

News from Holden Hall

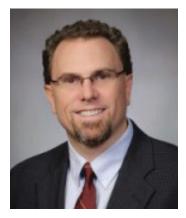
Virginia Tech Department of Mining and Minerals Engineering

Vol. 7, Issue 2 Winter 2016

Letter from the Department

Dr. Erik Westman, Professor and Interim Department Head

In August Dr. Greg Adel stepped down from his role as Department Head, returning to the faculty ranks for the academic year before his planned retirement in the spring. Greg has served in the department since 1982 as a teacher, researcher, advisor, Assistant Department Head, and Department Head. During his leadership as Department Head many of our key metrics reached all-time highs, including number of students in the program and research expenditures. Prior to that, he was the key reason that we were twice recognized within Virginia Tech as a University Exemplary Department, specifically for the outstanding quality of advising. Our students have recognized him with the annual Outstanding Faculty Member Award numerous times. Please join me in thanking Greg for his many meaningful contributions to our Department! With Greg's stepping down, an extensive search is already under way for a new department head. Dr. Jerry Luttrell leads these efforts and serves as the search committee chair.



Dr. Erik Westman

It is my pleasure to let you know that the Governor's budget includes funds for a renovation to Holden Hall. Due to consistent growth, there is a clear need for additional space, not only within our department, but across the College of Engineering. If this budget item is included in the General Assembly budget, then the process will include 12-18 months of developing building plans

followed by several years of construction. We are currently completing the feasibility and conceptual design process and, at this point, the plan is to leave the front, three-story portion of Holden Hall but replace the L-shaped one-story portion with another three stories. A key outcome of the upgrade will be the enlargement and improvement of our teaching laboratories for mineral processing and rock mechanics.

I'm happy to announce that in 2016 we'll be recognizing our Distinguished Alumni at the SME Annual Conference in February and the NSSGA Agg1 Academy and Expo in March rather than at our Scholarship and Awards Banquet in April. This decision was made so that a greater number of alumni can be present when the awardees are recognized. Please be sure to join us at our Alumni Reception during the SME Annual Conference on Tuesday evening, February 23, in Phoenix and/or at NSSGA's Agg1 Expo in Nashville.

Finally, in this issue you will find our new "*Alumni Updates*" feature, where we will share news and stories from our many graduates. Feel free to drop me an email at ewestman@ vt.edu to share personal news or successes.

Dr. Erik Westman Professor and Interim Department Head Virginia Tech Department of Mining and Minerals Engineering

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Students Honored at 2015 Department Scholarship and Awards Banquet

Faculty, alumni, industry representatives and students turned out in strong numbers once again for the Mining and Minerals Engineering Department Scholarship and Awards Banquet, held April 24th, 2015, at the Inn at Virginia Tech and Skelton Conference Center in Blacksburg, Virginia. The annual event recognizes students for their academic achievements as well as honors the careers of distinguished alumni.

Student Highlights of this year's banquet included the awarding of the highly competitive *Copper Club* scholarship to Jillian Trickey. Dillon Clark was recognized for both his academic achievements as well as leadership potential with the Academic Achievement Award. Max Hames was presented with the Haycocks Award, named in honor of Chris Haycocks, a faculty member who served from 1969-2002 and was widely admired by his students. Kerem Erayden, a graduate of the department's Ph.D. program and current Industry Technical Consultant for Global Mining with Nalco, presented Logan Compton with the Nalco Scholarship. Outstanding Graduate Student Awards were presented to two students at this year's banquet: Meredith Scaggs and Kyle Louk.

The department congratulates the many other students who were honored at the banquet and expresses its deep appreciation to those individuals and corporate sponsors who have contributed to the program's success.





Kyle Louk (left) and Meredith Scaggs are recgonized as this year's Outstanding Graduate Student Award recipients



Dillon Clark presented with Academic Achievement Award



Erik Westman presents Jillian Trickey with the Copper Club Scholarship



The Chris Haycocks Scholarship and Award is presented to Max Hames



Logan Compton receives the Nalco Scholarship from Kerem Erayden

Alumni Updates

News from Holden Hall invites readers to update us on their personal news to share in our Alumni Updates feature. Whether you've been promoted, have changed jobs, or recently moved, we'd love to hear from you! Please email your updates to ewestman@vt.edu.



Mike Mankosa

Eriez Promotes Mike Mankosa to Executive Vice President of Global Technology

Mike Mankosa, former Eriez Vice President of Operations, has been promoted to Executive Vice President-Global Technology. In his new position, Mike will focus his efforts on leveraging Eriez' technology to advance both domestic and international operations while exploring global opportunities for product and market innovation. He will oversee the technology interests of all Eriez products as well as future technology acquisitions.

