

2:00 p.m. - 2:30 p.m.

ACE Award Winners Ceremony

5:00 p.m. - 6:00 p.m.

Welcome Reception

SCHEDULE AT A GLANCE

Wednesday, October 19

7:00 a.m. - 5:00 p.m.

Registration Open

8:00 a.m. - 9:00 a.m.

Good Day, CAMX

9:00 a.m. - 12:00 p.m.

Conference Programming

9:00 a.m. - 5:00 p.m.

Exhibit Hall Open

12:00 p.m. - 1:00 p.m.

ACE Award Winner Presentations

1:00 p.m. - 5:00 p.m.

Conference Programming

4:00 p.m. - 5:00 p.m.

Young Professionals Meet-Up

5:00 p.m. - 6:30 p.m.

Market Segment Reception (ticket required)

Thursday, October 20

8:00 a.m. - 1:00 p.m.

Registration Open

9:00 a.m. - 1:00 p.m.

Exhibit Hall Open

9:30 a.m. - 11:45 a.m.

Conference Programming (on the Show Floor)



CAMX HIGHLIGHTS

CAMX is the place for all things composites and advanced materials. With two leading associations — ACMA and SAMPE — producing the event, along with numerous partners including Gardner Business Media, the publisher of *CompositesWorld*, you'll find an extensive gathering of people, education and companies at CAMX this week.

With so much happening, make sure you plan to see what is of most interest, and network with exhibitors and your peers. Below are a few items to help you make the most of your time while in Anaheim.

ACMA Membership Awards & Reception

Monday, October 17 / 5:30 p.m. – 7:30 p.m.

Marriott – Marquis Ballroom (Level 1)

Join ACMA and composites industry leaders at the Membership Awards Ceremony Reception to recognize exceptional individuals for their dedication and commitment to the success of the industry and its Association. During the ceremony, ACMA will announce the winner of its prestigious Chairman's Award and recognize industry pioneers with the Pioneer Award. Registration is free.

Sponsored by



SAMPE Awards Ceremony & Dinner

Monday, October 17 / 5:00 p.m. – 7:30 p.m.

Marriott – Grand Ballroom E-F (Level 1)

Join SAMPE at the SAMPE Awards Ceremony and Dinner recognizing outstanding individuals for their distinguished contributions in the fields of materials and processes. Enjoy the opportunity to mix and mingle with the industry's top thinkers and leaders. Registration is free.

CAMX First-Time Attendee Orientation

Tuesday, October 18 / 7:30 a.m. – 8:15 a.m.

ACC – Room 303AB (Level 3)

Are you NEW to CAMX? Join other first-timers for coffee, breakfast, and networking as you learn how to make the most of your CAMX experience.

CAMX General Session with CAMX Award Winners

Tuesday, October 18 / 8:30 a.m. – 10:00 a.m.

ACC – Ballroom B – E (Level 3)

CAMX 2022 will kick off with an insightful and inspirational keynote by renowned author, teacher, and business leader, Michael Steep. His presentation, *Supply Chain and the Role of Composites and Advanced Materials*, will address how to turn current supply chain disruption into new opportunities for the industry. The general session presentation will draw on Steep's extensive first-hand experience and outline clear strategies and best practices to get ahead of disrupting supply chain challenges to achieve practical productivity gains and address critical problems that have emerged during the pandemic. The CAMX Award winners will also be announced during the General Session.

Sponsored by



Good Day, CAMX

Wednesday, October 19 / 8:00 a.m. – 9:00 a.m.

ACC – Ballroom B – E (Level 3)

Join Good Day, CAMX for a lively panel discussion about an exciting collaboration led by Re:Build Manufacturing, along with Elroy Air and Victrex, that has produced next-gen aerospace certified structures and is leading the adoption of thermoplastic materials. The panel discussion titled *Take Off with Good Day CAMX* and *Re:Build Manufacturing* will feature panelists: Miles Arnone, Chief Executive Officer of Re:Build Manufacturing; Jay Wakenshaw, Chief Operating Officer of Elroy Air; and Jonathan Sourkes, Head of Sales of Aero SBU, Victrex; with moderator Marcy Offner from Composites One.

CAMX HIGHLIGHTS

CAMX Mobile App

Search for “CAMX 2022” in the Apple App Store or Google Play. This is the Onsite Guide in the palm of your hand, which gives you the latest scheduling updates and direct access to your MyCAMX account where you can select exhibitors to visit and events to attend. Search exhibitors, conference program and events; plus view maps, area information, and Anaheim and Disney information. You can also complete the post-show survey evaluation in the Mobile App.



Conference Program

CAMX offers the most extensive collection of experts and topics anywhere around the globe. From technical research to case studies and panel discussions, the conference program contains more than 70 topical categories and over 100+ sessions. See page 32 for conference program sessions and use the mobile app to view the full conference program with session descriptions and speaker bios.

Featured Sessions

CAMX Featured Sessions are developed by a committee of CAMX volunteers and are designed to bring you the latest trends in the industry with a broad appeal. This year's Featured Sessions include:

- Resin Chemistry Advancements Meeting Future Market Opportunities
- From Earth Shot to Moon Shot, ORNL Supports the US Industry with Next Generation Manufacturing Technologies
- Outlook for Sustainability in Composites Manufacturing
- Net Zero: What Does it Mean to the End User?
- The Advanced Air Mobility Landscape
- The Journey of NASA Technology to Commercial Technology
- Ceramic Composites Manufacturing Routes
- Selecting Adhesives and Bonding Methodologies for Sustainability

Technical Papers and Education Sessions

The bulk of the conference program is composed of presentations based on peer-reviewed research papers, as well as presentations from companies and individuals willing to share their expertise. CAMX thanks the over 200 volunteers from the industry who contributed to this program.

Exhibitors, Product Displays & Demonstrations

The largest industry marketplace is at CAMX this week! From new companies in the composites and advanced materials space, to traditional companies offering products for new market segments — leave ample time to see the Hall! You'll also find exhibitor demonstrations, and the CAMX and ACE Awards pavilions where you can touch and feel the 2022 award finalist's submissions. Plus, plenty of food and drink. See page 40 for more information.

Exhibit Hall Hours

Tuesday, October 18: 10:00 a.m. – 5:00 p.m.
 Wednesday, October 19: 9:00 a.m. – 5:00 p.m.
 Thursday, October 20: 9:00 a.m. – 1:00 p.m.

Welcome Reception

Tuesday, October 18 / 5:00 p.m. – 6:00 p.m.
 ACC - Grand Plaza (located outside)

The best place to see everyone! Celebrate the start of CAMX by mixing and mingling among the swaying giant palm trees and sunny SoCal skies while you grab a drink or bite to eat before you head to dinner.

Market Segment Reception

Wednesday, October 19 / 5:00 p.m. – 7:00 p.m.
 Marriott - Grand Ballroom E - F (Level 1) *Ticketed event*

Composites and Advanced Materials combine during this event! This reception provides the opportunity to engage and network with people interested in the following market segments: Aerospace, Automotive/Transportation, Wind, Infrastructure, and Marine.

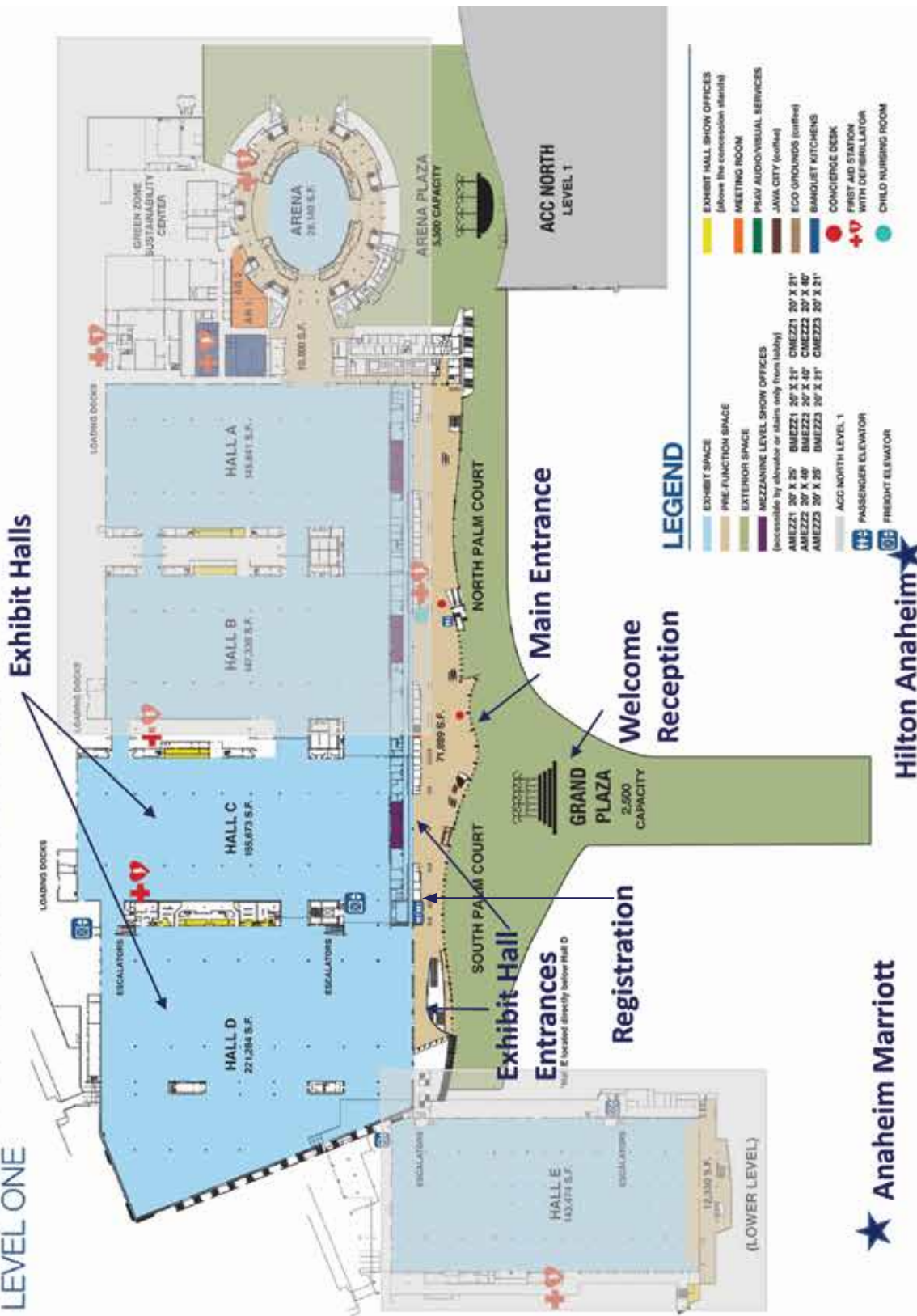


Young Professionals Meet-Up

Wednesday, October 19 / 4:00 p.m. – 5:00 p.m.
 ACC - CAMX Park Place, Exhibit Hall (Level 1)

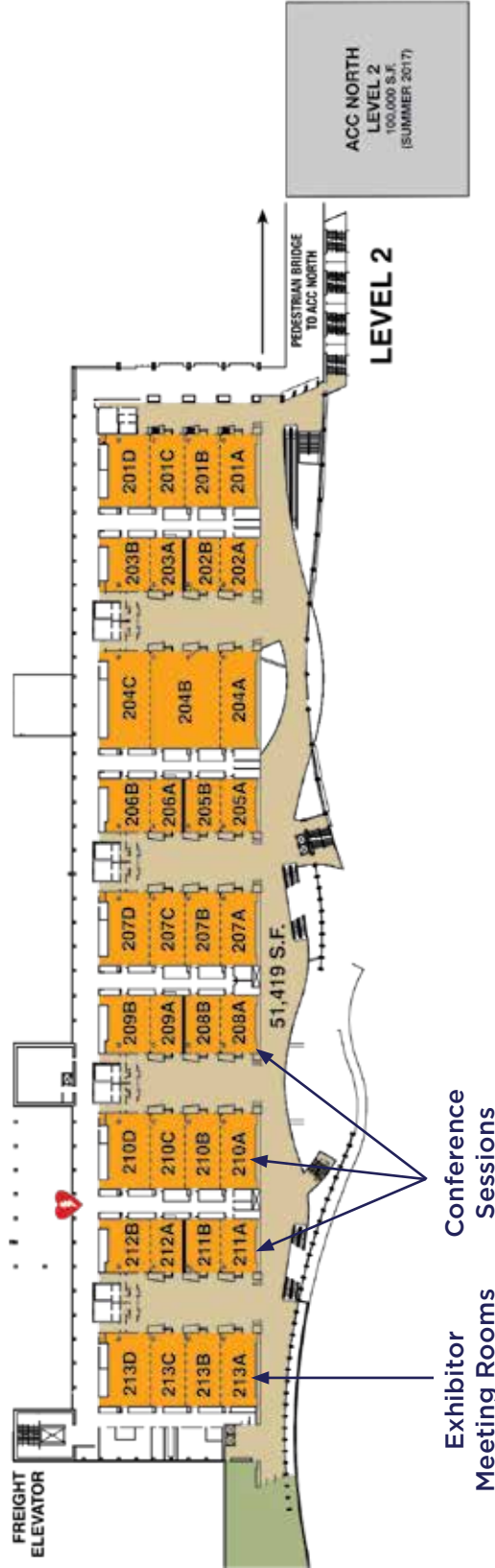
If you're a working professional 35 and under, the Young Professionals Meet-Up is a great opportunity to introduce yourself and connect with industry peers. Start building your network with colleagues who can offer insights to navigating the industry.

