Society for the Advancement of Material and Process Engineering

SAMPE
Los Angeles Chapter
News and Information

January 2022

Impossible Objects
Presented by Jeffrey DeGrange
January 25, 2022 (Tuesday) at 6:00 PM

Date:

1-25-22 (Tues)

Time:

6:00 PM PST

Reservations:

Register for the Zoom presentation.

Registration link at:

You are invited to a Zoom meeting.
When: Jan, 25, 2022 06:00 PM Pacific Time (US and Canada)

Register in advance for this meeting at:

https://us02web.zoom.us/meeting/register/tZAsdOCoqTIpGtbfEv99UTx5_wMI2yX1scRZ

After registering, you will receive a confirmation email containing information about joining the meeting.

About Impossible Objects

Impossible Objects Composite Based Additive Manufacturing (CBAM) composite process is the fastest, lowest cost 3D printing process available. CBAM is completely new way of 3D printing that prints up to 10x faster, at up to half the cost of legacy methods and yields parts up to 10x stronger. CBAM has a greater material selection, with higher strength, including carbon fiber composites. CBAM can use almost any thermoplastic ranging from commodity materials like polyester to high-performance materials such as PEEK. This gives high strength-to-weight ratios that rival aluminum in strength at lower weight. CBAM also has better dimensional tolerances, and essentially no shrinkage or warpage. In addition, materials such as PEEK have better chemical resistance and exceptional heat performance. Parts are ideal for applications in automotive, aviation, webspace, defense and consumer products.

With Impossible Objects, you get to choose:

- CARBON FIBER / PEEK
- CARBON FIBER / NYLON
- FIBERGLASS / NYLON
- FIBERGLASS / PEEK

About Jeffery DeGrange

Jeffery DeGrange is the current Chief Commercial Officer of Impossible Objects Incorporated, a 3D Composites Chicago company, past Stratasys Vice President of Industrial Verticals, past Boeing Company Research and Technology department head for advanced manufacturing materials and technologies.

Jeff is the past Chairman of Society of Manufacturing Engineering (SME) Additive Committee, former Chairman of the Germany's Direct Manufacturing Research Center (DMRC), Chicago Museum of Science and Industry, University of Iowa College of Engineering, University of Minnesota Medical Device Center and current board member to Precision ADM in Winnipeg, Canada.

He holds multiple patents and has a Master of Science in Manufacturing Engineering from Washington University and received his Bachelor of Science in Industrial Engineering from the University of Iowa.

. Key Skills:

- Additive manufacturing materials and processes
- Manufacturing
- Technology transition
- Government funding
- Venture capital funding
- Business development

Impossible Objects Presentation

Composite Based Additive Manufacturing (CBAM) 3D technology.

The presentation will provide a detailed look into Impossible Objects Composite Based Additive Manufacturing (CBAM) technology that uses nonwoven composite sheets and thermoplastics to produce 3D Polymer Matrix Composite (PMC) parts. This will include an in-depth material and process discussion into the material combinations, fiber volume, void content and resulting material properties.

Consumer Part Applications:

Electrical Components Applications:

BENEFITS

- Light weight and durable
- Improved material properties
- Chemical and temperature resistance
- Various material combinations

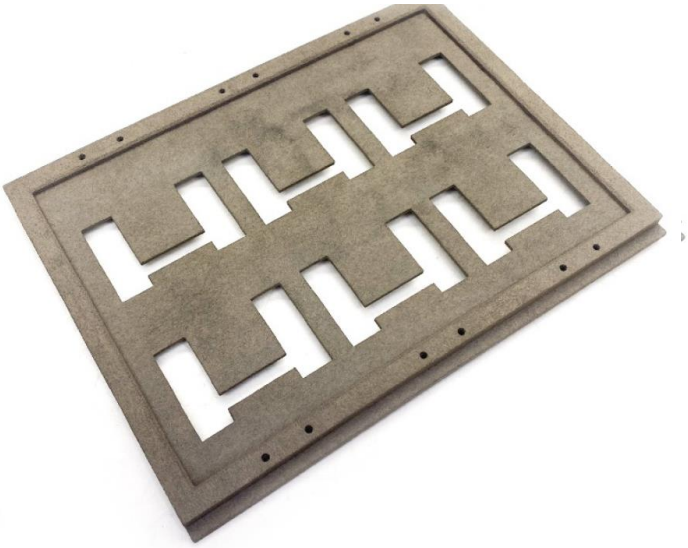
Aerospace Part Applications:

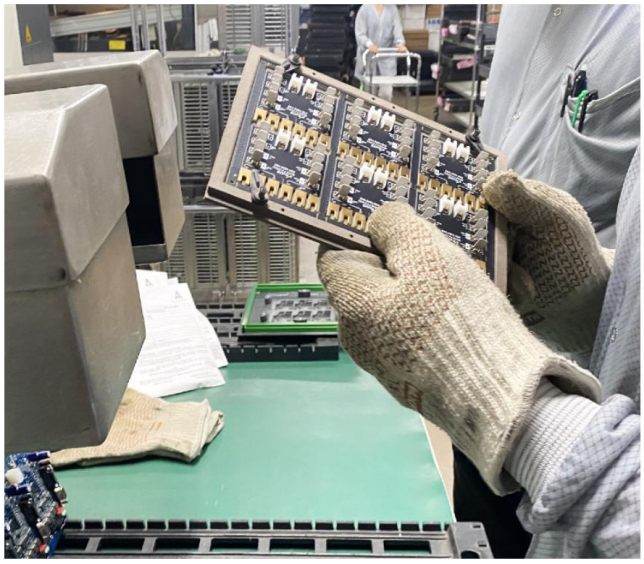
Unmanned and Air Mobility Vehicles Part Applications:

BENEFITS

- Parts in days
- Excellent strength to weight compared to aluminum
- Improves fleet readiness levels
- Provides supply chain security
- Lowers sustainment costs
- Rapid response time to engineering change orders

Tooling Applications:





BENEFITS

- Tools in days versus weeks
- Temperature and chemical resistance
- Tool accuracy and durability
- Cost effective

How The Parts Are Made - **CBAM2 system**:

- Larger build area 12” x 12” (305mm x 305mm)
- Bulk ink refill system
- Material feeding and conveyance
- Automated sheet stacking
- In-situ inspection of printed sheets
- Improved error reporting & logging
- Plug-ins for user customization
- Faster print speeds

Schedule of Upcoming Events

Event	Presented From	Date
Impossible Objects	Jeffery DeGrange (Zoom)	January 25, 2022
Materials Innovaton & Advanced Technical Leadership Form	Huntington Beach, CA	January 26 – 27, 2022
Medical Design & Manufacturing Show West	Anaheim, CA	April 12 – 14, 2022
Southern California Facilities Expo	Anaheim, CA	April 27 – 28, 2022
TechCon (Society of Vacuum Coaters)	Long Beach, CA	April 30 – May 5, 2022
Del Mar Electronics & Manufacturing Show	Del Mar, CA	May 4- 5, 2022
Space Tech Expo	Long Beach, CA	May 23- 25, 2022
CAMX	Anaheim, CA	October 10 -13, 2022
Anaheim Electronics & Manufacturing Show	Anaheim, CA	November 16 -17, 2022

Irene Epstein Scholarship

The Irene Epstein Memorial Scholarship Awards were initiated in 1996 shortly after the death of Irene Epstein, to honor her volunteer efforts on behalf of the Society for the Advancement of Material and Process Engineering (SAMPE), and to recognize her strong desire to assist financially-needy, academically-deserving students at Fairfax High School (Los Angeles) to attend college to study engineering, science, mathematics, or medicine.

The Irene Epstein Memorial Scholarship Awards program was initially funded by contributions from The Aerospace Corporation and SAMPE. It is also supported by the Air Force Space Systems Manufacturing Problem Prevention Program (MP3).

The program is administered by Dr. Howard A. Katzman, Senior Scientist at The Aerospace Corporation, and Education Chairman of the Los Angeles Chapter of SAMPE.

Many individuals and companies have generously contributed to help the fund grow so the amount of the scholarship awards has increased five-fold since it started. In addition, a special Book Awards was introduced three years ago to help selected students in the purchase of their college textbooks. If you would like to make a donation or learn more about the scholarship, please contact Dr. Howard A. Katzman at 310-336-5860 or e-mail him at Howard.A.Katzman@aero.org**.**

Thank you all for your sponsorship and support of SAMPE – LA!!!

Our list of sponsors is growing!!! Sponsors get monthly exposure in our mailing to over 500 members and associates of the local chapters of SAMPE. Sponsors also get a link to their corporate webpage via the SAMPE Los Angeles Chapter website.