Mankosa joined Eriez in 1997, beginning his career as the company's Technical Director in the Erie-Division Research and Development Lab. Over the years, he continued accruing additional managerial responsibilities. Soon after being named Vice President of Operations in 2004, he became the executive sponsor and global leader for Eriez' newly acquired flotation business.

Mike earned his doctorate in mining and minerals engineering from Virginia Tech, and he has published nearly 100 articles in prominent scientific and technical journals, obtained numerous equipment and process patents, and received more than \$2 million in research funding from state and federal agencies.

Mike and Erica Plale (Class of 2006 & 2008)

"We made the move from Arizona to Virginia in July of this year and are now both working for Luck Stone. I have been hired on as a Mining Engineer and Mike as a Design Engineer. We are both happy to be with Luck and back on the east coast, closer to family!"

Thank You to Our Donors

One of the biggest challenges we face each year is finding sufficient funds to operate the Department. Our annual budget allocation is sufficient to cover most of the faculty salaries and some of the staff salaries, but there is virtually nothing provided for the day-to-day operations (telephones, copying machine, supplies, etc.). Nearly all of our operating revenues come from research overhead, interest on our endowment, and gifts from our alumni and friends. In fact, as our student body grows, it is becoming increasingly difficult to provide sufficient funding to support scholarships and student organizations. That is why your gifts are so important to us. We would like to take this opportunity to extend a heartfelt thank you to the following donors for their support during Calendar Year 2015.

Individual Donations

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If you donated to the Department during Calendar Year 2015 and your name is not listed above, please contact us. We strive to ensure that our information is accurate and we want to know if a mistake has been made. It is also helpful if you specify "Mining Engineering" on your check to ensure that your donation goes directly to this Department. Likewise, if you donated directly to the Burkhart Mining Society or one of our other student organizations, these donations do not come through the Department. Nevertheless, these donations are important to us and we thank you for helping with student activities. Finally, if you prefer to donate on-line, we have established a link on our website for giving to the Department. Visit http://www.mining.vt.edu/sponsors/giving.htm to donate on-line via credit card. Please follow the instructions provided to ensure that your gift goes to Mining and Minerals Engineering.

Sarver Receives New Nationwide SME Career Development Grant

Emily Sarver, assistant professor of mining and minerals engineering at Virginia Tech, has received one of the two first nationwide Society for Mining, Metallurgy, and Exploration Career Development Grants. The Career Development Grant program is one part of the society's new strategic efforts aimed at building and securing the faculty pipeline for mining and minerals engineering. The honor is patterned after the National Science Foundation's CAREER award program, and provides support to rising stars in this field.

Sarver, who joined the Virginia Tech faculty in spring 2011, has already been involved in more than \$2.8 million in sponsored research, with her personal share exceeding \$2 million. She focuses her research and teaching on mine generated environmental contaminants and the responsible development of mineral and energy resources.

Describing her work, Sarver said, "Clearly, the global mining industry is in the midst of an intentional paradigm shift towards more holistic, responsible approaches to business. The



Emily Sarver

goal is to operate in a manner that actually contributes to the development of sustainable economies, environments, and communities. As an environmentally and socially conscious citizen of the mining community, I am optimistic and committed to this vision." Sarver will use the award, valued at a maximum of \$300,000 over three years, to support her research and teaching in her areas of concentration.

Sarver, Krometis Win Inaugural Environmental Science Award

The Appalachian Research Initiative for Environmental Science (ARIES), a university consortium, managed at the Virginia Center for Coal and Energy Research, affiliated with the College of Engineering at Virginia Tech, presented its inaugural ARIES award to Emily Sarver of the Department of Mining and Minerals Engineering and Leigh-Anne Krometis of the Department of Biological Systems Engineering.

Sarver and Krometis received the inaugural ARIES award due to the exemplary quality of their research and research partnership, according to John Craynon, ARIES project director.

The ARIES program focuses on collaborative work investigating key issues from various energy production and environmental science disciplines. Over the course of their ARIES grants, Sarver and Krometis developed their initial single-subject investigations into transdisciplinary projects, meeting the demand of complex issues with a depth of understanding provided by multi-level, multi-disciplinary research.

After its inception in 2010, ARIES sponsored several investigations by Sarver and Krometis including research reviewing corporate social responsibility in Appalachia and research regarding bacterial and biological impairments in Central Appalachia, sustainability and water quality, and bacterial impairments in surface waters as an obstacle to sustainable water quality solutions.

