



Biological Systems Engineering

Newsletter

Fall 2013

We are growing—rapidly!

The Introduction to BSE (BSE 2004) course this semester has 67 students, the largest enrollment in the history of the department. Of the 140 current undergraduate BSE students (sophomores through seniors), 41% are women and 59% are men. Our students hail from nine countries (US, Bangladesh, China, Greece, India, Ireland, Japan, South Korea, and Spain), eleven different states (AL, GA, KY, MD, NJ, NY, NC, PA, TN, TX, VA), and Washington, D.C. The growth of our undergraduate program can be attributed to increases in the number of students admitted to the College of Engineering (COE), the new COE enrollment management plan, and an increased interest in engineering and bio-based careers.

This fall, the incoming COE class of 2017 numbered 1,440 students. To ensure the college has the personnel, space, and equipment resources to educate these future engineers, the COE has implemented an enrollment management plan. The goal of the plan is to keep the student:faculty ratio from getting too large in any engineering program, while still providing students access to their major of choice. Students are placed in departments competitively based on their grade point average and preference of major. Some students will not be able to enroll in their first choice major.

As a result of the enrollment management plan, students are considering their choice of major more carefully and many find a degree in BSE is the perfect match for their career interests. As one student stated “I chose to major in BSE because I wanted to major in a branch of engineering where I could get out and do meaningful fieldwork... BSE was the deciding factor in my decision to go to Virginia Tech!” While the traditional career interests of watershed and bioprocess engineering are still popular, many sophomore students in the BSE class of 2016 express interest in new fields, including biomedical engineering and the health industry. Because our undergraduate curriculum provides a strong foundation in biology and chemistry, students are able to complete a B.S. degree in BSE with a minor in biomedical engineering with the addition of just one extra course.

As a result of the increased number of undergraduate students, the BSE department is
(Continued on page 2)



BSE Class of 2016

In this issue...

**Note from the
Department Head.....2**

Department News.....2-3

BSE Student News.....4-10

**BSE Faculty and
Staff News.....11-13**

BSE Alumni News.....14-15



BSE students carve pumpkins at an ASABE chapter meeting to decorate the Julia Pryde garden. More from ASABE student branch on page 4.



VirginiaTech
Invent the Future

Department News



Dear BSE alumni and friends,

Writing this letter gives me a great opportunity to look back over 2013 and look forward to the new year. Some of the words that jump to mind are HABB1, record enrollments, and faculty changes. HABB1 (Human and Agricultural Biosciences Building 1) is now one of the homes of BSE research programs. You have watched its progress through the past few years and, now, it's real! Much of December was spent moving into the new facility. The faculty and staff housed in HABB1 are very excited about working in new laboratories and are looking forward to the enhanced research collaborations and opportunities that will be enabled by the new facility. The Grand Opening Celebration for HABB1 is on March 21; everyone is invited to attend. We are also looking forward to repurposing some space in Seitz Hall as a result of some labs moving to HABB1. We had a fourth record-breaking enrollment in fall 2013: 67 students in the Intro to BSE course, 68 students in junior level Seminar and in Thermodynamics, with a total BSE undergraduate enrollment of 140. We celebrated **Theo Dillaha's** career, thanked him for his many contributions, and wished him every happiness as he retired on September 30, 2013. We hired two new faculty members, **Zachary Easton** and **Venkataramana (Sri) Sridhar**, during 2013 as part of a Water Cluster in the College of Agriculture and Life Sciences (CALS) and College of Natural Resources and Environment (CNRE). Zach moved from the Eastern Shore Agricultural Research and Extension Center to join us on campus in August. Sri is joining us in January 2014; prior to joining us, he was a faculty member at Boise State University. We will provide a profile of Sri in the spring newsletter.

Looking forward to 2014 – we will be hiring a faculty member in biomolecular engineering, a new bioprocess laboratory manager (**Amy Egan** left us to join her new husband in Reno, Nevada), and an undergraduate student support services (advising and recruiting) coordinator. We will be implementing the departmental strategic plan that was approved in 2013. Focus areas for 2014 include promoting the professional devel-

(Continued on page 3)

(Continued from page 1)

hiring a part-time Administrative/Professional (A/P) faculty member dedicated to undergraduate student advising. The BSE Student Services Coordinator will work closely with students to develop individual course plans, to monitor their progress towards completion of their degree, and will refer students to appropriate BSE faculty members for career advising. We are currently in the process of filling this position and look forward to introducing our new student coordinator in the next newsletter.

To maintain small laboratory class sizes, the department has increased the number of laboratory sections for Introduction to BSE (BSE 2004) and Unit Operations (BSE 3524). Additionally, to provide students with unique opportunities to develop career-specific skills during their undergraduate career, two new senior-level BSE electives were introduced this

academic year. The 3-credit laboratory course Field Methods in Hydrology (BSE 4224), taught this fall by **Durelle Scott**, BSE assistant professor, introduces students to techniques for measuring surface and subsurface hydrologic processes, as well as strategies for sampling and testing the quality of surface, ground, and soil pore water. In spring, **Justin Barone**, BSE associate professor, will teach the 3-credit course Industrial Biopolymers (BSE 4644), which covers topics such as the synthesis, production, biodegradation, and life cycle of biobased polymers, as well as polymer structure and properties relationships. These electives provide students with more options to focus their undergraduate education in watershed management or sustainable biomaterials, and to gain knowledge and skills that will render them even more competitive when seeking employment. ■

BSE Advisory Board Members 2013-2014

Amy Alber

Frito-Lay, Inc.
Lynchburg, Virginia

Clifton Bell, P.E. (Vice-Chair)

Brown and Caldwell
Virginia Beach, Virginia

Matthew Dickson (Chair)

MedImmune, Inc.
Gaithersburg, Maryland

J. Michael Flagg, P.E.

Hanover County Public Works
Hanover, Virginia

Dale Lehman, P.E.

URS Corporation
Germantown, Maryland

Kumar Mallikarjunan (Faculty)

Biological Systems Engineering
Virginia Tech

Angela Parrish, P.E.

USDA Forest Service
Roanoke, Virginia

Farzaneh Rezaei

Novozymes Biologicals, Inc.
Salem, Virginia

Kelly Ramsey, P.E. (NRCS Liaison)

USDA - Natural Resources
Conservation Service
Richmond, Virginia

Andy Southerly

Cargill Meat Solutions
Wichita, Kansas

Kevin Tweedy, P.E.

Ecosystem Planning and Restoration,
LLC
Cary, North Carolina

Mary Leigh Wolfe (Department Head)

Biological Systems Engineering
Virginia Tech

Visit our website:

<http://www.bse.vt.edu/>

(Continued from page 2)

opment of graduate students, continuing to grow a diverse portfolio of funded research, increasing the visibility of our undergraduate program, and increasing the audiences and formats for extension and outreach programming.

Best wishes for a wonderful 2014! Please visit us in Seitz Hall when you are in Blacksburg (we will be glad to take you on a tour of HABB1, too).

