

# Mining Engineering

Volume 04, Issue 1, Winter 2011



## Alliance Coal Establishes Academic Chair

Mr. Joseph W. Craft III is well known for his support of athletic programs at the University of Kentucky. What may not be as well known is that he is also a major supporter of academic programs.

A recent pledge provided through Alliance Resource Partners L.P. and Alliance Holdings GP, L.P. resulted in the establishment of the **Alliance Coal Academic Chair in Mining Engineering**. The \$1.2 million contribution to fund the position ensures that the department will continue to be a leader in education, research, and industrial service in areas of significant importance to the mining industry including mine safety, mine ventilation, rock mechanics, mine power systems and mine operations.

Mr. Craft, President, Chief Executive Officer and Director of Alliance Resource Partners L.P. was honored along with his company at a reception November 4. Also introduced at the reception was Dr. Thomas Novak, who joined the department in November as holder of the first Alliance Coal Academic Chair.

“The strength of any academic department is primarily defined through its faculty members” said Department Chair Rick Honaker. This fact is certainly true for the UK mining engineering program where the total amount of academic and industrial experience within the faculty is 204 years. The average experience level per faculty member is 25 years with the average tenure at UK being 18 years. The faculty has traditionally been very active as researchers and consultants for the mining industry which

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Left to right: *Rusty Ashcraft*, BSGLY '87, *Eb Davis*, BAECO '79, *JD* '82, *Mark Watson*, BSEE '99, MSEE '00, *Ernie Thacker*, BSMNG '01, *Tom Novak*, *Joe Craft*, BSACC '72, *JD* '76, *Bryan Lummus*, *Jeff Brock* BSMNG '92

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## Samuel S. Johnson Receives Inaugural Mining Engineering Foundation Distinguished Alumni Award

In 2010 the Mining Engineering Foundation established the Distinguished Alumni Award to honor outstanding individuals whose personal lives, professional achievements and community service exemplify the values and goals of the mining engineering profession, the Mining Engineering Foundation, and the Department of Mining Engineering.

The department is proud to announce the first Distinguished Alumni Award was presented to Samuel S. (Sam) Johnson,

*The true measure of a university's greatness can be found in the achievements of its alumni*

David Roselle, President of the University of Kentucky from 1987-1989 recently commented, "I remember Sam from my long ago days at UK as a bright, eager and competent professional." Upon learning that Sam had been nominated for the Distinguished Alumni Award, Dr. Roselle said, "if his career has progressed in accord with the promise of those early years, he certainly is now a deserving candidate."

Throughout his career, Mr. Johnson has remained involved and active in the department. As a Mining Foundation charter member, he served in every capacity during the past 27 years from committee member to board chairman. He currently serves on the executive committee and is chair of the nominating committee. He was a founding member of the UK Engineering Alumni Association; served as president, and later represented mining engineering.

Charlie Reeves, a fellow '73 graduate said, "I have known Sam since 1971 when I went to school at UK with him. We have kept in touch over those years and we have worked on some projects together and for about eight years were employed by the same company. Ethics and reliability have always been my benchmarks as to the worth of a person. Sam gets high marks in both of these areas." Mr. Reeves added, "Sam is an honorable business man, a good family man, and one who gives back to his community. His support to the university and the mining community has helped both grow."

We congratulate Mr. Johnson on winning this distinguished award, and look forward to his service and counsel for many years to come.



Sam Johnson (left) receiving the Distinguished Alumni Award from Mining Foundation Chair Steve Gardner.

a 1973 graduate of the University of Kentucky and a Mining Engineering Foundation charter member.

Mr. Johnson's history with the mining department dates back many years. He was known as one of "Ted's Boys," a close-knit group who studied under the much loved mining professor Ted D. Haley. After earning his bachelor's degree and later a master's degree in business administration, his experiences in the coal industry led him from entry level worker and intern engineer to manager, international consultant, financial advisor and COO. He currently serves as president of Guohua Technology Corporation, the exclusive importer of Tangshan Guohua Technology Co., Ltd. coal preparation technology for North America.



Sam Johnson and his daughter Olivia Schulz with Rick Honaker and Steve Gardner.

## Department Receives Gift from H. Louis Kirkpatrick

H. Louis "Kirk" Kirkpatrick, of Beckley, West Virginia passed away November 25 at the age of 85. Mr. Kirkpatrick graduated in 1949 from the University of Kentucky with a B.S. in Mining. While at UK he received the "Old Timers" award, and later was a UK Bowman Fellow and became a member of the Engineering Quadrangle Society.