CONVENTION CENTER

ANAHEIM CONVENTION CENTER
LEVEL ONE

CONVENTION CENTER

ANAHEIM CONVENTION CENTER
LEVEL TWO



CONVENTION CENTER

ANAHEIM CONVENTION CENTER
LEVEL THREE



General Session
& Closing
Luncheon

First Time
Attendee
Orientation
Breakfast

LEGEND

- PRE-FUNCTION SPACE
- MEETING ROOMS
- EXTERIOR SPACE
- FIRST AID STATION
WITH DEFIBRILLATOR



PARKING MAP



COMPOSITES IMPROVE OUR WORLD

Composites make parts, products and structures faster, lighter, stronger, and more sustainable.

Together, we can make composites the sustainable material of preference.

GET INVOLVED
ACMA.TODAY/SUSTAINABILITY



Climate Impact Project

This new program is designed to help our members access and gather critical data to quantify and improve the climate impact of our materials and products from cradle to grave.

Upcoming Sustainability Events

Sustainability Forum | February 15, 2023, Arlington, VA

Learn and develop strategies and best practices to build your company's ESG initiatives and inform customers and clients about sustainable composite solutions. Contribute your product and market knowledge.

Sustainability & Infrastructure Fly-In | February 15 - 16, 2023, Washington, DC

Tell Congressional leaders about the benefits of composites and how they can be utilized to build a stronger, durable and sustainable infrastructure for the U.S.



GENERAL INFORMATION



About CAMX

CAMX — The Composites and Advanced Materials Expo — is the one source for connecting and advancing all aspects of the world's Composites and Advanced Materials communities: R&D, engineering, manufacturing, service providers and end-users. Regardless of the application — transportation, aerospace, marine, wind energy, software, construction and infrastructure, medical, academics, sports and leisure — CAMX is America's go-to event in the U.S. for the global composites and advanced materials communities. It provides a venue for companies and individuals to grow business opportunities, develop industry skills, understand their potential impact on the industry and new markets, and showcase new innovations in products and technology.

SAVE THE DATE:

CAMX 2023, October 30 - Nov. 2, 2023 (Atlanta, GA)

CAMX 2024, September 9 - 12, 2024 (San Diego, CA)

CAMX 2025, September 8 - 11, 2025 (Orlando, FL)

CAMX 2026, September 21 - 24, 2026 (Atlanta, GA)



About ACMA

The American Composites Manufacturers Association (ACMA) is the world's largest trade group representing the composites industry. ACMA is recognized as the premier provider of composites industry educational resources through its CAMX show, conferences, and Certified Composites Technician (CCT®) program. It is a timely source of business intelligence and analysis for the composites industry through *Composites Manufacturing* magazine, the ACMA website and e-newsletters. It serves its members and the industry by providing strong, proactive leadership in growing the composites market and technical, legislative and regulatory affairs.

To learn more and become a member, visit www.acmanet.org or visit the **ACMA Booth #U74**.



About SAMPE

The Society for the Advancement of Material and Process Engineering (SAMPE), a global professional member society, provides the latest information on new materials and processing technology via in-person and online technical meetings, journal publications, webinars, workshops, and conferences in which professionals can exchange ideas and present their views. As the only technical society encompassing all fields of endeavor in materials and processes, SAMPE provides a unique and valuable forum for industry leaders, scientists, engineers and academicians.

To learn more and become a member, visit www.sampe.org or visit the **SAMPE Booth #H76**.

Attendee & Exhibitor Registration

Registration for attendees and exhibitors is located in the Anaheim Convention Center, on Level 1 in the Hall C Lobby.

Attendees and exhibitors may pick up their badges and registration materials as well as purchase additional tickets to networking events and programming sessions, change their registration, or purchase the conference proceedings. If you need to make a correction to your badge or if you have lost your badge, please go to registration. Please note that lost badges will only be reprinted once and a photo ID is required for all badge reprinting.

A \$30 charge will be applied to badges reprinted more than once.

Registration Hours

Monday, October 17	8:00 a.m. – 4:00 p.m.
Tuesday, October 18	7:00 a.m. – 5:00 p.m.
Wednesday, October 19	7:00 a.m. – 5:00 p.m.
Thursday, October 20	8:00 a.m. – 1:00 p.m.

À La Carte Items

Wednesday, October 19 – Market Segment Reception: \$65
Conference Proceedings: All Papers and Presentations: \$110

Pre-Conference Tutorials

With CAMX Premium Registration: Included
With CAMX Full/Show Sampler Registration: \$200
Without CAMX Registration: \$225
Student: \$75

Registration Categories & Access

Your badge is your “ticket” to convention activities. It must be worn at all times during the event and when entering the Exhibit Hall. Your badge will also be scanned as you enter Conference Programming sessions. Below is an explanation of what is included with each type of registration. À la carte items available for purchase are listed to the left.

Premium

Includes access to two Pre-conference Tutorials (Monday, October 17), the Exhibit Hall, the General Session, ALL Conference Programming (October 18-20), Proceedings, Tuesday’s Welcome Reception, Wednesday’s Good Day, CAMX and the Market Segment Reception.

Full Conference

Includes access to the Exhibit Hall, the General Session, ALL Conference Programming (October 18-20), Proceedings, Tuesday’s Opening Reception, Wednesday’s Good Day, CAMX and the Market Segment Reception. Tickets to Pre-Conference Tutorials must be purchased separately.

Show Sampler

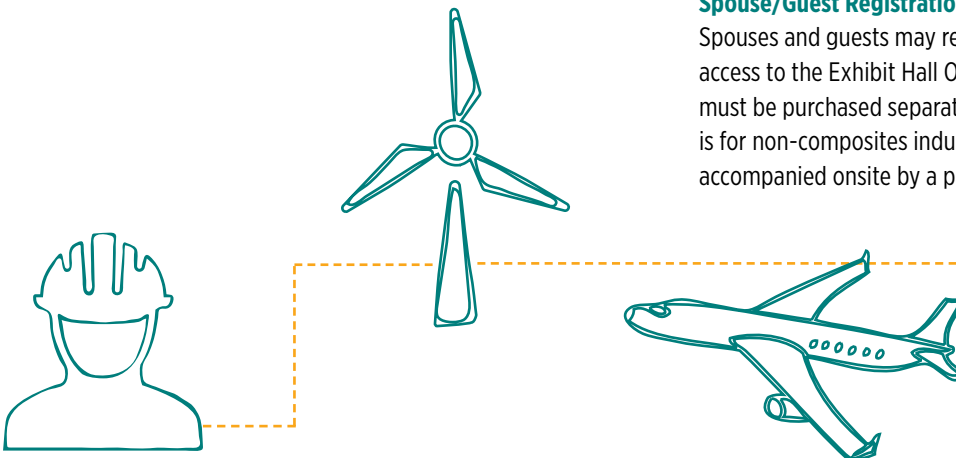
Includes access to the Exhibit Hall, the General Session, tickets to four Conference Program sessions of your choosing (October 18- 19; all programming is complementary and on the Show Floor on Thursday) and Wednesday’s Good Day, CAMX. Tickets to all other events must be purchased separately.

Exhibit Hall Only

Includes access to the Exhibit Hall, General Session and Wednesday’s Good Day, CAMX. Tickets to all other events must be purchased separately.

Spouse/Guest Registration

Spouses and guests may register free of charge, allowing access to the Exhibit Hall ONLY. Tickets to all other events must be purchased separately. Spouse & Guest Registration is for non-composites industry professionals and must be accompanied onsite by a paid conference registrant.



GENERAL INFORMATION

Policies

Registration Badges

Registration badges must be worn at all times during the event. Badges cannot be shared with or loaned to other people. Anyone found to be doing so will be asked to pay the Full Conference registration fee.

Photography and Videography

Registration, attendance, and participation in CAMX, ACMA and SAMPE meetings and events constitutes an agreement by the registrant for ACMA's and SAMPE's use and distribution (both now and in the future) of the registrant/attendee's image and/or voice in photographs, videos, electronic reproductions, and audio of such events and activities. Photography/Videography is not allowed in the Exhibit Hall or any Conference Program session unless previously arranged for and approved by CAMX show management.

Antitrust Guidelines

All participants agree to adhere to the following Antitrust Guidelines in order to prevent unintentional violations of the antitrust laws. The following topics of discussion must be avoided at CAMX:

- Current or future prices, rates, or bids (Great care must be taken in discussing past prices, rates, or bids.)
- What constitutes a "fair" profit level
- Possible increases or decreases in prices or rates
- Standardization or stabilizations of prices or rates
- Pricing procedures
- Credit terms
- Control of sales
- Allocations of customers or markets

Age Restrictions

CAMX is a professional trade show and is not appropriate for children. Anyone under the age of 18 is not permitted on the Exhibit Hall floor, unless special arrangements have been made in advance with CAMX show management. This is for the safety of all event participants.

Evaluations

Evaluations are a critical tool in planning for upcoming meetings and events. Your input is invaluable as we strive to improve and expand our program offerings. Immediately after the show, attendees will receive a survey via email. Please take time to complete the survey. You can also complete the evaluation through the mobile app.

Weapons

CAMX attendees are not permitted to carry weapons of any kind, including concealed or displayed firearms, onto the premises of any CAMX events. We reserve the right to require conference participants who violate this policy to immediately leave the event. Each attendee agrees to comply with this policy, regardless of whether signs prohibiting weapons are posted at the premises of any official CAMX event.

Harassment

CAMX is dedicated to providing a harassment-free conference experience for everyone. We do not tolerate harassment of conference participants in any form. CAMX attendees, exhibitors and vendors violating these rules may be sanctioned or expelled from the conference without a refund at the discretion of the show organizers.

GENERAL INFORMATION

Onsite Need-To-Know

Attire

Business Casual

Wireless Access

Complimentary Wi-Fi is available throughout the Anaheim Convention Center, including inside the Exhibit Hall. Look for the Wi-Fi name "Anaheim Free." If needed, additional bandwidth can be purchased for daily rates.

Business Center

The Business Center/C2 is located on the first floor of the Anaheim Convention Center between Exhibit Halls B & C. Copying, faxing and mailing services, as well as supplies, are available for purchase. The Anaheim Marriott and Anaheim Hilton also have FedEx Ship & Print Centers in both hotels.

Bag/Coat Check

A Bag/Coat Check is located near Registration on Level 1. Coat check is available on Thursday from 7:00 a.m. – 2:00 p.m. A small fee is required to utilize this service. Visit the main registration area for full details.

Anaheim Guest Services Desk

Restaurant reservations, sports tickets, cultural events and venues and other information on Anaheim can be found at the Anaheim Information Desk, located in the main lobby of the Convention Center near the main Convention Center entrance.

Housing/Hotel Reservation Assistance

If you have questions or need assistance with your housing reservations, please contact your hotel directly. You may also contact the CAMX Housing Bureau, Conference Direct

- Email: thecamx@conferencedirect.com
- U.S. Toll-free: 1-888-557-0824 (Domestic)
- International: +1-801-512-2547 (International)

**Phones are answered Mon. – Fri. from 9:00 a.m. – 7:00 p.m. ET*

Food Concessions

Food concessions are located in both Exhibit Hall C and D. Additionally, food trucks will be available outside on the Grand Plaza. If you have specific dietary restrictions, please be sure to inform the servers.

Phones

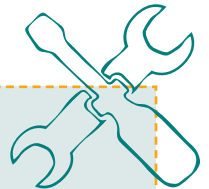
As a courtesy, please mute your cell phones while in program sessions.

Safety, Security and Emergency Information

For major medical emergencies, please call 911 and mention your location. For minor medical emergencies, small cuts, or other issues please see the First Aid office near Hall B entrance. To report any security or safety issues, please visit the CAMX security office inside Exhibit Hall D, or for immediate attention call 714-765-8975.

Lost & Found

Misplaced items may be turned in at CAMX registration. These will be kept at the CAMX registration area until the conclusion of the event, at which time they will be turned over to the Anaheim Convention Center.







Download the CAMX App

Search the Apple Store or Google Play for "CAMX 2022" to download the App onto your mobile device. The App is the Onsite Guide in the palm of your hand, and features:

- Facility and Exhibit Hall maps
- Access to MyCAMX
- Select conference program sessions
- Select exhibitors to visit
- CAMX general information
- Safety and Security Info
- Hotel Info



Stay connected to CAMX on Social Media

-  Use #CAMX2022 to tweet about your CAMX experience
-  Like "CAMX"
-  YouTube: theCAMX
-  LinkedIn: CAMX - The Composites and Advanced Materials Expo

GENERAL INFORMATION

Anaheim Convention Center Information

CAMX Location

Anaheim Convention Center
800 W Katella Ave., Anaheim, CA 92802

Parking

If you plan to drive to CAMX, there are plenty of parking options available at or near the Anaheim Convention Center. Parking is also available at the nearby Anaheim Marriott Hotel and Hilton Anaheim Hotel. Please see a parking guide map on page 12 to help plan your time at CAMX. CAMX is in Hall C & Hall D.

