

**Petro Bowl Runners-Up
National SPE Meeting—Fall 2009**



Matt Paradeis, Aaron Croy, Saeed Salehi, Pei Chia, Phil Meeks
Defeated Oklahoma, Calgary, & Texas A&M, but lost to Texas

**Imperial Barrel Competition
Runners Up against 14 other universities.**



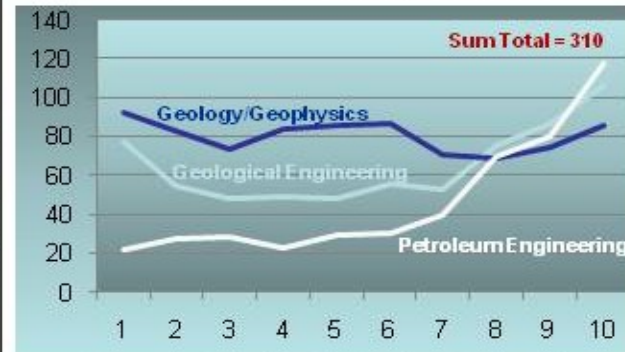
Lamuail Bashir, Aboaja Uchenna, Ali Atef, Hesham Refayee
and Rajesh Challa. Advisor is Dr. Kelly Liu.

**Geological Engineering students working with Dr.
Elmore on water purification projects in Guatemala.**



Dr. John "Jack" Burst passed away on June 28, 2009 in Rolla. Jack received bachelor's and master's degrees from the School of Mines & Metallurgy in 1943 and 1947. Jack was a longtime adjunct faculty in GSE and was inducted into the M&M Academy in April of 2009. Jack was internationally known for his work in ceramics and clay mineralogy. He will be missed in the department.

Fourth Week Total Enrollment Grid 2001→2010



(Does not include students in Freshman Engineering)

Since 2006 (four years):

- Total enrollment from 156 to 310 (almost doubled)
- Proposal numbers from 22 to 42 (almost doubled)
- Proposals submitted from \$1.5 mm to \$12.2 mm (>8X)
- Awards from \$0.9 mm to \$2.5 mm (> 2.5X)
- 23 to 69 fully funded international students (3X)
(worth at least \$6 million to the university total)
- Two PE faculty switched to university funding.
(PE faculty numbers back to reasonable numbers)
- Staff increases = Zero

**Remote Controlled Robot with Lidar
Dr. Norbert Maerz - \$400,000 funded by
Fort Leonard Wood Institute**



Used for visualization and monitoring of unsafe conditions such as landslide areas or underground.

Tectonics of the Nile Valley, Ethiopian Plateau & Afar Triangle. Drs. Mohamed Abdelsalam, Steve Gao, Kelly Liu and John Hogan plus 14 students. Total of six NSF, Statoil and PRF projects at over \$1.3 million.



Students conducting seismic surveys in the Nile Valley, Egypt., January 2010.

**M&M Academy Meeting
April 22nd, 2010**

Business meeting: 9:30 a.m. – 2:30 p.m.
Induction Ceremony and Dinner: 6:00 p.m. – 9:00 p.m.



Chair's Corner

Dear M&M Academy Members,
Greetings from the Academy. This message follows another Best Ever St. Pat's celebration at Missouri S&T! The chairs inform me that students and faculty all survived the festivities, albeit many rubber snakes were pulverized into the turf on campus.

Once again, overall enrollment on campus is up for the spring semester (~6,496 students) – this is more than 500 students greater than one year ago. In the Mines & Metallurgy departments the enrollment stands at 687 students, which is up 104 students from a year ago. This continued success in recruiting new students is great news for the bottom line, but a recent capacity study on campus shows that S&T has reached its limits on the ability to deliver the hands-on lab expertise employers desire in the students. Coupled with the looming budget cuts from the state, our chairs are very worried about their ability to maintain this tradition that distinguishes S&T graduates.

The basic message is simple – through our generosity we have helped give our departments the scholarships necessary to recruit and retain students. Now what they need even more are the resources needed to acquire and maintain the laboratory equipment needed to educate the greater number of students. In the last Academy Newsletter we presented what some of these critical needs are; please consider helping directly.

