

NEWS

mechanical engineering

FALL 1999

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The Chair's Corner

by Dr. Tsu-Wei Chou

You may have noticed that The Chair's Corner column in each of the past three issues of *ME News* has been written by a different chair: Dr. Andras Szeri, Dr. Suresh Advani, and me. Dr. Szeri, who has served as the Interim Dean of the College of Engineering during the past year, has been appointed by the Provost for another year because the search for a new Dean was unsuccessful. A new Search Committee was formed early in the fall semester and is now moving forward at full speed. Dr. Advani returned to teaching and research in September and will enjoy his sabbatical leave in the spring semester. As for myself, the fall semester marks the beginning of my 31st year at the University of Delaware. I welcome the opportunity to serve the Mechanical Engineering Department in this new capacity for this academic year.

This year we welcome the 79 students of the class of 2003, which includes 17 women. The freshman class has an average SAT score of 1256, and 29 freshmen are in the Honors Program.

The fall semester has been a busy time for our faculty. First, a retreat was held in September to formulate a strategic plan for the Department in undergraduate and graduate education and research. It was a very rewarding experience for all of us in assessing our strengths and weaknesses and in setting our goals and strategies. Another major event in the fall was the visit by a team from the Accreditation Board of Engineering and Technology (ABET) to the College of Engineering from October 24–26. The preparation for ABET review began more than a year ago and involved every faculty member and a large number of undergraduates. I am very pleased to report that the result of the ABET review for the whole College was very positive.

Our undergraduate curriculum, ME 2000, went into effect in the fall of 1997, so our freshman, sophomore, and junior classes are all in the new curriculum this year. The main objectives of the new curriculum are flexibility and the ability to respond rapidly to the ever-changing technical and business environment. We are continuously assessing the new curriculum and comparing our performance against the new ABET criteria, EC 2000. I believe that we are heading in the right direction, and our undergraduate cur-



riculum will meet the ABET requirements six years from now.

Regarding graduate education, our revised graduate program has been in place since the fall of 1998. The Department has 55 graduate students, 36 of whom are pursuing the Ph.D. degree. There are also 16 postdoctoral fellows, visiting scholars, and research associates.

In the fall retreat, the faculty decided that we should continue to strengthen our research program in composite materials. Also, three additional focus areas were identified: biomedical engineering; fluid, particle, and environmental systems; and vibration and control.

The ME faculty continue to do well in attracting external research funding. This fall the Department has a total of 43 active grants and contracts. Research expenditures for 1998–99 total \$2,448,295. Our faculty members are also serving as co-investigators on 10 additional grants through other UD departments or other universities.

Many of our alumni participated in the celebration of the 25th anniversary of the Center for Composite Materials. Researchers from 17 countries attended the three-day Composites 2000: An International Symposium on Composite Materials, held at the Trabant University Center. It was indeed a joyous reunion. Many of you may recall that CCM was founded by Dr. Jack R. Vinson, H. Fletcher Brown Professor of Mechanical and Aerospace Engineering. It was his wonderful idea that has brought very significant impact to the educational and research programs at the University of Delaware and has given international visibility to our Department in composite materials.

profession through leadership, technical developments, patents, and educational activities. Director of CCM and a professor in the Department of Civil & Environmental Engineering and the Department of Materials Science & Engineering, Gillespie is the first academic researcher to be selected for the award.

Artificial Hip Design Receives National Attention

An artificial hip designed by two ME faculty members, Suresh G. Advani and Michael H. Santare, has been featured in *Business Week* and on television. Seeking to mimic the natural load on human thigh bones, Advani and Santare used computer simulations to design the prosthesis, which has the potential to reduce the post-surgical atrophy common with hip replacements.

“Conventional prosthetic designs remove so much stress from the patient's leg, they can allow thigh bones to weaken, especially among those younger than about age 60,” Santare explains. “The UD design significantly reduces this stress shielding because it's based on an analysis of real loading conditions within the human hip region.”