Sincerely,

Mary Leigh Wolfe

Valued Contributors to BSE (5/1/13 - 12/15/13)

The BSE faculty, staff and students would like to thank our alumni, friends, and organizations who have generously supported the department through their gifts and donations. Please contact the department if your name has been omitted as we want to make sure that we have recognized all our donors (barbt@vt.edu, mlwolfe@vt.edu). Your contributions are used to provide student scholarships, purchase teaching laboratory equipment, aid in recruitment of outstanding graduate students, enable students to participate in special projects both domestically and internationally, and allow students to attend professional conferences. Activities that we would like to add or expand through the generous contributions of our alumni and friends include senior design project fabrication and a Distinguished Lecture Series.

Butler, Amy
Collins, Eldridge
Flagg, J. Michael
Hale, Edward
Johnson, Rachel
Leach, Charles
Mangili, Nicholas
Perumpral, John and Shalini
Powers, David
Prince, George
Tonn, Gina
Trykowski, Tom
Wells, Donald
Wills, Larry
Yagow, Eugene

BSE Advisory Board

The BSE Advisory Board is composed of professionals representing private industry, academia, and government agencies who provide feedback and oversight of the BSE teaching and research programs. Members of the Board are volunteers who do not receive any monetary compensation for their service. In each newsletter, we highlight the background and activities of one of the BSE Advisory Board members.

Andy Southerly received a BS degree in Agricultural Engineering (now BSE) from Virginia Tech in 1983, and an MBA from the University of Arkansas – Little Rock. He began his career with Cargill, Inc.'s Poultry Products Division in Jacksonville, FL as an engineering trainee. Currently in the position of VP - Supply Chain Management for the Cargill Value Added Meats business unit, Southerly's 30 year career with Cargill has included a variety of roles and experiences in the meat and poultry industry including:



- Chicken processing in Florida – projects included installation of the country's first automated chicken cutting and packaging system for Quick Service Restaurants (QSR)
- Egg further processing in Minnesota – projects included automation of diced egg and cooked omelet production
- Chicken further processing in Georgia – operation of a chicken nugget plant serving the largest QSR in the US
- Turkey further processing in Arkansas – plant manager of a turkey deboning and cooked further processing operation
- Turkey processing in Missouri – general management of a vertically integrated turkey operation
- Turkey general management in Arkansas – leadership of Cargill's turkey plant operations
- Operations management in Kansas – coordinated plant operations for Cargill's international poultry businesses in Brazil, Central America, UK and Thailand
- Engineering leadership in Kansas – for Cargill's US turkey and cooked meats business
- Supply Chain Management in Kansas – for Cargill's US turkey and cooked meats business

Currently serving his first term as an Advisory Board member for BSE, Southerly is involved with Virginia Tech to recruit engineers for Cargill's meat businesses to fill both intern and associate roles. Additionally, Cargill is sponsoring a Senior Design Project this school year.

Andy and his wife Gay have two daughters and reside in Wichita, KS. They look forward to every opportunity to return to Virginia to visit family and friends, and to take in the beautiful scenery of Virginia and the Virginia Tech campus. ■



[BSE Moves to HABB1!]

Look for full story and pictures in the spring edition of our BSE newsletter!

BSE Student News

ASABE Student Branch News

This semester has been a busy one for the ASABE Chapter at Virginia Tech! Regular chapter meetings have been full of invited speakers, including one of our very own undergraduates, **Lindsay Carr** (junior), who spoke about her experience in Africa with Community Water Systems, and Cathy Hill, Graduate Program Coordinator in the Department of Mechanical Engineering, who provided the group with advice and tips about the process of applying for MS programs.

The annual Pig Roast was a fantastic success with an enormous amount of food, friends, and fun. It was such a great time that we are hoping to have one next semester as well! The very next day there was an opportunity for students to volunteer with Habitat for Humanity of Roanoke where ASABEs gained some handy skills by hanging dry wall all day. A relationship with Sinkland Farms is in the works, where ASABE was given the chance to volunteer during their annual pumpkin festival at the end of October (we indulged in some stress relief during one ASABE meeting by carving pumpkins to decorate the Julia Pryde garden—pictured on front cover). We will soon be starting an educational outreach program with the Biochemistry Club where we will travel to local elementary schools to teach children about science and sustainability through experiments and demonstrations. More events are being added to the calendar every day, so stay tuned!

Sarah Nash, ASABE Chapter President (2013-2014)



Above: Habitat for Humanity volunteers :
Front (l-r): Katie Spruill, Alex Guendl, Sara Gokturk, Cassie Conway, and a fellow volunteer
Back (l-r): Lindsay Carr, Joe Roeske, Sarah Nash, and Chris Balian

Below: The annual Pig Roast



Graduate Student Awards

Emily Lassiter, BSE PhD student, received a \$5,000 grant from the Virginia Water Resources Center for her project: *Optimization of denitrification and mitigation of greenhouse gas emission in a denitrifying bioreactor*. This research explores the potential to expand functionality of these systems to include phosphorus and greenhouse gas mitigation in addition to nitrogen removal from agricultural drainage.

Kelsey Pieper, BSE PhD student, received second place with a \$500 cash award in the Virginia American Water Works Association (AWWA) graduate scholarship competition, based on an essay she wrote titled "Water, taken in moderation, cannot hurt anybody" - Mark Twain. Her essay explores private drinking water and her work with the Virginia Household Water Quality Program (VAHWQP).

Spring 2013 Dean's List

Congratulations to the BSE undergraduate students who made the Dean's List in the spring 2013 semester. Undergraduate students must attempt at least 12 credit hours graded on the A-F option and earn a 3.4 grade point average (on a 4.0 scale) during the spring or fall semester to be awarded Virginia Tech Dean's List status.

BSE Freshmen (in spring 2013)

Alyssa Huntington
Carolyn Mottley
Kindell Schmitt
Joseph Stevens

BSE Sophomores (in spring 2013)

Michele Anderson
Christopher Balian
Jacob Cantor
Lindsay Carr
Dylan Cooper
Daniel Flannery
Emily Hilburger
Sasha Howes
Ryan Johnson
Daniel Logsdon
Anish Luthra
Manuel Martinez Salgado
Austin Moon
Victoria Nystrom
Maryjoe Rice
Charles Roco
Scott-Eugene Saverot
Michael Scimeca
Xunuo Shen
Nancy Stevenson
Jordan Wetzig

BSE Juniors (in spring 2013)

Jason Arze
Mitchell Dillon
Theresa Garwood
David Gong
Joshua Gozum
Kinsey Hoffman
Meghan Laporta
Travis Moore
Sarah Nash
Cassidy Owen
Brian Shenk
Lauren Smith
Michael Swartz

(Continued on page 5)

(Continued from page 4)

Aishwarya Venkat

BSE Seniors (in spring 2013)

William Carswell

Catherine Colandro

Margaret Delany

Jaclyn Einstein

Adam Hise

Parker Lee

David McCann

Bradley Morrison

Aneela Mousam

Daniel Neighbors

Sarah Norton

Stefanie Pagano

Kayla Reidenbach

Jeffrey Smith

Angela Stires

Nicole Szanyi

Caroline Tuck

Lory Willard

ASABE Award Winners

Aaron Estep, David McCann, and Brian Parkhurst, all May 2013 BSE graduates, competed in the G.B. Gunlogson Open Environmental Design Competition with their Comprehensive Design Project: North River Restoration at Natural Chimneys Park. The purpose of the competition is to encourage undergradu-



Brian Parkhurst, David McCann, and Aaron Estep

ate students to participate in the design of a relevant engineering project and to provide an arena of professional competition for environmentally and biologically related design projects. The team finished second in the written phase of the competition and second in the oral presentation phase of the competition that took place at the ASABE Annual International Meeting in Kansas City in July. ■

GSO (Graduate Student Organization)

Fall 2013 has been a busy semester in the BSE department. GSO officers **Nick Cook** (President), **Stephanie Houston** (L&W Vice President), **Devin Ridgley** (BP Vice President), **Winfred Mbungu** (Secretary), and **Hehuan Liao**



BSE students hike the Cascades.