We're hoping to see you at the April 22nd Academy meeting. **Please come** – you'll see firsthand how our dedication is making a difference in the lives and success of students. A meeting agenda follows this short note. Highlights:

- ◆ Four new Academy will be inducted.
- ◆ Two faculty will receive the Academy Faculty Award.
- ◆ Departmental updates will be given by the Chairmen
- ◆ Mariesa Crow will update us on the activities and growth of the Energy Research and Development Center

I am currently serving on the external committee of Chancellor Carney's "Blue Sky Task Force." This task force is charged with the duty to look into the future and identify which megatrends the campus may be best positioned to pursue. Similar to previous task forces that developed the university's "Mission Enhancement" focus and "Areas of Eminence," we are hoping to identify the future areas faculty will be hired into, and where infrastructure investments will be made. As a first step we are analyzing the National Academy of Engineering's Grand Challenges. Importantly, our Mines & Metallurgy disciplines figure prominently in the future, and helps make Missouri S&T unique as an institution. We'll be discussing this at the Academy meeting- hope to see you there!

Dianna Tickner
March 2010

**April 22nd Meeting Agenda
Missouri/Ozark Room Havener Center**

- 9:30 AM Opening Remarks/Introductions
- 9:40 AM Committee Reports
 - * Executive
 - * Academy Nominations
 - * Scholarship (Scholar Award)
 - * Jackling
- 10:30 AM Break
- 10:45 AM Presentation by Mariesa Crow, Director, Energy Development and Research Center
- 11:30 AM Lunch
- 12:30 PM Departmental Reports
 - * Samuel Frimpong
 - * Wayne Huebner
 - * Bob Laudon
- 1:30 PM Blue Sky Task Force
- 2:30 PM Discussion / Adjourn
- 6:00 PM Reception (McNutt)
- 7:00 PM Dinner, Scholar Awards, Faculty Recognition Award & Induction Ceremony

Students

- 174 total undergrad students (up 8)
→ 92 MetE / 82 CerE
- 63 students in the FEP (up 29)
→ 31 MetE / 32 CerE
- 62 graduate students (up 6)
→ 14 Met / 14 Cer / 34 MSE
- ≈\$300K in endowed scholarships given out in AY09-10; ≈\$75K in competitive scholarships from professional organizations
- 80% placement rate in CY09; starting salary Met: \$59,289, Cer: \$57,100



Fall 09 Graduates

- Keramos & Material Advantage Groups win National Awards at MS&T



Research

- 3 Year average expenditures: \$6.1M (MSE generates 21.2% of the research on campus with 5.5% of the faculty).
- \$1.9M from NSF will fund the renovation of the MRC; total project ≈\$5M
- NSF funds a new \$1.5M TEM! Will be installed fall 2010.



FEI Tecnai F20 TEM

Faculty

- The Steel Division of the AFS names S&T work to receive the Best Paper Award at the upcoming Cast Expo '10 / 114th Metalcasting Congress:
R. Howell, T. Weerasooriya, and D. Van Aken, "Tensile, High Strain Rate Compression and Microstructural Evaluation of Lightweight Age Hardenable Cast Fe-30Mn-9Al-XSi0.9-0.5Mo Steel"
- 17 fulltime T/TT faculty (UG student: faculty ratio =10.4:1)
- Hilmas and Dogan were named 2009 Fellows of the American Ceramic Society



Greg Hilmas



Fatih Dogan

News from 2009

- The Inaugural Dr. Thomas J. O'Keefe Lecture was given by Robert C. Tooke, MetE '62, '66, '72
- Joe & Sally Rupp, MetE, '72, \$100K for the Thomas J. O'Keefe Lecture.
- Bill and Ann Horst, MetE, '51, \$300K for the O'Keefe Student Development Fund
- Arthur Shrubsall, MetE, '33, \$50K, unrestricted
- Earl Weaver, Cer E, '65, \$45K, unrestricted
- Edward P. Lasko, MetE, '58, \$660K, unrestricted
- Tom Wetteroth, CerE '79 & '83, \$5.5K, scholarship
- David Kroeter, MetE, '73, \$5K, scholarship
- The SOMM Academy provided over \$150K to obtain pieces of equipment critically needed for ABET accreditation.



