

ALUMNI & FRIENDS

Biological & Agricultural Engineering

BAE

Spring 2005

"We Bring Engineering to Life"

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More Color and Pictures...

To catch the eye of potential students interested in BAE programs, BAE has been strengthening recruiting efforts with new materials. Some of the new materials were designed to appeal to high school age students like the presentation slide below.



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Symposium Focused on the Future

The semiannual N.C. Section of the ASAE Meeting was held on June 8, 2004, in Asheville, N.C. The spring's meeting, "Advances in Biological and Agricultural Engineering Symposium," brought university faculty, employers and students together to share ideas on topics ranging from a lecture on "millennia's" to a panel discussion of employer expectations.



No one knows for sure what the future holds, but at the N.C. ASAE spring symposium, "Advances in Biological and Agricultural Engineering" held on June 8, 2004,

scholars, experts and students shared their predictions.

Students, faculty, and staff from NC State, the University of Tennessee, Pennsylvania State and Clemson University attended the symposium at the North Carolina Arboretum, in Asheville, NC hoping to share ideas and gain insights into how to successfully propel BAE programs into the future. Speakers included: employers, high school teachers, extension personnel, as well university speakers.

The symposium began with an overview of issues facing the BAE discipline by Dr. Roy Young, Agricultural and Biological Engineering Department head at Penn State. Young emphasized current trends in the field, stating that while universities still maintain an agricultural engineering major, they have changed department names and added different concentrations to attract students.

NC State's BAE undergraduate coordinator, Dr. Andy Hale and Heather Gordon, student service assistant and recruiter, then presented insight and information into who the prospective students to college programs are and how to attract them to BAE programs in particular.

Hale described some characteristics and expectations of "Millennial's" – these being students born after 1984 currently applying to and enrolled at universities.

Millenials are career-oriented, usually knowing what career they want to pursue when they arrive. They expect the university to be an extension of parental love and support, meaning they expect professors to "coach" them through tough classes and to assist them with finding jobs and internships.

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Faculty News

Dr. Lingjuan Wang has been hired this year to fill a vacant air quality position. BAE is glad to have found Wang for this position because she has a strong understanding in the type of air quality issues the department has traditionally addressed.

Wang earned her Ph.D. in 2004 from Texas A&M University where she also earned a Masters degree. Her research dissertation was focused on air quality (PM, odor and gases) issues related to agricultural operations. In the ASAE 2004 *Graduate Student Research Competition* Wang earned 2nd place.

Dr. Wang is originally from China and in her home country she practiced as a Certified Research and Design Engineer.

Wang's appointment is to focus in both teaching and research areas. Currently her research interests are air pollution abatement system design, air quality sampling/moni-

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Department Head James Young
Writer/Graphics Carolyn Mitkowski
Advisor Mike Boyette

BAE Alumni & Friends is a semi-annual publication of the Biological and Agricultural Engineering Department, North Carolina State University, Box 7625, Raleigh, NC 27695-7625.

If you would like to contribute to the next issue of BAE Alumni & Friends, please send your contributions to the above address or email: cmmitkow@eos.ncsu.edu.

Symposium Focuses on the Future

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Millennials also work well in teams and are comfortable using technology.

Given those characteristics, Gordon outlined how to effectively appeal to these students. She stressed appealing not only to the students but to parents and employers as well, since parents are usually contributing monetarily and employers are looking to eventually hire the students.

Several NC State faculty members then shared their experiences with various teaching methods geared at engaging Millennials.

NC State's Dr. Garry Grabow, who taught a BAE class on-line for distance education via NCREN, was pleased overall with the amount of flexibility for both students and teachers, the ability to reach more students, and the integration of new technology, but he also feels there is room for improvement with regards to outlining expectations and communicating effectively.

The entire faculty highlighted the need to "throw out the cookbook," the approach of many students who come to college with the impression that following instructions or an example will solve every problem. These students have trouble trying to attack the same problem from a different angle.

Research has shown that active and inquiry-guided classes work better than traditional lectures when attempting to eliminate the cookbook. For this reason, NC State's BAE Department gutted one of their traditional classrooms and transformed it into a more user-friendly atmosphere.

For instance, tables and chairs can be rearranged to suit the professor's needs, and the room implements current technology, including wireless internet. The updated lab contains six stations with a variety of equipment, giving every student the opportunity to apply classroom knowledge.

