



SPE® Automotive Composites Conference & Expo (ACCE) 2024 Excels with Industry and Academia Innovations and Exchanges

SPE® Automotive Composites Conference & Expo (ACCE) 2024 included 72 Technical Presentations, 28 Student Posters, 43 Sponsorships, 29 Exhibits, 4 Keynote Addresses and a panel discussion on Sustainability and End of Vehicle Life.

In addition, more than \$11,000 was awarded in student scholarships & 28 students were provided with free registrations and hotel accommodations

TROY (DETROIT), MICH. - The SPE® Automotive Composites Conference & Expo (ACCE) event was held September 4 – 6, 2024, at the Suburban Collection Showplace Diamond Banquet and Conference Center in Novi, Michigan. It was the 24th annual SPE® ACCE produced by the SPE Automotive and Composites Divisions. It was a valuable event for exhibitors/sponsors and attendees representing OEMs, Tier Suppliers, Academia and other composites industry professionals.

“Globally, the SPE-ACCE event always brings together the ‘best of the best’ from academia and industry,” said Peter McCormack, North American Sales Manager, Dieffenbacher. “For a few short days, this exchange is an invaluable arena for the composites sector,” added McCormack.

“Thank you to the ACCE team for the excellent coordination of the ACCE; it was a great conference for our team, and we especially enjoyed the extra time allocated for multiple hour-long networking breaks to have meaningful customer interactions. The variety of workshops and keynote speakers provided valuable insights,” said Michele Laperna Wong, Commercial Development Manager – Polymers & Coating at Imerys Performance Minerals Americas. “Overall, it was a well-organized and enriching experience that we look forward to attending again in the future,” added Wong.

“All of the plastic and composite parts showcased at 2024 ACCE demonstrated innovation in numerous ways, reflecting the growth we strive for in our industry,” stated Ankur Bhosale, Sr. Principal Engineer of Engineering Plastics at BASF Corporation. “The 2024 ACCE offered invaluable insights and remains the premier event where we all can learn from each other and elevate our plastics industry to new heights,” Bhosale added.

ACCE Leadership & Summary

“The 2024 ACCE attracted many long-time attendees and newcomers excited to drive innovation in composites for the future of transportation,” said Dr. David Jack, Professor – Department of Mechanical Engineering at Baylor University and ACCE 2024 Co-Chair. “This year, because composites are the key

to numerous mobility applications (beyond the road and moving into the air), our theme expanded to reflect composites as essential to “The Future of Transportation - Mobility and Beyond,” added Jack.

“Composites are the most versatile, lightweight, and strongest materials for design freedom and multifunctionality, and due to recent advances in processing and manufacturing, their use has extended to numerous innovative applications,” said Dr. Mike Siwajek, Vice President of Research and Development at Teijin Automotive Technologies.

A number of composite leaders from industry and academia provided additional direction and support for the event. The technical program included 72 presentations and was led by Dr. Mehdi Tajvidi, Professor of Renewable Nanomaterials, School of Forest Resources, Advanced Structures and Composites Center and Forest Bioproducts Institute at University of Maine and Dr. Dominik Dörr, Co-Founder & Managing Director of Simutence. Additional support was provided from Jitesh Desai, Program Treasurer, SPE Automotive Division. Dr. Leonardo Simon, Professor at the University of Waterloo, led the ACCE Parts Competition that included 4 nominations. Dr. Douglas Smith, Professor at Baylor University, Chair of Student Engagement, led the Student Poster Competition that included 28 presentations with sponsorship support provided by Dassault Systèmes. This year we included five minute presentations with all student posters, and was well received by everyone. Teri Chouinard, President of Intuit Group, provided leadership as ACCE Sponsorship Chair with 43 sponsorships and 29 exhibits and provided Admin support for the Technical Program and Event Management overall.

Keynotes presented at the ACCE 2024 event included: “Beyond Carbon-Neutral Mobility-Sustainability in the Volkswagen Group Innovation” by Dr. Hendrik Mainka, Principal Program Lead Innovation Hub Knoxville, Volkswagen Group of America, Inc., “High Performance Composites: Trends and Impact on Automotive Lightweighting” by Andrew N. Hrymak, Co-Director of the Fraunhofer Innovation Platform for Composites Research at Western University and Professor of Chemical and Biochemical Engineering, “Innovation to Impact: Advancing Transportation Through The Intersection of Sustainability and Polymer Composite Technology” by Amanda Nummy, Senior Materials Engineer, Sustainable Materials at Hyundai America Technical Center, and “50 Years of Innovation at the University of Delaware’s Center for Composite Materials” by Dr. Srikanth Pilla, Professor and Director of the University of Delaware’s Center for Composite Materials (UD-CCM).

