AAAS Honors Zhu for Nanotechnology

Yuntian T. Zhu’s “pioneering and innovative work on nanotechnology development and fundamental science of nanomaterials” was cited by the American Association for the Advancement of Science as it selected him among its newest class of fellows.

Zhu, distinguished professor of materials science and engineering at NC State, was honored at the 2013 AAAS Annual Meeting in Boston, Mass. Zhu and his research group have made significant advances in the fields of nanostructured materials and carbon nanotubes with applications in everything from airplanes to bicycles. These advances include the recent development of strategies to simultaneously increase the strength and ductility — or stretchability — of nanostructured metals and alloys, a significant breakthrough because previous attempts to improve ductility have sacrificed the strength. The group has also synthesized four-centimeter-long carbon nanotubes and fabricated super strong and stiff carbon nanotube fibers and composites.

By stretching the CNT material before incorporating it into a composite for use in finished products, the researchers straighten the CNTs in the material, which significantly improves its tensile strength — and enhances the stiffness of the composite material and its electrical and thermal conductivity.

State-of-the-art carbon fiber composites are currently used to build products where strong, lightweight materials are desirable. Lighter airplanes, for example, are more fuel-efficient. However, researchers have long thought that if these composites could be made with CNTs they could be just as strong, but 10 times lighter. Or they could be the same weight, but 10 times stronger.

Huang Cited for Energy Leadership

Alex Huang, director of the National Science Foundation-funded FREEDM Systems Center, is among 10 honorees chosen for the 3rd annual Energy Leadership Awards by the Charlotte Business Journal. The program cites individuals who have played a key role in making the Carolinas a global player in the energy industry. He was recognized at a January event and in a Charlotte Business Journal special report. Huang also is the Progress Energy Distinguished Professor of Electrical and Computer Engineering at NC State. The FREEDM Center is located on Centennial Campus.

Chancellor Lauds Faculty Scholars

The new University Faculty Scholars program recognizes and rewards top NC State early- and mid-career faculty. Each honoree receives $10,000 — in donated funds — for each of the next five years to support their academic endeavors.

The program is part of the university’s strategic initiative to invest in and retain top faculty. It is funded by generous gifts totaling $5.7 million: $3 million from Jim and Ann Goodnight and $2.7 million from the William R. Kenan Jr. Charitable Trust. “Investing in retaining and attracting the best faculty to teach our students and lead innovative research that improves lives and enhances the state’s economy is a key strategic goal for NC State,” Chancellor Randy Woodson says. Scholars are nominated by their colleges and selected by a committee of senior faculty. The inaugural class includes:

- Jose Alonso, genetics
- Joseph Brazel, accounting
- Jessica Decuir-Gunby, curriculum, instruction and counselor education
- Michael Dickey, chemical and biomolecular engineering
- Rob Dunn, biology
- Andrew Fox, landscape architecture
- Bonnie Fusarelli, leadership, policy and adult and higher education
- Amy Grunden, microbiology
- Jason Haugh, chemical and biomolecular engineering
- William Hunt, biological and agricultural engineering
- Fikret Isik, forestry and environmental resources
- Elizabeth Loboa, biomedical engineering
- Jon-Paul Maria, materials science and engineering
- Alison Motsinger-Reif, statistics
- John Muth, electrical and computer engineering
- Nanette Nascone-Yoder, molecular biomedical sciences
- Heather Patisaul, biology
- Orlando Rojas, forest biomaterials
- Ann Ross, sociology and anthropology
- Heike Sederoff, plant biology
- Seth Sullivan, mathematics
- Lori Foster Thompson, psychology
- Keith Weninger, physics
- Xiangwu Zhang, textile engineering, chemistry and science

The University Faculty Scholars program strengthens NC State’s ongoing commitment to faculty excellence. Last year the university also launched the
Names Gubbins

Keith Gubbins has been selected to receive the 2013 Lennard-Jones Lectureship and Prize from the British Royal Society of Chemistry for his outstanding contributions to the field of thermodynamics and statistical mechanics. The Lectureship and Prize are named in honor of Professor Sir John Lennard-Jones of Cambridge University.

Gubbins’ accomplishments are well-summarized in the preface of a two-issue celebration of his work in Molecular Physics. Per the preface, he “is a renowned figure in the area of the statistical mechanics of fluids, with key papers that have established lines of investigation for countless researchers. But Keith is known also for his support of younger researchers in the field, his dedication to international collaboration, and his contributions in the development of the institutions and departments of which he has been part.”

Other recent awards include receiving the Medal of Merit from Adam Mickiewicz University in Poznan, Poland in 2011, the Rossini Lecture 2012 Award from the International Association for Chemical Thermodynamics (to honor “contributions to chemical thermodynamics”), and the Foundations of Molecular Modeling and Simulation (FOMMS) Medal 2012 to honor “profound and lasting contribution by one or more individuals to the development of computational methods and their application to the field of molecular-based modeling and simulation.”