Below are the parking rates (subject to change):

Anaheim Convention Center: starts at \$20/day

Anaheim Marriott Hotel: starts at \$26/day

Hilton Anaheim Hotel: starts at \$24/day

Smoking

The Anaheim Convention Center is a non-smoking facility. Smoking is only allowed on the balconies, terraces and other exterior areas of the facility.

Cashless Transactions

Please note that the Anaheim Convention Center is a cashless venue. Only credit or debit cards, Apple Pay, and Google Pay will be accepted at locations within the convention center that require payment, such as parking and food stand locations.



GENERAL INFORMATION

Transportation

Public Transportation

The ART shuttle (Anaheim Resort Transportation) is a public transportation system operating within The Anaheim Resort District and surrounding areas. It stops directly at the Anaheim Convention Center, along with many hotels and restaurants. To learn more about how to ride and to view route maps and rates visit the ART Shuttle website.

Taxi/Uber/Lyft

Taxis can be picked up at hotels or at the Taxi Drop off/Pick up area, noted at the Transit Plaza, outside of the Anaheim Convention Center, on Level 1 south of the Main Lobby. Uber™ and Lyft also operate in the Anaheim area.

ADA And Dietary Information

Dietary Requirements

If you have specific dietary requirements and did not indicate this on your registration form, please inform the registration desk. Check with your server for information on specific

ingredients, and be sure to inform them of any requirements. Also note that the concession stands in the food court areas offer products to meet a variety of dietary needs.

Mobility Services

Scooters and wheelchairs are available for rent through OC Medical ocmedicalsupply.com/rentalform. Please contact OC Medical to rent a scooter or wheelchair at (714) 956-4690.

Attendee Perks

Exclusive deals and discounts await throughout Anaheim and Orange County with the Attendee Perks Pass — the new iteration of the previously named “Show Your Badge” attendee discount program. From things to do to delicious dining, CAMX attendees can enjoy all the character of the area while indulging in overall savings. Using your mobile passport is easy — and totally free! Just show your passport to participating vendors at check out and cash in your savings. Sign up for the passport at gbm.media/CAMXPerks

CW

Join Our Community!

Subscribe to the **CW TODAY** and **CW EXTRA** e-newsletters today!

You'll receive exclusive content delivered throughout the week from our top editors and experts in composites.

CompositesWorld.com



PROGRAM VOLUNTEERS

THANK YOU

THE STRENGTH OF CAMX COMES FROM THE MANY INDUSTRY VOLUNTEERS INVOLVED.

CAMX Steering Committee

Lucy Houchin, Norplex Advanced Composites,
Committee Chair

Eric Howard, Toray Advanced Composites

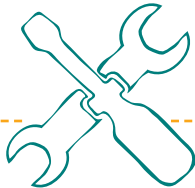
David Leech, ATC Manufacturing

Fletcher Lindberg, AOC

Marcy Offner, Composites One

Jeff Sloan, CompositesWorld

Eric Smith, Re:Build

**SAMPE Technical Committee**

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Prof. Steven Nutt, University of Southern California

Kelsi Hays, Boeing

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Haley Wilson, Lockheed Martin

Dr. Hieu McElroy, Blue Origin

Ted Lynch, Strategic Marketing Innovations Inc.

Robert Brushaber, Texas Research Institute Austin, Inc.

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Dan Coughlin, Oak Ridge National Laboratory

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Yinglong Chen, Dow

Dr. Muthu Ram Prabhu Elenchezian,
X-wave Innovations, Inc.

Dr. Andrew Frazee, Solvay

Mikhail Grigoriev, Northrop Grumman

Judith Johnson, Teijin Carbon America, Inc

Robert Koon, Lockheed Martin

Narender Lakshman, Amazon

Prof. Carina Li, California Polytechnic State University

Dr. Fei Liang, Gulfstream

Maggie McKenney, Bostik, Inc.

Brian Nasralla, Boeing

Stacy Nelson, Sandia National Labs

Dr. Vishnu Saseendran, Pennsylvania State University

PROGRAM VOLUNTEERS

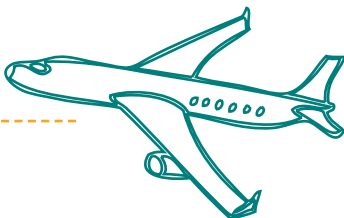
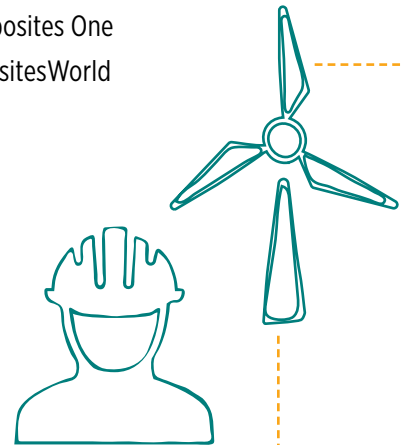
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Dr. Hao Wu, Gulfstream
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James Jones, Composites One
Alfonso Lopez, Teijin Carbon America, Inc.
Dana Miloaga, Johns Manville
Stephen Misencik, Metyx
Ed Pilpel, Sustainable Composites, LLC
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Jean-Pascal Schroeder, Scott Bader ATC
Michael Stevens, INEOS Composites
Keith Tellman, ChromaFlo Technologies LLC

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Ed Pilpel, Sustainable Composites, LLC
Kevan Rusk, Composites One
Jeff Sloan, CompositesWorld



WE FORM
THE FUTURE



2022 CAMX Awards Finalists

The flagship CAMX Award recognizes innovations that have the potential to significantly impact composites and advanced materials in the marketplace. The CAMX Award will be awarded to two game-changing entries that reflect the depth and breadth of the CAMX theme: **Combined Strength. Unsurpassed Innovation.** The CAMX Award provides industry recognition and prestige to deserving and groundbreaking industry work, and we are excited to present the 2022 finalists.

CAMX Award Finalists: Combined Strength Award

This award is presented to the composites product that clearly demonstrates a team approach and effort that brings together knowledge, resources and talent to produce an incredible example of the best use of composites materials that solves a problem. Here are the 2022 entries.

- **AMCM: Integrated Large-Scale Additive Manufacturing and Compression Molding Process** | Oak Ridge National Laboratory/ Manufacturing Science Division
- **Automated Edge Sealing with Automated Programming** | Airborne
- **Automating the Design & Manufacture of Composite Tooling Using AI** | Plyable
- **Carbon Fiber Composite Products Manufacturer** | Devna Composite Inc
- **Fiberglass-Graphene-Polypropylene 3D Printing Filament Made from Decommissioned Wind Turbine Blades** | Windfall, Inc.
- **Plataine's Digital Thread Technology Helps Manufacturers Overcome Supply Chain Challenges** | Plataine

CAMX Award Finalists: Unsurpassed Innovation Award

This award is presented to the composites product that clearly demonstrates a novel design that incorporates low-cost materials for high-volume applications or with high-performance applications with low-volume materials which delivers a product that is innovative and has the potential to either significantly impact existing or open new markets. Here are the 2022 entries.

- **Bidirectional Fabric Made of Recycled Carbon Fiber and Thermoplastic Filaments** | Blackfabric
- **Door Panel Beltline Stiffener** | Clemson University
- **FibreCoat** | FibreCoat
- **Fire Retardant FRP Utility Poles for Grid-Hardening in Fire-Prone Areas** | Creative Composites Group
- **Heat-Sealing Module — HSM for Zünd Digital Cutting Systems** | Zünd
- **hum3 Xenon Heating Innovation — Lowers Cost and Increases Sustainability in the Mass Production of Composite Pressure Vessels and Pipes** | Heraeus Noblelight
- **In-process AFP Manufacturing Inspection System (IAMIS) with Augmented Realty Visualization** | National Institute for Aviation Research (NIAR/WSU)

(Continued on next page)

THE CAMX AWARD

- **Massivit 10000 — Digitalized Tooling for Composites with Advanced AM** | Massivit 3D
- **Multi-Material EV Battery Enclosure** | Teijin Automotive Technologies
- **One Step, 100% Recyclable Thermoplastic Panel for Aerospace Cabin Interiors** | Diab
- **Pole-Position: Polarization Image Based Position Determination** | Schmidt & Heinzmann GmbH & Co. KG
- **Reclamation of Continuous Composite Fibres from Wound Parts to Enable Circularity and Sustainability in High-Value Composites** | Cygnet Tekkimp
- **ShapedTape — A Low-Cost Direct Material Replacement for Slit Tape** | Century Design Inc.
- **The Electronic Control Board for Mark One's 3D Printers** | Mark One
- **Wireless Batteryless Vacuum Measurement** | VacPuc

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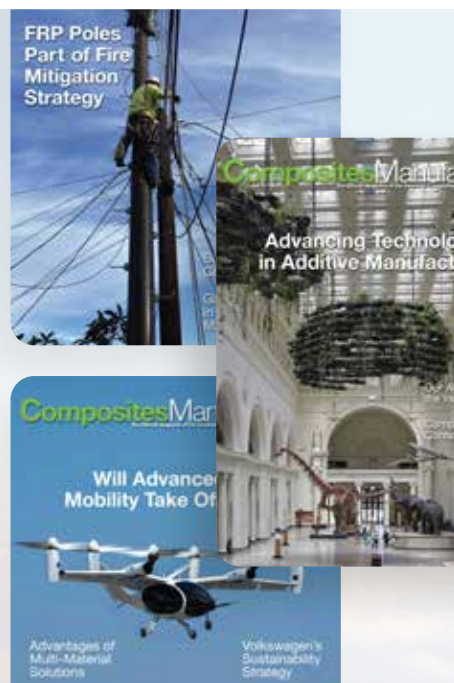
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ACMA
 AMERICAN COMPOSITES MANUFACTURERS ASSOCIATION

Sponsored by **Composites One**

2022 ACE Awards Finalists

Awards for Composites Excellence (ACE), a prestigious composites industry competition, recognize outstanding achievement and innovation in technology, manufacturing, and product development. The American Composites Manufacturers Association (ACMA), host to the long-standing awards program, will present six awards in three categories at CAMX. Categories include Design, Manufacturing, and Market Growth. CAMX is excited to present the finalists for the 2022 Awards for Composites Excellence. These awards are sponsored by Composites One.

Design Category Finalists

INNOVATION IN GREEN COMPOSITES DESIGN

This award is presented to the composites product that clearly demonstrates a team approach and effort that brings together knowledge, resources and talent to produce an incredible example of the best use of composites materials that solves a problem. Here are the 2022 finalists.

- **Bidirectional Fabric (0° /90°) Made of Recycled Carbon Fiber and Thermoplastic Filaments** | Blackfabric
- **Fiberglass-Graphene-Polypropylene 3D Printing Filament Made from Decommissioned Wind Turbine Blades** | Windfall, Inc.

MOST CREATIVE APPLICATION

This award is presented to the composites product that clearly demonstrates a novel design that incorporates low-cost materials for high-volume applications or with high-performance applications with low-volume materials which delivers a product that is innovative and has the potential to either significantly impact existing or open new markets. Here are the 2022 finalists.

- **LamLight** | Structural Composites, Inc.
- **Recycled Fiberglass Textile Yarn for Filament Winding of Launch** | TPI Composites, Inc.

Manufacturing Category Finalists

EQUIPMENT AND TOOLING INNOVATION

This award is presented to the equipment, tooling, production aid, or software that is designed to improve manufacturing production, environmental sustainability, or product quality and performance in composites manufacturing. The entry must demonstrate improvement or efficiency in the manufacturing of a specific end-use composites product. Here are the 2022 finalists.

- **Heat-Sealing Module - HSM for Zünd Digital Cutting Systems** | Oak Ridge National Laboratory/ Manufacturing Science Division

MATERIAL AND PROCESS INNOVATION

This award is presented for a material or process that best contributes to efficient manufacturing and product sustainability. The entries should demonstrate use of innovative materials, production techniques or methods that result in better quality, reduced production costs, increased production rates and volume, or reduced life cycle costs. The entry must demonstrate its application in the manufacturing of a specific, end-use composites product.

- **Carbon Fiber Products Manufacturer** | Devna Composite Inc.
- **Fiberglass-Graphene-Polypropylene 3D Printing Filament Made from Decommissioned Wind Turbine Blades** | Windfall, Inc.
- **One Step, Recyclable Thermoplastic and Panel Development for Aerospace Cabin Interiors** | Diab
- **Peel & Paint Surfacing Film for Thermoset and Thermoplastic Composite Substrates** | Henkel

(Continued on next page)

2022 ACE AWARDS

- **Print the Unprintable. CIM 500 Casting Material for Automated Tooling** | Massivit 3D
- **ShapedTape — A Material Processing Solution Designed as a Direct Replacement for Slit Tape** | Century Design Inc.

Market Growth Category Finalists

COMPOSITES SUSTAINABILITY

Here are the 2022 finalists.

- **Additive Manufacturing of High-Performance 3D Carbon Reinforcement with Recycled Carbon Fibers for Thermoset Composites** | University of Delaware Center for Composite Materials
- **Recycled Fiberglass Textile Yarn for Filament Winding of Launch Vehicle** | TPI Composites, Inc.
- **Carbon Fiber-Reinforced Beam for Semi-Trailer Truck Ultralight Fifth Wheel** | Strongwell
- **Fire Resistant Utility Pole System — Providing Innovative Wildfire Protection Using Engineered FRP Composite Technologies** | Creative Composites Group
- **Functional Graphene Products by MITO Materials Increase Lightweight and Performance Capabilities in Skis and Beyond** | MITO Material Solutions
- **Modular Overclad Composite Panels for Envelope Retrofits** | The University of Tennessee Knoxville

INFINITE POSSIBILITY FOR MARKET GROWTH

This award is presented to the composites product that demonstrates the potential to significantly increase the use of composites in existing markets or generate the greatest impact to open new and emerging markets for composites. This product exemplifies innovation, creativity, and commercialization leading to market growth. Here are the 2022 Finalists.