(Treasurer) provided support for our new graduate students and organized activities for BSE students – sometimes even grad students need to relax! Events this fall included a hike to the Cascades, the return of the BSE Halloween party, and as always, the weekly Happy Hour for BSE students, faculty, and staff.

As you can see, everyone had a great time on the hike! The Halloween party was also a great success with tons of

delicious treats and games like Pumpkin Bocce, cornhole, and an intense round of Jenga. A big thank you is definitely in order for **Stephanie Houston**, who was the impetus behind the event and a big contributor to its success. GSO looks forward to continuing its support of the BSE graduate student body during finals and Spring 2014, where many more fun events await us!

Nick Cook, GSO President (2013-2014)

Alpha Epsilon (BSE honor society)

For the second consecutive year (2012 & 2013), the Virginia Eta Chapter of Alpha Epsilon received the American Society of Agricultural and Biological Systems Engineering's Most Outstanding Chapter Award. This award is based on criteria such as membership and educational and professional activities. This year, fourteen new members were initiated at the Spring Banquet in May 2013.



The "Veggie Share" program hosted by AE, is now coordinated online (<http://gladeroadgrowing.csasignup.com>), and provides convenient access to fresh produce to all in Seitz Hall, as well as regular brisk business for our partners (Alpha Epsilon alumni!) at the Glade Road farm.

In collaboration with GSO, a hike to the Cascades was organized earlier in September. On-going collaborative activities with GSO also include the BSE Halloween party and a volunteer opportunity for clean-up at the Price's Fork Research Site.

Other events for this fall semester included a canned food drive for Thanksgiving and winter clothes drive as part of our service activities. To honor our members at graduation, starting this spring, members will have the choice of ordering honor cords in the honorary colors black and gold to adorn their gowns for the "big day".

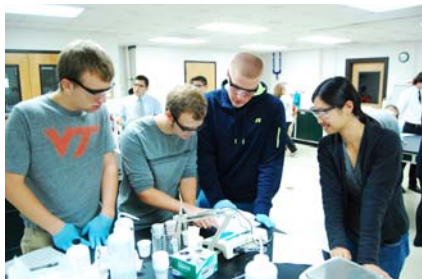
Theresah Korbich Zu, AE President (2013-2014)



Prices Fork Research Site clean-up volunteers: (l-r) Zongmin Zhao, Winfred Mbungu, Nick Cook, Frank Gillam, Yun Hu, Sampath Karunarathne, Emma Withers

BSE Graduate Students Awarded College Teaching Fellowships

BSE doctoral students **Stephanie Houston** and **Kelsey Pieper** are the recipients of two highly competitive teaching fellowships. Kelsey received a Dean's Teaching Fellowship from the College of Engineering, and Stephanie is a member of the Graduate Teaching Scholars scholarship program in the College of Agriculture and Life Sciences. Both programs are designed to provide doctoral candidates with significant experiences in pedagogical development and classroom teaching prior to pursuing positions in academia upon graduation.



Stephanie Houston (right) directing lab

During the first year of the Dean's Teaching Fellowship, Kelsey served as a teaching assistant for ENGE 1024 (the first year "Engineering Exploration" course); she has since been serving as a teaching assistant in the BSE Thermodynamics and GIS courses. Members of the CALS Graduate Teaching Scholars, like Stephanie, observe a class taught by a professor in their first year, teach half of the class their second year, and then take full instructional responsibility in their third year. Stephanie is currently working with **Dr. Mike Zhang** in the Introduction to BSE course. Both fellowship recipients emphasize how their teaching opportunities have helped them to learn new ways of conveying concepts. Kelsey thinks teaching a course helps her to reinforce what she learned when taking that class. As a Teaching Scholar, Stephanie feels her weekly meetings with graduate students in the program are a great way to

collaborate and share different teaching techniques. Both fellows find that the most rewarding part of teaching is the opportunity to help undergraduate students reach that "light bulb" moment when the course material starts to make sense and find it refreshing to be able to connect with mentoring professors regarding topics beyond research.

For other graduate students interested in participating in a teaching program, Kelsey's advice is to "go for it" - it is not only rewarding on a personal level of honing public speaking and organization skills, but it is also an opportunity to give back to the department and pay homage to your educational roots. When applying for a teaching position, Stephanie says the most important thing is enthusiasm. If a prospective graduate student enjoys teaching and looks forward to the challenges and rewards that come with it, that winning attitude will shine through in their application!■



Kelsey Pieper (center) during office hours

BSE Student Summer Internships

Many of our undergraduates choose to use these months away from the university to gain career experience via a wide variety of internships. These positions allow students to gain practical insights into their future choice of work, begin building their career network, and add meaningful experience to their resumes.

Sophomore **Sofia Davila** spent her summer as an intern at NASA-Langley in Hampton, Virginia. Her work focused on exploring the effects of computer-based attention and working memory training with embedded neurofeedback technology on cognitive performance. This work is aimed at reducing pilot error and improving pilot training for high-stress situations. Sofia was prepared by the many group design and lab projects during her freshman year to immerse herself in this project, which required considerable organizational and people skills in addition to technical knowledge.



BSE senior and ASABE Student Branch president **Sarah Nash** spent her summer in Maryland, working for the Washington Suburban Sanitary Commission (WSSC), where she assisted a principal engineer in developing 55 miles of project plans for the Distribution Water Main Replacement Program. Sarah says she was well-prepared by her BSE classes in AutoCAD and GIS to complete this project. Her advice for future interns eager to succeed in their position is to "know when to speak up and when to just listen, and always produce your best work."

Fellow BSE senior **Meghan Laporta** also spent her summer focused on urban infrastructure serving as an intern with DC Water. Over the summer she collected and analyzed wastewater samples to determine sulfide concentrations, performed asset management inventory of DC Water's Main Sewerage Pumping Sta-

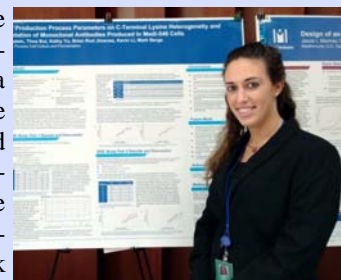
(Continued on page 7)



(Continued from page 6)

tion, researched the remaining life of sewer pipes, and drove a skimmer boat on the Potomac! Meghan notes that she was well-prepared by the BSE curriculum for this position; according to her boss, the wet lab experience she gained in BSE 2004 and BSE 3334 earned her the job.