MNE STATISTICS

- 230 Seniors, Juniors, and Sophomores, 100 FEP; 35 MS/PHD & 57 ME; Total Enrollment of 387 (16% growth over last year)
- \$320K in endowed, industry and competitive scholarships for CY2009
- 100% placement for May 2009 grads with \$75K starting salary; 85% placement for December 2009 grads with \$64K starting salary
- Overall, > 90% of students involved in Department, Campus and External Extracurricular Activities

ACTIVITIES IN MNE



2009 Mucking Competition in Butte, MT



2009 Mine Rescue Contingent Displaying their Strength and Passion



Sir Paul Worsey, 2010 Saint Patrick Knight



Nuclear Camp - Educating HS Students



Explosives Camp - Educating HS Students

NEW FACES IN MNE



Dr. Bijaya Shrestha



Dr. H. Koo Lee

Dr. Shrestha – Assoc. Prof. – NUC ENG

Dr. Koo Lee – Assoc. Prof. – NUC ENG



Dr. Maochen Ge

CAPACITY EXPANSION



MINING ENGINEERING

- Kennedy Metal Product's \$1.5 M for the Exp Mine Bldg (60% Funding)
- Barrick's \$125K for Mine Survey Facility (35%)
- Arch's \$116K for Health & Safety Facility (100%)
- Doe Run's \$150K for Exp Mine Facility
- CAT Global Mining's \$225K for Surface Facility (60%)
- Joy-P&H Mining's \$100K for Underground Facility (100%)
- Mississippi Lime's \$200K for Exp Mine Facility

NUCLEAR ENGINEERING

- 50-Year Anniversary in Fall 2010. Dr. Warren Miller, Asst. Sec. Nuc. Energy, US DOE as Keynote Speaker

RESEARCH NEWS



\$430K funding for Department of Homeland Security Counter-terrorism research



\$1.7 M funding for CDC- NIOSH Mine Safety and Health Research



With Impact Tech for the \$2.4 M DOE award for Slurry Jet in Enhanced Geothermal Energy

DOE \$180K funding for S&T-Lincoln Partnership

OTHERS: NRC \$160K & Exelon's \$50K funding



Dr. Baojun Bai

Assistant Professor of Petroleum Engineering
For the Mines & Metallurgy Academy Junior Faculty Award



Research Areas:
Chemistry of hydrocarbons
Enhanced oil recovery (EOR)
CO₂ sequestration
Surfactant, foam and polymer flooding
Nanogel transport thru porous media
Reservoir simulation

Dr. Baojun Bai, Assistant Professor, Petroleum Engineering
Missouri S&T: 2006-Present
Post Doc--Chemical Engineering: CalTech—2006
Ph.D. New Mexico Tech—Petroleum Engineering: 2006
Ph.D. China University Geosciences—Petroleum Geology—2002
MS. Graduate School of RIPED, Beijing, China,
Petroleum and Natural Gas Engineering--1995
BS. Daqing Petroleum Institute, Daqing China, 1992

Dr. Bai is one of our rising stars. He has the potential to become a Curators Professor if he dose not burn out. He presently has five active grants at over \$1.4 million and he has six proposals out for review at over \$3.2 million. He is presently hosting two visiting research faculty, one post Doc and one visiting Research Assistant. He is presently advising eight Ph.D. students and five MS students, plus three OURE students. In addition to research and special problems, he is teaching three courses per year including our Formation Evaluation course with over 40 students. He is the graduate coordinator for Petroleum Engineering and processed over 80 students this past year.

Dr. Bai has over 80 papers in various journals and international conference proceedings, 20 reports and ten awards for his research. He is an active member of the Society of Petroleum Engineers (SPE) and the American Chemical Society. He is technical editor for the Reservoir Engineering and Evaluation group of the Society of Petroleum Engineers and he is a committee member for the Journal of Petroleum Technology on Enhanced Oil Recovery (EOR) performance section.