SAMPE University Research Symposium



This competitive program, organized by SAMPE, sponsors selected student members to present the results of their technical research on Sunday and Monday, October 16-17, 2022. To learn more visit nasampe.org/researchsymposium

DOCTORAL CATEGORY

Rawan Aqel, University of Wisconsin-Milwaukee
Margot Bonmatin, ENIT Toulouse University,
SAMPE Europe 2021 Competition Winner
Michael Chauby, Rowan University
Levi Hamernik, University of Southern Mississippi
Chris Hunt, Bristol Composites Institute, *SAMPE Europe 2019 Competition Winner*

Naruki Ichihara, Nihon University, *SAMPE Japan 2021 Competition Winner*
Akshay Jacob Thomas, Purdue University
Faheem Muhammed, University of Delaware
Colleen Murray, University of Maryland
Caleb Schoenholz, University of Washington
Mehul Tank, FAMU-FSU College of Engineering

MASTER'S CATEGORY

Seyda Naz Alasahin, University of Delaware
Jaclyn McLaughlin, Drexel University
Mitesh Patadia, FAMU-FSU College of Engineering
Takumi Morishima, The University of Tokyo, *SAMPE Japan 2022 Competition Winner*

BACHELOR'S CATEGORY

Bailee Ecole Ku, Florida State University
Isaac Sorensen, Brigham Young University

*Congratulations
to all!*

ACMA MEETINGS

These ACMA meetings and events are open to members and CAMX attendees. To find the latest ACMA committee meetings, search the CAMX 2022 Mobile App or view the schedule online. Search “ACMA” to find events details.

Monday, October 17, 2022

Time	Event	Location	Room
2:15 p.m. - 4:00 p.m.	ACMA Sustainability Forum Meeting	ACC	207AB
5:30 p.m. - 7:30 p.m.	ACMA Membership Awards Ceremony & Reception	Marriott	Marquis Ballroom

Tuesday, October 18, 2022

Time	Event	Location	Room
10:00 a.m. - 11:00 a.m.	ACMA High Performance Forum	ACC	207AB
11:15 a.m. - 12:00 p.m.	ACMA Public Policy Steering Committee Meeting	ACC	207AB
4:00 p.m. - 5:00 p.m.	ACMA Booth Reception	ACC	ACMA Booth

Wednesday, October 19, 2022

Time	Event	Location	Room
9:00 a.m. - 10:00 a.m.	ACA Members Only Meeting	ACC	ACMA Booth
1:00 p.m. - 2:30 p.m.	ACMA Construction & Infrastructure Meeting	ACC	207AB
3:00 p.m. - 4:00 p.m.	ACMA Architectural Division Meeting	ACC	207AB

Thursday, October 20, 2022

Time	Event	Location	Room
9:15 a.m. - 10:30 a.m.	ACMA Pultrusion Industry Council Meeting	ACC	207AB



Mark Your Calendars

Network with other professionals and keep up with industry trends through events and conferences by ACMA.

Educational, exciting and always thought-provoking, ACMA events provide valuable education on important industry topics, as well as opportunities to connect and engage with peers, industry leaders, experts, customers and partners. Our flagship annual tradeshow, CAMX - the Composites and Advanced Materials Expo, is the place where the industry convenes for business, conduct meetings, and learn from expert speakers.

UPCOMING EVENTS

Add these ACMA events to your calendar so you won't miss opportunities to learn what's going on in all facets of the composites industry. Share ideas with peers, prospective customers and partners.

Infrastructure and Sustainability Fly-In

Washington, DC, USA | February 15 - 16, 2023

Construction/Infrastructure Composite Technology Day

Virtual | Early 2023

North American Pultrusion Conference

Chicago, IL, USA | May 16 - 18, 2023

CAMX 2023

Atlanta, GA, USA · October 30- November 2, 2023

Thermoplastic Composites Conference

San Diego, CA, USA | March 26 - 28, 2024

SAMPE Meetings and Events

The following SAMPE meetings and events are open to members and CAMX attendees. To find the latest listing of committee meetings by invitation, search the **CAMX 2022 Event App** or view the schedule online. Search **"SAMPE"** to find all events and details. Scan the QR code to get the app:



Monday, October 17, 2022

Time	Event	Location	Room
12:30 p.m. - 3:30 p.m.	SAMPE North American Board of Directors Meeting <i>All SAMPE members are welcome</i>	Marriott	Orange County Ballroom 1
5:00 p.m. - 6:00 p.m.	SAMPE Awards Ceremony Reception	Marriott	Grand Ballroom EF
6:00 p.m. - 7:30 p.m.	SAMPE Awards Dinner & Ceremony	Marriott	Grand Ballroom EF

Tuesday, October 18, 2022

Time	Event	Location	Room
10:00 a.m. - 12:00 p.m.	SAMPE Technical Committees and Technical Excellence Committee <i>All SAMPE members and CAMX attendees are welcome</i>	ACC	207D
4:00 p.m. - 5:00 p.m.	SAMPE Toasts its Honorees at the SAMPE Booth <i>Celebrate SAMPE's 2022 awards recipients</i>	ACC Exhibit Hall D	Booth H76

Wednesday, October 19, 2022

Time	Event	Location	Room
4:00 p.m. - 5:00 p.m.	SAMPE Booth Coffee Happy Hour with Women in the Composites Industry	ACC Exhibit Hall D	Booth H76

Thursday, October 20, 2022

Time	Event	Location	Room
8:00 a.m. - 9:30 a.m.	SAMPE Young Professionals Breakfast (anyone under 35 welcome)	ACC	210A



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Member Experience

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PAPER AWARD WINNERS

Outstanding Technical Paper Award Winners

CAMX – The Composites and Advanced Materials Expo is proud to announce the Technical Paper Award winners. Every year, CAMX recognizes outstanding research that will impact the next generation of composites innovation. CAMX technical papers cover critical areas that are important to the composites and advanced materials industry from business, applications, and research perspectives. Congratulations to this year's winners:

Additive Manufacturing

Tuesday, October 18 1:00 p.m. — 1:25 p.m.

Large Scale Polymer Additive Manufacturing of Lightweight Foam Structures

Tyler Smith, Vipin Kumar, Vidya Kishore, Katie Copenhaver, John Lindahl, Vlastimil Kunc — Oak Ridge National Laboratory

Tuesday, October 18 1:30 p.m. — 1:55 p.m.

Direct Digital Manufacture of Continuous Fiber Reinforced Thermoplastic High Aspect Ratio Composite Grid Stiffeners with Radically Reduced Tooling

Steven J. Hogan, Donald W. Radford — Colorado State University

Tuesday, October 18 2:00 p.m. — 2:25 p.m.

Mechanical Properties of Extruded PA12 and SrFe12O19 Filaments Via Twin-Screw Extrusion for Magnetic Field Assisted Fused Filament Fabrication

Mandesh Khadka, Md Javed Imtiaz Khan, Alireza Sargordi, Ryan Woods, Maria Camila Belduque C., and Jitendra S. Tate — Texas State University

Wednesday, October 19 9:30 a.m. — 9:55 a.m.

Validated Simulation for Large Scale Additive Manufacturing

Eduardo Barocio, Pasita Pibulchinda, Akshay J. Thomas, Vasudha Kapre, Alan Franc, R. Byron Pipes — Composites Manufacturing and Simulation Center, Purdue University

Wednesday, October 19 2:00 p.m. — 2:25 p.m.

Influence of Process Conditions on the Extrudate and Inter-Bead Geometries in Extrusion Deposition Additive Manufacturing

Pasita Pibulchinda, Eduardo Barocio, Anthony J. Favaloro, R. Byron Pipes — Purdue University, Composites Manufacturing and Simulation Center (CMSC)

Advances in Materials

Tuesday, October 18 1:00 p.m. — 1:25 p.m.

Investigating How Peel Ply Affects Initial Conditions and Aging of Carbon Fiber Reinforced Polymer Chemistry

Joann L. Hilman and R. Giles Dillingham — Brighton Science

Tuesday, October 18 4:00 p.m. — 4:25 p.m.

Effect of Process Variables on the Uncured Handleability and Formability of Stretch Broken Carbon Fiber

Riad Morshed Rezaul, Cecily Ryan, Roberta Amendola, Dilpreet Bajwa, Douglas Cairns — Montana State University

Wednesday, October 19 11:00 a.m. — 11:25 a.m.

Design and Fabrication of an Energy Absorbing Hybrid S-Glass/Epoxy Composite Laminate with Shear Thickening Fluid Infused Fabrics for Impact Applications

Erik A. Hobbs, Richard D. Dombrowski, Norman Wagner, Bazle Haque — STF Technologies

Wednesday, October 19 2:00 p.m. — 2:25 p.m.

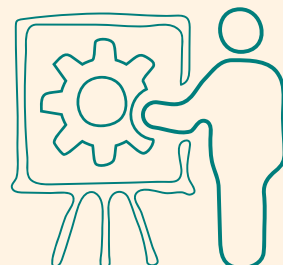
Easily Dispersed Toughener for Epoxy Composite

Ya-Ting Su, Rabi Inoubli, Amy Lefebvre — Arkema Inc.

Wednesday, October 19 4:30 p.m. — 4:55 p.m.

Investigations of Phosphate Geopolymers

William Monzel, Olivia Meyer, Kyle Schroeder, Allison Hohenshil, Adam Rape, Kathryn Doyle, Devon M. Samuel, Waltraud M. Kriven — Air Force Research Lab



Bonding & Joining

Tuesday, October 18 1:30 p.m. — 1:55 p.m.

Through Transmission Laser Welding of PPS and PEI Continuous Fiber Reinforced Thermoplastic Composites

Jeff L. Ellis, Miranda Marcus, Matt A. Nitsch — EWI

Green & Sustainability

Tuesday, October 18 2:00 p.m. — 2:25 p.m.

Natural Fiber Composites with Enhanced Impact-Damage Resistance Via Bioinspired Helicoid Fiber Architectures

Lorenzo Mencattelli, Jia Long Liu, Ping Yee Chua, Van Pham Nguyen Hong, Vincent B C Tan, Tong-Earn — Helicoid Industries Inc.

Tuesday, October 18 4:00 p.m. — 4:25 p.m.

Effects of Mechanical Recycling on Carbon Fiber-Based Hybrid Composites

Mitchell L. Rencheck, Vipin Kumar, Halil Tekinalp, Vinit Chaudhary, Samarthya Bhagia, Vlastimil Kunc, Soydan Ozcan, Brian Knouff, Uday Vaidya, and Patrick Blanchard — Oak Ridge National Lab

Wednesday, October 19 9:30 a.m. — 9:55 a.m.

Overmolding of Textile Grade Carbon Fiber Tape and Bamboo Fiber Polypropylene Composites

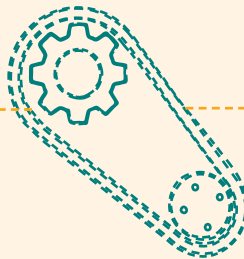
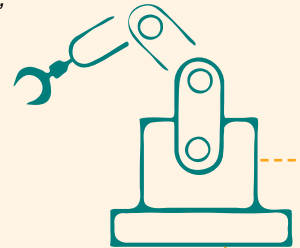
Sanjita Wasti, Benjamin Schwartz, Pritesh Yeole, Georges Chahine, Halil Tekinalp, Soydan Ozcan, Merlin Theodore, Jaydeep Kolape, Uday Vaidya — University of Tennessee Knoxville

Manufacturing & Processing Technologies

Tuesday, October 18 4:30 p.m. — 4:55 p.m.

