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NANOCOMP SCIENTIST, DAVID LASHMORE TO DESCRIBE NEW NANOCOMPOSITE TECHNOLOGIES AT SPE® ACCE SHOW

Keynote will Explain Challenge, Opportunities of Translating Nanoscale Properties to the Macroscale

TROY (DETROIT), MICH. – “The challenge for the composites industry using nanosize materials is to translate the extraordinary properties that individual carbon nanotubes exhibit on a nanoscale to macroscale products usable by industry,” says David S. Lashmore, Ph.D., vice-president and chief technology officer of Nanocomp Technologies Inc. (Concord, N.H., www.nanocomptech.com) and a confirmed keynote speaker for the 2011 ***SPE Automotive Composites Conference & Exhibition (ACCE)***. On **September 15**, from **10:30-11:00 a.m.**, Lashmore talk – entitled ***Carbon Nanotube Composites Fabricated from Multiwall (MW) Carbon Nanotube (CNT) Mat*** –will describe a new nanocomposites technology used to produce multifunctional composites with very-high CNT loadings. The eleventh SPE ACCE show will be held **September 13-15, 2011** at the MSU Management Education Center in Troy, Mich., U.S.A.

Carbon nanotubes are nearly immune to corrosion and fatigue in composites at nominal operating conditions. And at the nanolevel, they are also very stiff and strong, yet incredibly lightweight, all of which makes them highly desirable as structural reinforcements for composites. However, the challenge over the last 30 years has been to find ways to integrate nanotubes and other nanoparticles into a resin matrix successfully in order to take advantage of their unique properties.

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*New Carbon Nanotube Technologies a Topic of Nanocomp Keynote Speaker at SPE ACCE
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Nanocomp Technologies Inc.'s was formed to leverage its proprietary and fundamental advancements in the production of long carbon nanotubes together with a unique ability to fabricate them into physically strong, lightweight, electro-thermally conductive fibers, yarns and felts. The company's goal is to create products with revolutionary performance benefits, thereby creating a new generation of advanced structural materials and electro-energy devices. As such, Nanocomp Technologies has developed an automated chemical-vapor deposition (CVD) process for synthesizing high-strength carbon nanotubes preselected to be single-, dual- or multiwall in structure with each yielding somewhat different properties. In turn, mixtures of multiple types of these nanotubes can sequentially be fabricated into large sheets (1.2x2.4 meters/4x8 feet joined into rolls greater than 122 meters/400 feet in length) of CNT mat or high-strength CNT-based fibers that in turn are used to produce prepreg and net-shape articles for multifunctional polymeric composites with very-high CNT loadings.

Lashmore says his presentation will review the synthesis of these MWCNT sheets and describe the company's progress developing CNT-mat composites whose resultant properties include excellent electromagnetic-interference (EMI) shielding, in-plane thermal conductivity, and very-good thermal insulation (up to 60 Watts/meter-degrees Kelvin (W/m^oK) at an overall density of about 0.6 grams/cubic centimeters (g/cc or g/cm³)/0.22 pounds/cubic inch (lb/in.³) normal to the plane in which the CNT are positioned in the resultant resin matrix / part geometry. Thermal conductivity for these materials on a per-weight basis is better than for copper (380 W/m^oK with a density of 8.94 g/cc / 0.32 lb/in.³). Electrical resistivity can be as low as 0.5 x 10⁻⁵ ohm-centimeters with a coefficient of thermal expansion (CTE) of about -2 x 10⁻⁶/^oK. Mechanical properties for both randomly and highly oriented sheets will also be covered.

"In collaboration with a number of partners, Nanocomp has demonstrated that these large sheets can be pre-impregnated with a wide variety of resin systems and exhibit 'near' *rule-of-mixture* properties," explains Lashmore. "We've already successfully fabricated very-lightweight electrical cables, super-insulators, thermal traps, EMI shielding, and extremely lightweight and powerful Joule heaters. We'll also present fabrication rules for these composites and note how they differ from current practice with fiberglass or even with graphite fibers."

Dr. David S. Lashmore is one of the three founders of Nanocomp Technologies Inc., a 2004 spin-off from Synergy Innovation, Inc., a Lebanon, N.H.-based technology-development company. In his work there, he is involved in the basic issues of nanotube growth, manufacturing development, and property measurements. He is also instrumental in helping develop new applications for CNT textiles, such as cables and conductors, ballistic armor, thermal interfaces, super insulators, heat straps, thermoelectric applications, and space-based CNT composites. Prior to joining Nanocomp Technologies, Lashmore was a senior scientist at Synergy Innovation from 2002 to 2004, and before that he was a co-founder and vice-president of R&D at Materials Innovation Inc. (West Lebanon, N.H.) from 1994 to 2002. Lashmore also worked as group leader-Metallurgy Division at the National Institute of Standards and Technology (NIST) from 1977 to 1993.

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New Carbon Nanotube Technologies a Topic of Nanocomp Keynote Speaker at SPE ACCE
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With over 100 total and 11 non-archival publications to his credit, and named on 35 issued patents and 22 patent applications, Lashmore also is the recipient of numerous awards and industry recognitions. He has been honored with the U.S. Department of Commerce' Bronze Metal (1986), the Electrochemical Society's Electrodeposition Research Award (International, 1989), the Electrochemical Society's Blum Award (1992), a Research Award from the American Electroplaters and Surface Finishers International (1994), the Power Metallurgy Award for Advanced Soft Magnetic Materials (2000), *Time* magazine's Invention of the Year award for the compact powder metallurgy press (2000), the *Wall Street Journal's* Technology Innovation Award for CNT sheets (2008), and the National Aeronautics and Space Administration (NASA)'s Nano-50 2007 for CNT sheets (2008). He was also president of the Electrochemical Society's Electrodeposition Division from 1987 to 1989. Lashmore holds a B.S. degree in Engineering Science from the University of Florida, an M.S. degree in Physics from Michigan Technological University, and a Ph.D. degree in Materials Science from the University of Virginia.

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, heavy 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 the SPE Automotive and Composites Divisions.

Current sponsors and exhibitors for the show include: Ticona Engineering Polymers, Dieffenbacher GmbH, Magna Exteriors and Interiors, Continental Structural Plastics, RTP Co., 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., Premix, Inc., Quantum Composites, Ashland Inc., American Chemistry Council - Plastics Div., Dassault Systèmes, BASF, e-Xstream engineering, Flow International Corp., Polystrand, Williams, White & Co., Plasman 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.

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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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