Mr. Kirkpatrick was preceded in death by his wife of 61 years, Mary Hornbrook Kirkpatrick. He is survived by a son, Judge H.L. Kirkpatrick III, his wife Rebecca and family, and a daughter, Ann Kirkpatrick Price and her husband Donald.

Through a charitable remainder unitrust, Mr. and Mrs. Kirkpatrick bequeathed over \$300,000 to the Department of Mining Engineering. A significant portion of the funds will be used to develop an Automation and Control Laboratory to be named in honor of the Kirkpatricks. A dedication ceremony will be held this summer, and the laboratory will be open for the Fall 2011 semester.

We sincerely appreciate this generous gift and extend heartfelt sympathy and gratitude to the Kirkpatrick family.

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## Alliance Coal Academic Chair

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has resulted in a transfer of valuable knowledge into the classroom.

However, Drs. Kot Unrug and Andrew Wala who have the greatest amount of experience (i.e., 96 years total and 61 years at UK) are set to retire over the next two years. The problems associated with losing these two faculty members are compounded by their expertise in critical mining subjects, namely rock mechanics and mine ventilation. Replacement of two faculty members would have been very difficult without the understanding and financial commitment provided by Mr. Craft through Alliance Resource Partners and Alliance Holdings.

"The establishment of the Alliance Coal Academic Chair provides the department the opportunity to attract internationally renowned faculty which will help maintain the high level of educational quality, research productivity and industrial service that is expected of the UK Department of Mining Engineering. We are extremely grateful for the significant financial commitment provided

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## Upcoming Events

**April 15, 2011** – College of Engineering Hall of Distinction

**April 28, 2011** – Professional Development Blasting Workshop presented by Dr. Braden Lusk, Assistant Professor (8 PDHs)

**April 28** – Mining Engineering Foundation Distinguished Lecture  
7:00 p.m., Boone Center  
(reception immediately following lecture)  
**Guest Lecturer:** Mr. Harold (Hal) Quinn, President and CEO National Mining Association, Washington D.C.

**April 29** – Mining Engineering Foundation Board Meeting  
10:00 a.m., Boone Center  
(luncheon immediately following meeting)

**April 29** – Mining Engineering Student Awards Dinner  
6:00 p.m., Marriott Griffin Gate Resort

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## 2010 Student Award Winners

Academic Excellence Award – Zeb Kramer  
Tau Beta Pi Recognition

Outstanding Senior – Clifton "Scooter" White

Outstanding Teacher – G.T. Lineberry

Gatesby Clay Leadership Award – Kris Milner

Careers-In-Coal Lamplighter Award – Justin Thompson

Old Timers' Club Award – Zeb Kramer

Outstanding Graduate Student – Kyle Perry

Distinguished Alumni Award – Sam Johnson (BSMNG '73)

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## New Appointments to

### Mining Engineering Foundation Board

The Mining Engineering Foundation welcomes the following new members as recommended by the foundation board and approved by the University of Kentucky Board of Trustees:

Bill Bissett, President, Kentucky Coal Association

David R. Cobb, Vice President of Corporate Development,  
Armstrong Coal

James W. Stuckert, Vice Chair, UK Board of Trustees

## Greetings from the Chair

Many exciting developments have occurred in the department since the last newsletter. The articles within this newsletter provide details of the developments which include the establishment of the Alliance Coal Academic Chair as well as the hiring of Dr. Thomas Novak to fill the position. Please take a moment to read Dr. Novak's profile later in the newsletter. As a result of additional industrial funding support, the department was able to hire Dr. Kyle Perry as an assistant professor to teach courses and work with Dr. Kot Unrug in the rock mechanics area. These two developments will have a long-lasting, positive impact on the department's education and research programs.



*Dr. Rick Honaker*

Fourteen graduating seniors in 2009-10 continues a gradual elevation in B.S. degree productivity realized through the last decade. The total number of B.S. graduates in 2010-11 is expected to be around 18. Demand for B.S. graduates remains strong as indicated by 100% placement of the graduates in full-time positions. The average starting salary for B.S. Mining Engineering graduates at UK was \$66,500 compared to a reported national average of \$64,500. There were 22 companies that conducted on-campus interviews within the department for permanent and summer internship positions. The continued high demand for mining engineering graduates is also reflected in the fact that 49 of the 66 freshman participated in some form of internship during the 2010 summer.