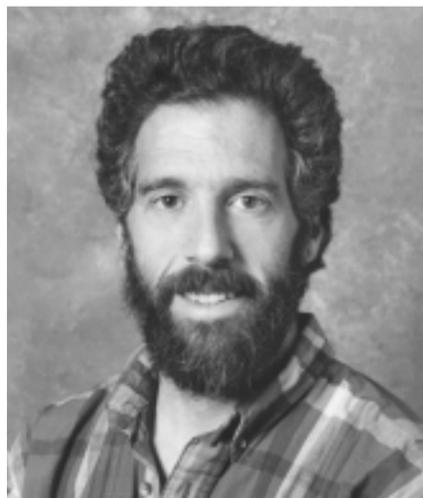
While the design is still in prototype form, it has been headlined as “A Hipper Prosthesis” in *Business Week's* “Developments to Watch” column. A 99-second spot covering the breakthrough

has also been produced by “Discoveries & Breakthroughs Inside Science” and has been made available to television stations via satellite.



Suresh Advani and Mike Santare
Photo by Jack Buxbaum

Wexler's Research Featured in Regional Newspaper



The Health & Science section of the October 4, 1999, issue of the *Philadelphia Inquirer* highlighted

research conducted by Prof. Tony Wexler and graduate student Ramesh Sarangapani. Using mathematical models based on fluid mechanics, the two have demonstrated that tiny particles of pollution may be more harmful than previously thought.

Their research suggests that it is not just babies, the elderly, and sick or injured people who are at risk, but healthy adults as well, because fine particles can travel through human lungs up to two times faster and penetrate deeper than assumed. Sponsored by the Electric Power Research Institute, the work has the potential to influence the Environmental Protection Agency's efforts to regulate these mist-like particles.

Advani Named ASME Fellow

Reprinted with permission from the University of Delaware *UpDate*, October 29, 1999, by Ginger Pinholster

Prof. Suresh G. Advani was recently elected to the grade of fellow by the American Society of Mechanical Engineers (ASME) International.

The status of fellow is granted to researchers responsible for “significant engineering achievements,” who have been members of the organization for at least 10 years, according to ASME President Robert E. Nickell. “Dr. Advani's recognition truly places him in a distinguished and a very small segment of ASME's membership,” Nickell added.

Advani's research has focused on polymer and composites processing. In particular, he examines deformation behavior as liquid-phase materials flow during product manufacturing. Currently, Advani is working with departmental colleague Michael Santare and others to design an improved artificial hip design.



Advani earned his Ph.D. in 1987 from the University of Illinois at Urbana-Champaign and his undergraduate degree at the Indian Institute of Technology in Bombay. His previous honors include awards for the best papers submitted to the 1995 American Composites Conference and to the 1990 Society of Plastics Engineers event.

Advani joins three other UD–ME faculty members who are ASME fellows: Tsu-Wei Chou, Jerzy L. Nowinski Professor; Andras Szeri, Interim Dean of the College of Engineering; and Jack R. Vinson, H. Fletcher Brown Professor.

Gillespie Honored by SME

Dr. John W. Gillespie Jr. (76BME, 78MMAE, 85PhD) has been selected to receive the 2000 J. H. “Jud” Hall Composites Manufacturing Award from the Composites Manufacturing Association of the Society of Manufacturing Engineers for his significant contributions to the composites manufacturing

Class Notes

Daniel Tyman 50EG, of Wilmington, Del., and Penobscot, Maine, retired in 1996 from DuPont's central research organization after 46 years. He holds numerous U.S. and foreign patents and has authored a number of papers on polymer processing.

Nathan Cloud IV 64EG, 70M/EG, of Wilmington, Del., is the owner of Cirrus Engineering Inc. there.

William H. Just 63EG, of Atlanta, founder and president of Total Association Management Services Inc., was appointed to the American Society of Association Executives' Certification Commission and the international Board of Directors of the Convention Liaison Council (CLC). He was also one of six professionals chosen to be recognized in the CLC Hall of Leaders with a bronze plaque placed in the entry of the Washington, D.C.,

Convention Center and in McCormick Place in Chicago.