Cold Spray Deposition of Titanium onto Carbon Fiber Reinforced Polymer with Hybrid Polymer-Metal Bond Layer

Po-Lun Feng, Alexander Li, Bo Jin, Steven Nutt — University of Southern California



PROGRAM

CONFERENCE PROGRAM BY TRACK

ADDITIVE MANUFACTURING

Category	Title	MUST SEE ✓
Advanced Materials for Thermoplastics	Direct Digital Manufacture of Continuous Fiber Reinforced Thermoplastic High Aspect Ratio Composite Grid Stiffeners with Radically Reduced Tooling Education Session	
	Large Scale Polymer Additive Manufacturing of Lightweight Foam Structures Education Session	
	Mechanical Properties of Extruded PA12 and SrFe12O19 Filaments Via Twin-Screw Extrusion for Magnetic Field Assisted Fused Filament Fabrication Education Session	
Advanced Materials for Thermosets	Additive Manufacturing of Phenolic-Based Composites for Thermal Protection Systems Education Session	
	Shrink Controlled, Thermoset 3D Print Media for use with Customized Large-Scale Printers Education Session	
Concepts and Design Ideas for Advanced Composites	A.M. Toolbox Explains How They Used Additive Manufacturing & Tooling to Produce Shyft'S Group Ev Truck Prototype for Display at the 2022 Work Truck Show in 9 Months Education Session	
Current Technology in Manufacturing and Materials	Applications in Tooling & Prototyping for Large Format Additive Manufacturing Education Session	
	Introduction to Extrusion-Based Additive Manufacturing Education Session	
	Large Format Additive Manufacturing: Applications Beyond Tooling! Education Session	
	Validated Simulation for Large Scale Additive Manufacturing Education Session	
Research Developments in Additive Manufacturing	Influence of Process Conditions on the Extrudate and Inter-Bead Geometries in Extrusion Deposition Additive Manufacturing Education Session	
	Qualitative Chemorheological Considerations for Continuous Reactive Additive Manufacturing Education Session	
	Sensor Network Integration in Continuous Fiber Printing Education Session	
Tooling	Hybrid Technology Development to Directly Print Thermoset Molds for Composites Education Session	

ADVANCES IN MATERIALS

Category	Title	MUST SEE ✓
Advanced Design, Analysis, and Verification	Pultrusion Composites for Automotive Applications Education Session	
Advanced Materials and Selection	Advances in The Development of Stretch Broken Carbon Fiber for Primary Aircraft Structure Technical Paper	
	Crash Performance of Epoxy-Polyamide Hybrid Composites Technical Paper	
	Enhancement of the Mechanical Properties and Bonding of Composite Laminates and Assemblies Using Carbon Nano-Coils Technical Paper	
	Enriching Materials Databases with Machine Learning Technical Paper	
	Graphene Enhanced Composites — A Comparative Study Technical Paper	
	UHT Carbon-Based Materials for Use in Solar Interstellar Space Missions Technical Paper	
Carbon Fiber	Bulge and Dome Testing to Investigate the Formability of Continuous and Stretch Broken Carbon Fiber Prepreg Laminates Technical Paper	
	Carbon-Carbon Composites for Improving Fire Retardancy, Electrical and Thermal Conductivities Technical Paper	
	Effect of Process Variables on the Uncured Handleability and Formability of Stretch Broken Carbon Fiber Technical Paper	
	Improving Flame Retardancy of Fiber-Reinforced Composites Via Modified Fire-Resistant Resins and Metallic Surface Film Coatings Technical Paper	
	Investigating How Peel Ply Affects Initial Conditions and Aging of Carbon Fiber Reinforced Polymer Chemistry Technical Paper	
	Novel Experimental Unit to Evaluate Inter-Ply and Tool-Ply Friction in Carbon Fiber Reinforced Polymer Composites Prepregs Technical Paper	
	Tensile Properties of Stretch Broken Carbon Fiber Prepreg Technical Paper	
Fibers, Textiles, and Reinforcement Forms	Influence of the Binder on Compaction, Shear and Friction for Carbon Fiber Preforms in the RTM-Process Technical Paper	
Flammability, Smoke, Toxicity (FST)	Flammability Characterization of Carbon Nanofibers and Nanotubes Z-Threaded CFRP Laminates Technical Paper	
High Temperature Resins & Adhesives	Curing Emissions of New Ultra Low Free Formaldehyde Phenolic Resins for Composite Applications Technical Paper	
	Investigations of Phosphate Geopolymers Technical Paper	
Multifunctional Materials & Structures	An E-Glass Prepreg for Producing Transparent Composites Technical Paper	
	Design and Fabrication of an Energy Absorbing Hybrid S-Glass/Epoxy Composite Laminate with Shear Thickening Fluid Infused Fabrics for Impact Applications Technical Paper	

PROGRAM

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ADVANCES IN MATERIALS *(continued)*

Category	Title	MUST SEE ✓
Nanomaterials & Nanotechnology	The Study of Highly Dispersible Functionalized Reduced Graphene Oxide/Polyhedral Oligomeric Silsesquioxane Additives and the Effect of Polyvinylpyrrolidone on Dispersion Quality Technical Paper	
	The Truth About Graphene – Where Is It and Why It Is Taking This Long to Get Here? Technical Paper	
Sandwich Structures & Core Materials	Investigation into Forming Aircraft Seat Components with Thermoplastic Sandwich Panels Utilizing Recycled Materials Technical Paper	
Thermoplastic Materials & Applications	Effects of Scrap Size on Mechanical Properties of Recycled Carbon Fiber Reinforced Plastics Technical Paper	
	Lightweight Polymeric Composites with Finished A-Surface for Wall and Ceiling Paneling Inside Recreational Vehicles Technical Paper	
	Novel Cross-Linkable Thermoplastic Composite System Technical Paper	
	Viscoelastic Response Characterization of Ultra High Molecular Weight Polyethylene Composite After UV Aging Technical Paper	
Thermoset Materials & Applications	An Alternative Approach for Defining and Predicting Outdoor Performance for Sheet Molding Compound Technical Paper	
	Challenges in Engineered Stone – Improving Properties of Highly Filled Up Systems using Quartz Technical Paper	
	Easily Dispersed Toughener for Epoxy Composite Technical Paper	
	High-Performance Properties of a Resin Transfer Molding (RTM) Imide Oligomer Polymer Matrix Technical Paper	
	Improved Cure Kinetics of Phthalonitriles Through Dicyanamide-Based Ionic Liquids Technical Paper	
	New Advances in Molded-In-Color, UV-Stable Composites for Automotive Applications Technical Paper	
	Novel Epoxy System for Robust Pultrusion Process to Enable Enhanced Productivity Technical Paper	
	Reactive Polyetherimide Oligomers: Part I. Processability Enhancements in Epoxy Resins Technical Paper	
	Reactive Polyetherimide Oligomers: Part II. Toughening in Epoxy Resins Technical Paper	

BONDING & JOINING

Category	Title	MUST SEE ✓
Adhesives	Non-Destructive Evaluation (NDE) of Bond-Line Using Carbon Nanofiber and Nanotube Modified Film Adhesive and Infrared Thermography Technical Paper	
Composites to Composites	Through Transmission Laser Welding of PPS and PEI Continuous Fiber Reinforced Thermoplastic Composites Technical Paper	
Multi-Material	Innovative Effects on GFRP Inserted Epoxy Adhesives with the Different Thicknesses for Bonding Wind Turbine Blades of Two Parts Technical Paper	
	Plasma Treatment Efficacy on Unclean Surfaces for Bonding Processes Technical Paper	

DESIGN, ANALYSIS, AND SIMULATION

Category	Title	MUST SEE ✓
Advanced Design, Analysis, and Verification	Bayesian Calibration of Physics-Based Models for Digital Twin Development Education Session	
	Composite Sounding Rocket Payloads: A Structural Design Study Technical Paper	
	Design and Development of a Multi-Material, Cost-Competitive, Lightweight Mid-Size Sports Utility Vehicle'S Body-In-White Technical Paper	
	Innovative Sizing Method for Fastener-Free Thermoplastic Airframe Technical Paper	
	Pultrusion Composites for Automotive Applications Technical Paper	
Damage, Fatigue, and Fracture	Tensile Failure Analysis of Unidirectional Fiber-Reinforced Composite Laminates with Inter-Tow Gap Technical Paper	
Process Modeling & Simulation	A Novel FEA Approach to Design and Optimize Composite Lattice Reinforcements and Simulate the Mechanical Properties of Composite Lattice Reinforced Plastics Technical Paper	
	Cure Process Modeling and Characterization of Composites Using In-Situ Dielectric and Fiber Optic Sensor Monitoring Technical Paper	
	Impregnation of High-Rate Carbon Fiber Composites Technical Paper	
	Machining Simulation of Unidirectional and 2D Woven Fiber-Reinforced Composites Technical Paper	
	Micromechanics-Integrated Artificial Neural Networks Model for the Prediction of Stress-Strain Response of Carbon Nanotube-Reinforced Nanocomposites Technical Paper	

PROGRAM

CONFERENCE PROGRAM BY TRACK

GREEN & SUSTAINABILITY

Category	Title	MUST SEE ✓
Designing for Sustainability	Hygrothermal Performance of a New Composite Sandwich Panel Alternative to Gypsum Drywall Technical Paper	
	Natural Fiber Composites with Enhanced Impact-Damage Resistance Via Bioinspired Helicoid Fiber Architectures Technical Paper	
	New Generation of Accelerators Addressing Human Health Concerns and Enabling Renewable Composites Technical Paper	
Life Cycle Assessments	Smart Factory and Sustainability Standards for Composites and Advanced Materials Education Session	
Recycling of Composites	Effects of Mechanical Recycling on Carbon Fiber-Based Hybrid Composites Technical Paper	
	PMMA Composite Recycling — A Shift Towards Net Zero Discharge Technical Paper	
Renewable & Bio-Composites Materials	Boatbuilding for Sustainability — Natural, Recycled and Recyclable Content Education Session	
	Comparison of Mechanical and Morphological Properties of AMEO and GLYMO Silane Treated Ragweed-PLA Bio-Composites Technical Paper	
	Enhancement of Mechanical Properties of Microcrystalline Cellulose Reinforced Polyvinyl Alcohol Biocomposites with Minimal Addition of Multiwall Carbon Nanotube Technical Paper	
	Investigating the Use of Natural Hollow Milkweed Fibers to Improve Functional Properties of Epoxy Resin Technical Paper	
	Novel Bio-Based Epoxies and Their Performance in Reinforced Composites Technical Paper	
	Overmolding of Textile Grade Carbon Fiber Tape and Bamboo Fiber Polypropylene Composites Technical Paper	
	The Development of Sustainable Internal Curing Agent Using Natural Hollow Fibers for Cementitious Composites Technical Paper	
	The Effect of Silicon Dioxide (SiO ₂) Nanoparticle Impregnation on the Viscoelastic Properties of Moist Spruce Wood Technical Paper	
	Thermal, Mechanical and Rheological Behavior of Polycaprolactone and Lignin Blends Technical Paper	

MANUFACTURING & PROCESSING TECHNOLOGIES

Category	Title	MUST SEE ✓
Advances in Automation & Affordable Manufacturing	High Rate Automated Preforming for Battery Boxes Education Session	
	Quality Monitoring of Composites Fabrication in an Industry 4.0 Ecosystem Technical Paper	
	Robotic Material Removal and Finish on Parts with High — Approaches from Big to Small Companies Education Session	
Automation & Robotics Technology	Enabling Superior Storage Efficiency for Composite Tanks with FPP Dome Reinforcements Technical Paper	
	High-Rate Composite Manufacturing Using Automated Fiber Placement Education Session	
Composite Manufacturing & Processing	A Comparison of Infrared and Xenon Flashlamp Heating for Thermoset Automated Fibre Placement Technical Paper	
	Autoclave Curing: Process Fundamentals and Equipment Details Education Session	
	Biomimicry, and Materials Development for Impact Energy Absorption Technical Paper	
	Cold Spray Deposition of Titanium Onto Carbon Fiber Reinforced Polymer with Hybrid Polymer-Metal Bond Layer Technical Paper	
	Deep Learning for Void Detection in Composite Oriented Strand Board Technical Paper	
	How Dry Fiber Preforms and Resin Infusion is Enabling Onshoring of B2C Composite Parts Manufacturing Education Session	
	Manufacturing of Magnesium and Carbon-Fiber Hybrid Advanced Composites Technical Paper	
	Mechanical Performance of Buckypaper Inserted Carbon-Fiber-Reinforced Composite Laminates Technical Paper	
	Real-Time Monitoring System for Out-Of-Autoclave Composite Manufacturing Using Conformal and Continuous Carbon Nanotube Yarns Technical Paper	
	Stiffener Jumping for Unitized Stitched Composite Preform Manufacturing Technical Paper	
	Technologies for Fiber Composite Manufacturing — State-Of-The-Art and its Advancement Education Session	
	Thermoplastic vs Thermoset Composites — What Have We Learned? Education Session	
	Three-Point Bending of Tapered Composite Coupons and Structures for Weight-Saving Technical Paper	
Forming Technologies	A Predictive Forming Model for Stretch-Broken Carbon Fiber Composites As a Function of State of Stress, Forming Rate, and Resin Viscosity Technical Paper	

PROGRAM

MANUFACTURING & PROCESSING TECHNOLOGIES *(continued)*

Category	Title	MUST SEE ✓
Out-of-Autoclave (OOA)	OOA Processing Using Same Qualified Resin Transfer Molding for Electric Aviation Technical Paper	
	Robust Out-of-Autoclave Prepreg Processing Using a Semi-Permeable Membrane to Maintain Resin Pressure Technical Paper	
Rapid Cure & Manufacturing Processing Technologies	Smart Susceptor Technology for Composites Technical Paper	
Resin Infusion/Liquid Molding/VARTM Composites Processing	Permeability of Multiaxial and Non-Crimp Fabrics for Vacuum Infusion Technical Paper	
UV Cure & EB Cure	UV-LED Curable Glass Fiber Composites and their Properties Technical Paper	

MARKET APPLICATIONS

Category	Title	MUST SEE ✓
Aerospace	Case Study FF Core-Stiffened Wing Versus Skin-Stringer Approach for Intermediate-Size Flight Structures Technical Paper	

NON-DESTRUCTIVE EVALUATION & TESTING

Category	Title	MUST SEE ✓
Non-Destructive Inspection & Materials Testing	Characterization of Transverse Impact Damage and Internal Contamination of In-Service Composite Aircraft Skins Technical Paper	
	Quantification of Impact Damage to Carbon Composite Bicycle Tubes Using Phased Array Ultrasonic Testing and Photomicrographic Image Analysis Technical Paper	
Structural Health Monitoring	Advanced Condition-Based Maintenance of Composites Based on Real-Time Electromechanical Behavior Data Technical Paper	
	Early Damage Detection in Composite Materials Using Inkjet-Printed Carbon Nanotube Sensors Technical Paper	

Plan to Attend!

