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. Highights:

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

Dr. Baojun Bai, Assistant Professor, Petroleum Engineering
Missouri S&T 2006-Present
Ph.D., China University of Geosciences—Petroleum Geology 2002
MS, Graduate School of RIPEA, Beijing, China
Petroleum and Natural Gas Eng—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 does not burn out. He presently has five active grants at over $1.4 million and 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 90 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 handled 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

Current and Previous Graduate Students
- Dr. B. Lusk, Assistant Professor, Department of Mining Engineering, University of Kentucky (Co-Avisor)
- Dr. S. S. Lim, Assistant Professor, Department of Mining Engineering, New Mexico Tech (Co-Avisor)
- 2 for M.S. Graduates
- Current Students: Dominique Nolan (Ph.D.), Phillip Mulligan (M.S.), Charles Zbyszynski (M.S.), Jason Miller (M.S.), Lauren Bickford (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: Mines 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 2000)

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
- 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 (Batcock & 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