Joseph P. Smiley Sr. 78EG, 97M/CHEP, of Wilmington, Del., a consultant for Compaq Computer Corp., joined the governing board of the Opportunity Center Inc., a nonprofit organization specializing in the vocational training and placement of persons with disabilities and special needs.

John R. Lombardo EG, of Chicago is sourcing manager of construction and engine services for the purchasing department of Amoco Corp. there.

William (Jack) Armstrong 90 BME took a position as a Senior Laboratory Engineer at the University of Rochester's Laboratory for Laser Energetics (www.lle.rochester.edu). He provides engineering support to the experimental

Operations group in conducting laser fusion and high energy plasma physics research.

DEATHS

Amos C. Jaquette 33EG, of Newark, Del, Feb. 16, 1999

Garry W. Hoffman 57EG of Hershey, Pa, Aug. 2, 1998

Carl F. Riegel 68 EG of Wilmington, Del., Dec. 30, 1998

MARRIAGES

Jenifer Anstine 90AS to Kevin Warren 92EG, Oct. 3, 1998.

PRESENTATIONS

Professor Leonard W. Schwartz gave the keynote lecture, "The Theoretical and

Numerical Modelling of Coating Flow," at the 3rd European Coating Symposium held at the University of Erlanger-Nurnberg, September 7-10, 1999.

Professors R. Valery Roy and Leonard W. Schwartz also co-authored two contributed talks at this meeting, "Morphological Stability And Nonlinear Evolution Of Capillary Ridges," and "Modeling thin layer flows with strong surface tension gradient effect."

Dr. Leonard W. Schwartz was also an invited speaker at the Symposium on The Dynamics of Thin Fluid Films sponsored by the International Centre for Mathematical Sciences held in Edinburgh, Scotland, July 11-14, 1999. His talk was entitled "Direct Numerical Simulation of Wetting and Spreading Phenomena."

Mechanical Engineering Department 1999 Honors Day Awards

SENIOR YEAR AWARDS

W. FRANCIS LINDELL MECHANICAL ENGINEERING AWARD FOR DISTINGUISHED SENIOR

*David Geesaman
George Sapna
Brandon Fichera*

MARY AND GEORGE NOWINSKI AWARD FOR EXCELLENCE IN UNDERGRADUATE RESEARCH

*David Geesaman
Glenn C. Gardner*

AMERICAN SOCIETY OF MECHANICAL ENGINEERS DELAWARE SECTION SENIOR DESIGN PROJECT AWARD

First
Team 6: Automatic Dental Bur Loader
Jason Dickey, Greg Frantz, Allison Martin, Nancy Meyer

Second

Team 5: Video Tracking
Justin Combs, Raymond Foulk, Ryan McDonough, George Sapna

Third (Tie)

Team 1: Hovercraft
Brandon Fichera, B. Sean Gallagher, Greg Pease, Dave Rabeno

Team 2: Watermelon Ripeness Sensor
Dave Bartoski, Matt Behr, Allan Cohen, Jason Firko