A record freshman class of 91 incoming freshman students included 12 females and six out-of-state students. There were also 12 transfers from other colleges. The quality of the incoming students remains outstanding as indicated by average ACT composite and math scores of 27.7 and 29.4, respectively. As a result of the freshman and transfer enrollments, the number of students in our Introduction to Mining Engineering course was 108 - an all-time high.

The increased quality of the undergraduate student body is evident by the recent success that the students are having nationally. Our students were recently the recipients of several nationally competitive scholarships including one of the inaugural SME Foundation McIntosh Scholarships (Andrew Goderwis), a 2010-11 John S. Marshall scholarship (Greg Brenner), a SME Mining & Exploration Scholarship (Aaron Burton and David McLane) and a SME Environmental Division Scholarship (Tessa Monday). The SME Norwood Student Chapter was also notified recently that they will be the recipient of the 2<sup>nd</sup> runner-up award

for the Outstanding Student Chapter contest which will be recognized at the 2011 SME annual meeting.

A program evaluation team from the Accreditation Board for Engineering and Technology (ABET) visited the department during the fall 2010 semester. I am pleased to report that the preliminary report from the review of the UK Mining Engineering program is excellent and the optimum outcome is expected.

The department has been very active in organizing and conducting several external educational and technical programs over the past year. During the spring 2010 semester, the department co-hosted the XVI International Coal Preparation Congress meeting in Lexington, Kentucky. The meeting attracted over 400 delegates from 22 countries. The technical program and meeting activities were exceptional with many compliments received from the delegates. Ms. Geaunita Caylor and the department staff were primarily responsible for the efficient operation of the meeting and the outstanding social events and, thus, are commended for their effort. Also my thanks to the graduate students who worked behind the scenes packing boxes, running errands, welcoming guests at the airport, and acting as interpreters when called upon.

Research activity within the department continues to expand as indicated by a new funding record of \$4.5 million during the 2009-10 academic year. The total collaborative (faculty serving as principal investigator or co-principle investigator) research funding was \$8.4 million. Projects include the development of computational fluid dynamic tools to model the ventilation at continuous miner faces and longwall gob areas which is being led by Dr. Andrew Wala. The project is part of a significant effort by NIOSH to develop expertise in mine ventilation nationwide.

Faculty members received national and international recognition for their professional achievements. Dr. Andrew Wala was awarded the 2010 Howard L. Hartman Award in recognition of his lifetime contributions to the field of mine ventilation.

In closing, I would like to acknowledge the outstanding efforts of the department faculty and staff. The significant growth of the program over the last decade has added significantly to their on-the-job demands during a time of little-to-no salary adjustments. Without their professionalism and dedication to the department, the success as reported would not be possible.

## Student Reflections



Aaron Burton  
BSMNG '10

Where have the last four-and-a-half years gone? It seems as if only yesterday someone from the University of Kentucky was attempting to persuade me to join the mining engineering program. Being from central Kentucky, I had virtually no exposure to mining. To be honest, I didn't know anything about the industry at the time. This was still a time in my life when mining conjured up images of movies like "October Sky" or some dwarves whistling a work song. It is rather fascinating how things change over such a relatively short period of time. Oh, and in case you are wondering, that mysterious figure that made the long journey to Liberty, Kentucky was none other than Ron Robinson: Recruiter Extraordinaire.

Since those humble and rather naïve beginnings, I have had the college experience that many only dream about. Traveling to multiple places across the country on someone else's tab (well, for the most part anyway), working at fascinating jobs, leading student organizations, and witnessing sports history (victory over LSU in triple overtime). All because I made a commitment to a program that I knew nothing about.

As much adventure and excitement as I have experienced, I have also been transformed into a marketable professional. Through the rigorous course work such as general chemistry (which, I might add, is the bane of my existence), I have learned many lessons in diligence, problem solving, and more importantly time management, the latter of which can still be elusive on occasion.

Inside the classroom I was given useful tools with vague notions of their usefulness. It was as if someone placed a hammer in my hand and left the room. True reinforcement of these theoretical concepts came through summer internships. Spending two summers with Vulcan Materials Corp. and a subsequent two with Newmont Mining Corp. were educational experiences all their own. These jobs gave me a deeper understanding of classroom concepts and more importantly, a full-time job with Newmont.