Registration is Open

Materials Innovation & Advanced Technology Leadership Forum

COMPOSITES FOR SUSTAINABLE ENERGY & TRANSPORTATION APPLICATIONS

Topics

Structural Energy Storage

- On-board transportation vehicles with integrated functionality
- Infrastructure charging stations for transportation vehicles

Multifunctional & Adaptive Composite Structures

- Integrated devices, including energy storage, for improved energy efficiency
- Shape changing composites and structures that improve transportation efficiency

Composite Recycling and Sustainability

- Recovery of embodied energy in both fiber and resin systems
- Sustainable materials and processes

Hydrogen Energy Systems

- Transportation – MD/HD trucks, marine, rail, aerospace
- Industrial – mining, transmission and distribution systems
- Wind energy on-shore

Off-shore

- Ocean energy
- Ocean currents or tidal energy
- Wave energy

Digital Manufacturing of Composites

- Design of topological composite structures with improved structural efficiency
- Additive printing of structural composites

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Contact: MaterialsForum@sampe.org

materialsinnovationforum.org

EXHIBIT HALL HIGHLIGHTS

EXHIBIT HALL HIGHLIGHTS

Visit the most comprehensive marketplace for business in the industry, with hundreds of companies offering products and services in more than 70 different categories for all areas of the composites and advanced materials industry. The Exhibit Hall features product showcases, new commercial and industrial applications, and live manufacturing demonstrations. Plan ahead to visit with companies of interest. The Exhibit Hall is open with longer hours this year to ensure you have the time to see everything!

CAMX AWARDS PAVILION

The CAMX Award recognizes the cutting-edge innovations that will significantly impact composites and advanced materials in the marketplace. CAMX is looking for visionary concepts and products that show strength through collaboration, while bridging low-cost materials/high-volume applications with high performance applications/low-volume materials. The CAMX Awards are located in the rear-right side of the Exhibit Hall behind Innovation Park. See the listing of CAMX Award Finalists on pages 22-23.

CAMX Awards will be announced during the Opening General Session at 8:30 a.m. on Tuesday, October 19.

ACE AWARDS PAVILION

Awards for Composites Excellence (ACE), a prestigious composites industry competition, recognizes outstanding achievement and innovation in technology, manufacturing and product development. ACMA, host to the long-standing awards program, will present awards in three categories at CAMX during the ACMA Closing Awards Luncheon. The ACE Award entries are located in the back of Hall E of the Exhibit Hall near the CAMX Awards Pavilion. Use the CAMX Mobile App or Onsite Guide map to find the location. See the listing of ACE Award Finalists on pages 24-25.

The ACE Awards will be announced at the pavilion. Entrants will be available to talk with attendees about their entries as well. See the CAMX Mobile App for times and details.



EXHIBITOR DEMONSTRATIONS AND PRESENTATIONS

Many exhibitors are holding demonstrations in their booths. More information can be found in the MYCAMX planner and at thecamx.org. Additionally, some presentations will be held in Innovation Park at the Presentation Theater. See full schedule on pages 42-43.

Exhibit Hall Hours

Tuesday, October 19	10:00 a.m. – 5:00 p.m.
Wednesday, October 20	9:00 a.m. – 5:00 p.m.
Thursday, October 21	9:00 a.m. – 1:00 p.m.





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CAMX Park Place

Presented by Gardner Business Media and CompositesWorld
Exhibit Hall C - Booth V68

Connect with your colleagues and peers at CAMX Park Place (formerly called "Innovation Park"), an exhibit hall attraction with designated areas for learning, networking, and inspiration. CAMX Park Place offers opportunities to exchange ideas and collaborate, and make new connections with other like-minded attendees.



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CAMPFIRE SESSIONS

Learn from subject matter experts in a collaborative setting and share your ideas about new trends and industry developments during campfire sessions, located in "The Hub" at CAMX Park Place. Topics of interest vary, see below:

Tuesday, October 18, 2022

2:00 p.m. - 2:50 p.m.

Are You Overpaying Your Taxes?

Kirk Chen, CTI - Corporate Tax Initiatives and Dan Neumann, American Composites Manufacturers Association (ACMA)

3:00 p.m. - 3:50 p.m.

Envision the Possibilities - Composites in Sustainable Architecture

Sam Ang, Armacell

Wednesday, October 19, 2022

10:00 a.m. - 10:25 a.m.

Diversify Your Markets & Grow Internationally!

Joe Mannion, EuroLink International Business Development

11:30 a.m. - 11:55 a.m.

NDT - Where Do I Start?

James Bennet, Radalytica

3:30 p.m. - 3:55 p.m.

Breaking Into the Space Industry as a Young Professional

Yourri Dessureault, Virgin Galactic

CAMX Theater

EXHIBIT HALL D - BOOTH L72

Find the full presentation abstracts, speaker details and more in the CAMX 2022 event app, available for iOS or Android devices. Scan the QR code to access the app and CAMX schedule online:



TIME	TUESDAY, OCTOBER 18, 2022
10:30 a.m. - 10:55 a.m.	Preparing Engineers for the Factory of the Future <i>Waruna Seneviratne, National Institute for Aviation Research (NIAR)</i>
11:00 a.m. - 11:25 a.m.	Digitalizing Tooling for Composite Materials with Large - Scale Additive Manufacturing <i>Kevin Sykes, Massivit 3D</i>
11:30 a.m. - 11:55 a.m.	Bioinspired Helicoid Architectures for High - Performance Sustainable Composites: From Sporting Goods to Automotive Applications <i>Lorenzo Mencattelli, Helicoid Industries</i>
12:00 p.m. - 12:55 p.m.	CAMX Award Winner Presentations
1:00 p.m. - 1:25 p.m.	Large Scale Additive Manufacturing for Composite Tooling <i>Rick Neff, Thermwood Corporation</i>
2:30 p.m. - 2:55 p.m.	T-Link Thermoplastic Technology Expands its Offering <i>Scott Stover and Jason Walker, DH Sutherland</i>
3:00 p.m. - 3:25 p.m.	Presentation by Radalytica <i>James Bennet, Radalytica</i>
3:30 p.m. - 3:55 p.m.	Build the Future of a Flexible Manufacturing Environment That is Sustainable Through Automated Laser Projection Solutions and AI-based Cloud Software <i>Sean Francoz, Virtek Vision, and Avner Ben-Bassat, Plataine</i>
4:00 p.m. - 4:25 p.m.	Innovative Solutions Enabling High Performance H2 Pressure Vessel Manufacturing <i>Nathan Bruno, Hexion (now Westlake)</i>
4:30 p.m. - 4:55 p.m.	Eliminating Barriers for Thermoplastic Composite Adoption <i>Jonathan Huang, Build Manufacturing</i>

CAMX Theater

Exhibit Hall D - Booth L72

TIME	WEDNESDAY, OCTOBER 19, 2022
9:30 a.m. - 9:55 a.m.	Advanced Materials Qualifications and Processes <i>Royal Lovingfoss, National Institute for Aviation Research (NIAR)</i>
10:00 a.m. - 10:25 a.m.	New Technologies Enhance Existing Benefits of Phenolic Resins <i>Jason S. Lee, Georgia - Pacific Chemicals</i>
10:30 a.m. - 10:55 a.m.	Functional Graphene Applied in Innovative Structural Vehicle Materials (Green Steel or Substitutes) <i>Kevin Keith, MITO Material Solutions</i>
11:00 a.m. - 11:25 a.m.	Unparalleled Inspection of Composites with the Dolphicam2 <i>Jack Lambert, Dolphitech</i>
11:30 a.m. - 11:55 a.m.	Design Lighter and Stronger Composite Materials Faster by Quickly Getting Properties From Your Images <i>Arsalan Zolfaghari, Thermo Fisher Scientific</i>
12:00 p.m. - 12:55 p.m.	ACE Award Winner Presentations
1:00 p.m. - 1:25 p.m.	Overview of L&L Products PHASTER™ Technology <i>Norman Rawls, L & L Products</i>
1:30 p.m. - 2:25 p.m.	The Evolution of Women in Business: Generations of Women Making a Difference <i>Panel Moderated by Marcy Offner and Jane Thomas, Women In Composites Industry</i>
2:30 p.m. - 2:55 p.m.	Graphene & Graphite Technology Enables Thermal & Electrical Conductivity for the Composites Industry <i>Christian Oberleitner, SP2 Carbon</i>
3:00 p.m. - 3:25 p.m.	METYCALC - METYX Composites' 'Value-Added-Service' Laminate Design and Review Program, <i>Metyx representative</i>
3:30 p.m. - 3:55 p.m.	Additive Fusion Technology: 3D - Print and Compress Carbon Composites Preforms to Increase Strength and Reduce Cost <i>Giovanni Cavolina, 9T Labs AG</i>
4:00 p.m. - 4:25 p.m.	E - Mobility and Recycled Carbon Fiber <i>Stephen Rawson, R & M International</i>
4:30 p.m. - 4:55 p.m.	Rotational Molding Technology for a Cost - Effective Hydrogen Liner Solution <i>Fabio Bressan, Perisco SpA</i>
TIME	THURSDAY, OCTOBER 20, 2022
	Join us in the CAMX Theater for these complimentary sessions; open to all attendees.
9:30 a.m. - 10:30 a.m.	Featured Panel: Adhesive Selection and Sustainable Bonding <i>Moderated by Maggie McKenney, Bostik</i>
10:40 a.m. - 11:10 a.m.	Education Session: An Interactive, Practical Application for Using Water Contact Angle for Preparing Surfaces for Bonding <i>Rose Roberts, Brighton Science</i>
11:15 a.m. - 11:45 a.m.	Education Session: Thermoplastic Welding Options and Pathways to Certification <i>Evan Young, Qarbon Aerospace</i>

CAMX FLOOR MAP



CAMX FLOOR MAP



EXHIBITOR PRODUCTS

Exhibitor and Product Listings are updated as of 9/2/2022.
For current listings, please visit thecamx.org

COMPANY

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Airborne.....	W62
Aligned Vision	F12
Allnex USA	F64
Apply Carbon	W23
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Cevotec GmbH / Biesse / Additive Ai	G54
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Trelleborg Sealing Solutions, Albany.....	W64
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Goodwinds Composites.....	E51
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ISOVOLTA AG.....	T61
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NEXX Technologies an MGC Company.....	N48
Pinette Emidecau Industries (PEI).....	R41
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GS Manufacturing.....	G5
Heraeus Noblelight America LLC.....	F54
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Century Design Inc.....	L66
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Cygnat Texkimp Limited	P65
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Engineering Technology Corporation	F8
Fives Machining Systems	N54
Gefran, Inc.	X73
Gunnar USA, Inc	X30
Held Technologie GmbH.....	T70
IND GROUP	S55
Janicki Industries	N66
Kent Pultrusion a subsidiary of Kent Automation, Inc.	F53
KraussMaffei Corporation	P71
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Schmidt & Heinzmann North America Inc.....	E12
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StateMix Ltd.....	M54
Tinius Olsen	G13
Virtek Vision / Plataine.....	U56
Zund America Inc	G42

Auxiliary Processing

ACMOS Inc.....	D36
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Gascogne Flexible	V22
IND GROUP	S55
Kastilo Technische Gewebe GmbH	M63
Leesona Corporation	N67
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SWORL Reusable Vacuum Bags, Cauls, Bladders	R42
Wisconsin Oven Corporation	N35

Blenders/Mixers

GS Manufacturing	G5
Hauschild SpeedMixer	J78
HV2 Enterprises Inc.	Z26
Myers Mixers	J58
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StateMix Ltd.....	M54

Braiding, Knitting/Stitching

A&P Technology	K12
Concordia Fibers, LLC.....	N77
Nammo Defense Systems Inc	Y18
P-D Glasseiden GmbH Oschatz	P46
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Textile Products, Inc	G30

Carbon Fiber Systems

Associated Industries Inc.....	N32
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Boston Materials, Inc.....	N78
C.A. Litzler Co., Inc.	L55
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Clear Carbon and Components, Inc	K15
Conductive Composites	J65
GPM Machinery (Shanghai) Co., Ltd.	Y67
Gummiwerk KRAIBURG GmbH & Co. KG ...	U21
Innovative Composite Engineering (ICE) ...	T49
Molding Products - IP Corporation	F11
Montalvo	G24
Terra Applied Systems	K82
Teubert Maschinenbau GmbH represented by Foam Equipment & Consulting Co.....	M61
Textile Products, Inc	G30
Thermo Fisher Scientific	P56