MEEG 101 UNDERGRADUATE TEACHING ASSISTANT AWARD

*Ricardo Blackett
Pam McDowell*

JUNIOR YEAR AWARDS

W. FRANCIS LINDELL MECHANICAL ENGINEERING AWARD FOR DISTINGUISHED JUNIOR

Jeffrey Focht

W. FRANCIS LINDELL MECHANICAL ENGINEERING ACHIEVEMENT AWARD

Krishan Bhatia

OTHER DEPARTMENT AWARDS

AMERICAN SOCIETY OF MECHANICAL ENGINEERS DELAWARE SECTION OUTSTANDING STUDENT AWARD

Kevin Agnew

AMERICAN SOCIETY OF MECHANICAL ENGINEERS STUDENT SECTION AWARD

Patrick Cole

ROBERT T. BOSWORTH SCHOLARSHIP

Leslie Rossman

REDDEN SCHOLARSHIP

*Justin Taylor
Jason Reinhardt*

OUTSTANDING ALUMNI AWARD

Mr. E. Douglas Huggard

COLLEGE AWARDS

BOEING COMPANY SCHOLARSHIP

*Krishan K. Bhatia
Florence J. Li*

CONECTIV COMPANY SCHOLARSHIP

Mark K. Mathre

MILES POWELL JR. SCHOLARSHIP

*David L. Geesaman
Allison E. Martin*

SLOCUMB SCHOLARSHIP AWARD

Chad S. Stover

CENTER FOR COMPOSITE MATERIALS AWARDS

TICONA EXCELLENCE IN ENGINEERING AWARD

Jeffrey A. Acheson

Mechanical Engineering Alumni Group

by Art Holveck

Our alumni group continues to meet to explore ways to further our purpose of providing a mutually beneficial relationship between the UDME Department and all UDME alumni.

The most prominent activity that has resulted so far has been a program undertaken by alumni Nate Cloud (BME64). He is involved with providing ME Senior Design students with real projects for corporate or individual customers.

Anyone with a project that Nate could use in the course should contact him by phone

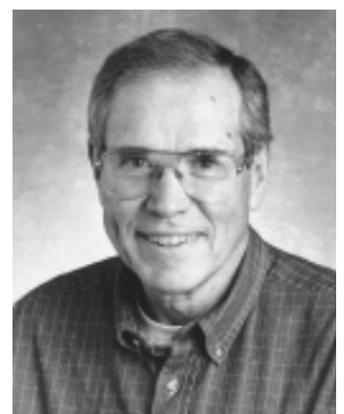
at 302-831-2421 or email him at cloud@me.udel.edu. He will be glad to hear from you.

Have you checked out the ME web page at www.udel.me.edu? Information about what is happening in the Department is there as well as information about individual alumni. While you are there, fill out the page with information on yourself, which will be added to the database so that your classmates and friends will know what you're doing and how to contact you. Look up your old friends and

associates. So far, there are 48 names there. We have space for many more.

The University provides free courses for matriculated Delaware residents over the age of 60 and enables interested individuals to audit courses. Information on these programs is included on the web page or from Prof. Tony Wexler in the Mechanical Engineering Department.

If you have any ideas for what the Alumni Group could do to help you or the University, please contact me at Holveck@aol.com.



Art Holveck

Symposium Held to Honor Nowinski



Dr. Jerzy L. Nowinski, with Bryan Cheeseman, greets Albert Wang and John Lambros

ME honored one of its own when the Department organized and sponsored the Jerzy L. Nowinski Symposium on May 14, 1999, Nowinski's 94th birthday. The symposium featured 10 invited seminars, a lab tour, and a banquet in Nowinski's honor.

From 1961 to 1973, Nowinski was the H. Fletcher Brown Professor at the University of Delaware. During that period of significant growth, he was the academic leader and senior member of the Department. When he retired, the Department initiated the Nowinski Lecture, which has since been given every year as part of the Mechanical Engineering Seminar series. The list of Nowinski lecturers appears on a plaque in the departmental office and, according to Nowinski Symposium chair Michael H. Santare, "reads like a Who's Who of Applied Mechanics."

"I have always wanted to have a symposium to celebrate Professor Nowinski's contributions to our department and to the field of engineering mechanics," said then-Acting Department Chair Suresh G. Advani. "I'm very pleased that these world-class mechanics researchers were

willing to share their expertise with us in Prof. Nowinski's honor."

Invited speakers represented Lehigh, Rice, Drexel, Northwestern, and Harvard universities as well as the Universities of New Mexico, Virginia, and Nebraska.



