



## Holds Second Annual Student Achievement Day

CCM held its annual Student Achievement Day on Friday, May 13, in the Composites Manufacturing Science Laboratory. The event included student presentations and posters, a keynote lecture on wind power by professor Willett Kempton, and the unveiling of CCM founding fathers' portraits. The day concluded with Student Achievement Awards as well as prizes for the top three posters.

CCM Student Achievement Day included student presentations, a student poster session, a keynote lecture on wind power by professor Willett Kempton, and the unveiling of CCM founding fathers' portraits.

University of Delaware  
 Center for Composite Materials

COMPOSITES

# UPDATE

June 2011

### Keynote

Kempton, professor in UD's School of Marine Science & Policy and director of the Center for Carbon-free Power Integration, talked about the tremendous potential of wind power to replace traditional sources over the next few decades.

According to Kempton, wind power is the most rapidly growing of sustainable alternative technologies. "Although the present system is heavily weighted toward traditional sources," he said, "we've already made the change in terms of what we're ordering for the future."

The advantages of wind power, he said, include the elimination of pollution and greenhouse gases and the creation of local jobs.



TOP STORY *(Continued)*

Kempton went on to talk about the UD-owned turbine in Lewes, Del., which runs a large ocean-going research vessel, two substantial laboratories, and a conference center with housing.

“We’ve created a carbon-neutral campus in Lewes and are also doing research with the turbine,” Kempton said. Research projects are addressing such topics as the impact of the turbine on avian populations and the effects of the marine environment on turbine blades.

Powering the Mid-Atlantic region would require 54,000 turbines, according to Kempton, opening up substantial opportunities for new manufacturing operations and materials applications.

***Portrait Unveiling***

Local artist Lisa Bartolozzi traveled almost four decades back in time in creating portraits of CCM’s founding fathers—Jack Vinson, Byron Pipes, Tsu-Wei Chou, and the late Roy McCullough. She drew her inspiration for the sepia-toned paintings from small black-and-white photos taken in 1974. “Painting the four portraits in earth tones helped to unify the series,” she said. “I had a lot of fun working with these guys.”

After the portraits were unveiled, CCM director Jack Gillespie pointed out the backdrops in the paintings, each one providing a hint of the subject’s research expertise—plates and shells for Vinson, interlaminar stresses for Pipes, micromechanics for McCullough, and structure-property maps of textile composites for Chou.

“Lisa has captured tremendous detail in these pieces,” Gillespie said. “When you look at their eyes, you feel like you’re really looking at the people themselves.”

[Click here for  
more information  
about artist  
Lisa Bartolozzi](#)

Artist Lisa  
Bartolozzi





# TOP STORY (Continued)

The portraits will be displayed in easels in a glass display case for a year while they cure, and then they will be framed.

Chou, the only one of the four able to attend the unveiling, took the audience back to CCM's launch, recalling "a common vision and the pioneering spirit of Jack Vinson and Byron Pipes."

He described the group's plan for the NSF-ERC in the 1980s—four blocks drawn on a sheet of yellow paper. The blocks were connected to show the iterative nature of the concepts: processing and manufacturing, characterization of composite properties, analysis and modeling of behavior, and performance optimization.

"It was a very simple diagram," Chou said, "and a concise representation of a comprehensive and ambitious undertaking. To make the approach feasible in an academic environment, we needed to minimize the barriers between traditional disciplines."

That simple drawing became the foundation for decades of research at the Center and attracted students from across the country and around the world.

One of those students was Guiseppe Palmese, now professor and head of the Department of Chemical and Biological Engineering at Drexel University. Palmese, whose doctoral work in chemical engineering was advised by McCullough, said CCM's reputation was what drew him to UD in the 1980s.



*Prof Guiseppe Palmese, Department of Chemical and Biological Engineering at Drexel University*

"Since then," he said, "I've visited many centers, and nothing quite matches up with what you have here."

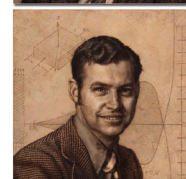
Palmese also shared fond memories of McCullough. "Roy was always very interested in what was good for the students," he said, "and he would have been happy to see all of the research presented today. He thrived on interacting with students, providing guidance and suggestions—and always in a kind way."

Jan McCullough, Roy's widow, also spoke at the ceremony. "It was the experience of a lifetime to watch the establishment of the center," she said. "It was absolutely amazing to see the coalescence of energy and talent and brilliance of the founders."

She also praised Bartolozzi's work, saying "The portrait is wonderful—you caught that impishness in Roy's eyes."



*Prof Tsu-Wei Chou, Pierre S. du Pont Chair of Engineering*



*Click to view high-res image*

# TOP STORY (Continued)

## Poster Awards

Students presented posters and presentations on the full range of research ongoing at the Center. Awards for the top three posters went to the following students:

Qi Lu 1st Place: *High Energy/Power Supercapacitor from NiO/Ni Nanocomposite*

Jennifer Mueller 2nd Place: *Interaction Volume Effects of Ultrasonically Consolidated CU/AL Concentration Profiles*

Quinn McAllister 3rd Place: *Nano-Scale Property Measurements of Fibers by Nanoindentation: Methodology*