Since 2011, ARIES has supported more than 60 academic researchers in energy and the environment and over 75 student researchers at Virginia Tech, Pennsylvania State University, the University of Pittsburgh, West Virginia University, the University of Kentucky, Ohio State University, Marshall University, St. Francis University, the Edward Via College of Osteopathic Medicine, and consultants at Johns Hopkins and Georgetown.

She is also an adjunct faculty member with Virginia Tech's Via Department of Civil and Environmental Engineering. She obtained her doctorate in this department in 2010 after working with Marc Edwards, an internationally recognized expert on water treatment issues and the only Virginia Tech faculty member to receive a MacArthur Fellow award. To date, Sarver has served as the committee chair or co-chair for two doctoral candidates and two master's students in three different departments; and an additional eight graduate students are pursuing degrees under her advisement at present.

Sarver is a true Hokie. She received her bachelor's degree in mining and minerals engineering summa cum laude in 2004 and her master's degree in 2005, also from the same department. In 2004 she was named the outstanding senior in Virginia Tech's College of Engineering.

Among her other honors, the Burkhart Mining Society at Virginia Tech named Sarver the 2015 Teacher of the Year. She was an invited speaker for the university's 2010 Fall Graduate Commencement Ceremony. She was also a recipient of a Charles E. Via Fellowship from 2007 until 2010, and a National Science Foundation Graduate Research Fellowship from 2004 until 2009. In 2006 she earned the W.V. Power Graduate Award in materials science and engineering from the University of California at Berkeley. Sarver is a member of the Association of Environmental Engineering and Science Professors, the American Water Works Association, the Society of Mining Professors, and the Society for Mining, Metallurgy and Exploration.

New Faces in the Department: Dr. Cheng Chen

This summer Dr. Cheng Chen joined the department as its newest faculty member, as well as its first natural gas engineer. Born and raised in China, Cheng earned his B.S. Degree in Hydraulic Engineering in 2003 from Tsinghua University, China. During his undergraduate studies, Cheng found his research interests lied more in fundamental and qualitative areas of research, such as applied math, physicals and engineering. He spent the next five years at Northwestern University where he earned both his M.S. (2005) and Ph.D. (2008) degrees in Civil and Environmental Engineering. His thesis, *Pore-Scale Investigation of Colloid Deposition, Changing Pore Geometry, Fluid Flow, and Solute Transport in Porous Media*, focused on colloid transport in natural porous media. As part of this doctoral work, he developed a micron-scale imaging method to visualize the deposition of colloidal particles in complex 3D porous media using X-ray difference micro-tomography.



Cheng Chen

After earning his degrees, Cheng took a position as a researcher for Halliburton, where his primary duty was to develop advanced imaging and modeling methods for understanding

fluid flow and hydrocarbon transport in unconventional reservoirs, such as shales and tight sandstone. Cheng found the experience both rewarding and insturctional. "At Halliburton I was able to lead several geomechanics projects that provided scientific information and data for major oil and gas companies," he noted. Cheng's background and areas of expertise have a number of benefits for a mining engineering program. "My experience in the energy industry has advanced my understanding of emerging challenges associated with energy, water, and the interface between them," explained Cheng. "My research on advanced numerical methods in porous media, multiscale simulation of subsurface flow and transport, and high-resolution rock characteristic imaging all complement the research of other faculty members in the department, who are working on geological carbon sequestration and shale oil and gas."

This fall, Cheng worked on establishing a viable research facility. The lab, located at Virginia Tech's Corporate Research Center, is equiped with critical mahinery, such as a Pulse Decay Permeameter, which measures ultra-low permeabilities in shale samples. "At Halliburton I had access to state-of-the-art X-ray CT facilities which allowed me to conduct fundamental research at the nanometer and micron scales," explained Cheng. "I am glad to find that Virginia Tech has similar excellent facilities and resources."

In addition to research, Cheng is already tapped to begin teaching a number of courses. This spring he will offer a graduate-level course entitled "Numerical Methods for Fluid Flow in Petroleum Reservoirs," which will teach students how to write their own reservoir simulators. For Fall 2016 he will also teach the new undergraduate-level course, "Flow and Transport in Porous Media," which introduces students to fundamental theories and principles governing fluid flow and mass transfer in natural complex porous media.

Students Take First Place in 18th Annual Carlson Software National Senior Design Competition

Four recent graduates of the mining and minerals engineering department won first place in Carlson Software's 18th Annual National Senior Design Competition. Jason Gurrister, Victoria Johann, Marion King, and Elizabeth Van Nostrand, all from the Class of 2015, were selected for the top prize

based on their project "Savannah River Mining Company," a 2-million-ton per year phosphate ore mining operation in Effingham County, Georgia.