Front row (l to r): Johannes Weertman, Ronald Rivlin, Millard Beatty, Mohsen Shahinpoor, and Albert Wang. Back row: Michael Carroll, Cornelius Horgan, Jan Achenbach, C.C. Wang, Fazil Erdogan, and James R. Rice

Precision Farming ME Faculty Help Agriculture Go High-Tech

A royal blue tractor with a bright red spreader attached circles the field at the University of Delaware farm, looking very similar to the tractors used a generation ago. But inside—thanks to the efforts of ME Associate Professors Jian-Qiao Sun and James L. Glancey—that simple tractor incorporates components that make it a precision farming machine. Precision farming equipment makes use of sensors, satellites, on-board GPS interfaces, and fertility maps to optimize such operations as fertilizer and pesticide application. Glancey and Sun, with financial support from the State of Delaware and New



Professor Jian-Qiao Sun

Holland North America, are playing a key role in the development of the controls and hardware that have enabled farming to become high tech.

Glancey, who holds a joint appointment in ME and the Department of Bioresource Engineering, explains that a government-developed database of information about farm land—for example, fertility and chemical content—enables farmers to tell, with a great deal of precision, the quality of their land. This commercial database serves as the foundation of precision farming by helping farmers to decide, for example, where pesticides need to be spread the most heavily and where the application can be lighter or even eliminated. Similarly, with information about soil fertility, farmers can determine where the amount of fertilizer can be reduced and where it needs to be increased. “With this knowledge,” says Glancey, “we can reduce waste and pollution while increasing efficiency.”

While Glancey focuses on hardware development, Sun is the brains behind the controls that enable this degree of precision. In essence, the hardware is analogous to the human skeletal and muscular systems, while the controls are the central nervous system. Sun’s contributions to the project have included modeling the hydraulic

system of a typical spreader machine and developing a nonlinear adaptive control strategy for the machine to achieve the desired spreading rate.

He explains how the system works: A satellite locates the tractor according to its map coordinates—that is, longitude and latitude—with a global positioning system, or GPS. An on-board GPS interface links positioning information from the satellite with land quality information from the database and provides input to the precision farm machine regulating the application of chemicals to the soil. Also providing input to the machine are sensors that govern spreader parameters such as speed, weight, auger, and rear gate. The result is optimal application of the fertilizer or pesticide.

Glancey and Sun’s first collaborative project with New Holland North America culminated with graduate student Manu Krishnan earning a master’s degree for his research and thesis, “Non-Linear Adaptive Control of Precision Farming Machines.” But Sun is quick to mention that graduate students are only part of the research team that was involved in this project and will contribute to future collaborations in this area. He employs a number of undergraduates in the lab, who are involved at all levels of the work from instrumentation

and measurement to data acquisition, data processing, and graphics.

Sun jokes that a follow-on project with New Holland was both a success and a failure. “We were asked to do a vibration and noise survey of a piece of equipment called a skid-steer loader,” he explains. “Our work indicated that a redesign of the machine was in order, which temporarily put us out of business on the project. But we’re hoping that we may be called in for further work on the controls system after the redesign is complete.”

“Our collaboration with the New Holland engineers has been very successful,” Sun adds. “Our two organizations have worked together very nicely, and we have become good colleagues.”

The research team has received a great deal of interest in the work from companies and governments overseas. At the same time, there is also high potential local applicability—located in the center of the Delmarva Peninsula “poultry belt,” Delaware has received much press for pollution problems related to the use of chicken manure as a fertilizer. By helping to determine where fertilizers are needed and enabling control of their application, Sun and Glancey may be helping to solve a pressing regional problem.

ME Design Course Highlights Agricultural Innovation Projects

by Pat McAdams — adapted with permission from UD *UpDate*, October 24, 1999

During the 1998–99 academic year, the College of Agriculture and Natural Resources and the College of Engineering teamed on a two-term senior design class to provide work experience for students, who interact with customers in industry, academia, and agriculture.



Professor Dick Wilkins

The course, System Design and Synthesis I and II (MEEG 447-448), is an example of project-based learning, said class coordinator Dick Wilkins, Professor of Mechanical Engineering. “Learning occurs through solving problems, rather than through classroom lectures,” he said. “In this case, students work in true-to-life projects with real customers, real budgets, and real expectations.”

Profs. Michael Keefe (ME) and James Glancey (ME and Bioresources Engineering) supervised 14 teams of students, including four assigned to solve agricultural problems.

