



UD-CCM's Top Students

John Gangloff
and Cedric Jacob
Win International
Competition



Cedric Jacob, left, and John Gangloff with their Composite App Challenge winnings

UPDATE

February 2011

UD students win at international Composite App Challenge

UDaily Story - 2:29 p.m., Feb. 8, 2011----An integrated structural composite fuel cell developed by two University of Delaware graduate students may someday help transform the world of renewable energy.

For their innovative idea, Cedric Jacob and John Gangloff have won a \$10,000 cash prize in the Owens Corning Composite App Challenge, a global competition to find new applications for composite materials. They received the award at a trade show hosted by the American Composites Manufacturers Association (ACMA) in Fort Lauderdale, Fla., on Feb. 3.

Jacob and Gangloff, both doctoral students in mechanical engineering, have been affiliated with UD's Center for Composite Materials and its Center for Fuel Cell Research over the past several years. Their winning concept exploits the benefits of advanced composites to lower vehicle weight, increase power output, and significantly reduce the cost of manufacturing and assembly.

Participation in the Composite App Challenge was international. The other winners included a student from Brazil who proposed a concept for low-cost composite construction materials and a researcher from India with an idea for composite



TOP STORY *(Continued)*

shipping containers. The overall winner was a South African company that received \$200,000 to bring a recyclable composite pallet box to market.

“The competition was not only a technical challenge but also a business challenge,” said Gangloff. “We had to make the case that our idea works from an engineering perspective and that it’s potentially viable in terms of the global market.”

Meeting the other winners gave the two budding entrepreneurs some valuable insights into that market and what it takes to be successful. They learned, for example, that Lomold Pty Ltd., the South African company that won the application award, has been working on its pallet box for 13 years and will finally see the product commercialized in 2012.

“We realize that to make it big, we need help, we need to ask questions, and we need to learn more,” said Jacob. “We plan to invest the \$10,000 in our future projects. In determining the direction of those projects, we’re willing to talk with anyone who will talk to us and can teach us something about how to translate our ideas into products that can be brought to market.”

“Internships with our industrial and government sponsors provide our students with valuable insights into relevant issues and opportunities, and we encourage them to unleash their creativity in this process.”

Jack Gillespie, CCM director and Donald C. Phillips Professor, points to the center’s entrepreneurial environment as the catalyst for Jacob and Gangloff’s success.

“With our strong connections to industry and government, we encourage our students to think about how their work might solve an industrial problem or address a military need,” he said. “Internships with our industrial and government sponsors provide our students with valuable insights into relevant issues and opportunities, and we encourage them to unleash their creativity in this process.”

Fuel cells provide electric power that can be used in applications including car engines, power stations, and power packs for portable electronics. According to a July 2008 Energy Business Report, the global fuel cell industry is expected to generate more than \$18.6 billion in 2013.

“John and Cedric’s winning application, which integrates advanced composite materials into novel fuel cell technology, is truly innovative,” said Anette Karlsson, chair of UD’s Department of Mechanical Engineering. “It shows a very creative and interdisciplinary approach to saving weight and reducing the cost of fuel cells. Their idea will make fuel cells more cost effective, which in turn will make them more competitive with the traditional combustion engine.”

Photos courtesy of UDaily



John Gangloff, Jr.



Cedric Jacob

TOP STORY (Continued)

About the competition

Launched in April 2010, the Composite App Challenge was the brainchild of Ashish Diwanji, vice president of innovation for Owens Corning Composite Solutions. The challenge offered a \$200,000 commercial development award for a composite application that can be introduced by the end of 2012 and up to a total of \$50,000 for composite ideas that effectively address marketplace needs, appear to be technically feasible, and have a perceived market opportunity. One \$20,000 award was available to anyone, and up to three \$10,000 awards were reserved for students.

Individuals and teams were asked to submit applications and ideas in four categories -- infrastructure durability, fuel efficiency, renewable energy and protection from harm. The entry phase of the competition closed Aug. 15, and participation was almost evenly divided between ideas and applications. Fifty-two percent of the entries were ideas, and 48 percent were applications with the potential to reach the market in 2012.

Semi-finalists and finalists were invited to provide additional information for subsequent rounds of review. Judges were looking at the content of the idea, the potential market opportunity, the time needed to commercialize the application, the business case, technical feasibility and the contestant's ability to commercialize the application or solution. The judges based their final decisions on the likelihood of scalability and long-term success.

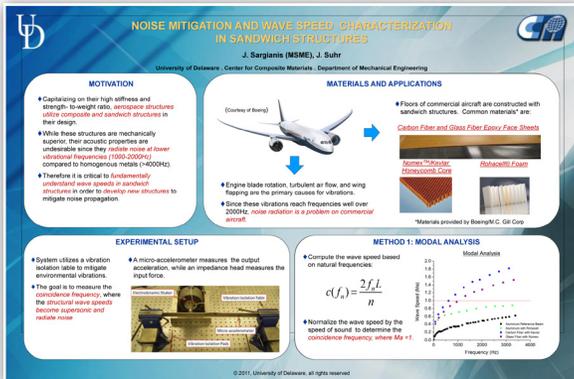
Owens Corning is a leading global producer of glass fiber reinforcements for composite systems and residential and commercial building materials.