With the recent increases in enrollment in Petroleum Engineering, the whole PE group has come under considerable stress. Dr. Bai, in particular, has carried a very heavy load in both teaching and research, and I think it is fitting to recognize him for his efforts. He participates in department recruiting and retention efforts and has become a valued member of the department. It is with great pleasure that I nominate him for the Mines & Metallurgy Academy Junior Faculty Award.

Robert (Bob) Laudon, Chair, Geological Sciences & Engineering

DR. JASON BAIRD

ASSOCIATE PROFESSOR OF MINING ENGINEERING
RECIPIENT OF THE SENIOR FACULTY AWARD BY
THE MINES & METALLURGY ACADEMY



Dr. Jason Baird
Associate Professor of Mining Engineering
Rtd. Lt. Col. US Air Force

Research Areas

- ▣ Explosive-Resistant Structures
- ▣ Energetic Materials
- ▣ Advanced Composite Materials
- ▣ Explosive Taggants
- ▣ Explosive-Driven Pulsed Power

Research Awards

- ▣ \$8 million within the last 10 years (with 80% shared credit)

Notable Research Projects

- ▣ 1998-03: AFOSR MURI (Multi-University Research Initiative)
- ▣ 2005-08: Congressional Plus-up Grants to study Blast Barriers for Civil Defense
- ▣ 2005-07: U.S. Technical Support Working Group for Anti-Terrorism, Explosives Expert
- ▣ 2007-10: Blast-Resistant Barrier and Panel Research for the Leonard Wood Institute
- ▣ 2008-10: DHS Counter-Terrorism Research
- ▣ 2009-10: Oak Ridge National Laboratory (Babcock & Wilcox Y-12), Blast-Resistance Studies

Research Publications

- ▣ 19 Refereed Journals,
- ▣ 29 in conference proceedings
- ▣ Co-authored 3 books
- ▣ 9 invited presentations
- ▣ 12 final reports

Current and Previous Graduate Students

- ▣ Dr. M. Schmidt, Research Scientist, Applied Research Associates, Inc. (Co-Advisor)
- ▣ Dr. B. Lusk, Assistant Professor, Department of Mining Engineering, University of Kentucky (Co-Advisor)
- ▣ Dr. S.B. Lim, Assistant Professor, Department of Mineral Engineering, New Mexico Tech (Co-Advisor)
- ▣ 2 for M.S. Graduates
- ▣ Current Students: Dominique Nolan (PhD), Phillip Mulligan M.S.), Charles Zdazinski (M.S.), Jacob Miller (M.S.), Laurin Bookout (M.S.), Nathan Rouse (M.S.)
- ▣ S&T Committee Memberships: 7 in Civil Engineering, 1 in Chemistry, 1 in Geological Engineering, 1 in Mechanical Engineering.

Recognition and Honor Citations

- ▣ Teaching Excellence Awards: AY2007-08 & AY2008-09
- ▣ 2008 Fort Leonard Wood SAME Award

Service

- ▣ Academic Advisor: Freshman Engineering
- ▣ Faculty Advisor: NSSGA Student Chapter
- ▣ Faculty Advisor: Mine Design Club
- ▣ Faculty Advisor: Missouri S&T Chapter of Pi Kappa Phi Fraternity (2004 – Date)
- ▣ NRA Certified Pistol Instructor
- ▣ NRA Certified Instructor for Personal Protection
- ▣ Outreach activities volunteer at church
- ▣ Reviewer for Illinois Clean Coal Institute since 2002
- ▣ Reviewer – IEEE pulsed power publications since 2000

Memberships

- ▣ Society for Mining, Metallurgy, and Exploration (since 1997)
- ▣ International Society of Explosives Engineers (since 1997)
- ▣ Institute of Electrical and Electronics Engineers (since 2000)
- ▣ Reviewer/Referee for IEEE Transactions on Plasma Science
- ▣ American Institute of Aeronautics and Astronautics (since 2000)
- ▣ Directed Energy Professional Society (since 2000)
- ▣ American Physical Society (since 2005)