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SPE® ANNOUNCES WINNER OF FIFTH-ANNUAL ACCE GRADUATE SCHOLARSHIP ON AUTOMOTIVE COMPOSITES

Virginia Tech Doctoral Candidate to Receive Funds for Research on Nanocomposites

TROY (DETROIT), MICH. – **David Inglefield**, a Ph.D. candidate pursuing a dual degree in Chemistry and Biomedical Engineering at ***Virginia Polytechnic Institute & State University*** (Virginia Tech, Blacksburg, Va.), is the 2011-2012 winner of the ***SPE Automotive Composites Conference & Exhibition (ACCE)*** graduate-level scholarship in transportation composites research. Inglefield, who is from Fairfax, Va. and expects to graduate in 2014, won this year's scholarship for a research project involving the synthesis of functionalized carbon nanotubes for optimized properties in polymer composites, a project that could have broad application in automotive composites. Inglefield will receive his $2,000 USD check this fall and will report the results of his research during the twelfth-annual SPE ACCE, September 11-13, 2012.

As Inglefield explains, since their discovery in 1991, interest in carbon nanotubes (CNTs) has grown rapidly and their use has expanded into areas as diverse as electronics and bionanotechnology. One of their most promising areas of usage is to improve the properties of polymer composites by increasing mechanical strength (without raising resin weight or density as most reinforcements do) and conferring electrical and thermal conductivity to materials that normally provide neither property. However, wider usage has been limited by many factors, including high production costs and challenges effectively dispersing the nanoparticles into polymer matrices. Developing a functionalized CNT that effectively interacts with the resin in which it is incorporated remains a significant challenge in expanding usage of this technology.

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"My work involves functionalization of multiwall carbon nanotubes for more efficient incorporation into polymer composites by increasing dispersion and interactions with the polymer matrix," says Inglefield. "In their native form, carbon nanotubes don't interact well with organic groups on most polymers. However, I've been able to introduce functionality through the acid oxidation of the pristine nanotubes, increasing dispersion in the polymer matrix. I've also worked on the functionalizing nanotubes with metal nanoparticles, which increase conductivity and improve their function in specialized electronic applications. Carbon nanotubes can also be aligned in a magnetic field for anisotropic conductivity in polymer matrices via magnetic nanoparticles. I'm investigating a combination of these techniques for enhanced conductivity at low loadings for specialty electronics applications to preserve polymer properties that otherwise can be negatively affected by high reinforcement loadings."

David Inglefield holds a B.S. degree in Biochemistry from Virginia Tech, which he received in 2009. Since graduating, he has worked as a graduate research assistant under his undergraduate and graduate research advisor, Dr. Timothy E. Long, professor of Chemistry and associate dean of Strategic Initiatives, Department of Chemistry, College of Science at Virginia Tech. The focus of their graduate work together has been synthesis and characterization of novel functionalized multiwall carbon nanotubes (MWCNT) and MWCNT composites. Inglefield's undergraduate work with Long involved synthesis and characterization of cinnamate functionalized ultraviolet (UV) cross-linkable ammonium ionenes. Since receiving his undergraduate degree, Inglefield also has worked as teaching assistant (undergraduate Organic Chemistry lab for non-majors) at Virginia Tech and has been an American Chemistry Society (ACS) short-course presenter, where he was responsible for demonstrating various polymerization techniques. His current research expertise is in organic functionalization of MWCNT for polymer composites; electrospinning of polymers and MWCNT composites; performing transmission-electron and scanning-electron microscopy, nuclear magnetic-resonance spectroscopy, differential scanning calorimetry, thermogravimetric analysis, Raman and infrared spectroscopy, cryomicrotomy, dynamic light-scattering analysis, and rheology. In addition he has co-authored two publications presented at industry conferences.

About the SPE ACCE

Held annually in suburban Detroit, the SPE ACCE typically draws 400+ speakers, exhibitors, sponsors, and attendees from 14 countries on five continents and provides an environment dedicated solely to discussion 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, and Asia / Pacific as well as North America and who represent transportation OEMs -- traditional automotive and light truck, as well as agriculture, truck & bus, commercial truck, and aviation – 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 SPE's Automotive and Composites Divisions.

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Current sponsors and exhibitors for the show include: Ticona Engineering Polymers, Dieffenbacher GmbH, Magna Exteriors and Interiors, Continental Structural Plastics, RTP Co., American Composite Manufacturers Assoc.'s (ACMA's) Automotive Composites Alliance (ACA), Bayer MaterialScience, Addcomp North America, Inc., AOC Resins, Asahi Kasei Plastics North America, Inc., Toho Tenax America, Inc., PPG Industries, Acrolab, Ltd., OCV Reinforcements, Bulk Molding Compounds Inc., The Composites Group, Quantum Composites, Ashland Inc., American Chemistry Council - Plastics Div., Dassault Systèmes, BASF, e-Xstream engineering, Flow International Corp., Polystrand, Williams, White & Co., Plasan Carbon Composites, Mitsubishi Rayon Co. Ltd., Newport Adhesives & Composites Inc., National Research Council Canada (NRCC) - Automotive Div., DASI Solutions, LayStitch Technologies, Core Molding Technologies, Inc., *Reinforced Plastics* magazine, *Composites Technology* magazine, *High-Performance Composites* magazine, *CompositesWorld Weekly* eZine, *Ward's AutoWorld* magazine, WardsAuto.com, *Plastics Technology* magazine, Plaspec Global Plastics Selector, *Polymotive* magazine, *Automotive Design & Production* magazine, AutoField Blog, *China Plastics & Rubber Journal*, *China Plastics & Rubber Journal International*, *Plastics Engineering* magazine, *Automotive NewsWire* eZine, SAE International, *Automotive Engineering International* magazine, JEC Group, and Composites Europe.

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 & Exhibition, visit the Automotive Division's website at **http://speautomotive.com/comp.htm**, or the Composites' Division website at **http://compositeshelp.com**, 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 or other SPE events, visit the SPE website at **www.4spe.org**, or call +1.203.775.0471.

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Attention Editors: Low-resolution digital photography is available upon request.