An insect-tracking project placed second in the ASME competition at UD. The students developed a surveillance camera for Keith Hopper, a research entomologist with the U.S. Department of Agriculture and an adjunct UD faculty member in entomology and applied ecology. Hopper wanted an insect-tracking machine for his work in identifying beneficial insects to control agricultural pests.

Another team invention, a ripeness sensor for watermelons, tied for third place in the ASME competition.

Other student inventions included the following:

- Adel Abumohor, Jeff Acheson, Peter Sullivan, and Mike Tate worked to design a machine for Limin Kung Jr., animal and food sciences. The machine allows Kung to pressure-pack small test silos he uses in research. In his search for better microbial inoculants for preserving silage, Kung stuffs hundreds of silos every summer.
- Students Nate Smith, Jon Hackett, Jim Wert, and Alan Star worked with Ed Kee, a UD extension specialist for vegetable crops, to design a mechanical

pickle sorter for the pickle-packing industry. If a pickle is too crooked to fit into a jar, the computer orders the pneumatic system to blow it off the line, the inventors explained.

- Jason Dickey, Greg Frantz, Allison Martin, and Nancy Meyer investigated automatic loading technologies for Dentsply Co, earning a first-place prize in the ASME competition.
- Brandon Fichera, B. Sean Gallagher, Greg Pease, and Dave Rabeno worked on Hovercraft technology for the Delaware Aerospace Academy, tying for third place in the ASME competition.



Professor Michael Keefe

- David Geesaman, Ken Kammerer, Jin Ko, and Mike Shaffer designed a compact mobile lifting device for the Fraunhofer Center.
- Heat-pump design was the focus of a project involving students Ricardo Blackett, Andy Parke, Scott Quirico, and Brian Zigmond.
- Smart tooling strategies needed by the Fraunhofer Co. were the topic of a project by Glenn Gardner, Andy Graybill, Jeff Roushey and Joe Staley.
- Brian Davison, Sean M. Gallagher, Pam McDowell and Prathan Yannarath conducted an air-conditioner experiment for UD faculty member Tony Wexler, mechanical engineering.
- Katie Kaser, Joanna Pirnot, Moshe Solomon, and Lihong Xu worked on an ultrasonic mixer for Fraunhofer.
- Jeremy Freeman, Noel Goldstein, Justin Schaffer, and Tom Winward designed a generator enclosure for CCM.
- A card-placing machine for GDA Digital Media kept Dave Conway, Jeremy Garey, Evan Kress and Rob Roche busy.
- Kevin Agnew, Greg Barber and Dave Rubin worked on an “automated spray patternator” for the DuPont Co.

ME Department Ranked 5th in U.S. for Journal Citations

The UD mechanical engineering department has been ranked fifth in High Impact U.S. Universities, 1993–97, by the Institute for Scientific Information (ISI) in its University Science Indicators database (<http://www.isinet.com/hot/research>).

The ranking is based on the average citations per paper in mechanical engineering,

among the top 100 federally funded U.S. universities that published at least 100 papers a year in ISI-indexed mechanical engineering journals between 1993 and 1997.

UD had published 110 papers with 2.68 citations per paper.

The top four were Brown and Stanford, California Institute of Technology, and Cornell.

According to then-Acting Chair Suresh Advani, “One measure of the quality and importance of engineering research at a university is not the number of articles published, but the number of citations or

references to papers made by other engineers and researchers. To be ranked fifth in the nation is an indication of the high quality of research and scholarship carried out in mechanical engineering at UD. We are pleased with this recognition of the work being done by our faculty.”

ME Alum Turns Soda Bottles into Substrate: Lear is Cooking!

Adapted from a Lear company press release

The next time you have a soft drink, raise that recyclable bottle in a salute to Sunil Gupte (95PhDME, 91MME). This UD grad has given Lear the last important piece in the development of a substrate made from post-consumer polyethylene terephthalate (PET)—used soda bottles. And if you happen to be sitting in a brand-new premium vehicle some day, look up. Thanks to Gupte, that soda bottle could be in the headliner.