Carlson Software sponsors the annual competition, which is open to ABET accredited mining engineering schools. Carlson is widely recognized for its support of the mining engineering academic community by sponsoring the competition and providing its software at a discounted price to qualifying institutions.

Left to right: Jason Gurrister, Victoria Johann, Elizabeth Van Nostrand and Marion King

The winning project earned a \$2,000 dollar prize, and each student received a certificate documenting the achievement. Schools also receive a running plaque that is updated

by the sponsor. Carlson presented the award at the Joint Fall Meeting of the West Virginia Coal Mining Institute and the Central Appalachian Section of SME, held October 21-23, 2015 at The Greenbrier, White Sulphur Springs, West Virginia.

Luxbacher Receives Stephen McCann Educational Excellence Award

Kray Luxbacher, Associate Professor in the mining and minerals engineering department, has been awarded the Stephen McCann Educational Excellence Award by the Pittsburg Coal Mining Institute of America (PCMIA). The award recognizes instructors, teachers or professors in a mining engineering program for their contributions, achievements as well as commitment to quality mining education.

The PCMIA established the award in 1986 as the Educational Excellence Award. With the passing away of Stephen McCann in 1991, who dedicated his life to the students in the field of mining, the award was renamed the Stephen McCann Memorial Educational Excellence Award. The award consists of an inscribed commemorative clock which is presented at the annual luncheon of the PCMIA in October.



Kray Luxbacher

Luxbacher also serves as Associate Director of the Virginia Center for Coal and Energy Research, and she is a registered professional engineer in Virginia. Her research interests are in underground mine ventilation, mine health and safety, and unconventional oil and gas reservoir engineering, with research projects exceeding \$4 million.

Research Team Tests New Technology to Reduce Atmospheric CO2

Researchers from the mining and minerals engineering department and the Virginia Center for Coal and Energy Research have teamed with industrial partners, including Cardno and Consol Energy, to conduct two field tests to study CO2 storage and enhanced gas recovery in unconventional gas reservoirs. The field tests are part of a project funded by the U.S. Department of Energy's National Energy Technology Laboratory in support of its Carbon Storage Program, which aims to reduce the environmental impact of man-made CO2 emissions through the development of new carbon management technologies.

Early this year, the Virginia Tech team successfully completed a small-scale "huff-and-puff" test in Morgan County, Tennessee, using an existing well to inject 510 tons of CO2 into a depleted shale gas reservoir. The well was shut in for several months to allow the CO2 to "soak" in the reservoir and then brought back into production. Analysis of the produced gas over the following year indicated elevated levels of valuable heavy hydrocarbons, also called natural gas liquids, carried by the CO2. Approximately 65 percent of the injected CO2 volume is expected to remain permanently in the reservoir.



Team researchers Kyle Louk (I) and Joseph Amante inject tracer gas into an existing well in Tennessee.



Members of the VCCER Advisory Board were given a tour of the field site by team researchers during the October board meeting. Featured (left to right) are Kevin Elkins (Consol Energy), Ed Diminick (Cardo), Nino Ripepi (Co-PI,), Serkan Saydam (Associate Professor University New South Wales), Kyle Louk and Joseph Amante (VCCER), Dick Wolfe, Steve Keim (Cardno), Charlie Schlosser (VCCER), Tom Keim (Cardno), Mike Onifer (VCCER Board President), Ellen Gilliland (VCCER), and Michael Karmis (PI, Director VCCER)

A second, larger field test began in July 2015 in Buchanan County, Virginia, where three coalbed methane wells are currently being used to inject up to 20,000 tons of CO2 over a one year period. Monitoring at the field site includes gas and water sampling of twenty wells in the study area, tracer studies used to track the migration of CO2 and formation water in the subsurface, passive microseismic monitoring, and geospatial monitoring using satellite imagery and GPS surveys. The monitoring program will help researchers evaluate the impact and effectiveness of CO2 storage in coal formations and the potential to simultaneously extend the lifespan of depleted reservoirs through enhanced gas recovery.

Bill Hylton, Class of 1951, Remembered

William Thomas Hylton, a 1951 graduate of Virginia Tech's mining and minerals engineering department, passed away on Tuesday, November 3, 2015, at LewisGale Montgomery hospital in Blacksburg, Virginia, with his wife, Dorothea, by his side. A mining engineer who worked in the coal industry across America, Bill and his wife had retired to Blacksburg a number of years ago. He was 87.

Mr. Hylton was a native of Floyd, Virginia, the third child and only son of the late Cephas Alvin Hylton and his wife Louetta Bishop. The family had deep roots in Southwestern Virginia. At the time of his birth in 1928, his father was sheriff of Floyd County, Virginia.