BSE Seniors **Jackie Einstein** and **Michael Swartz** both interned during the summer of 2013 at MedImmune in Maryland. Jackie says her undergraduate lab classes helped her be prepared for her work growing hybridoma cells to observe the quality of monoclonal antibody production, and that she gained an appreciation for the amount of collaboration and time required for the success of any single project. Though employed by the same company, Mike's responsibilities were very different. As part of the Supply Chain Operations group, Mike observed the manufacturing floor and conducted time studies and interviews to try to reduce production delays and improve company profitability. Mike advises future interns, "Don't be afraid to ask questions! - there were dozens of people that wanted to help me." ■



Congratulations to 14 BSE Graduate Students Who Completed Their Degrees

MS Degrees Completed Spring/Summer 2013

Elizabeth Claunch (Advisor: **J. Barone**), *Application of Functional Amyloids in Morphological Control and in Self-assembled Composites*. Elizabeth is seeking employment in the field of biobased materials.

Michelle Colandro (Advisor: **M. Zhang**), *Baculovirus Stability in Serum-free Lyophilized and Wet Storage Conditions*. Michelle is a System Integration Analyst with Accenture Federal.

Janell (Henry) Weiss (Advisor: **T. Thompson**), *Flow Estimation for Stream Restoration and Wetland Projects in Ungaged Watersheds Using Continuous Simulation Modeling*. Janell is a conservation technician with the Mercer County Soil & Water Conservation District in Celina, OH.

Eric Neuhaus (Advisor: **T. Thompson**), *Evaluation of a Water Budget Model for Use in Wetland Design*. Eric is an Environmental Designer for Wildlands Engineering, Inc. in Charlotte, NC.

Stephen Nimitz (Advisor: **K. Mallikarjunan**), *Application of Far Infrared Radiation and Ethanol Vapor as Alternative Treatment Methods for Reduction of Salmonella Enterica Tennessee in Dried, Ground Spices*. Stephen is a Contract Process Engineer II at Merck in Elkton, VA.

Caitlin Rippner (Advisor: **J. Barone**), *Effect of De Novo Peptide Properties on Self-assembling Large Amyloid Fibers*. Caitlin is working for Marrone Bio Innovations in Davis, CA.

Tamara Smith (Advisor: **L.A. Krometis**), *Correlations Between Fecal Indicator Bacteria Prevalence and Demographic Data in Private Water Supplies in Virginia*. Tammy is in Florida and is seeking employment in environmental engineering.

Ambika Mosale Vankatesh Murthy (Advisor: **M. Zhang**), *Virus-like Particles as a Vaccine Against Porcine Reproductive and Respiratory Syndrome Virus*. Ambika has returned to her family in India.

PhD Degrees Completed Spring 2013

Isaac Alukwe (Advisor: **T. Dillaha**), *Evaluating the Effects of Watershed Land Use Distribution and BMP Data on HSPF Water Quality Predictions*. Isaac is a lecturer at the University of Nairobi in the Department of Environmental and Biosystems Engineering. Isaac is also an associate faculty at Mount Kenya University in Thika, Kenya.

Wei Huang (Advisor: **M. Zhang**), *Assembly, Characterization and Evaluation of a 3rd Generation Nanoparticle Based Drug Carrier for Metastatic Breast Cancer Treatment*. Wei is a Postdoctoral Associate at Baylor College of Medicine in Houston, TX.

Suwan Myung (Advisor: **P. Zhang**), *Cell-Free Biosystems Comprised of Synthetic Enzymatic Pathways: Development of Building Blocks, Immobilization of Enzymes, Stabilization of Cascade Enzymes, and Generation of Hydrogen*. Suwan is working for Lotte Chemical Corporation in South Korea.

Michael Nassry (Advisor: **D. Scott**), *In-Stream Reactivity of Dissolved Organic Matter and Nutrients in Proglacial Watersheds*. Mike is a postdoctoral research associate with Riparia (formerly the Penn State Cooperative Wetlands Center) at Penn State.

Sara Namanda Senyondo (Advisor: **J. Ogejo**), *Mitigation of Ammonia Emissions from Broiler Houses Using a Biodegradable Litter Amendment*. Sara is working in the Water Quality Division at the Oklahoma Department of Environmental Quality in Oklahoma City.

Zhigunag Zhu (Advisor: **P. Zhang**), *Enzymatic Fuel Cells via Synthetic Pathway Biotransformation*. Zhiguang is a senior research scientist and principle investigator at Cell Free Bioinnovations Inc. in Blacksburg, VA.



BSE Hosts Seven European Exchange Students

The BSE Department is hosting seven students this semester from three European universities through the Trans-Atlantic Biosystems Engineering Curriculum and Mobility program. The students are **Maite Jurado Jiménez**, **Francisco (Paco) José López García**, **Paloma Nieto Cachinero**, and **José Olalla Pérez** from the Universidad Politécnica de Madrid (Spain); **Alexandros Mikroulis** and **Christos Christofilopoulos** from the Agricultural University of Athens (Greece); and **Jack Browne** from University College Dublin (Ireland).

The students are taking a variety of classes based on their individual interests, including Dairy Science, Entomology, Horticulture, Hydrology, Land Use and Environmental Policy, and Biological Systems Engineering Seminar, among others. The students commented on the differences between classes in Europe and the United States. They all agreed that they spend more time in the classroom at their home universities, but have more homework here. Much more weight is generally given to the final exam of each class in Europe, while the classes at VT place less emphasis on the final exam. José says that although the structure of the classes in the States is a little different, he feels like he learns more.



*European exchange students at BSE
(l-r) Christos Christofilopoulos, Maite Jurado
Jiménez, Francisco José López García, José
Olalla Pérez, Paloma Nieto Cachinero, Jack
Browne, Alexandros Mikroulis*

The exchange students are exploring other opportunities outside of class. Maite and Paloma have joined the Women's Rugby Club; Alexandros continues to enjoy skydiving while in the United States. Some of the students have used their study abroad semester to explore other parts of the country as well. José made a trip to visit Philadelphia this semester, and Paco has traveled to the Outer Banks and Roanoke. Alexandros has also been to Roanoke, as well as Charlotte and Washington DC.

Overall, each student stated that the opportunity to study in another country has been an invaluable experience to grow academically and professionally. Jack says the exchange program is a great way to learn his major from a different perspective. The students as a group agree that the BSE department has been welcoming and supportive throughout their transition into American collegiate life. All but Alexandros will be with us for the spring 2014 semester as well. ■

BSE Students Receive Scholarships

Each year the BSE department offers a number of scholarships to undergraduate students made possible through the continuing generosity of our alumni and friends. Scholarship awardees for the 2013-2014 academic year are as follows:

J. Lawrence & Lucille G. Calhoun

Alexandra Barnes

Dylan Cooper

Kelly Ferguson

Daniel Flannery

Sasha Howes

Yuya Ishizuka

Tad Kolterman

Valeria Llanos

Anish Luthra

Gary Mitchell

Travis Moore

Sarah Nash

Cassidy Owen

MaryJoe Rice

Michael Scimeca

Jenna Sharkey

Joseph Stevens

Nancy Stevenson

Aidan Suiter

Aishwarya Venkat

Jordan Wetzig

Jiaming Yao

(Continued on page 9)

BSE Education Abroad in Brazil

Nine BSE students joined **Conrad Heatwole**, BSE associate professor, for a two-week study-abroad program in Brazil this summer focusing on "Energy, Water, and Food." Classes and field trips with Brazilian students from two partner universities explored world use of both hydrocarbon and "green" energy sources and explored different perspectives and assumptions on climate impacts and the energy future. Brazil is self-sufficient in energy, with an energy portfolio including fossil fuels, hydropower, biofuels, and wind energy. The group visited the spectacular Iguazu Falls (a UNESCO world heritage site) and the nearby Itaipu dam, the largest hydro-electricity producer in the world. At a sugarcane/ethanol plant, they saw the complete production cycle: planting, harvesting, handling, processing, fermenting, refining, with utilization of all waste streams and byproducts. In Brazil, ethanol production from sugarcane provides an 8:1 ratio of energy out to energy in, in contrast to the approximately 1:1 ratio (no net energy gain) of producing ethanol from corn in the US.