Summers working and semesters spent in the classroom were not the only things that aided in the accelerated passage of time. I managed to find other things to entertain myself with, most notably the Norwood Student Chapter of SME. Through this organization, I was able to create and build upon relationships within our department, as well as with students across the nation.

The chapter provided the means to become better acquainted and share once-in-a-lifetime experiences

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Justin Thompson  
BSMNG '10

My undergraduate experience with the Department of Mining Engineering at the University of Kentucky has been invaluable in preparing me for a career in the mining industry. This program has a unique way of creating a successful environment for students from an array of different educational and demographical backgrounds. The department staff will exhaust every resource to ensure that each student has a positive and successful experience at UK.

I could not imagine a more inviting or rewarding program on any college campus. In just one semester I found that I had gone from a new guy on campus to a familiar student within the department. Being a member of this department felt similar to being a member of a professional mining industry organization that provides a family-like support system. Everyone was eager and willing to help me develop my engineering skills. The staff also plays an integral role in encouraging students to develop their professional careers by helping prepare resumes and scheduling job interviews with the numerous companies who visit campus weekly throughout the semester recruiting students for paid internships and permanent employment.

Although this program was very difficult and demanding at times, the program has been designed with a goal-oriented structure which offers continuous rewarding challenges. As a freshman, my program began with the introduction to the theory of mining and the practices employed, and as a senior, it ended with the assignment to a senior design team responsible for designing an entire underground coal mine. In just four short years it seemed that I had gone from being introduced to mining engineering to being a skilled and capable mining engineer ready for a professional career in the mining industry.

My experience at UK could not have been more enjoyable as well as rewarding. The student chapter of SME offered various types of recreational activities, including tailgating for football games, Keeneland horse racing, and all types of intramural sports. No matter what a student enjoys, the student chapter of SME at UK has an event or sport in which to participate, and in many cases allows students to develop leadership skills by organizing events. SME also allowed me to gain great experience by providing travel to the various professional conferences while enrolled at UK. For example, I was able to travel to Las Vegas, Salt Lake

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## SME Student Chapter Activities

*Kris Milner, BSMNG '10, 2009-10 Chapter President*

The UK Norwood Student Chapter of SME has continued to be active. Last spring, the chapter took 22 students to the SME National Convention in Phoenix, AZ where they received the runner up award in the 2009-2010 Outstanding Student Chapter Competition. While there, the students were able to get a good deal of personal time with professionals in the mining industry, both in and

outside of the conference setting. Thanks to the support of industry and the dedication shown by the students, we have enough money to take 21 students to the National SME Conference in Denver this year.

This past year, the chapter teamed up with Friends of Coal and Kentucky Coal Association to build upon the tailgating activities which began in 2009. At each home football game, a tailgate party was held and sponsored by two companies. The tailgating activities proved to be a valuable tool in giving students a chance to mingle with mining professionals in a casual setting. All who attended were able to enjoy food, conversation, cornhole, and watch football on a big screen television.

In October, the chapter hosted its annual golf

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### Student Reflections - Burton

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with my peers. Whether it was getting to know an upper classman via the mentor program, playing an intramural sport with that guy from lab, or jetting across the country to the SME National Convention or the Intercollegiate Mine Competition, these were the moments that made the experience, and SME provided the catalyst. I must say that the past four-and-a-half years have been difficult, but more importantly it has been a formative time in my life. As I move into the next phase, there will be fond memories of the people, places, and things that I have done as a member of the University of Kentucky's mining engineering program. It is my greatest hope that future students have an experience rival to or greater than my own, although no student will ever out ski Dr. Andrew Wala!

### Student Reflections - Thompson

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City, and various active mines operated by some of the largest mining companies in the world.

Overall I could not be more pleased with my decision in choosing the UK Department of Mining Engineering. I believe I am well prepared for a career in the mining industry. This department proved to be very dynamic in providing me with a lifelong education and lifelong friends and professional relationships. I could not be more appreciative of the department staff or more proud to have been a part of such an outstanding organization. This department has a great legacy and I believe an even greater future. Thank you to the entire staff for providing me with this experience and I look forward to being an active alumnus in the future.

# Mine Seals Research

By Dr. Kyle Perry, Assistant Professor

Mine seals are necessary in nearly every underground coal mine to isolate mined-out areas from the ventilation network. Many seals are already in place in active mines and more need to be constructed to keep up with the development of underground coal reserves. The accidents involving seal failures at Sago and Darby prompted MSHA to create and implement new regulations. These regulations require the design and construction of seals that are larger and stronger than ever before. The new regulations state that seals must be able to withstand an explosion force of either 50 PSI or 120 PSI, depending on whether or not the atmosphere behind the seals is monitored and kept inert. Structural seals capable of withstanding the new required design loads are very expensive and time consuming to construct.