His father held the post of sheriff for 16 years, much of it during Prohibition, and then moved the family to farm in Radford around 1938 where they raised Angus cattle. It was there that Mr. Hylton reached his adulthood. The tall, handsome young man had completed a year at Virginia Tech when he met Dorothea White of Chatham, a student at Radford College. The two were married in 1952 in Chatham. He was drawn to both the geological and mechanical aspects of mining engineering, and he graduated with a Bachelor of Science degree in Mining Engineering from Virginia Tech's College of Engineering in 1951.

During an era when coal powered America's industries, Mr. Hylton held supervisory positions at a number of companies, including CONSOL, Eastern Associates, Lykes, John Hardesty, Anchor Coal, and Utah Power and Light. His career took the family to Fairmont, West Virginia; Eighty Four, Pennsylvania; Athens, Ohio; Morganton, West Virginia; and Price, Utah.

Mr. Hylton was an accomplished hunter and fisherman and a stalwart Virginia Tech fan who held season tickets to Hokies football. Not many years ago, he donated his collection of rare mining memorabilia to the mining and minerals engineering department. "Bill and his wife Dottie frequently attended our annual banquets, and he donated a lot of 1950's era mining memorabilia to the department sometime in the late 1990's," recalled department professor, Greg Adel, who was also Bill's Blacksburg neighbor. "Some of this memorabilia is now on display at the Virginia Transportation Museum in Roanoke. Bill was a great storyteller and often told me about his time in the coal mines in Utah."

Mr. Hylton's broad interests and natural friendliness drew family and friends close. He loved history and the natural world, frequently visiting historic battlefields, monuments and national parks, and he was generous in sharing his insights and learning with others. He was blessed with a deep sense of humor, and his voice held the low and melodious tones so distinctive of his native county. He inherited an interest in politics from his father and was a lifelong Republican. Once he made a friend, it was for life, and he took it as his duty and honor to help others. He was an avid reader who preferred mysteries, especially those of Tom Clancy and Clive Cussler. He was a Presbyterian all of his life.

Mr. Hylton belonged to that vanishing generation of honorable men who did not openly display their affection but whose love was nonetheless boundless. He and his wife raised a wonderful family. Survivors include his wife Dot Hylton, of the home; son William Thomas Hylton II of Port Huron, Michigan, son Richard Alvin Hylton of Morgantown, West Virginia, son David Stuart Hylton of Huntsville, Alabama, and his wife, Stacy, and son, Robert Alan Hylton of Summerville, South Carolina, and his wife, Cindy Lea. Bill is also survived by 9 grandchildren and 3 great-grandchildren. He was predeceased by his sisters, Geneva Elsie Hylton Chumbley and Marguerite Faye (Peggy) Hylton.

Mr. Hylton was laid to rest in the town of his birth. A memorial service was held Saturday, November 7, 2015 at 2 p.m. at the Northside Presbyterian Church in Blacksburg.

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is published semiannually by the Department of Mining and Minerals Engineering at Virginia Tech, 100 Holden Hall Blacksburg, Virginia, 24061-0239, phone (540) 231-6671 | fax (540) 231-4071 | email mineinfo@vt.edu

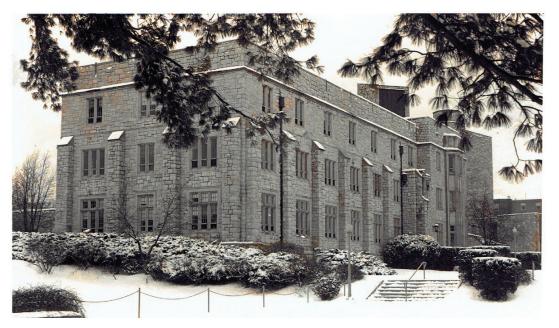
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Blast from the Past

With the real possibility of Holden Hall undergoing a face-lift in the near future, we thought this issue's *Blast from the Past* might be a good opportunity to revisit our department's "home" in years past. The two photos of Holden Hall here show the building in different seasons and at different vantage points; however, they are both from the same academic year.





Can you let us know the year these photos were taken? If so, please share with us any information you can tell us about these photos or what you remember about the department during this time period. Please send your responses to: Dr. Erik Westman, Department of Mining and Minerals Engineering, Virginia Tech, Blacksburg, Virginia 24061. Or you can email your response to ewestman@vt.edu.

As always, we welcome you to submit any images or photos you have from your days in the department, especially group shots of class members and fellow students. Feel free to send us original photos as well. We will gladly scan these and send them back to you along with a digital copy.