The highlights of the trip were the cultural experiences: wonderful foods, new landscapes, Iguazu Falls, a day to see the beaches and Christ statue of Rio, a barbecue (churrasco) with traditional music and dancing, sunrise on the beach at Itaunas state park, pastels and a game of boccia in a rural "Italian" village on a Friday night, and making friends with the Brazilian students. ■

(Continued from page 8)

Peter H. Fitzgerald
Cassidy Owen

John B. Greiner
Michele Anderson
Haley Fuller
Alexandria Gruendl

Jim & Elizabeth Lillard
Jacob Cantor

John Philip Mason
MaryJoe Rice

B. L. Parsons
Dave Gong
Travis Moore

Earl T. Swink, Jr.
Dylan Cooper

George C. Vaughan
Ben Fox
Christopher Gilson
Sasha Howes
Austin Moon
Carloyn Mottley
Sarah Nash
Kindell Schmitt
Brian Shenk
Nancy Stevenson
Jiaming Yao

**Thinking about
grad school...**

**Or know of someone
who is?**

BSE is accepting applications

Application due date:
Spring 2015: October 1, 2014

For more information, please
visit: www.bse.vt.edu/apply

New BSE Graduate Students (Summer/Fall 2013)

Graduate Student (Advisor)

MS Students

Cameron Bell (Sample)

BS Civil Engineering, Oregon Institute of Technology, 2013

Martin Davis (Easton)

AS General Science, Louisburg College, 2005

BS Biological Sciences, Virginia Tech, 2007

Denis Kiobia (Mallikarjunan)

BS Agricultural Engineering, Sokoine Univ. of Agriculture, Tanzania, 2010

David McCann (Scott)

BS Biological Systems Engineering, Virginia Tech, 2013

Wesley Tse (Hession/Benham)

BS Civil Engineering, University of Maryland, 2010

James Wade (Easton)

BS Biological Sciences, University of Virginia, 2009

BS Biological Systems Engineering, Virginia Tech, 2012

Lory Willard (Thompson/Krometis)

BS Biological Systems Engineering, Virginia Tech, 2013

Ruihua Zhang (Ruder)

BS Biochemical Engineering, Beijing Institute of Technology, China, 2013

PHD Students

Akinrotimi Akinola (Thompson)

BS Agricultural Engineering, Obafemi Awolowo Univ., Nigeria, 2008

MEng Mechanical Engineering, City College of New York, 2013

Chelsea Corkins (Thompson)

BS Environmental Engineering, Kansas State University, 2013

MS Environmental Engineering, Kansas State University, 2013

Clara Darko (Mallikarjunan)

BS Agricultural Engineering, Kwame Nkrumah Univ. of Science & Tech,
Ghana, 2003

MS Agricultural Engineering, Kwame Nkrumah Univ. of Science & Tech,
Ghana, 2011

MBA Management, Coventry University, UK, 2013

Frank Gillam (M. Zhang)

BS Chemistry, North Carolina State University, 2006

MS Nutrition, North Carolina State University, 2012

Sampath Karunarathne (Ogejo)

BS Agricultural Engineering, Univ. of Peradeniya, Sri Lanka, 2007

MS Biological & Agricultural Engineering, University of Maine, 2011

Sung-Ho Paek (Ruder)

BS Agricultural Engineering, Dongguk University, S. Korea, 2010

MEng Biomedical Engineering, Korea University, S. Korea, 2012

Imen Tanniche (Senger)

BS Bioengineering, National Engineering School of Sfax (ENIS), Tunisia,
2010

MS Engineering Science, National Engineering School of Sfax (ENIS),
Tunisia, 2012

MS Biological Systems Engineering, Virginia Tech, 2013

Daniel Wolozny (Ruder)

BS Chemical and Biomolecular Engineering, Johns Hopkins University,
2012

MS Chemical and Biomolecular Engineering, Johns Hopkins University,
2013

Zongmin Zhao (M. Zhang)

BS Bioengineering, East China University of Science and Technology,
China, 2013

New Grad Student Highlights

Each semester, a new cohort of excited researchers arrive in Seitz Hall ready to pursue MS and PhD degrees. Here we profile just a few of the many talented young minds beginning BSE graduate studies this Fall (for a complete list, see page 9)

After finishing both her undergraduate and MS degrees at Kansas State University, **Chelsea Corkins** decided to expand her academic experience through pursuit of a doctorate degree at another university. Her interest in Virginia Tech began following a recommendation by her former advisor, and after attending the recruitment weekend she was certain the BSE department would be an excellent “new home”. Although she says her initial move was a bit of a “shock” after five years in Kansas, she notes that college towns – including Blacksburg, VA and Manhattan, KS – can be very similar regardless of specific geographic locale. Her research under **Dr. Tess Thompson** involves examining biofilms and their role in stream systems. She is also a trainee in MultiSteps, a new NSF-sponsored multidisciplinary research program that aims to integrate the fields of biological sciences and engineering. After finishing her graduate studies, she is interested in becoming a professor.



David McCann is a new graduate student who completed his undergraduate degree at Virginia Tech last spring. The biggest draw for him for finishing his degree at Tech is the 5-year BS/MS program which enabled him to begin his graduate program during his senior year. His research, advised by **Dr. Durelle Scott**, looks at floodplain connectivity. Through the use of models and GIS software, he seeks to better understand how much land area is inundated during flood events. After finishing his MS degree in BSE, his plans are to go into ministry and provide consulting on water system construction in developing countries. During his graduate program David hopes to increase his analytical skill-set with the practical tools he uses in water resources (MATLAB, Python scripting, GIS), so he can apply what he has learned in real life situations.

Zongmin Zhao is an international doctoral graduate student who obtained his BS degree from East China University of Science and Technology. Recommendations from friends and Virginia Tech’s reputation as a top tier research university encouraged him to pursue his PhD in BSE. Studying abroad has been a wonderful experience for Zongmin so far, and he enjoys the beautiful Blacksburg scenery. Under the supervision of **Dr. Mike Zhang**, Zongmin is conducting research on nanoparticle mediated cancer drug delivery. He believes his research focus is a promising field and hopes to make notable advancements in the next few years. During his stay in the United States, Zongmin's goals include visiting as many places as possible - this semester’s goal is to visit New York City. ■

BSE Students at Summer Research Experience for Undergraduates (REU) Summer Programs

Many BSE undergraduates decide to spend their summers immersed in research either through student research programs or one-on-one with a faculty and graduate student mentor. In addition to juniors **Nolan Shen** and **Dylan Cooper**, who participated in National Science Foundation REU programs hosted by our BSE department (see p. 11), several of our undergraduates participated in REU programs at other sites in North (and South!) America. Junior **Charles Roco** spent his summer in Philadelphia at an REU site hosted by the University of Pennsylvania’s Materials Science and Engineering Department and the Perelman School of Medicine. Over the summer, Charles performed atomic force microscopy (AFM) in conjunction with total internal reflection fluorescence microscopy (TIRFM) to correlate cellular viscoelasticity to health at the nanoscale. BSE junior **Sasha Howes** was a fellow in the University of Maine’s “Explore It! Building the Next Generation of Sustainable Forest Bioproduct Researchers”. Sasha’s work focused on completing a Life Cycle Assessment for torrefied wood pellets made by a company in Maine, Thermogen, and involved a week in Concepción, Chile to visit wood processing plants and learn more about local university efforts in Life Cycle Assessment.