Carbon Fibers

ACMA, American Composites Manufacturers Association	U74
Aditya Birla Chemicals USA, Inc.	P79
Apply Carbon	W23
Avient Corporation.....	U32
C.R. Onsrud Inc.	Y45
Clear Carbon and Components, Inc	K15
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
Current, Inc.	P49
dolphitech.....	H56
ElectriCities of NC	J68
Engineered Fibers Technology	E62
Freeman Manufacturing & Supply Company	E2
Gerster TechTex, Gustav Gerster GmbH & Co. KG	G61
HEATCON Composite Systems	N47
Hexcel Corporation	W42
Hollingsworth & Vose.....	K67
Innovative Fabrication School (DBA) The FAB School	Z36
Janicki Industries	N66
KBK Inc.	K68
Leesona Corporation	N67
Mahr Metering Systems Corporation	Y17
Mar-Bal, Inc & Lattice Composites	Y34
Metalcrafters, Transparencies, and Composites, Inc. (MTCcorp)	V62
Michelman	X26
MITO Material Solutions	S26
Mitsubishi Chemical Group	F22
Molding Products - IP Corporation	F11
Montalvo	G24
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Plataine, Inc.	U56
R & M International Sales Corporation.....	M50

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COMPANY BOOTH

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Sahm Winding Solutions.....	H72
SGL Technologies GmbH.....	H48
Sharon-Cutwell Co.....	P77
Sky Composites AG.....	K77
Smartech - Reusable Vacuum Bagging.....	G53
TCR Composites.....	T55
Textile Products, Inc.....	G30
The Institute for Advanced Composites Manufacturing Innovation (IACMI).....	S47
TORAY Group.....	U14
UAMMI.....	X50
Vartega.....	X36
Vectorply Corporation.....	H42
Zoltek.....	F8

Ceramic Materials

Advanced Ceramics Manufacturing.....	E14
AlzChem LLC.....	M53
Axiom Materials, Inc.....	J48
Fabric Development, Inc.....	G30
M.C. Gill Composites Center at University of Southern California.....	K71
Specialty Materials, Inc.....	Z33
Textile Products, Inc.....	G30

Cleaning Products

ACMOS Inc.....	D36
Chem-Trend LP.....	N34
EuroLink International Business Development.....	Z14
Kastilo Technische Gewebe GmbH.....	M63

CNC Machining Equipment

ACMA, American Composites Manufacturers Association.....	U74
AMAMCO Tool.....	N53
American GFM Corporation.....	N18
Autonational Composite Machinery.....	Y52
Breton SpA.....	L61
C.R. Onsrud Inc.....	Y45
C6 - A Techniks Tool Group Company.....	E48
CGTech.....	P44
Diatrim Tools.....	G48
DUO Robotic Solutions Inc.....	J53
Eastman Machine Company.....	S32
Fives Machining Systems.....	N54
Gunnar USA, Inc.....	X30
Janicki Industries.....	N66
Metalcrafters, Transparencies, and Composites, Inc. (MTCcorp).....	V62
Multiax America, Inc.....	G15

COMPANY BOOTH

Paragon D&E.....	M64
Pinette Emidecau Industries (PEI).....	R41
Sharon-Cutwell Co.....	P77
Thermwood Corporation.....	W2
Titan Robotics.....	F50
YG-1 Tool USA.....	N62
Zund America Inc.....	G42

Coatings

ACMA, American Composites Manufacturers Association.....	U74
Akpa Kimya Ambalaj Sanayi ve Ticaret A.S.....	E55
Allnex USA.....	F64
Anupam Rasayan India Ltd.....	E5
AOC.....	U2
Calyxia.....	V22
Chem-Trend LP.....	N34
Composites One.....	J29
Composites One and the Closed Mold Alliance Demo Zone.....	L23
Cygnat Tekkimp Limited.....	P65
Daicel ChemTech, Inc.....	R15
Ele Corporation.....	L48
Elemental Coatings.....	S51
Engineered Fibers Technology.....	E62
Entropy Resins.....	G12
Gascogne Flexible.....	V22
INEOS Composites.....	J42
Kastilo Technische Gewebe GmbH.....	M63
Laboratorios Argenol S.L.....	G63
LCI Corporation.....	P53
Mahr Metering Systems Corporation.....	Y17
MB Superabrasives.....	P61
McLube Release Agents and Lubrication Technology.....	H17
Michelman.....	X26
Muratex Textile Machinery Ltd. Co.....	Z6
NanoSperse LLC.....	F30
Patcham USA.....	F48
P-D Glasseiden GmbH Oschatz.....	P46
Polynt.....	R1
PPG.....	F61
Resoltech.....	V22
Revchem Composites, Inc.....	W48
Survival Systems International - Valley Center, CA.....	N65
Technical Fibre Products, Inc.....	J11

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Aerodine Composites LLC.....	E54
Akpa Kimya Ambalaj Sanayi ve Ticaret A.S.....	E55

COMPANY BOOTH

Albany Engineered Composites.....	D14
Applied Aerospace Structures Corp.....	F6
Armaceil Benelux S.C.S.....	D42
Avient Corporation.....	U32
Boston Materials, Inc.....	N78
Calyxia.....	V22
Cannon.....	Z16
CGTech.....	P44
Clear Carbon and Components, Inc.....	K15
Collins Aerospace.....	T62
Composites One.....	J29
Covestro.....	X76
Crane Composites.....	E16
Current, Inc.....	P49
Daher Aerospace Inc.....	S71
Daicel ChemTech, Inc.....	R15
DUO Robotic Solutions Inc.....	J53
Ele Corporation.....	L48
ElectriCities of NC.....	J68
Fiberglass Coatings.....	K57
Foldstar.....	N49
Goodwinds Composites.....	E51
GPM Machinery (Shanghai) Co., Ltd.....	Y67
Gummiwerk KRAIBURG GmbH & Co. KG.....	U21
Hexagon.....	K53
Hexagon Purus.....	L62
HRC / Engenuity.....	Z47
Innovative Composite Engineering (ICE) ...	T49
J6 Polymers.....	U69
Janicki Industries.....	N66
JPS Composite Materials.....	N2
KraussMaffei Corporation.....	P71
L & L Products.....	K48
LANXESS Corporation.....	U25
Matrix Composites.....	T21
Mitsubishi Chemical Group.....	F22
Nammo Defense Systems Inc.....	Y18
NanoXplore, Inc.....	Z48
NDT Solutions.....	S64
Owens Corning Composites.....	J21
Park Aerospace Corp.....	V42
PCX Aerosystems.....	N58
PERSICO SPA.....	N63
Piercan USA, Inc.....	S25
PPG.....	F61
PRO-SET Inc.....	G14
Qarbon Aerospace.....	V14
RAMPF Group, Inc.....	S42
Re:Build Manufacturing.....	Q11
Revolution Composites.....	S27
Rock West Composites, Inc.....	S59
SEKISUI Chemical.....	W14
Technical Fibre Products, Inc.....	J11

EXHIBITOR PRODUCTS

COMPANY

BOOTH

Composites Structural Elements*(continued)*

Teubert Maschinenbau GmbH represented by Foam Equipment & Consulting Co.....	M61
The University of Southern Mississippi	N61
Thermwood Corporation	W2
TORAY Group	U14
UAMMI	X50

Compounds/Putties

Arxada LLC	Z51
Calyxia	V22
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
IDI Composites International / Norplex	L12
IPS Adhesives	F4
Janicki Industries	N66
NanoSpense LLC	F30
North American Composites	L1
Phosphorus, Inorganic and Nitrogen Flame Retardants North America, Inc. (PINFA-NA)	Z18
Polynt	R1
Polytek Development Corp.	F47
SBHPP - SB High Performance Plastics	E49
StateMix Ltd.	M54

Computer Hardware/Software

Advanced Processing Technology, Inc. (AvPro)	Z25
CGTech	P44
Foldstar	N49
HyperX - Collier Aerospace	M72
IND GROUP	S55
MFTECH	W27
QustomApps LLC	Z34
Thermo Fisher Scientific	P56
Tinius Olsen	G13
Walton Process Technologies, Inc.	R13

Consulting Services

Abaris Training Resources Inc	G11
Acrolab	E35
Clear Carbon and Components, Inc	K15
Diab	H23
EuroLink International Business Development	Z14
Foldstar	N49
Helicoid Industries Inc.	Z12
HyperX - Collier Aerospace	M72

COMPANY

BOOTH

JEC Group	M56
Lucintel	Z54
NDT Solutions	S64
NETZSCH Instruments North America, LLC	G7
Orbital Composites, Inc.	S50
PLASMABOUND	M74
Polymeris	V22
Precision Measurements and Instruments Corporation	X68
QustomApps LLC	Z34
Romeo Engineering Inc.	H61
Terra Applied Systems	K82
The Fluency Business Group	K78
The Graphene Council	Z42
Titan Robotics	F50
Trilion Quality Systems	U48

Core Materials

3A Composites Core Materials / Baltek Inc.	G36
ACMA, American Composites Manufacturers Association	U74
Advanced Ceramics Manufacturing	E14
Armacell Benelux S.C.S.	D42
Associated Industries Inc.	N32
Avient Corporation	U32
Axiom Materials, Inc.	J48
Bakelite GmbH	V47
Coastal Enterprises	Y64
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
Covestro	X76
Diab	H23
DUNA USA	F1
ECONCORE / ThermHex	X46
Elliott Company of Indianapolis Inc	K54
ERG Aerospace	Z2
Evonik Corporation	L42
Foldstar	N49
Gurit	H55
HEATCON Composite Systems	N47
ISO Technologies, Inc.	K66
J6 Polymers	U69
Kingspan Insulation, LLC	K61
Leesona Corporation	N67
METEX Composites	S11
Parabeam	X22
P-D Glasseiden GmbH Oschatz	P46
Piercan USA, Inc.	S25
PRO-SET Inc.	G14
Resoltech	V22

COMPANY

BOOTH

Revchem Composites, Inc.	W48
SAERTEX USA, LLC	K42
Sky Composites AG	K77
Technology Marketing Inc.	H11
Teijin Aramid USA, Inc.	X2
The R.J. Marshall Company	E41
ThermHex	X46
Tricel Honeycomb Corporation	J17

Cure Initiators/Catalysts

AlzChem LLC	M53
Arxada LLC	Z51
Bakelite GmbH	V47
Composites One	J29
Nouryon Chemicals LLC	U68
TRIISO	P5
United Initiators Inc.	N29

Cutting Equipment

ACMA, American Composites Manufacturers Association	U74
AMAMCO Tool	N53
American GFM Corporation	N18
Autometrix Inc.	Y8
Autonational Composite Machinery	Y52
Business France	V22
C6 - A Techniks Tool Group Company	E48
Diatrim Tools	G48
DUO Robotic Solutions Inc.	J53
Eastman Machine Company	S32
Kent Pultrusion a subsidiary of Kent Automation, Inc.	F53
LMT Onsrud LP	M67
Ribamatic Slitters	J16
Romeo Engineering Inc.	H61
Schmidt & Heinzmann North America Inc.	E12
Thermwood Corporation	W2
Wabash MPI / Carver Inc	P47
Wolff Industries Inc.	H53
YG-1 Tool USA	N62
Zund America Inc	G42

Design Product Development Services

9T Labs AG	X62
Acrolab	E35
Advanced Composites, Inc.	G17
Airborne	W62
Clear Carbon and Components, Inc	K15
CULTURE IN	V22
Ensinger Composites	G55
Hexagon	K53
Hexagon Purus	L62

EXHIBITOR PRODUCTS

COMPANY	BOOTH	COMPANY	BOOTH	COMPANY	BOOTH
HRC / Engenuity	Z47	ACMA, American Composites		Phosphorus, Inorganic and Nitrogen	
Innovative Composite Engineering (ICE) ...	T49	Manufacturers Association	U74	Flame Retardants North America, Inc.	
Janicki Industries	N66	CompositesWorld	D22	(PINFA-NA)	Z18
L & L Products	K48	Diab	H23		
Mar-Bal, Inc & Lattice Composites	Y34	EuroLink International		Fabricating Supplies	
Matec Instrument Companies, Inc.	R33	Business Development	Z14	Litek Composites Corp.	Q42
MB Superabrasives	P61	HEATCON Composite Systems	N47	PCX Aerosystems	N58
METYX Composites	S11	M.C. Gill Composites Center at		Warm Industrial Nonwovens	F28
MFTECH	W27	University of Southern California	K71		
Paragon D&E	M64	NDT Solutions	S64	Fabrics	
PCX Aerosystems	N58	The Institute for Advanced Composites		A&P Technology	K12
QustomApps LLC	Z34	Manufacturing Innovation (IACMI)	S47	AGY	H62
Re:Build Manufacturing	Q11	The University of Tennessee, Knoxville	K72	Bally Ribbon Mills	V61
Reno Machine Company	S43			Chomarat North America	F16
Rock West Composites, Inc.	S59	Electrical/Electronic		Composites One	J29
Romeo Engineering Inc.	H61	ACMA, American Composites		Composites One and the	
Sintex Plastics Group	V85	Manufacturers Association	U74	Closed Mold Alliance Demo Zone	L23
The Fluency Business Group	K78	Aditya Birla Chemicals USA, Inc.	P79	CULTURE IN	V22
The University of Tennessee, Knoxville	K72	Daicel ChemTech, Inc.	R15	De-Comp Composites Inc.	F5
Tricel Honeycomb Corporation	J17	Dantec Dynamics	Z8	Fabric Development, Inc.	G30
		Jiangsu Brother Alloy Co., Ltd	T67	Freeman Manufacturing &	
		JPS Composite Materials	N2	Supply Company	E2
		Mokon	R34		
Education/Training					
Abaris Training Resources Inc	G11				