Research has been conducted at the University of Kentucky to investigate several seal types and the way they are analyzed to meet the new regulations. Two seal types were analyzed using finite element modeling, structural dynamics calculations, and explosion testing in a shock tube. While one seal type is just an improved concrete block seal which was common under the previous 20 PSI standard, the other is a more novel idea which shows promising results. The difficult aspect in modeling mine seals is that programs typically assume support conditions although it can sometimes be very difficult to assure fixed or simple end conditions. While designs which utilize reinforcement into the surrounding rock can safely assume support conditions with proper pull test results, designs which depend on friction cannot due to varying mining conditions and seal placement.

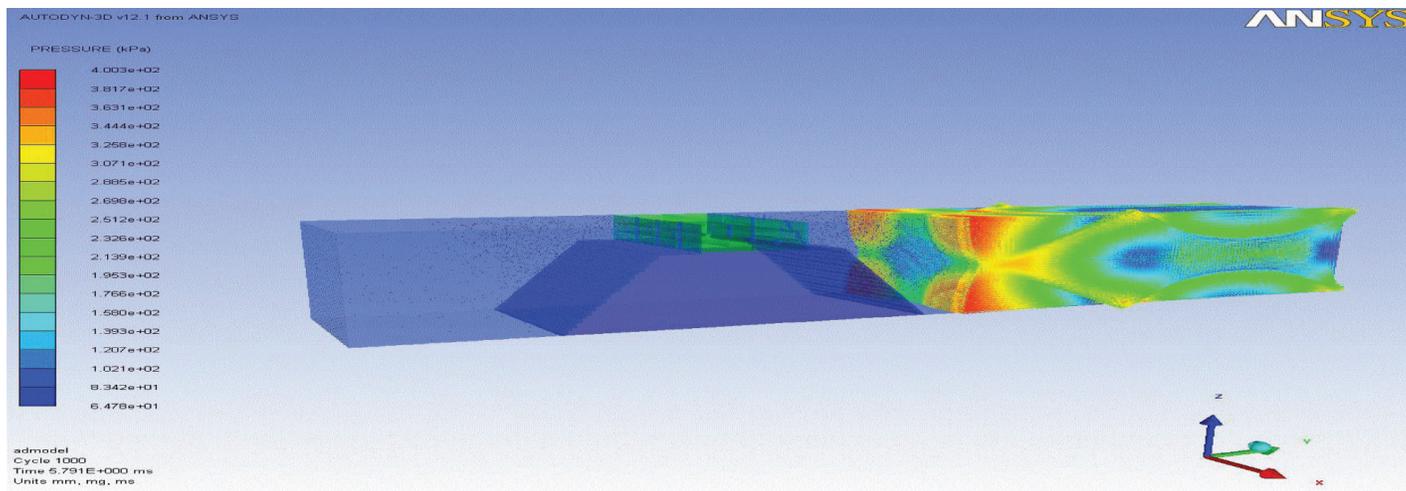
The concrete block seal design consisted of high-strength solid concrete blocks glued together with pressurized bags filled with mortar around the perimeter. Since it was



Photograph of the gob pile in the shock tube.

found that the glue was stronger than the blocks, the seal was modeled as a solid concrete slab using the material properties of the concrete. The initial analysis was using structural dynamics which requires an end condition assumption. After numerous frictional tests, a resistance was found per square inch of the material in contact with the surrounding rock. Based on this resistance, a wall thickness was calculated so the resulting forces generated by the blast would be less than the resistance. Once it was ensured that resistance was sufficient, a fixed support condition was assumed. The results of these calculations were then compared to finite element modeling which allows friction to serve as the resistance. Because of the different resistance types, the finite element modeling calculated displacements much larger than structural dynamics calculations. Physical explosion test results showed results more in agreement with the finite element models. This leads to the conclusion that, for designs which use friction as the primary resistance to the forces

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Screenshot from the finite element model of the gob seal.

## Women in Mining Chapter Formed

*By Katie Gardner, Sophomore*

A Women in Mining Chapter was formed on the UK campus in the 2010 fall semester with the goal of providing a group to educate and retain young female engineering students within the mining department. Additionally, our other goal is to educate local middle and high school students as well as the general public about the mining industry and engineering in general. Despite the small percentage of women within the department, activities are starting to pick up with the chapter and ideas are flowing for future events in which the group can partake.