Charles Roco working on a side project, building a server computer to meet lab requirements

BSE undergraduates also participated in different undergraduate research programs here in Blacksburg. Senior **Tori Nelson** spent her summer as a “Sciener” within a program aimed at increasing collaboration between engineers and scientists. She worked at the Rhizosphere and Soil Microbial Ecology Lab in Latham Hall to identify and quantify microbial biomarkers (amino sugars) during soil development. **Ben Fox**, also a BSE senior, has spent two summers working within the Summer Undergraduate Research Fellowships (SURF) Program at Virginia Tech, where he works culturing *Histophilus somni* strains for sensitivity testing on an ionic self-assembled multilayers (ISAM) fiber. ■

BSE Faculty and Staff News

BSE Welcomes Zach Easton to our Blacksburg VT Faculty

The BSE Department is excited to welcome **Zachary “Zach” Easton** to Seitz Hall this fall as an assistant professor. Prior to joining the faculty at the Blacksburg campus, Easton served for two years as an assistant professor at the Virginia Tech Eastern Shore Agricultural Research and Extension Center in Painter, VA.

The general focus of Easton’s program is the application of watershed modeling to improve natural resources management, and his diverse ongoing efforts quite literally span the globe. Over the past five years, Easton has conducted several projects in Ethiopia focused on improving land management in the Nile River Basin, and on developing university programs focused on water and natural resources management.

Just recently, Easton was awarded a USDA/NIFA Conservation Innovation Grant to develop technology to reduce nitrogen and phosphorus transfers in agricultural drainage networks in the United States. This project seeks to integrate field and drainage management practices (e.g. gypsum curtains, biofilter reactors) to develop, demonstrate, and test a comprehensive approach to drainage management that could be readily adopted by producers. As part of a consortium of eight universities and federal labs, Easton was also recently awarded a National Science Foundation (NSF) Earth Cube grant to develop the next generation of data brokering in the geosciences. EarthCube (EC) is the NSF GEO flagship initiative designed to create a new generation of information infrastructure to guide interdisciplinary collaboration investigating the interactions of humans and the natural environment. This effort aims to transform the research process through the development of a community-guided cyberinfrastructure to integrate information and data across the geosciences and beyond.



Easton is assisted in his numerous research and outreach efforts by post-doctoral associate **Dan Fuka** and an excellent group of graduate students, including **Emily Lassiter, Mark Rogers, Martin Davis, James Wade, and Nick Smith.**

In addition to his many early successes in establishing his research/extension program, Zach has already proven himself an invaluable addition to social life in BSE, as he hosted the annual departmental Pig Roast at his home in Blacksburg this October. Zach, his wife Nicole, and daughters Isabella and Madelyn proved excellent hosts to the approximately 70 faculty, staff, and students who arrived ready to share roast pig and potluck treats, and to enjoy fellowship and a beautiful fall evening in the mountains. ■

NSF-REUs at Biological Systems Engineering



This summer the BSE Department again hosted two National Science Foundation Research Experiences for Undergraduates (REU) sites. The Bioprocessing REU’s (Director: **Justin Barone**, BSE associate professor) twelve fellows included: Allison Bakovic (Milwaukee College of Engineering), Roberto Castro (Texas A&M—Kingsville), Emily Harker (Case Western Reserve Univ.), Heather Harshbarger (Univ. of Maryland at Baltimore County), Julianne Jorgensen (Olin College), Carissa Kloncz (Univ. of Minnesota at Duluth), Caitlin Landin (Univ. of Toledo), Tiernan Mendes (Syracuse Univ.), Sydney Shaouy (Univ. of Florida), **Nolan Shen** (Virginia Tech), Matther Shirley (Univ. of Maryland at Baltimore County), and Matraca Steen (North Dakota State Univ.).

The “Dynamics of Water and Societal Systems” REU (Directors: **Cully Hession**, BSE professor, and **Leigh-Anne Krometis**, BSE assistant professor) located at the Virginia Tech SIREAM Lab welcomed ten fellows from eight universities: Celena Alford (North Carolina Agricultural and Technical Univ.), Elizabeth Andruszkiewicz (Univ. of Notre Dame), Romina Benitez (Virginia Tech), Ian Bick (Univ. at Buffalo), **Dylan Cooper** (Virginia Tech), Breanna Green (Texas A&M Univ.), Carter Gresham (Virginia Tech), Kevin Libuit (James Madison Univ.), Erin Schaberg (Univ. of North Carolina at Chapel Hill), and Emily Von Wagoner (Univ. of Vermont).

For more information on these programs, you can check out their websites:

<http://www.bse.vt.edu/site/reu-bioprocess>

<http://www.bse.vt.edu/site/reu-streamlab>



Theo Dillaha Honored with Emeritus Status

Theo Dillaha, BSE professor, has been conferred the title of "Professor Emeritus" by the Virginia Tech Board of Visitors. The title of emeritus is conferred on retired professors who have given exemplary service to the university and who are specially recommended to the board of visitors by the Virginia Tech president. Nominated individuals who are approved by the board of visitors receive an emeritus certificate from the university.

With 30 years of service at Virginia Tech, Dillaha advanced a systems-based approach to management of natural resources through his research in the areas of watershed assessment and management, soil and water conservation engineering, and nonpoint source pollution control. During his career, he authored or co-authored over 250 peer-reviewed journal articles, research bulletins, and other publications and reports. His leadership of the Sustainable Agriculture and Natural Resources Management Collaborative Research Support Program and the Rebuilding Higher Education in Agriculture in the South Sudan Project contributed significantly to international agricultural development and education.



Theo Dillaha and his wife Rebecca Caldwell at the retirement celebration held in his honor at the Inn at Virginia Tech & Skelton Conference Center in November 2013

Dillaha supported scientific research in his field as a conference organizer, advisory panel member, and frequent reviewer for national and international organizations, journals, and funding agencies. He held leadership positions in several professional organizations, including president and board member of the Soil and Water Conservation Society. He is active in the Virginia Tech chapter of Engineers Without Borders, serving as a faculty advisor and project leader on students' projects in the Dominican Republic, Guatemala, Haiti, and Bolivia. He received several professional honors and awards during his career, including the Virginia Tech Alumni Award for Outreach Excellence, a Fulbright Fellowship, the Wesley W. Horner Award from the American Society of Civil Engineers, and a Fellow Award from the Soil and Water Conservation Society.