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EXHIBITOR PRODUCTS

COMPANY

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Hollingsworth & Vose.....	K67
JPS Composite Materials.....	N2
Kastilo Technische Gewebe GmbH	M63
KBK Inc.....	K68
METYX Composites	S11
Microtex Composites srl	W61
Northern Composites.....	N12
Owens Corning Composites.....	J21
Pacific Coast Composites	P16
Parabeam	X22
P-D Glasseiden GmbH Oschatz	P46
Revchem Composites, Inc.....	W48
Ribamatic Slitters.....	J16
SAERTEX USA, LLC	K42
Sahm Winding Solutions	H72
SGL Technologies GmbH.....	H48
Taconic	F18
Textile Products, Inc	G30
TeXtreme® (Oxeon, Inc).....	H12
Vectorply Corporation.....	H42
Warm Industrial Nonwovens	F28

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Fasteners

Click Bond, Inc.	F42
Galaxy Technologies	S67

Filament Winding Equipment

ACMA, American Composites Manufacturers Association	U74
Advanced Composites, Inc.....	G17
Akpa Kimya Ambalaj Sanayi ve Ticaret A.S.....	E55
Autonational Composite Machinery	Y52
Carbon Axis.....	V22
Century Design Inc.....	L66
Composite Automation / ISOJET / PCM Innovation	G56
Current, Inc.....	P49
Cygnat Textkimp Limited	P65
Engineering Technology Corporation	F8
Heraeus Noblelight America LLC.....	F54
ISOJET Equipments	G56
McClellan Anderson LLC.....	T22
MFTECH.....	W27
Mikrosam DOO.....	V51

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PCX Aerosystems	N58
Roth Composite Machinery GmbH.....	G47
TCR Composites.....	T55

Foams

3A Composites Core Materials / Baltek Inc.....	G36
Armaceil Benelux S.C.S.	D42
Cannon	Z16
Coastal Enterprises	Y64
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
Diab.....	H23
DUNA USA.....	F1
Elliott Company of Indianapolis Inc	K54
ERG Aerospace.....	Z2
Evonik Corporation	L42
ISO Technologies, Inc.....	K66
J6 Polymers	U69
Kingspan Insulation, LLC	K61
Laboratorios Argenol S.L	G63
Mahr Metering Systems Corporation	Y17
SP2 Carbon Technology Co.	Y24

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EXHIBITOR PRODUCTS

COMPANY BOOTH

Survival Systems International - Valley Center, CA	N65
Teubert Maschinenbau GmbH represented by Foam Equipment & Consulting Co.....	M61
Thermo Fisher Scientific	P56
Tricel Honeycomb Corporation	J17

Glass Fibers

ACMA, American Composites Manufacturers Association	U74
AGY	H62
Akpa Kimya Ambalaj Sanayi ve Ticaret A.S.	E55
Asia Composite Materials (Thailand) Co., Ltd.	D34
Avient Corporation.....	U32
Cannon	Z16
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
Crane Composites	E16
Current, Inc.	P49
De-Comp Composites Inc.	F5
dolphitech.....	H56
Engineered Fibers Technology	E62
Gerster TechTex, Gustav Gerster GmbH & Co. KG.....	G61
Helicoid Industries Inc.	Z12
Hollingsworth & Vose.....	K67
Kastilo Technische Gewebe GmbH	M63
Leesona Corporation	N67
Litek Composites Corp.....	Q42
Michelman	X26
Molding Products - IP Corporation	F11
Nippon Electric Glass (NEG)	F34
Norplex	L12
Omya.....	M66
Owens Corning Composites	J21
Pacific Coast Composites	P16
Parabeam	X22
P-D Glasseiden GmbH Oschatz	P46
Sahm Winding Solutions	H72
Saint-Gobain Vetrotex.....	X56
Shin-Etsu MicroSi	S62
Sky Composites AG	K77
Smartech - Reusable Vacuum Bagging	G53
Superior Huntingdon Composites, LLC	Z21
TCR Composites.....	T55
Technical Fibre Products, Inc.	J11
Textile Products, Inc	G30
Thermo Fisher Scientific	P56
Vectorply Corporation	H42

COMPANY BOOTH

Infrared Curing Systems

Allnex USA	F64
Heraeus Noblelight America LLC.....	F54
Muratex Textile Machinery Ltd. Co.	Z6
Pinette Emidecau Industries (PEI).....	R41
Schott & Meissner Maschinen-und Anlagenbau GmbH	M63

Infusion Equipment

ACMA, American Composites Manufacturers Association	U74
Composite Automation / ISOJET / PCM Innovation	G56
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
ISOJET Equipements	G56
Janicki Industries	N66
Practix USA	J56
SWORL Reusable Vacuum Bags, Cauls, Bladders	R42

Laser Projection

Aligned Vision	F12
LAP of America Laser Applications, LLC.....	J66
Virtek Vision / Plataine.....	U56

Manufacturing Process Development

9T Labs AG	X62
Accudyne Systems, Inc.....	S65
Acrolab	E35
Advanced Composites, Inc.	G17
Airborne.....	W62
American Colors Inc.	Y2
Anupam Rasayan India Ltd.	E5
Applied Aerospace Structures Corp.....	F6
Autometrix Inc.....	Y8
Bally Ribbon Mills.....	V61
Berndorf Belt Technology USA.....	P14
Breton SpA.....	L61
Carbon Axis.....	V22
Clear Carbon and Components, Inc	K15
Collins Aerospace.....	T62
Dantec Dynamics	Z8
Eastman Machine Company	S32
Engineering Technology Corporation	F8
Fiberglass Coatings	K57
Foldstar	N49
Gunnar USA, Inc	X30
Held Technologie GmbH.....	T70
Hexagon Purus.....	L62

COMPANY BOOTH

International Thermal Systems	G62
IPCO US, LLC.....	U62
Janicki Industries	N66
Massivit 3D.....	V48
Matec Instrument Companies, Inc.....	R33
MB Superabrasives	P61
Mikrosam D00	V51
Muratex Textile Machinery Ltd. Co.	Z6
NETZSCH Instruments North America, LLC	G7
Paragon D&E.....	M64
PCX Aerosystems	N58
Piercan USA, Inc.....	S25
Pinette Emidecau Industries (PEI).....	R41
PLASMABOUND.....	M74
Plataine, Inc.	U56
Practix USA	J56
Precision Measurements and Instruments Corporation.....	X68
Radius Engineering	U67
Re:Build Manufacturing	Q11
Reno Machine Company.....	S43
Rock West Composites, Inc.....	S59
Roth Composite Machinery GmbH.....	G47
SEKISUI Chemical.....	W14
Sharon-Cutwell Co.	P77
Smartech - Reusable Vacuum Bagging	G53
The Institute for Advanced Composites Manufacturing Innovation (IACMI)	S47
The University of Tennessee, Knoxville	K72
Thermwood Corporation	W2
Tricel Honeycomb Corporation	J17
Tri-Mack Plastics Manufacturing Corp.....	J61
UAMMI.....	X50
University of Delaware.....	K74
Veelo Technologies.....	S58

Material Research and Development

Anupam Rasayan India Ltd.	E5
BGF Industries, Inc.	Z41
BYK USA Inc	T56
C6 - A Techniks Tool Group Company	E48
Century Design Inc.	L66
Conductive Composites	J65
Covestro	X76
CULTURE IN.....	V22
Dantec Dynamics	Z8
Elemental Coatings	S51
Ensinger Composites.....	G55
ERG Aerospace.....	Z2
Hauschild SpeedMixer.....	J78
Helicoid Industries Inc.	Z12
Hexagon	K53

EXHIBITOR PRODUCTS

COMPANY

BOOTH

Material Research and Development

(continued)

IDI Composites International / Norplex	L12
Instron	N6
Integrated Technologies, Inc.	N55
M.C. Gill Composites Center at University of Southern California	K71
Mar-Bal, Inc & Lattice Composites	Y34
Nammo Defense Systems Inc	Y18
National Institute for Aviation Research (NIAR)	X61
NETZSCH Instruments North America, LLC	G7
NEEx: An ACI Center of Excellence for Nonmetallic Building Materials	J72
NEXX Technologies an MGC Company	N48
Norplex	L12
Precision Measurements and Instruments Corporation	X68
Rock West Composites, Inc.	S59
SBHPP - SB High Performance Plastics	E49
Siltech Corporation	S22
SP2 Carbon Technology Co	Y24
Specialty Materials, Inc.	Z33
Textile Products, Inc	G30
The Fluency Business Group	K78
The Graphene Council	Z42
The Institute for Advanced Composites Manufacturing Innovation (IACMI)	S47
The R.J. Marshall Company	E41
The University of Tennessee, Knoxville	K72
Thermo Fisher Scientific	P56
TRiiSO	P5
UAMMI	X50
University of Delaware	K74

Matrix Materials

Armacell Benelux S.C.S.	D42
Arxada LLC	Z51
BYK USA Inc	T56
Freeman Manufacturing & Supply Company	E2
Michelman	X26
Piercan USA, Inc.	S25
Resoltech	V22
SGL Technologies GmbH	H48
TRiiSO	P5
Westlake Epoxy (formerly Hexion Coatings & Composites)	G27

Mold Release Systems

Associated Industries Inc	N32
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COMPANY

BOOTH

AXEL Plastics	T42
Chem-Trend LP	N34
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
DH Sutherland	G18
Dunstone Company Inc.	Z13
Fiberglass Coatings	K57
Freeman Manufacturing & Supply Company	E2
McLube Release Agents and Lubrication Technology	H17
Piercan USA, Inc.	S25
RAMPF Group, Inc	S42
Taconic	F18
Technology Marketing Inc	H11

MRO - Maintenance, Repair, Operations

BriskHeat Corporation	R11
Click Bond, Inc.	F42
Composites One	J29
Composites One and the Closed Mold Alliance Demo Zone	L23
Diatrim Tools	G48
Electricities of NC	J68
ERG Aerospace	Z2
HEATCON Composite Systems	N47
Litek Composites Corp.	Q42
Macrodyne Technologies Inc.	Y30
National Institute for Aviation Research (NIAR)	X61
PLASMABOUND	M74
PPG	F61
Virtek Vision / Platane	U56

Nano Materials

ACMA, American Composites Manufacturers Association	U74
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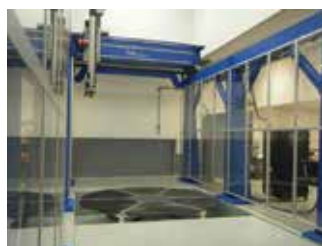


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HK Research Corporation— Booth U42

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France
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China
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JPS Composite Materials—Booth N2

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www.kentpultrusion.com

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California—Booth K71**Los Angeles, CA 90089
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MB Superabrasives LLC is an application and process focused producer of Diamond Tooling for all industries requiring Composite finishing and forming.

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www.metyx.com

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MFTECH SAS, France, the world leader in robotic filament winding started equipment manufacture in 2004 for solutions in aerospace, automotive, sports and industrial sectors.

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www.nammo-cs.com

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New York, NY 10017
www.enduredge.com

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www.thermhhex.com

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TMP, A Division of French—Booth T28

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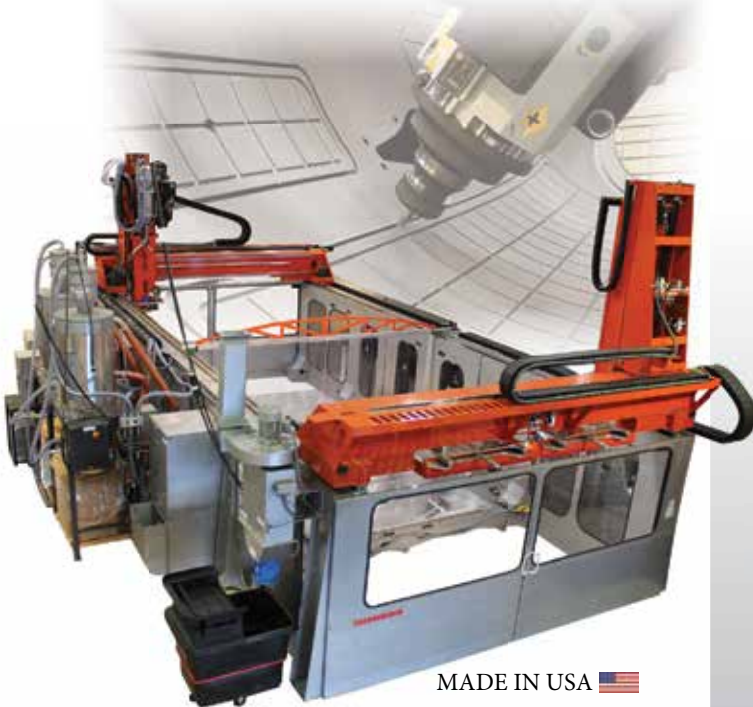


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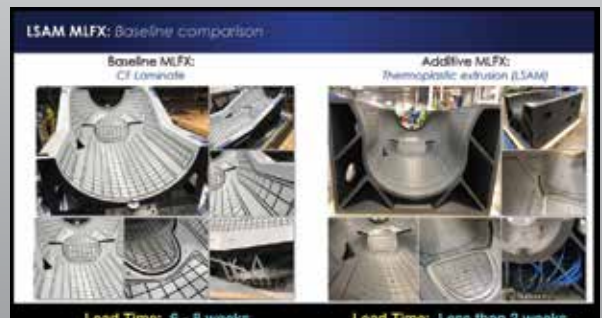
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