Our first meeting was held on November 11 with over ten women in attendance as well as several men from the mining department. On December 3, the chapter helped raise money for the Salvation Army by bell ringing at a local grocery store. After Christmas break, the group hopes to hold a back to school study break with a film, and hot chocolate for the members and any of the mining engineering students who wish to join. Presently chapter membership is 23.

In the future, the group hopes to take several field trips to help expose the students to different types of mining as well as create an outreach program to local high schools in coordination with the student SME Norwood Chapter at UK. We also hope to be able to participate in the national WIM conferences in the future!

### WIM Officers:

President: Katie Gardner  
Vice President: Brandy Chenault  
Treasurer: Katie Heath  
Secretary: Melyssa McFarland  
Sr. National Rep: Mallory Miller  
Jr. National Rep: Cindy Ballinger



*Left to right: Brandy Chenault, Katie Heath, Melyssa McFarland, Katie Gardner, Cindy Ballinger and Mallory Miller.*

## Kyle Perry Joins Faculty



*Dr. Kyle Perry*

A familiar face joined the faculty in August 2010 and immediately made an impact with the students. Dr. Kyle Perry became an assistant professor in 2010 after receiving his Ph.D. from the department in August.

Dr. Perry's hiring was made possible through the financial contribution of Kentucky River Coal Properties. He will work with Dr. Kot Unrug in the rock mechanics area until Unrug's retirement. "Dr. Perry provides a unique educational background for our department with a B.S. in civil engineering from the University of Missouri, and a Ph.D. in mining engineering from UK," said Department Chair Rick Honaker. "We are excited about his potential to provide excellent educational services and a stable and long-term research program in the rock mechanics area." Dr. Perry's other interests include ground control and explosives.

While studying at UK under Dr. Braden Lusk, Dr. Perry assisted in teaching several blasting courses from "Introduction to Blasting" to "Advanced Blast Design" and co-authored and presented papers at both regional and international conferences. As a student, Dr. Perry was captain of the UK International Mining Competition in 2007-2008, the 2008 International Intercollegiate Jackleg Champion, and treasurer of the UK Chapter of the International Society of Explosives Engineers (ISEE) from 2008-2010.

In his first semester, Dr. Perry taught MNG 303 (Deformable Solids Lab) to approximately 60-70 students. Mining engineering student Andrew Holcomb commented "Dr. Perry did an excellent job of teaching in his first semester at the University of Kentucky. He really helped the class grasp the concepts in lecture that can seem so distant from real-life engineering. He also created a comradery with the students that made us put forth more effort in class than we normally would have. Overall, I found it very refreshing to have a young, amiable professor like Dr. Perry help bring to life engineering concepts in a lecture class."

Dr. Perry is from Jackson, MO where he played football and golf in high school. Currently Dr. Perry is the advisor for the SME Norwood Student Chapter. In his free time he enjoys playing golf, going to the lake, and spending time with his family. Dr. Perry and his wife Callie and nine-month old son Rodrick live in Lexington.

## Thomas Novak Joins Faculty



*Dr. Thomas Novak*

The Department of Mining Engineering was pleased to announce that Dr. Thomas Novak joined the faculty as professor and Alliance Coal Academic Chair in November. Dr. Novak's primary research interests lie in mine electrical systems,

which include power-system design and analysis, protective relaying, grounding, safety, monitoring and control, and communications systems. He also maintains strong interests in mine ventilation and atmospheric monitoring. Dr. Novak has published extensively in these areas and has received various awards for his publications. He has consulted for numerous mining companies throughout the U.S. and served two years as Chairman of the Corporate Safety Committee for Asian American Coal Company, Beijing, China.

Following the Sago mine explosion in 2006, Dr. Novak participated in the post-disaster investigation at Sago, and he also testified before the U.S. Senate Committee on Health, Education, Labor, and Pensions on mine safety. Dr. Novak holds licensure as a professional engineer in Pennsylvania and Alabama, and will soon submit his application to Kentucky. He noted, "I am pleased to be back in academia after a 2-1/2 year stint with the federal government, and I am honored to hold the Alliance Coal Academic Chair. I feel that the department here at Kentucky ranks among the very best mining programs in the nation, and I look forward to getting back in the classroom, conducting research, and working with industry."