Dillaha received BS and MS degrees from Vanderbilt University and a PhD from Purdue University. ■

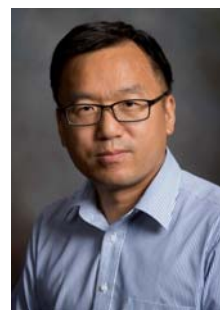
Dillaha received BS and MS degrees from Vanderbilt University and a PhD from Purdue University. ■

Mallikarjunan Receives AITAA Distinguished Award for Academic and Research Excellence



Kumar Mallikarjunan, BSE associate professor, recently received an Asian Institute of Technology Alumni Association (AITAA) Distinguished Award for Academic and Research Excellence. The award was presented at the AITAA annual meeting in Yangon, Myanmar in November 2013. The Award is given in recognition of outstanding professional and technical achievement, distinguished service to the profession or the community at large, and significant contributions to enhancing the reputation of AIT. Mallikarjunan received an ME degree in Agricultural and Food Engineering from AIT in Thailand. ■

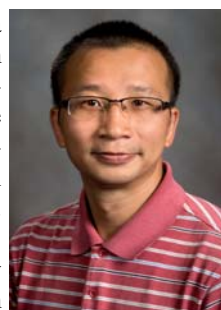
New Visiting Scholars



Keju Jing, a visiting scholar from China who joined the BSE Department in April 2013, is an associate professor in the Department of Chemical and Biochemical Engineering at Xiamen University, in Xiamen, China. He received his BS degree in Agriculture of Biotechnology from Tarim University, his MS degree in Agriculture of Biotechnology from Yunnan Agriculture University, and his PhD degree in Chemical and Biochemical Engineering from Zhejiang University. Jing's research program focuses on advancing the preparation of chiral pharmaceuticals by asymmetric reduction and kinetic resolution with microbial cell or enzyme systems. While at Virginia Tech, Jing is working with **Percival Zhang** (BSE associate professor) in the Biofuels Laboratory on research relating to biomimic factor synthesis. Jing has a four year old daughter, and his personal interests include tennis and table tennis.

He received his BS degree in Agriculture of Biotechnology from Tarim University, his MS degree in Agriculture of Biotechnology from Yunnan Agriculture University, and his PhD degree in Chemical and Biochemical Engineering from Zhejiang University. Jing's research program focuses on advancing the preparation of chiral pharmaceuticals by asymmetric reduction and kinetic resolution with microbial cell or enzyme systems. While at Virginia Tech, Jing is working with **Percival Zhang** (BSE associate professor) in the Biofuels Laboratory on research relating to biomimic factor synthesis. Jing has a four year old daughter, and his personal interests include tennis and table tennis.

Xiaobing Wu, a visiting scholar from China, is an associate professor in the School of Life Sciences at Xiamen University, China. He received his BS degree in Biology Education from Southwest Normal University, his MS degree in Animal Nutrition from Sichuan Agricultural University, and his PhD degree in Biologic Technology from Jiangnan University. Wu's research is focused on hydrogen production from biomass by microbe fermentation and structure-activity relationship of the hydrogenase. While at Virginia Tech, Wu is also working in the Biofuels Laboratory with **Percival Zhang** (BSE associate professor). ■



Wu's research is focused on hydrogen production from biomass by microbe fermentation and structure-activity relationship of the hydrogenase. While at Virginia Tech, Wu is also working in the Biofuels Laboratory with **Percival Zhang** (BSE associate professor). ■

History of Agricultural Engineering at VPI —by Dr. Charles Seitz

While organizing some of the historical records in Seitz Hall during his sabbatical, **Cully Hession**, BSE professor, unearthed a “History of Agricultural Engineering at VPI” by our first department head, Dr. Charles “Chas” Seitz. In the document, Dr. Seitz recounts how his experiences as an extension specialist prompted him to lobby for the creation of a full Agricultural Engineering Department, which produced its first three graduates in 1921. At that time, only five state colleges in the nation offered formal degrees in Agricultural Engineering, and Virginia Tech was the only college east of the Mississippi to have a formal program in the field. As the first department head, Dr. Seitz led or promoted a remarkable number of projects, including rural electrification, the use of surplus WWI explosives to clear new farmland, land drainage efforts, terracing projects to reduce erosion, and the development of new strategies in rural housing. You can read Dr. Seitz’s complete composition on our webpage at: <http://www.bse.vt.edu/about/history/index.html>. More historical documents and photos will be made available in the near future by Dr. Hession.

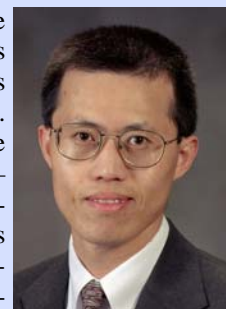


Dr. Charles Seitz (first row, second from left) around the time of this document's composition.

Despite intervening years, Dr. Seitz’s conclusion over 60 years ago still holds true for our profession today: “The past 36 years in the life of agricultural engineering at V.P.I. has been one of progressive development. With the increasing demands and needs for agricultural engineering services, the staff of the department is confident that the future will see even greater progress and development.” ■

Mike Zhang Promoted to Professor

Chenming (Mike) Zhang was promoted to professor, effective July 25, 2013. Zhang joined the Department of Biological Systems Engineering as an assistant professor in 2001. In 2007, he was granted tenure and promoted to the rank of associate professor. Prior to joining Virginia Tech, Dr. Zhang was a scientist for one year with a biotechnology company after earning his MS (1996—physical and analytical chemistry) and PhD (1999—chemical engineering) degrees from Iowa State University. Prior to his studies in the United States, he received BS and MS degrees in metallurgical physical chemistry from the University of Science and Technology in Beijing, China. He gained four years professional experience as a teacher and as a product manager and engineer working for two companies in China before moving to Iowa in 1993.



Zhang has nationally recognized research and teaching programs focused on bioprocess engineering, with a specific emphasis on pharmaceutical and biotechnology applications. His research program is focused on the development of novel delivery mechanisms to improve the efficacy of vaccines and therapeutics for humans and livestock. Current research involves vaccine development against viral infection and drug addiction, and the development of bio-nanoparticles for targeted drug delivery for cancer treatment. His research program is currently supported by NIH and USDA-NIFA. Zhang is a leader in the BSE teaching program, contributing significantly at both the undergraduate and graduate levels through teaching courses, advising students, and leading continuous improvement efforts. He is the BSE Graduate Program Director. Zhang’s service to the department and profession are exceptional. Colleagues have stated that he is “respected as one of the most congenial and dependable faculty members in the department”. ■

Electronic Noses Aid in Research Efforts

Kumar Mallikarjunan, BSE associate professor, and fellow researchers use electronic noses in two vastly different endeavors: to find prostate cancer cells and to evaluate fruit ripeness. Both applications rely on the electronic nose’s ability to detect biomarkers using algorithms, polymers, and sensors that hone in on irregularities in biological systems.

Capitalizing on the electronic nose’s ability to evaluate biomarkers specific to malignant cells, Mallikarjunan partnered with researchers at the Virginia Tech Carilion School of Medicine and Research Institute to make the detection of prostate cancer more accurate and to make testing less invasive.

Mallikarjunan also works with Bruce Zoecklein, professor emeritus of food science and technology, to evaluate grape ripeness using a handheld device called the Cyranose 320. Pinpointing the moment wine grapes are ready is a guessing game that affects the bottom line of wine sales. The Cyranose 320 analyzes gases to measure ripeness. Advanced pattern recognition algorithms then measure the degree of ripeness.

