Scholarship Awards

Winners of SPE® ACCE Scholarships Sponsored by Michigan Economic Development Corp.

Three students have won ***SPE ACCE Scholarship Awards*** sponsored by **Michigan Economic Development Corp.** for the 2013-2014 academic year. Winning students whose composites-intensive projects were judged to have the greatest potential impact on ground transportation were **Thomas Keith (Keith) Honaker-Schroeder** of ***Michigan State University***, **Nicholas (Nick) Smith** of ***Purdue University,*** and **Sarah Stair** of ***Baylor University***. Each student will receive a total scholarship of $2,000 USD — and will return to present the results of his or her research at next year's SPE ACCE show, September 8-11, 2014.

Keith Honaker-Schroeder won the scholarship for a student enrolled in a Michigan institute of higher learning with the topic: *Exfoliated Graphene Nanoplatelet-High Density Polyethylene Nanocomposites and their Use in the Automotive Industry*. Explaining how his work is applicable to ground transportation, Honaker-Schroeder says, "I'll be modifying a high-density polyethylene (HDPE) polymer matrix with a platelet-structured nanoparticle — specifically, exfoliated graphene nanoplatelets (GnP). The resulting HDPE-GnP composites provide enhanced mechanical, electrical, and barrier properties, allowing for use in the manufacture of automotive fuel tank and fuel line systems to reduce vehicle weight."

Currently a second-year doctoral candidate studying Chemical Engineering and working as a research assistant at Michigan State University (East Lansing, Mich.), Honaker-Schroeder's focus is on enhancing the properties of a polymer matrix using graphene nanoplatelets. Originally from Battle Creek, Mich., he graduated *summa cum laude* with a Bachelor's degree in Chemical Engineering last year from Kettering Univertsity (Flint, Mich.), which is known for its innovative co-operative education program. While a Kettering student, Honaker-Schroeder did an internship at Argonne National Laboratory (Lemont, Ill.) where he tested polymer composites for use in bipolar plates for fuel cells, as well as tested materials for use as cathodes for lithium-ion batteries. After graduation, he plans to go into industrial research.

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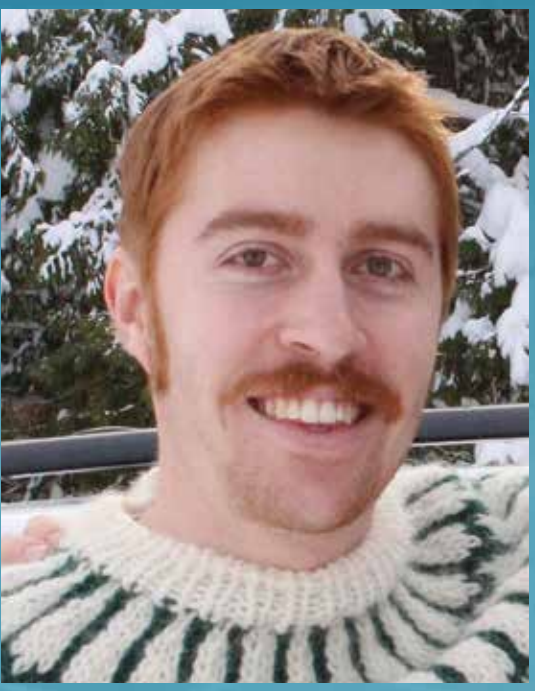

Nick Smith of Purdue University (West Lafayette, Ind.) won a traditional SPE ACCE Graduate Scholarship for his topic, *Simulation of Compression Molded Composites using a High Volume Fraction of Long Fibers & Prepreg Precursor Material.* About his project, Smith says, "One of the great challenges for short-fiber polymer composites is their large variability in strength. My research is specifically focused on predicting the orientation of fibers within composite components produced by compression molding with pre-impregnated short-fiber prepreg as a precursor. Success in this work will provide tools for design of high-performance parts with fiber aspect ratios over 2000 and fiber weight fractions over 50%. No currently-available simulation tool accurately predicts the final orientation state or the strength variability found in parts made with this process, which is capable of producing parts at a cost and speed appropriate for the automotive industry."

Originally from Moscow, Idaho, Smith is currently an Andrew's Fellow at Purdue and about to obtain his Master's degree in Aerospace & Aeronautical Engineering. He also is a Ph.D. candidate in Aerospace & Aeronautical Engineering at the school. Previously he was a Heritage Scholar at Brigham Young University (Provo, Utah) where he earned a Bachelor's degree in Mechanical Engineering in 2011. Upon graduation, Smith says he hopes to continue researching higher performance, lower cost composites for use in both the automotive and aerospace industries.

Sarah Stair of Baylor University also won a traditional SPE ACCE Graduate Scholarship for her topic, *Non-Destructive Characterization of Ply Orientation and Ply Type of Carbon Fiber Reinforced Laminates.* About her work, Stair says, "Manufacturing laminate-based advanced composites can be difficult, and final parts don't always meet as-designed specs. For example, during molding, a ply might slip and rotate 5 degrees from its designated orientation, which could affect final molded-part properties. My research will determine the "as manufactured" ply orientation of each lamina in a fiber-reinforced part and the failure envelope associated with the final part. My long-term goal is to fully automate this process so any technician who is making a repair on a car or performing quality-control tests at a manufacturing facility can scan a part with the system I'm developing. All of the ply orientation and failure envelope calculations will be performed by the device and results will be displayed for the user."

Stair graduated *magna cum laude* with a Bachelor's degree in Mechanical Engineering and a minor in Mathematics from Baylor last year. She continued working on her Master's degree in Mechanical Engineering at Baylor and currently is in her second year of the program. Her research focuses on non-destructive testing techniques for fiber reinforced laminated composites. Originally from Arlington, Texas, after graduation, she hopes to continue performing materials-related research in the aerospace industry.