After lunch, Mary Arnaudin with NC 4-H Youth Development and Cari Christopherson, a high school science teacher at Brevard High School, Brevard, NC, shared their experiences with placing and encouraging students. They agreed that a departmental scholarship would be the most enticing reason for a student to consider BAE.

"Larger scholarships always receive more attention," said Arnaudin, "but the

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The NC ASAE group listens to information presented in one of the break-out sessions.



Department Head's Comments



James H. Young

I would like to welcome Dr. Lingjuan Wang to the faculty as an Assistant Professor in the area of agricultural air quality engineering. Dr. Wang comes to NCSU from Texas A&M where she completed her MS and PhD. Dr. Wang is originally from China where she received her BS in Engineering at Anhui Institute of Finance & Trade. She worked in China as a Certified Research & Design Engineer conducting projects on the development of cotton ginning machinery and on particulate matter (PM) abatement system design.

Dr. Wang came to the USA in 1998 as a visiting scholar at Texas A&M and then decided to continue in a graduate program which eventually led to her PhD in 2004. Her research there has included work on cyclone design for PM abatement, sampling for PM levels, PM emission factors for cattle feedyards and dairy operations, and odorous gas dispersion modeling. At NCSU, Dr. Wang will be conducting research and teaching in the areas of odor and PM emissions from agricultural operations (especially confined housing for poultry and swine).

All the engineering departments including this department had an accreditation visit from ABET (Accreditation Board for Engineering and Technology) in October of 2004. I am happy to announce that (although the official results are not yet in) the college did extremely well and we expect (based on preliminary results) that we will be accredited for the next six years. Both the biological engineering program (administered by BAE) and the biomedical engineering program (developed by BAE but now administered by the separate biomedical engineering department) had very successful reviews. I wish to again acknowledge Dr. Roger Rohrbach for his outstanding leadership in assuring that we were ready for the ABET review. Following Roger's full retirement, Dr. Dave Beasley has agreed to provide leadership for our ABET activities in the future.

The BAE Advisory Board annual meeting was held on March 31 and April 1, 2005. New members of the Board this year are: Ms. Marge Davenport, Associate Regional Hydrologist with the U.S. Geological Survey, Norcross, GA. Dr. Mike Franklin, Mike Franklin Consulting, Cary, NC. Dr. Mac Safley, President and Founder of Agri-Waste Technology, Inc., Raleigh, NC. and Ms. Beth Truscello, Environmental Engineer with General Electric - Consumer and Industrial, Mebane, NC. Continuing Board members are: Mr. Hal Burns, Mr. Joe Gregory, Mr. Chuck Grief, Dr. Larry Sykes, Mr. Kim Colson, Mr. Ron Marlow, Dr. Jami Nettles, and Dr. Preston Sasser. We greatly appreciate the time spent by the Board in reviewing our academic programs this year and value their suggestions for promoting our degree programs.

Recruiting of qualified students continues to be a very important concern of the department. Following the "departure" of the biomedical engineering students from the BAE department, enrollment in our academic programs has dramatically decreased. However, increased efforts by the recruiting committee have led to some recovery in student enrollment. We would solicit your help in reaching qualified students. There is a recruiting poster as the centerfold of this newsletter which you are welcome to use. Please pass along the names of potential students to me, Dr. Andy Hale, and/or Ms. Heather Gordon. ■

Ways for Alumni to Help BAE Recruit...

1. Individual one-on-one recruiting is the most effective. Alumni have the potential to be BAE's most influential program promoters. As you converse with people daily, why not ask about their children's interests. You will find that often parents of teens are eager to learn about university programs. And who better than you can explain where a BAE degree can take you. Tip: To spark workplace conversations place a NCSU/BAE logo along with www.bae.ncsu.edu site on your computer screen background.

2. Opportunities to visit NCSU are always available for you to recommend. Events such as NCSU's General Open House in October, the celebrations of Engineers' Week; including Girls in Engineering Day in February and CALS Ag. Awareness in March. Then in April you have several events the Engineering Open House, The Undergraduate Research Symposium and BAE's Senior Design Presentations which are scheduled for April 27th., Weaver 3:30 to 8:00 PM. All are welcome.

3. You can find additional printable marketing materials at: www.bae.ncsu.edu button *department information*.

4. Do you or others work with teens such as; 4H, Scouts, etc. Then find out how BAE can work with you to "*Bring Engineering to Youth*" Contact: Heather Gordon (919) 513-7477 or hbfgordon@unity.ncsu.edu.