For information on being a sponsor, please contact:
Howard A. Katzman
(310)336-5860

SAMPE-Los Angeles Sponsors

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Thermal Wave Imaging	Steve Shepard Alan Nusbaum	248 414-3730	Sshepard@thermalwave.com alannusbaum@thermalwave.com
Toray Advanced Composites USA	Eric Howard	831 601-3851	e.howard@toraytac-usa.com

Thank you all for your sponsorship and support of SAMPE-LA!!!

ALL NEW!

Materials Innovation & Advanced Technology Leadership Forum

Towards Industrialization of Composites Manufacturing

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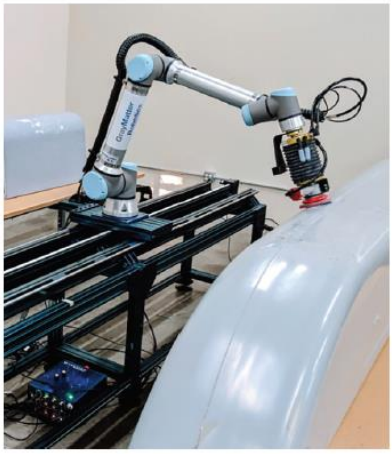
PLAN NOW TO ATTEND

WEDNESDAY, JANUARY 26, 2022

TIME	SESSION		
9:00am - 12:00pm	GrayMatter Robotics Tour - Limited to 50 registrants		
1:00 - 2:30pm	Track 1	Short Course	**Advances and Challenges in Automated Fiber Placement (AFP),** by Ramy Harik, University of South Carolina and Sayata Ghose, The Boeing Company
2:30 - 4:00pm			**Pultrusion Technology, Commercialization and Industrialization**, by Clement Hiel, Composites Support & Solutions, Inc.
1:00 - 2:30pm	Track 2	Short Course	**Non-Destructive Evaluation (NDE) Integration Into Modern Aerospace Manufacturing**, by David Forsyth, TRI Austin
2:30 - 4:00pm			**Thermoplastic Composites: Opportunities and Challenges**, by David Leach, ATC Manufacturing
1:00 - 2:30pm	Track 3	Market Overview	**Overview of Additive Manufacturing (AM) Market: State of the Art, Current Challenges and Opportunities, and Path Forward,** by Ahmed Arabi Hassen, Peeyush Nandwana and Vidya Kishore, Oak Ridge National Laboratory
2:30 - 4:00pm			**Market Overview of eVTOL and Urban/Advanced Air Mobility (UAM/AAM),** by Johnny T. Doo, Devonshire Holdings, Inc.
4:00 - 6:00pm	Welcome Reception		

ROBOTICS TOUR

See for yourself how GrayMatter Robotics makes AI-Brains for robots by taking commercially available robots and connecting them to artificial intelligence software, creating smart robotic assistants for high-mix surface treatment applications. **Tour attendance is limited to 50 registrants, register today.** Visit **materialsinnovationforum.org/tour.**



VENUE & LOCATION — HUNTINGTON BEACH, CA

The forum will be held at the **Kimpton Shorebreak Resort**, 500 Pacific Coast Highway, Huntington Beach, CA 92648. Book your room at **materialsinnovationforum.org/hotel-registration.** Huntington Beach is located in Southern California, within driving distance to numerous manufacturing companies and offers a plethora of activities for visitors — live entertainment, iconic bonfire pits, beautiful sandy beaches, and oceanfront dining year-round.

SEATS ARE LIMITED. REGISTER AT: materialsinnovationforum.org

Below is the link to the Jan 2022 Forum registration page:

https://365.sampe.org/networks/events/9917

FORUM SPEAKERS & PRESENTATIONS

THURSDAY, JANUARY 27, 2022

SESSION 1 — CHALLENGES

8:10am - 9:40am

- Air Mobility - Economy of Scale, *John Geriguis and Nobuya Kawamura*
- Recycling and Circular Economy of Automotive Composite Parts, *Hendrik Mainka*
- Composite Material Opportunities and Challenges for Air Mobility and Unmanned Systems, *Robert Yancey*

John Geriguis, Joby Aviation

Nobuya Kawamura, Toyota Motor North America, Inc.

Hendrik Mainka, Volkswagen Group of America, Inc.