A Panel Discussion on Sustainability and End of Vehicle Life, “Breaking Down the Barriers to a Circular Automotive Economy,” was moderated by Adam Halsband, Managing Director at Forward Engineering North America. Panelists including Dr. Hendrik Mainka, Senior Project Lead and Head of Innovation Hub Knoxville at Volkswagen of America; Dr. David L. Waggoner, Chief Scientist/Director of Environmental Management at Recycled Materials Association (ReMA); Mr. Brad Allen, OEM Automotive Account Manager at Rebuilders Automotive Supply (RAS); and Mr. Marco Meloni, Chief Operating Officer at Plastics Recycling, Inc. (PRI) provided valuable insights and solutions for composites compatibility in a circular and sustainable system.

The ACCE 2024 technical program included 72 presentations on advances in the following categories: Composites in Electric Vehicles; Advances in Thermoplastic Composites; Advances in Thermoset Composites; Additive Manufacturing/3D Printing; Enabling Technologies; Sustainable Composites; Bonding/Joining/Finishing; Design, Modeling, and Simulation of Composites; and Celebration of the 50 Years of the Center for Composite Materials.

Best Paper Awards

Excellence in technical writing is recognized annually at ACCE by honoring those who have presented the best papers at the conference. The 2024 Best Paper Award winners received the highest average ratings by conference peer reviewers, including members of the ACCE planning committee and other industry experts. First, second, and third place winners were recognized and honored at the event in the “Best Paper Award” competition.

Tanzila Minhaj, North Carolina A&T State University, won the Best Paper Award for her paper “Assessment of Damage Evolution in Thermoplastic Composite Using Acoustic Emission and CNN-LSTM Mode.” Second place recognition was awarded to Rachel Van Lear, PhD student at Baylor University, for her paper “Sound Predictions: Correlating Impact Damage to Laminate Compressive Strength with Phased Array UT.” Third place recognition was awarded to Dr. Martin Hohberg, Simutence GmbH for his paper on “Using Thermokinetic Analyses for the Efficient and Accurate Optimization of Composites Molding”.

At the conference, the authors received certificates, and their papers were highlighted in the ACCE program schedule. Their papers will also be published in the SPE Automotive and Composites Division newsletters and other industry publications.

Student Poster Competition:

Students from the United States and Canada featured innovative research related to polymer composite materials and manufacturing technologies for automotive applications via the annual ACCE Poster Competition. This yearly event enables students to meet with industry professionals and learn about career opportunities as a scientist, engineer, researcher and other professions in the field. Automotive OEMs, tier suppliers, and others appreciate the introduction to the next generation of automotive composites engineering professionals and the opportunity to potentially hire them in the future. The 2024 ACCE Student Poster Competition, sponsored by Dassault Systèmes, included 28 posters from six different universities. This year’s winners are:

Graduate Category:

1st Place: “Hybrid Carbon/Metal Composites for Lightning Strike Protection in Advanced Air Mobility Vehicles” Hridayesh Tewani, U of Wisconsin - Madison

2nd Place: “Sound Predictions: Correlating Impact Damage to Laminate Compressive Strength with PAUT” Rachel Van Lear, Baylor University

3rd Place: “Simulating the Effect of Bead Microstructure on Thermal-Mechanical Response in Multi-Bead Structures for Large Area Additive Manufacturing of Short Carbon Fiber/ABS” Neshat Sayah, Baylor University

Undergraduate Category:

1st Place: “AI-Driven Sustainable Fused Deposition Modeling of Sustainable Composite For Automotive Applications: A Bayesian Optimization Approach” Philip McMorran, University of Guelph

2nd Place: “Effects of Repetitive Recycling on the Performance of Sustainable Biocarbon Polypropylene Composites” Sarah Simoes, University of Guelph

3rd Place: “Effect of Blend Ratio and Compatibilizer on rPP/rLLDPE Sustainable Miscanthus Biocarbon Reinforced Composite” Cameron Marquez, University of Guelph

Scholarship Awards:

The organizing committee for the SPE Automotive Composites Conference & Exhibition (ACCE) honored the winners of the group’s annual SPE ACCE scholarships and the Dr. Jackie Rehkopf scholarships from a fund that has been set up to honor the long-time SPE ACCE committee member, SPE Automotive Division board member, and automotive composites researcher. ACCE scholarship winners will plan to present the results of their research at the next year’s SPE ACCE event, Sept. 3 - 5, 2025. Rehkopf scholarship winners will present the results of their research at next year’s SPE ACCE or publish them in an SPE journal. Both scholarships are administered as part of the SPE Foundation (www.4spe.org).