Entrepeneurs and Innovators Cited

NC State celebrated its achievements in innovation and entrepreneurship for 2012 — including 42 U.S. patents issued and 10 start-up companies launched — with its Innovator of the Year and Entrepreneur of the Year awards.

“These outstanding researchers and innovators represent the entrepreneurial spirit that permeates throughout NC State,” says Chancellor Randy Woodson. “Not only are they conducting terrific science, but they are turning their results into products, services and even companies that benefit the citizens of North Carolina, the U.S and the world.”

Jere Confrey and Josip Simunovic were named Innovators of the Year for 2012.

Confrey is Joseph D. Moore Distinguished Professor Mathematics Education and a senior scholar at the William and Ida Friday Institute for Educational Innovation. She also is chief mathematics officer for Wireless Generation, Inc., a company building digital curricula with diagnostic assessments for middle grades.

Simunovic is a research associate professor in the Department of Food, Bioprocessing and Nutrition Sciences and assistant director of the NC State site of the Center for Advanced Processing and Packaging Studies. Simunovic has gained national and international recognition as one of the leading researchers on advanced thermal processing of foods.

John Cavanagh, Christian Melander and Mary Tschirhart were named 2012 Entrepreneurs of the Year.

Cavanagh, William Neal Reynolds Distinguished Professor of Biochemistry, is an expert in protein structural biology, particularly in how bacteria are able to protect themselves. Melander is an associate professor in the Department of Chemistry. His research focuses on defining small molecules that control bacterial behavior and small molecule-coated nanoparticles with antibacterial and antiviral properties. See more about their combined research and start-up, Agile Sciences, on page 10.

Tschirhart is the director of the Institute for Nonprofits and a professor of public administration. She leads a diverse array of initiatives including research projects, education programs, community collaborations and social entrepreneurship initiatives.

Presented by the Office of Research, Innovation and Economic Development, the awards recognize members of NC State working to promote commercialization of university intellectual property, train future leaders, and champion the university’s culture of innovation and entrepreneurship.

Hoit Takes IT Honors

NC State’s chief information officer, Marc Hoit, has been named a top IT executive in the Research Triangle Region. Hoit was selected a winner of the Triangle Business Journal CIO of the Year Awards in the public sector category. In partnership with the North Carolina Technology Association, the Triangle Business Journal honored 23 tech-savy executives. The awards recognize individuals who have used information technology in innovative ways to create competitive advantage, optimize business processes and enable growth.

Pizza Boxes Project Wins Green Award

Three textile engineering students were awarded third place in the 2012 Odebrecht Award for Sustainable Development. Richard Figueroa, Nicole continued
Santos and Monica Golike’s project was based on their class assignment in Melissa Pasquinelli’s sustainability course last spring.

The project looked at the recyclability of oil-contaminated pizza boxes, which typically cannot be recycled. The students examined three different ways to recycle the boxes including adding a solvent to the recycling bath, using a bio-polymer coating on cardboard and using the contaminated cardboard as a recycled composite material for construction purposes. The students received $10,000 among prizes and opportunities for their work.

Westmoreland to Lead AIChE

The American Institute of Chemical Engineers has chosen Phillip R. Westmoreland, a professor of chemical and biomolecular engineering at NC State and executive director of the university’s Institute for Computational Science and Engineering, as its 2013 president. Known as AIChE, the organization has nearly 45,000 members.

Walden Receives Order of the Long Leaf Pine

It is difficult to imagine a more deserving recipient of North Carolina’s Order of the Long Leaf Pine award than Mike Walden, an N.C. Cooperative Extension economist. Given by the governor, the award is among the highest state honors. Walden has been explaining economic issues and concepts throughout his 30-plus-year career. When radio, television and newspaper reporters want a coherent comment on an economic story, they call Walden. In addition to interviews, Walden also gives approximately 80 formal talks each year to a range of audiences on economic issues.

Landscape Architects Honor Moore

Robin Moore, professor of landscape architecture, was awarded Honorary Membership in the American Society of Landscape Architects (ASLA).

Honorary membership is among the highest honors ASLA bestows in recognition of notable service to the profession. Since its inception in 1899, ASLA has inducted only 158 honorary members. College of Design alumnus and 2010 LaGasse Medal recipient William Flourney, FASLA, with the unanimous support of the NCASLA, nominated Moore for this award.

Professor Robin Moore is cited as a passionate believer in the importance of landscape architecture as the profession responsible for design, management, and policy that cares for the surface of the planet and supports human health. He helps professionals in other fields understand the contribution that landscape architecture can make to health and quality of life, such as in public health, education, recreation, community development, and medicine.

With Jena Ponti, ASLA, Moore co-founded the ASLA Professional Practice Network (PPN) on Children’s Outdoor Environments (January 2009). In 2001 he received the Great American Gardeners Landscape Design Award from the American Horticultural Society for his pioneering work on children’s outdoor environments.

He has contributed to professional education programs in Argentina, Australia, Belgium, Brazil, Canada, Chile, Columbia, France, Germany, Hong Kong, Italy, Japan, Mexico, the Netherlands, Scandinavia, Singapore, United Kingdom, and Venezuela.