## Student Achievement Day Award Winners:

*Roy L. McCullough Scholars Award:* Gaurav Nilakantan, PhD

*CCM Progress Award:* Quinn P. McAllister, PhD MSEG, and Mingjiang Zhan, PhD CHE

*CCM Achievement Award:* Joseph R. Walther, MME, and Garrett M. Peters, MCE

*CCM Outstanding Senior Award:* Anthony M. Coppola, BME, and Kevin M. Ayotte, BME

*CCM Undergraduate Research Award:* Andrew C. Abbott, BCHE, William J. Henry, BME, Joseph L. Walsh, BME, and Eric B. Wurtzel, BME

*CCM Scholarship Award:* Bazle Haque, PhD

*CCM Directors' Award:* Joseph M. Deitzel, PhD, Dirk Heider, PhD, Dan J. Molligan, and Shridhar Yarlagadda, PhD



**UDaily Story**

**Materials science student honored  
Doctoral recipient wins Colburn Prize for best  
dissertation in math and engineering**

8:05 a.m., June 1, 2011--Gaurav Nilakantan, who completed his doctorate in materials science and engineering at the University of Delaware in 2010, has won the Allan P. Colburn Prize for his dissertation, "Modeling the Impact of Flexible Textile Composites through Multiscale and Probabilistic Methods." The prize is given annually to recognize the best dissertation in engineering and mathematical sciences.

Nilakantan was advised by John W. (Jack) Gillespie, Jr., Donald C. Phillips Professor and director of UD's Center for Composite Materials, and Michael Keefe, associate professor of mechanical engineering.

**[Click here to read full story in UDaily.](#)**

*Photo compliments of UDaily*



***Pictured are, from left, John W. (Jack) Gillespie, Jr., Colburn Prize recipient Gaurav Nilakantan and Michael Keefe.***



***UD students watch as a test is conducted on one of their bridges.***

**UDaily Story**

**Sampling SAMPE**

**UD students have strong presence at  
international materials conference**

1:09 p.m., June 20, 2011--A group of UD engineering students recently returned from the SAMPE 2011 International Conference in Long Beach, Calif., with several awards as well as valuable exposure to the global composites industry and career opportunities.

A contingent of University of Delaware engineering students recently returned from an international materials symposium with not only eight awards but also an introduction to the global composites industry and a new understanding of career opportunities in the field.

Eighteen students affiliated with UD's Center for Composite Materials (CCM) attended SAMPE 2011 in Long Beach, Calif., from May 23-26. The international conference and exhibition has been hosted annually for more than half a century by SAMPE, the Society for the Advancement of Material and Process Engineering.

**[Click here to read full story in UDaily.](#)**



## OTHER NEWS

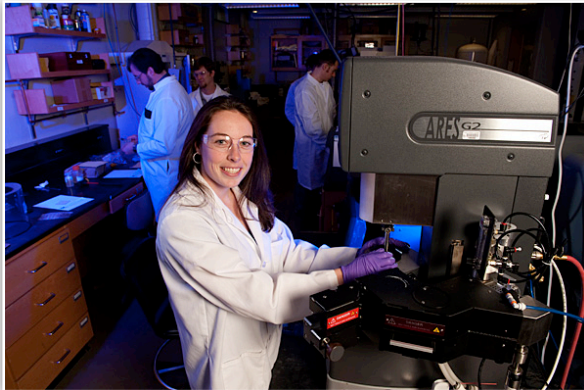
*UDaily Story**Space suit safety**NASA Fellowship opens doors for chemical engineering student's research*

Photo  
compliments of  
UDaily

11:46 a.m., June 9, 2011--Astronauts are exposed to many dangers in space, particularly debris encountered while working outside the aircraft.

Micrometeoroid orbital debris (MMOD) are sub-centimeter sized particles that can travel up to 19 kilometers per second and have the potential to penetrate space suits, placing astronauts at risk and sometimes forcing them to abort their mission.

Kate Gurnon, a doctoral student in the Department of Chemical Engineering at the University of Delaware, will spend the next year studying materials that show

promise to improve MMOD resistance in the next generation space suits as a NASA Delaware Space Grant Fellow.

[Click here to read entire story in UDaily](#)

*UDaily Story**Speed it up**CCM acquires lightning fast shared memory supercomputer*

11:23 a.m., June 14, 2011--The Bugatti Veyron is currently the fastest road-legal production car in the world, and the Altix UV1000 is the fastest shared memory supercomputer in the world, according to its manufacturer, Silicon Graphics International (SGI). So when the University of Delaware Center for Composite Materials (CCM) recently bought one of these supercomputers from SGI, they couldn't resist naming it after the car.

A team led by CCM director John W. (Jack) Gillespie and research associate Gaurav Nilakantan is using Veyron initially to explore the behavior of textile-based composite materials under extreme dynamic environments using multi-scale and probabilistic numerical techniques.

[To read entire story in UDaily, click here.](#)

*John W. (Jack) Gillespie, director of the Center for Composite Materials, left, and Gaurav Nilakantan, research associate, with the SGI Altix UV1000 supercomputer nicknamed Veyron.*



## CONSORTIUM MEMBERS

We would like to thank Owens Corning Science & Technology, Novi, MI, Revenge Advanced Composites, Clearwater, FL, and Superior Graphite Company, Chicago, IL, for the recent renewal of their consortium memberships. We would also like to thank our many other 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](http://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>

201 Composites Manufacturing Science Laboratory ♦ phone 302.831.8149  
University of Delaware, Newark, Delaware 19716-3144 ♦ fax 302.831.8525