Dr. Novak grew up in southwestern Pennsylvania and began his career as a co-op student for the Republic Steel Corporation in its Northern Coal Mines Division. Upon graduating from Penn State with his B.S. degree in electrical engineering in 1975, he worked for Republic Steel as the Assistant Division Maintenance Engineer. He

then spent two years with the U.S. Bureau of Mines at its Pittsburgh Research Center, during which time he earned his M.S. degree in mining engineering in 1978 by taking evening classes at the University of Pittsburgh. Penn State then offered Dr. Novak the opportunity to pursue his Ph.D. while working as an Instructor of Mining Engineering in 1984. Near the completion of his doctorate, the University of Alabama offered him an Assistant Professorship from 1983 to 2001. The College of Nursing at Alabama simultaneously offered his wife, Debbie, the same type of position. The couple spent the next 18 years working and raising their two sons in Tuscaloosa.

After the mining engineering program closed in 1995, Dr. Novak held a variety of positions at Alabama, including Professor of Electrical Engineering, Interim Department Head of Aerospace Engineering and Mechanics, holder of the G.N. Drummond Chair, and Department Head of Civil and Environmental Engineering. He stated, "Being department head of Aerospace Engineering and Mechanics was a bit of a stretch for a mining engineer; but, surprisingly, it worked out quite well. I enjoyed my time at Alabama, but I wanted to get back to mining engineering." As a result, he accepted an offer from Virginia Tech to be Department Head of Mining and Minerals Engineering from 2001 to 2008. While there, he was also awarded the C.T. Holland Professorship. Dr. Novak spent seven years at Virginia Tech. NIOSH then recruited him for the position of Deputy Director, which evolved into the Director of Science and Technology, for its Office of Mine Safety and Health Research from 2008 to 2010. Dr. Novak noted, "After nearly 30 years of working at universities, I thought it would be a nice change. But my time at NIOSH reinforced what I already knew – I love being a professor."

Dr. Novak is eager to reestablish a research program, while developing courses to supplement the Department's curriculum. "The department is very fortunate to be able to attract Dr. Novak to the University of Kentucky" said Rick Honaker. "His educational experiences at Virginia Tech and the University of Alabama combined with an extensive record of industrial consultancy and service with NIOSH will greatly benefit the UK mining engineering program. Dr. Novak's extensive expertise clearly meets the qualities of the individual who was targeted for the Alliance Coal Academic Chair."

Dr. Novak is acclimating to life in Lexington and noted, "I have only worked at schools with strong football programs; but I have quickly become an avid Wildcats basketball fan to the dismay of my older son, who is a graduate student at Duke. I look forward to fostering this new rivalry."

## SME Student Chapter Activities

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scramble at Marriott Griffin Gate in Lexington. Each team consisted of a mix of industry and students. Overall, nine teams participated in the tournament. The chapter offered hole sponsorships to help raise money. At each sponsored hole, a sign was placed to denote the sponsor, and the higher level sponsored holes included a prize. The chapter also sold skirts and mulligans before the tournament to raise additional money. This year, the ICG team consisting of Don Gibson, Tyler Wright, Nate Waters, and Rodney Campbell took first place. The student chapter plans to hold a spring scramble as well, so keep a look out for a flyer in the coming months.

Not every activity throughout the year involved fundraising. In August, the chapter attended the freshman orientation at the University of Kentucky and helped introduce incoming students to the organization. SME also set up booths at the KCA/CAS, PEM and KMI conferences that took place in Lexington.



The Norwood Student Chapter is continuing its partnership with God's Food Pantry where the chapter will donate their time in January. Our GEM program, whose goal is to educate younger people in the state about mining, is set to get underway in the spring semester. We also volunteer for Engineers Day (E-Day). This event allows schoolchildren to be exposed to different disciplines within engineering, and we certainly want to take this opportunity to educate them about mining.

As you can see, the chapter has had a very busy semester. It is because of many dedicated students that we are able to make these events so successful. Just as important, is the continued time and financial support given to the chapter from both the people in mining and their related industries, and the mining engineering department. The assistance that the UK SME Norwood Student Chapter receives helps to make it one of the more active organizations on campus.



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## Mine Seals Research

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generated by an explosion, finite element modeling is more appropriate for variable coal mining conditions.