Robert Yancey, Hexcel

SESSION 2 — SYNERGIES

10:00am - 12:00pm

- Synergy of Aerospace and Wind Energy Composites Technologies, *Wendy Lin*
- Pultrusion with Design Freedom
- Advances in Manufacturing Carbon-Carbon Composites for High Temperature Applications, *Matthew Parkinson*
- Part Throughput is one of the Most Limiting Factors When Working in the Composite Industry, *Adam Rawlett*
- Alternate Methods For Increasing Composite Part Throughput, *Sam Tollefsen*

Wendy Lin, GE Renewable Energy

Matthew Parkinson, BASF Performance Materials

Adam Rawlett, US Army Research Laboratory

Sam Tollefsen, Toray Composite Materials America, Inc.

SESSION 3 — ADVANCEMENTS

1:30 pm - 3:00pm

- Rapid Large-Scale Structural Thermoplastic Parts, *Michael Assadi*
- NCC's Digital for Composites (D4C) – From Right First Time to Right Every Time, *Enrique Garcia*
- Aerospace Integral Structures by LRI Based in Automated Lamination of Fabrics with ADMP, *Peio Olaskoaga*

Michael Assadi, Electroimpact Inc.

Enrique Garcia, National Composites Centre

Peio Olaskoaga, IDEKO Research Center

SESSION 4 — SIMULATION/SOFTWARE CONTRIBUTORS

3:30 pm - 5:20pm

- AI-Based Production Scheduling And Process Optimization Drive Manufacturing Agility And Efficiencies, *Avner Ben-Bassat*
- How Credible Simulation Significantly Reduces Product Development Time and Cost, *Javad Fatemi*
- Software Platform Solutions for Composites Design, Manufacturing and Simulation 4.0, *William Ramroth*
- Efficient Manufacturing for 21st Century Composite Structures, *Alex Rubin*

Avner Ben-Bassat, Plataine

Javad Fatemi, Airbus Defence and Space

William Ramroth, Dassault Systemes

Alex Rubin, The Boeing Company

Below is the link to the Jan 2022 Forum registration page:

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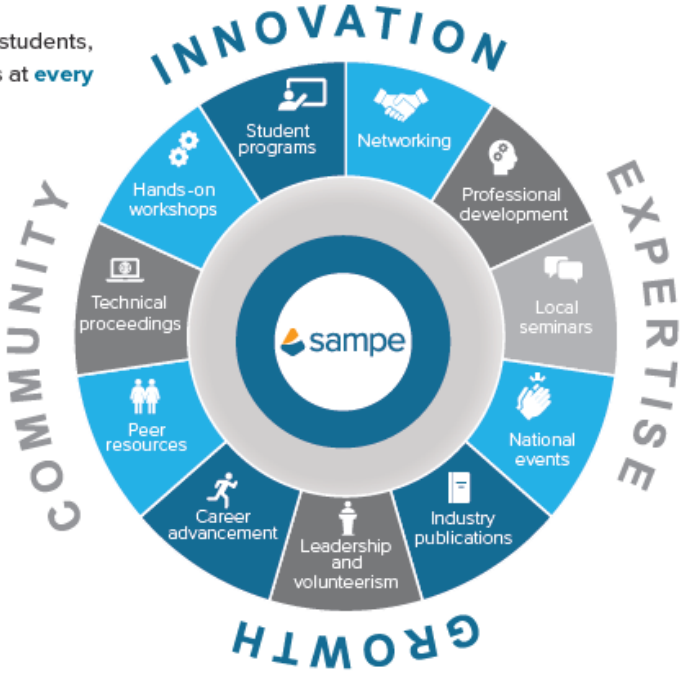
Join the Society for the Advancement of Material and Process Engineering.

sampe North America

SAMPE is your global connection to the advanced materials and processes community and the only technical society encompassing all materials and processes fields.

Member Experience

SAMPE provides a collaborative, technical community for students, professionals, and academics tailored to meet their needs at **every stage of their professional lives**.



Membership Includes

- ☑ **SAMPE 365 virtual community** — year-round platform built for the advanced materials and process community to share ideas and novel techniques, forge business relationships, source cutting-edge materials and work together to advance discovery and further profitable outcomes. Find education, events, resources, products and services, all in one place.
- ☑ ***SAMPE Journal* subscription** — access new issues and archives
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