Turinsky Joins Nuclear Waste Panel

Paul Turinsky, professor of nuclear engineering at North Carolina State University, has been appointed by President Barack Obama to the Nuclear Waste Technical Review Board (NWTRB).

Established in 1987, the NWTRB is an independent agency of the US federal government, acting as a science-based advisor and overseer of the Department of Energy’s (DOE) program for managing and disposing of high-level radioactive waste and spent nuclear fuel. The board’s 11 members are appointed from a list of candidates submitted by the National Academy of Sciences. Nominees are chosen based on distinguished professional service and eminence in a field of science or engineering.

Turinsky’s areas of expertise are computational reactor physics in support of mathematical optimization of fuel management and nuclear fuel-cycle multiobjective decisions; uncertainty quantification and data assimilation in support of optimum experimental design applied to nuclear power plant safety and fuel-cycle assessments; and adaptive model refinement applied to nuclear power plant transient simulation. He is chief
scientist for the Department of Energy’s Consortium for Advanced Simulation of Light Water Reactors; NC State plays a key leadership role in the effort.

He is a Fellow of ANS and a member of the Society for Industrial and Applied Mathematics, the American Society for Engineering Education, and the American Association for the Advancement of Science.

**Frey Named Chair of EPA Clean Air Committee**

H. Christopher Frey, distinguished university professor of civil, construction and environmental engineering, has been appointed by U.S. Environmental Protection Agency Administrator Lisa Jackson to chair the independent Clean Air Scientific Advisory Committee (CASAC).

The seven-member CASAC is required under the 1977 Clean Air Act to advise the administrator on the scientific and technical bases for EPA’s National Ambient Air Quality Standards (NAAQS). The standards protect public health and the environment based on the latest scientific knowledge.

CASAC, composed of scientists from outside the EPA, reviews extensive scientific and policy assessments prepared by EPA staff, provides advice regarding whether existing air quality standards adequately protect public health and the environment, and provides advice regarding alternative standards, if needed.

As chair, Frey also serves on the EPA Science Advisory Board. Frey has served on panels for each of the NAAQS pollutants, which include ozone, particulate matter, nitrogen dioxide, sulfur dioxide, carbon monoxide and lead. These pollutants are either emitted directly, such as from cars and power plants, or formed in the atmosphere as a result of other pollutants. EPA is required to review the NAAQS for each pollutant every five years. Frey will continue as chair of the ongoing Lead Review Panel and will become chair of the Ozone Review Panel.

Frey has made significant research and teaching contributions in the areas of measurement of real-world vehicle emissions, evaluation of power plant energy use and emissions, exposure and risk assessment, and quantification of uncertainty in environmental systems models. His classes at NC State include Air Pollution Control, Air Quality Engineering and Environmental Exposure and Risk Analysis.

**Corporate Partners Earn Accolades**

NC State corporate partners — two started by NC State faculty and students, the other initiating a new innovation center — have made national news recently.

The Eastman Chemical Company was named Company of the Year by Chemical and Engineering News and the company’s partnership with NC State was among the reasons cited.

Eastman is joining with a wide range of NC State partners to conduct joint cutting-edge research in chemistry, materials science and a variety of other scientific disciplines across at least six colleges at the university. As part of the agreement, the company will provide $10 million over six years in support of the Eastman Chemical Company Center of Excellence. It also establishes the Eastman Innovation Center laboratory on Centennial Campus, NC State’s nationally recognized research campus.

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Many eyes were on an NC State startup in January as LipoScience, Inc. was the first health-care IPO — initial public offering — of 2013, according to The Wall Street Journal. LipoScience is cited as a pioneer in personalized diagnostics with its NMR LipoProfile® that measures low density lipoprotein particles in blood samples. Also, its automated clinical analyzer, Vantera® has been cleared by the FDA. Based in Raleigh, the company has 200 employees.

SAS again earned a high spot on Fortune magazine’s list of 100 Best Companies to Work For in the United States, marking its 10th time in the Top 10. SAS, a global leader in statistical analytics, ranked No. 2 in 2012 for its challenging work, empowering leadership and great workplace environment.

Building on the “statistical analysis system,” SAS began at NC State as a project to analyze agricultural research. As demand for analytical software grew, the company was founded in 1976 and now serves a wide range of customers, from pharmaceutical companies and banks to academic and governmental entities. SAS Hall on campus houses mathematics and statistics departments. SAS is also a founding partner in the Institute for Advanced Analytics at NC State.

**New AMS Fellows Selected**

Four NC State faculty members are among the first class of fellows named by the American Mathematical Society. Carla Savage, Michael Shearer, Michael Singer and Seth Sullivant, all in the College of Physical and Mathematical Sciences, will enter the inaugural class of 1,119 fellows representing over 600 institutions. The AMS designation recognizes members who have made outstanding contributions to the creation, advancement, communication and utilization of mathematics.