5. Find in the centerfold of this newsletter a poster. Will you assist us in finding a visible place in your community to hang the poster? **Thanks for the help...**

Please see the other PDF file
which contains the printable
11x17 poster

Alumni Updates

Some alumni we hear from are at the start of their careers. Others are very well established in them, like BAE 1972 alumni **David Smith**. Currently he is North Carolina's Chief Deputy Commissioner of the Department of Agriculture and Consumer Services.

Smith was recently appointed the new chairman of the board of directors for ASTM International. ASTM (www.astm.org) is a non-profit organization for the development of voluntary standards for materials, products, systems, and services.

In the January 2005 issue of the "**ASTM Standardization News**" Smith was featured as the cover story. In the article, Smith's many accomplishments are revealed in an in-depth biographical interview.

Smith's interest in standards that measure the quality and quantity of products began shortly after the start of his career with the agriculture department. In 1976, he was selected to direct the *Liquefied Petroleum Gas Inspection Program*, within the Standards Division. Three years later he became the Standards Division department director. This division is responsible for the state's inspection programs involving gasoline and oil, weights and measures, and liquefied petroleum gas.

Over the years, he earned many awards and achievements, and served actively on committees of many professional groups. He was most active on the ASTM D02 committee for *Petroleum and Lubricants*, serving in a number of capacities within this committee. Smith was also a past chairman of

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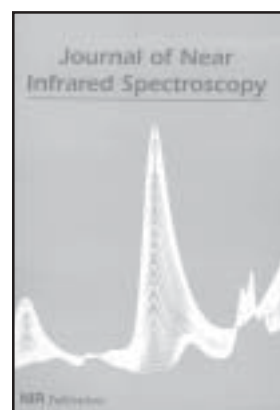
McClure an Achieving Emeritus



Fred McClure, Professor Emeritus, was recently honored by *NIR Publications* (United Kingdom) for his outstanding contributions to the field of Near Infrared Spectroscopy.

McClure's work was honored by the publication of two issues of the *Journal of Near Infrared Spectroscopy* (Volume 11, Numbers 4 and 6). In Number 4 an editorial by A.M.C. Davies states, "McClure has been many things; an inventor, researcher, teacher, supervisor, and editor of the North American "*NIR News*". He edited its first issue in 1990. Then he edited the *Journal of Near Infrared Spectroscopy* beginning with volume 2 in 1994 until now.

A world traveler, McClure has been lecturing about NIR and has been an enthusiastic forecaster of new ideas and trends." In Volume 6 of the *Journal of Near Infrared Spectroscopy*, Professor Yuki Ozaki of the Department of Chemistry and the Research Center for Near Infrared Spectroscopy, Kwansei-Gakuin University, Japan wrote of McClure that, "Japanese researchers are fortunate to have had strong ties with McClure. . . . In April, 1995, he became a visiting professor of Kwansei Gakuin University. I can never forget the time of his visit; he eagerly taught my students almost every day, one by one. Almost every morning he had a group in my class.



He taught students electronics using electronic circuits and computers for basic principles to achieve practical applications. Our chemistry students were happy to learn much from Dr. McClure . . . McClure enjoyed hiking, picnicking and Japanese style hot springs. . . We are very pleased to have had the opportunity to take part in this well-deserved tribute to our teacher, research colleague, and friend."

In 2004 McClure was invited by the University of Campinas, Brazil to present two lectures: *Writing and Speaking in the Technical Community* taped and played in streaming video on the internet. The second lecture, *Trends in Hand-held NIR Technology: The Smaller the Better*, were not only presented in Brazil but also presented at the Latin American Congress on Chemistry in El Salvador.

Continually active, the Council for Near Infrared Spectroscopy asked McClure to initiate a Web Newsletter. He quickly pulled together an international editorial board to publish "*The NIR Spectrum*" newsletter at www.idrc-chambersburg.org. It has four issues a year.

Still going strong, like an old soldier who never dies, McClure is also a founding member of a consortium called *The NIRprofessors*, a group interested in promoting the expansion of NIR technology around the world. ■

Symposium Focused on the Future

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point of a scholarship is to recognize potential in a student, and that's what is really important." Arnaudin and Christopherson also recommended hosting summer programs for both teachers and students to learn more about a school's programs and to see the campus and use the technology.

The symposium concluded with two employer panels representing a variety of businesses employing engineers, such as John Deere, NC DOT, and several consulting firms. All employers stressed the importance of teamwork and oral and written communications in addition to transferring classroom knowledge to real-world situations.