To read the complete article:

<http://www.vt.edu/spotlight/innovation/2013-12-09-nose/mallikarjunan.html>



Steve Van Sulphin, at left, vineyard manager at Chateau Morrisette in Floyd, VA, talks with Dr. Kumar Mallikarjunan as he demonstrates the electronic nose as a way to test the ripeness of grapes.

BSE Alumni News

Alumni Updates

1990's

Mohammad Al-Smadi (MS '98, PhD '08) is a senior water resources engineer with Schlumberger in Saudi Arabia.

2000's

Rebecca Zeckoski (BS '00, MS '02) currently works as a stormwater applications developer for the City of Charlotte, NC.

Tameshia Ballard (MS '03, PhD '08) is Director of Engineering Education for the College of Engineering and assistant professor with the College of Education at North Carolina State University.

Naresh Budhavaram (PhD '05) is an advanced engineer at Celanese in Narrows, VA. Naresh currently lives in Blacksburg with his wife Prathyusha and their 18 month old son, Purvith. They will soon be relocating to Florence, KY, where Naresh will continue to work for Celanese in the same position.



Chris Holler (BS '05, MS '07) is a postdoctoral fellow at Emory University School of Medicine in Atlanta, GA.

Chris researches neurodegenerative diseases in the Department of Pharmacology. He received his PhD in biochemistry from University of Kentucky in 2012.

Derek Kichula (BS '08) is a senior engineer with Hyde Engineering + Consulting in the greater New York City area.

Ofei Mante (MS '08, PhD '11) and his wife Pearl welcomed their beautiful baby girl Eliana-Monae in August 2013. She was 8 lbs. and 8 oz. She is an active and a happy baby, always beaming with smiles. She likes to listen to Mozart and loves listening to people sing. Ofei says, "She is our little muse and we draw a lot of inspiration from her."



Kevin Richter (BS '09, MS '12) is employed as an R&D research associate with Cargill in the Boston, MA area.

Barb (Crompton) Utley (PhD '09) and her husband Sam are happy to announce their family got a little bit bigger this year. Keller James Utley was born in October 2013. He was 8 lbs. 10 oz. and

21 inches long. Rhett is a great big brother and will be three in January. They are still living in Logan, UT. Barb and Sam are both working at Campbell Scientific. Barb is an application specialist with the Water Resources Market group, and Sam is the communications product manager.



2010's

Josh Arnett (BS '10) and Gina Hayes (BS '10) are happy to announce that they were married in our very own Ag Quad in May 2013. They went to Jamaica for their honeymoon in June, and are currently living in downtown Silver Spring, MD with their cat Pebbles. Josh is still working as an associate project manager at the Washington Suburban Sanitary Commission (WSSC). Gina took a new job last September and now reviews hydrologic and hydraulic models as a Letter of Map Revision (LOMR) engineer (as a FEMA contractor) at Stantec.



**We enjoy hearing your news!
Please take a few moments, fill out the
Information Sheet insert,
and send it to us or email bsealumni@vt.edu**

(Continued on page 15)

(Continued from page 14)

Cami (Johnson) Charonko (MS '10) and her husband John (BS ESM '02, MS EM '05, PhD BMES '09) welcomed baby Kristen to their family in August 2013.

Susan Handley (BS '10) is a design engineer in the Water Resources Department of Johnson, Mirmiran & Thompson, Inc. in Sparks, MD.

Somaye Badiyan (PhD '12) is a post-doctoral research fellow in biotechnology at the University of Michigan.

Katie Ridgeway (BS '12) is an environmental engineer I at Northrop Grumman Corporation in Salt Lake City, UT.

Fangfang Sun (MS '12) and her husband, **Xiaozhou Zhang**, welcomed their new baby daughter Emily in October 2013. Fangfang currently works as a research scientist at Cell-Free Bioinnovations, Inc, working on expression and purification of proteins via high density fermentation. Xiaozhou previously worked as a research scientist in Percival Zhang's lab, and is currently a principal investigator at Gate Fuels, Inc, working on renewable bio-based chemical production. Fangfang, Xiaozhou, Emily, and big brother Daniel are currently living in Blacksburg, VA.



Michelle Halstead (BS '13) is a chemical engineer in the Fluids and Lubrication Technology Lab at Boeing Research and Technology in Seattle, WA.

Taryn Horr (BS '13) is a production supervisor with Maple Leaf Foods Inc. in Roanoke, VA.

Sarah Jennings (BS '13) recently accepted a position with GAI Consultants in Richmond, VA, where she will be an EIT and will work on environmental engineering projects. ■

Newsletter Flashback! Do you recognize yourself in this picture?

The Virginia Tech Student Branch of the American Society of Agricultural Engineers presents The 1983 "AG ENGINEER"



Cully Hession, BSE professor, has been working with Virginia Tech's Digital Imaging and Archiving (DIA) Group to scan and archive more than 1000 historical photographs (1923-1966) and annual reports dating back to 1923. Above is one picture from this collection. If one of these smiling faces is you, please send an email to Barbara Wills (barbt@vt.edu) identify which person you are, send a current picture, and we will send you a BSE hat! ■

Alumni Spotlight

After receiving his PhD in BSE at Virginia Tech in 2011, **Ofei Mante** began his career as a post-doctoral fellow at Utah State University for a period of 3 months before taking a research associate engineer position at Brookhaven National Laboratory (BNL) located in the center of Long Island, New York. Currently, Ofei is an assistant engineer in the Sustainable Energy Technologies Department at BNL. The Brookhaven Lab is known for the design and operation of cutting-edge large-scale facilities for studies in physics, chemistry, biology, medicine, and applied science. Now, Ofei is learning his way around some of the world-class analytical tools such as the National Synchrotron Light Source and the Center for Functional Nanomaterials at BNL.

Thermochemical conversion of biomass is his core research interest with a focus on the design of new catalytic systems for upgrading pyrolysis vapors into hydrocarbon fuels, reforming contaminants in syngas, and converting syngas into mixed alcohols. "My experience so far at BNL has been wonderful." ■

Outside the lab, Ofei spends time with his wife Pearl and their daughter Eliana-Monáe. Visit his personal website at www.ofeimante.com to learn more about his work. ■



Ofei Mante and family

Biological Systems Engineering Department (MC0303)
Seitz Hall, RM 200, Virginia Tech
155 Ag Quad Lane
Blacksburg, VA 24061

Non-Profit Org.
U.S. Postage
PAID
Blacksburg, VA 24060

Permit No. 28

BSE Newsletter Staff

Editor-in-chief

Leigh-Anne Krometis
Email: krometis@vt.edu

Managing Editor

Barbara Wills

Assistant Editor

Karen Kline

Editorial Staff

Wesley Tse

Design & Layout Editor

Barbara Wills

Distribution

Susan Rosebrough

Current Issue Contributors

Conrad Heatwole
Cully Hession
Ofei Mante
Tess Thompson
Andy Southerly



**BSE
Annual
Fall
Picnic &
Expo**

Virginia Tech does not discriminate against employees, students, or applicants on the basis of age, color, disability, gender, national origin, political affiliation, race, religion, sexual orientation, or veteran status. Anyone having questions concerning discrimination should contact the Office for Equity and Access.