Gupte, a mechanical engineer from the Lear Technology Division in Southfield, Michigan, has

built a convection oven that quickly and economically heats the substrate material used in headliners and other interior parts. The substrate, a mix of 50 percent recycled PET fibers, was developed over the past four years by engineers working to answer a challenge from OEMs. The addition of a thick layer of finer PET fiber in a sandwich construction for better sound absorption made the substrate difficult to heat and form using conventional contact or radiant heating methods.

To solve the problem, Gupte designed a special convection oven. In this tool, hot air is forced through the stack of substrate using pressure on one side and vacuum suction on the other side. The oven was prototyped in house, and a first demonstration of the process was held in March of last year. “It was a proof of

concept,” Gupte said, “and a culmination of many years of research.” The test oven worked spectacularly.

The oven uses natural gas rather than electricity, so it costs much less to run. It has a smaller footprint than conventional ovens, which saves plant floor space. The hot air/vacuum method allows the substrate to keep its loft and maintain its sound absorption. Moreover, the process is robust and allows a very high degree of precision in heating.

Most impressive, however, is the amount of time saved with the convection oven process. While a conventional oven with a comparable footprint could take as much as 300 seconds to pre-heat PET substrate, Gupte’s oven takes just 30 seconds.

“In the Lear corporate mission statement,” Gupte said, “improvement in productivity is an important goal. The convection oven in this process meets that goal tenfold.”

“This is the kind of research and development that marks a company as progressive,” Gupte said. “I am grateful that Lear has the facilities and the forward thinking to encourage this breakthrough process.”

So far, four vehicle platforms will use the substrate for headliners starting from model year 2001.

As an ME grad student, Gupte was advised by Prof. Suresh Advani. “Sunil was always a creative and independent thinker,” said Advani upon learning of his student’s accomplishment. “I’m glad to see that he was able to apply the scaling principles to different applications.”

Alumni News

Alum Receives Presidential Citation

Dr. Bakhtier Farouk was selected as a recipient of the 1999 Presidential Citation for Outstanding Achievement. Farouk received his master’s and doctoral degrees in mechanical and aerospace engineering from UD in 1979 and 1981, respectively, and his bachelor’s degree from Bangladesh University of Engineering. He is an acknowledged authority in the fields of heat and mass transfer, fluid mechanics, and combustion and is a professor of mechanical engineering at Drexel University.

He was named a fellow of ASME in 1997, and he received the Drexel University Research Achievement Award in 1993, the American Society of Metals Henry Marion Howe Medal in 1989, and the Society of Automotive Engineers Ralph Tector Educational Award in 1986.

“My four years at the University of Delaware were an intense period of professional, academic, and personal growth,” Farouk said. “The dedicated and caring faculty in the mechanical engineering and mathematics departments . . .

provided me with a solid foundation for the teaching and research career that I have pursued since graduation. My professors at Delaware were not only scholars but also outstanding teachers, whose styles and techniques I often try to emulate in my own teaching.”

Two Alumni Receive Awards from Composites Center

The inaugural CCM Distinguished Alumni Awards were conferred at Composites 2000: An International Symposium on Composite Materials, held to commemorate the Center’s 25th anniversary.

Two of the three 1999 recipients were ME grads—**W. James Renton** (74PhD), Director of Structures Technology for The Boeing Company, and **Mark J. Shuart** (86PhD), Director of Structures and Materials at NASA Langley Research Center. The awards were presented to the distinguished alumni by their UD graduate advisors. Prof. Jack R. Vinson introduced Renton, and Dr. R. Byron Pipes conferred Shuart’s award.

Faculty and Staff News

Associate Professor John Lambros has been named Associate Editor of *Experimental Mechanics*.

Mark A. Deshon, Center for Composite Materials, received a Professional Staff Merit Award.

Kathleen M. Balthis, Mechanical Engineering, received a Salaried Staff Merit Award.



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