"The speakers from industry were well-prepared and gave thoughtful advice and suggestions" said Gordon. Dr. Bill Hunt, Dr. Mike Boyette and Heather Gordon, all from NC State, organized the symposium with assistance from Dr. John Tyner, University of Tennessee. -- This article was written by Kathleen Powers, a summer student attending the symposium. Developing this article, Kathleen was working on her organizational and written communication skills. ■

He Built a Lifetime to Remember...

Ray M. Ritchie died September 2004 at 82 years of age. He was an engineer who was ready and eager to design and build for the world around him. He continually sought to improve living conditions for the communities he served and family he loved. Coming from farm roots, Ritchie entered Virginia Polytechnic Institute to study Agricultural Engineering. He went to war like others of his era and married while in service as a post war engineer.

In 1946, he took a position as an assistant county agricultural agent in VA and then took a position with the Southern States Cooperative, where designing farm structures became his niche of expertise. He came to BAE in 1948, serving 18 years as a faculty agricultural extension assistant. He worked on projects involving animal production, storage, processing and marketing facilities. His considerable engineering skills, exacting blueprints, and research ability, led him to approach structures from a more environmental aspect applying insulation to animal housing.

In 1966 he started his own private consulting business. His clients were from all over the country and he designed buildings at Tuskegee Institute, North Carolina A&T, and for leading agricultural concerns. Ritchie enjoyed building and applied his talents to building homes for family and friends. He built two family homes and the homes of his four children. In all, he built about a dozen homes in the Raleigh area.

Ritchie's career began designing structures to house animals and most fittingly his last years were spent dedicated, to designing a church. He was a member of the Avent Ferry Methodist Church in Raleigh for 50 years. Very involved he provided consulting for the design plans and suggestions for the construction of a new and bigger church to be built. Ritchie died after the site ground breaking and just prior to the start of its construction. However, the congregation feel the church's foundation is stronger for his devoted efforts. ■

Alumni Updates

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the National Conference on Weights and Measures, and served in various capacities in the Southern Weights and Measures Association.

In the ASTM interview, Smith says, "State regulatory agencies can either develop their own standards or adopt standards developed by recognized standards development organizations. With shrinking budgets and staffs, it is very difficult to find the resources to develop standards in-house. Additionally, the regulated community wants to comply with more uniform standards as opposed to 50 different state standards addressing the same thing."

To keep NC up-to-date on the latest industry trends this agricultural commissioner stays informed. He's abreast of useful research, regulations, and in many ways he sets the standards. ■

In 2004 BAE received an update from Muhammad Salih Haji Ja'afar who studied at BAE until 1986. Although not a NCSU alumni he's an engineer on the faculty of Biological and Agricultural Engineering at the Universiti Putra Malaysia.

www.eng.upm.edu.my/webkbp/ Malaysia was among the many countries affected by the recent tsunami. Ironically, Haji Ja'afar teaches agricultural machinery, machine safety, project management, and natural disaster management. This disaster brought to light the importance of having people trained with project engineering skills. ■

Fall 2004 Grads

Name	Curriculum
Allen, Zachary Michael	AET
Ball, Eric Jerome	AET
Blackwell, James David	AET
Chen, Rick Chien-An	BE, BME
Domanowski, Craig Michael	AET
Edmiston, Jack Adam	AET
Gandy, Steven Ray	PhD
Gregg, James Riley	BE
Hagwood, Timothy Webb	AET
Lanier, Matthew Garrison	AET
Lyerly, Courtney Neil III	MS
McDonald, Jennifer Ann	BE, BME
Ridenoure, Jennifer Ann	MS
Senrud, Amanda Lynn	BE, BME
Smith, Jennifer Mary	MS



View more graduation pictures at:

www.bae.ncsu.edu/news/

Graduating students and alumni have the opportunity to purchase a brick in the CALS walkway. To learn more see www.cals.ncsu.edu/index.cfm?showpage=242



Faculty News

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toring, dispersion modeling, animal housing & environment management, and agricultural processing.

Dr. Roger Rohrbach, who recently retired from the faculty was awarded a Gertude Cox Lifetime Achievement Award in recognition of his more than 20 years of contributions to the computing environment at State. The award was established in 2001 to recognize and honor innovation and integration of technologies into teaching and learning. ■

NEWS ON THE WEB...

Note: You can keep up with all the BAE news and information by looking at the newly expanded news section on the BAE site. www.bae.ncsu.edu/news/