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MICHIGAN STATE UNIVERSITY'S PATTERSON DESCRIBES NEW AUTO COMPOSITES RESEARCH CENTER AT SPE ACCE SHOW

Multidisciplinary Research Center will Develop Patentable Technology for Industry Partners, Spinoff Companies to Advance Automotive Composites Technology

TROY (DETROIT), MICH. – Eann Patterson, director-Composite Vehicle Research Center, Michigan State Univ. (MSU, East Lansing, Mich.), will discuss his university's new automotive composites research center with a talk entitled: "*An Innovative Process for Composite Structures from the Nano- to Macro-Scale: A Vision for a New Center*" as a keynote speaker at the ninth-annual **SPE Automotive Composites Conference & Exhibition** (SPE ACCE) here on Sept. 15, from 12:45-1:15 p.m.

About the Composite Vehicle Research Center

Established in 2007 and headquartered in the Lansing/East Lansing, Mich. area, the Composite Vehicle Research Center (CVRC) at MSU aims to create a new paradigm in university research centers by its dual focus on collaboration across the length scales (from nano- to macro-), and on collaboration across the innovation process (from breakthrough research to technology validation).

There are three dimensions to the activities at CVRC, namely: creativity through world-class research leading to new design concepts in composite materials and structures; innovation in the form of engineering applications of research results; and technology transfer to sponsors, industry and the scientific community.

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The center's goals are being pursued by a multi-disciplinary team of faculty and students, which is organized into seven *thrust* areas:

- **Damage Survivability** (resistance of vehicle and its occupants to crash, impacts, blast & fire);
- **Composite Joining** (design and reliability of efficient joints in composite structures);
- **Multi-Functional Composites** (design, fabrication, and integration of mechanical, thermal, and electrical properties into composite structures);
- **Self-Diagnostics Composites** (embedded devices for non-destructive evaluation (NDE) and structural-health monitoring);
- **Structural Integrity of Composites** (evaluation and prediction of fatigue life and durability for 3-D components);
- **Biomimetics** (exploration of the designs in nature to create efficient structures); and
- **Design & Manufacture** (A "cross-cutting" (multidisciplinary) theme to ensure applicability of research in *thrust* areas).

To enable the later stages of the innovation process, an international consortium of industrial partners is being established to share in critical technology development and validation. These partners will participate in setting the direction for the fundamental research in order to ensure smooth transitions of technology to product design and development.

The direct outputs of the CVRC will be through new technology in the form of novel component and structure designs, improved devices for NDE and structural-health monitoring, and experimentally based design and manufacturing protocols. The indirect outputs will be through contributions to wealth and job creation via commercial exploitation of the new technology through spinoff companies and by providing a competitive edge for industrial partners by enabling global collaborations and participating in pre-normative research to support the development of standards.

About Eann Patterson

Eann Patterson is a professor of Mechanical Engineering and director of the Composite Vehicle Research Center at Michigan State University. He was chair of the Department of Mechanical Engineering at Michigan State University from 2004 to 2009, and prior to that he was head of the Department of Mechanical Engineering at the University of Sheffield (Sheffield, U.K.). He is a fellow of The Institution of Mechanical Engineers (London) and of the Society for Experimental Mechanics, and is a chartered (professional) engineer. He has published more than 250 papers and mentored more than 20 graduate students and holds B.Eng. and Ph.D. degrees in Mechanical Engineering from University of Sheffield.

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Patterson also is editor-in-chief of the *Journal of Strain Analysis for Engineering Design* published by The Institution of Mechanical Engineers, and was previously editor-in-chief of the *International Journal, Fatigue and Fracture of Engineering Materials and Structures* published by Wiley Blackwell. In addition to his other responsibilities, Patterson is currently technical coordinator for an international project entitled 'Advanced Dynamic Validation through Integration of Simulation and Experimentation' involving nine partners from seven countries and whose focus is composite structures for transportation applications.

About the ACCE

The ACCE typically draws over 400 speakers, exhibitors, sponsors, and attendees from 14 countries on 4 continents with fully one-third indicating they work for an OEM involved in ground transportation or aerospace/aviation. Interestingly, over the past few years, the types of transportation OEMs represented at the show have continued to broaden beyond traditional automotive and light truck, to include agriculture, truck & bus, heavy truck, and aviation. This trend may indicate greater interest in technology sharing among transportation OEMs and suppliers.

Held annually in suburban Detroit, the ACCE provides an environment dedicated solely to discussion and networking about advances in the automotive composites industry. Its global appeal is evident in the diversity of exhibitors, speakers, and attendees who come to the conference from Europe, the Middle East, and Asia / Pacific as well as North America and who represent transportation OEMs and tier suppliers; composite materials, processing equipment, additives, and reinforcement suppliers; trade associations, consultants, university and government labs; media; and investment bankers. The show is sponsored jointly by the SPE Automotive and Composites Divisions.

The mission of SPE is to promote scientific and engineering knowledge relating to plastics. SPE's Automotive and Composites Divisions work to advance plastics and plastic-based composites technologies worldwide and to educate industry, academia, and the public about these advances. Both divisions are dedicated to educating, promoting, recognizing, and communicating technical accomplishments for all phases of plastics and plastic-based composite developments, including materials, processing, equipment, tooling, design and testing, and application development.

For more information about the SPE Automotive Composites Conference, visit www.speautomotive.com/comp.htm, or contact the group at +1.248.244.8993, or write SPE Automotive Division, 1800 Crooks Road, Suite A, Troy, MI 48084, USA. For more information on the Society of Plastics Engineers International or other SPE events, visit the SPE website at www.4spe.org, or call +1.203.775.0471.

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