[For more about the Composite App Challenge, visit the website.](#)

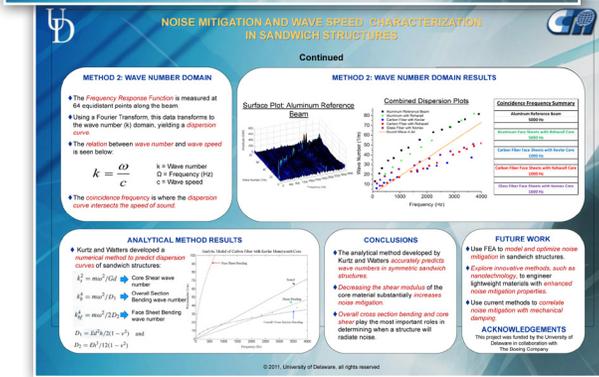
Article by Diane Kukich



Students Win Second and Third Place at Poster Competitions



James Sargianis (MSME), advised by Dr. Jonghwan Suhr, won \$400 for taking second place in the poster competition during the Baltimore-Washington **SAMPE** Chapter 16th Annual Student Symposium. The event was hosted at the University of Maryland, Baltimore County, on February 9th 2011. James' winning poster is entitled "Noise Mitigation and Wave Speed Characterization of Sandwich"

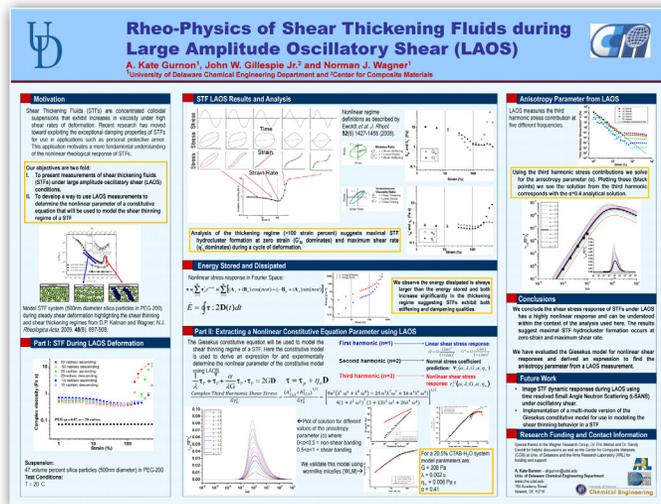


Kate Gurnon (PhDChE) won third place in the graduate student poster competition at **the 82nd Annual Society of Rheology meeting** for her poster entitled "Rheo-Physics of Shear Thickening Fluids during Large Amplitude Oscillatory Shear (LAOS)." The meeting was held in Santa Fe, New Mexico from October 24th-28th with 500 people in attendance. Gurnon is co-advised by Dr. Norman Wagner and Dr. Jack Gillespie of the Center for Composite Materials.

Winning 2-page poster by James Sargianis

Click images to view posters in PDF format.

Winning poster by Kate Gurnon



ACRES program featured on PBS series 'Making Stuff' Feb. 2

UDaily Story: 2:17 p.m., Jan. 18, 2011----Pushing the boundaries of materials technology. That's the focus of the Public Broadcasting Service series NOVA's Making Stuff: Stronger, Smaller, Cleaner, Smarter. The show, which airs at 9 p.m. on Wednesdays beginning Jan. 19, explores scientific innovations shaping the material world we live in.

The University of Delaware's **Affordable Composites from Renewable Sources** (ACRES) program will be featured in the Making Stuff: Cleaner segment Feb. 2, when host David Pogue examines the emerging science and business of clean energy.

Richard Wool, UD professor of **chemical engineering**, and Erman Senoz, a doctoral student, will report on research concerning the use of carbonized chicken feather fibers to store hydrogen for fuel-cell vehicles.

"In order to have a car that runs on hydrogen you need a fuel-cell, but to drive any real distance, you need a suitable way to store the hydrogen within the vehicle," explains Wool. "Chicken feather fibers are an agricultural waste with great potential to become a main hydrogen storage material because of their hollow structure and low cost."

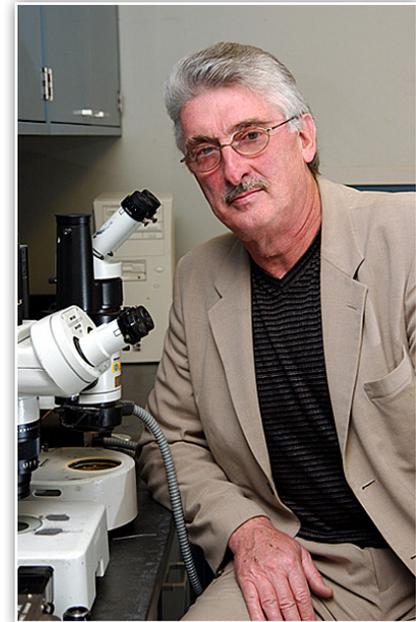
In addition to hydrogen storage, Wool is using bio-based materials in support of several other renewable energy projects, such as wind, solar and energy efficient housing, as practical clean energy solutions to global warming.

The ACRES program, led by Wool, is a green engineering effort that began more than a decade ago at the University's Center for Composite Materials. The program taps into a variety of research fields ranging from genetic engineering, food science, composites manufacturing science and materials synthesis to mechanics, advanced materials characterization and computer simulation.

The other *NOVA: Making Stuff* segments *Stronger, Smarter and Smaller* air on Jan. 19, Jan. 26 and Feb. 9, respectively. The program is produced by WGBH and Powderhouse Productions.

Article by Karen B. Roberts

Photo compliments of UDaily



Richard Wool, director of the University of Delaware's Affordable Composites from Renewable Sources (ACRES) program.

CONSORTIUM MEMBERS

We would like to thank our many consortium members for continuing to participate in CCM's research and development activities.

To learn more about the benefits of becoming a member, please visit us on the web at www.ccm.udel.edu/Consortium/benefits.html



Celebrating 35 years of significant contributions to composites science and technology, the education of students, and the creation and transfer of technology to industry.

This is a newsletter publication of the University of Delaware Center for Composite Materials
Please visit us on the web at <http://www.ccm.udel.edu>

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