The ACCE Scholarships (a total of \$6,000 USD) are sponsored by the SPE Automotive and SPE Composites Divisions. Five ACCE Scholarships (\$500 - \$2,000 USD each) are awarded to students pursuing advanced studies in a composites-related field. The five winners of the SPE ACCE scholarships are Kuthan Celebi, a PhD student in Materials Engineering at the University of British Columbia in Vancouver, Canada awarded \$2,000; Uday Kiran Balaga, a PhD student in focused on Composites Recycling at the University of Delaware Center for Composite Materials in Newark, Delaware, USA also awarded \$2,000; Md Amay Amif, a PhD student in the Department of Mechanical Engineering at Baylor University in Waco, Texas, USA awarded \$1,000; Seyedshahabaldin Amirabadi, a PhD student in Mechanical Engineering at the University of Toronto, in Toronto, Canada awarded \$500; and Elife Kildali, a PhD student in Bioengineering at the Bursa Technical University in Bursa, Turkey also awarded \$500.

The Dr. Jackie Rehkopf scholarships are sponsored by the SPE Automotive Division, the SPE Composites Division and the generous donations of friends and family. The three winners selected this year for the Rehkopf Scholarship (\$1,250 - \$2,500 USD each) are Paula Hohoff, Chief Engineer of the Polymer Engineering Center at UW-Madison in Madison, Wisconsin, USA awarded \$2,500; Meng Jiang, a Taoist and a chemist at Worch Lab at Virginia Tech in Blacksburg, Virginia, USA awarded \$1,250; and Dhanashree Shinde a PhD student at the University of Delaware Center for Composite Materials in Newark, Delaware, USA also awarded \$1,250.

Part Competition:

This year's ACCE Part Competition was led by Dr. Leonardo Simon from the University of Waterloo, who previously served as the 2021, 2022 and 2023 ACCE Co-Chair. A panel of automotive composites industry experts, from industry and academia, studied the 4 nominations that were submitted in advance of the event and reviewed the parts onsite and voted for the Most Innovative Material and/or Process Applications in Production Part and Prototype Part Categories. Nominations were judged on the impact and trendsetting nature of the application, including materials of construction, processing methods, assembly methods, and other enabling technologies that made the application possible. Nominations emphasized the benefits of design, weight and cost reduction, functional integration, and improved performance. A separate prize, the People's Choice award, was selected by vote of conference attendees.

Here are the winners:

1. Most Innovative Part in the Process Innovation - Prototype Part Category:

Cost -Effective Lightweight Vehicle Body Structures nominated by WEA3D with support from Braskem.

2. Most Innovative Part in the Process Innovation – Production Part Category:

Largest Known Injection Molded Polyamide Hydraulic Tank, An Alternative Technique to Roto-Molding for a 2024MY Compact Excavator (Utility/Construction Vehicle) nominated by BASF Corporation with support from Bemis.

3. People's Choice Award:

Continuous Fiber Thermoplastic Sandwich Structure For Next Generation Toyota Tacoma Service Hole Cover – A Process Innovation in the Prototype Part Category - Nominated by: Fraunhofer Innovation Platform for Composites Research at Western University with support from Simutence and Aerlyte.

4. Honorable Mention in the Process Innovation – Production Part Category:

Toyota Tacoma Second-Row Optimized Sear Structure nominated by BASF Corporation with support from USF US Farathane.

ACCE Sponsors:

The 2024 SPE Automotive Composites Conference & Expo (ACCE) was made possible by the support of Sponsors including:

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Held annually in suburban Detroit, the ACCE currently draws approximately 500 speakers, exhibitors, sponsors and attendees and provides an environment dedicated solely to discussion, education and networking about advances in transportation composites. Its global appeal is evident in the diversity of exhibitors, speakers, and attendees who come to the conference from Europe, the Middle East, Africa, Asia/Pacific and South America as well as North America. About 20% of attendees work for automotive and light truck, agriculture, truck & bus or aviation OEMs and another 25% represent tier suppliers. Attendees also work for composite materials processing equipment, additives, or reinforcement suppliers; trade associations, consultancies, university and government labs; media; and investment banks. ACCE has been jointly produced by the SPE Automotive and Composites Divisions since 2001.

For more info on ACCE go to: <https://speautomotive.com/acce-conference/>.

The mission of SPE is to promote scientific and engineering knowledge relating to plastics worldwide and to educate industry, academia, and the public about these advances. SPE's Automotive Division is active in educating, promoting, recognizing, and communicating technical accomplishments in all phases of plastics and plastic-based composite developments in the global transportation industry. SPE's Composites Division does the same with a focus on plastic-based composites in multiple industries. Topic areas include applications, materials, processing, equipment, tooling, design, and development.

For more info go to: <https://speautomotive.com/> and <https://composites.4spe.org/>. For more information on the *Society of Plastics Engineers*, see www.4spe.org.

The next ACCE is scheduled for Sept. 3 – 5, 2025 at the same venue as the 2024 event - the Suburban Collection Showplace Diamond Banquet and Conference Center in Novi, Michigan. An "Early Bird Discount" is available to sponsors who commit to supporting the ACCE 2025 event in 2024 and process payment by December 31, 2024. For more info contact Intuitgroup@gmail.com

Attention Editors: Photos are available for download via Flickr: <https://flic.kr/s/aHBqjBMvPN>