The second seal design is a gob seal which is created after a specific volume of roof rock is blasted down to fill the entry. Just outby of the gob pile, a small seal would be constructed for the sole purpose to separate the atmospheres. The shock tube was used to test the concept. First, a 'blank' test was conducted to determine the pressures associated with a charge size a certain distance from the pressure sensors. The next test utilized a limestone rubble pile which was constructed to fill a

portion of the shock tube to the roof between the explosive charge and pressure sensors. After analyzing the data, it was found that the peak pressure was reduced 81%. Finite element modeling of the test shows a similar reduction at 88.5%. While this seal design faces regulatory hurdles, it proves to be a design that needs to be researched further.

Both of these designs show promise in providing the mining industry with a more economic alternative. Research is ongoing with both designs, as well as others, to perfect them in not only a structural perspective, but also a logistical and financial one.

## Congratulations Graduates!



2009-2010 B.S. Graduates standing left to right: Kyle Arms, Matthew Belcher, Jonathan Billiter, Tyler Booten, Cory Chafin, Justin Thompson, Jesse Hatter, Zeb Kramer, Jarrod Watts, Drew Moore, Scott Ratliff; Kneeling left to right: Chad Weems, "Scooter" White; Not pictured: Jonathan Brown and Joshua Johnson



Graduates from left: Dharmendra Kumar (MSMING '10), Kyle Perry (PhDMING '10) and Chad Wedding (MSMING '10)



December 2010 Graduates from left: Jake Stephens, Aaron Burton, Seth Mittl, Derek Case, Qin Li, Kris Milner; Not pictured: Derrick Miller

## Alliance Coal Academic Chair

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by Mr. Craft and the Alliance Coal group" said Dr. Honaker.

The financial support provided to establish the academic chair position represents a continued commitment to the UK Mining Engineering Department. In 2007, Mr. Craft and Alliance Coal provided a gift to support major equipment purchases for the Alliance Coal Analytical Laboratory and to fund undergraduate scholarships for five years.

Several UK graduates who now work for Alliance Coal attended the reception at the Boone Center along with friends, family, and faculty/staff from the department and college.



Representative Rocky Adkins talks with Joe Craft after the November 4 reception.

# Department 2009-10 Highlights

- Record high in undergraduate enrollment of 205 was realized in fall 2010 of which 91 were freshmen.
- Dr. Andrew Wala received the prestigious 2010 Howard L. Hartman Award recognizing his career contributions in Mine Ventilation at the U.S./North American 13<sup>th</sup> Mine Ventilation Symposium held in Sudbury, Canada.
- A positive mining engineering article published October 2010 in the "Kentucky Kernel" see <http://kykernel.com/2010/10/20/mining-engineering-program-a-rarity>.
- Dr. Rick Honaker, Mr. Zaheer Akrim (MSMNG '08) and Dr. Jack Groppo, CAER (PhDMNG '92) received the 2009 Stefanko Best Award at the 2010 SME meeting in Phoenix, Arizona; second consecutive year that a UK faculty member and students received the award.
- The premiere of "Coal in Kentucky: A Documentary" presented by the Vis Center and the Dept. of Mining Engineering was held in June at the Kentucky Theater. See [www.coalinkentucky.com](http://www.coalinkentucky.com) for information.
- Dr. Rick Honaker was awarded Distinguished Membership in the Society of Mining, Metallurgy and Exploration; distinction limited to 1.8% of the membership.
- Dr. Joseph Sottile's significant contributions to the ABET process are acknowledged and greatly appreciated.
- SNF Flomin Graduate Fellowship was established for stipend and tuition support for M.S. or Ph.D. students.
- AKJ Industries Graduate Fellowship was established for stipend and tuition support for M.S. or Ph.D. students.
- Co-Host of the XVI International Coal Preparation Congress which was held on April 25-29, 2010 in Lexington, Kentucky.
- Mr. Andrew Goderwis, mining junior and Engineering Student Council President received an inaugural SME Foundation McIntosh Scholarship which has a \$12,000 value distributed over two years.
- Nine students were recipients of a WAAIME Scholarship and four students received an ISEE scholarship.
- A student chapter of Women in Mining was formed in fall 2010. There are a total of 23 female students enrolled in mining engineering at UK.
- Record high of \$4.5 million of new research funding awarded to UK mining engineering faculty in 2009-10.
- A Mine Safety & Health Management Processes (MNG 322) class has been added to the curriculum and is being taught by Ken Katen, President, Katen & Associates, Inc. and former deputy assistant secretary of MSHA.
- Department electronic display was purchased and installed and a recruiting video was produced as a result of funding received from Newmont Mining.



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