



MetAlum News

A Newsletter for the Alumni of
Metallurgical Engineering

Fall 2004

**Greetings from the
UMR Department of Materials Science
and Engineering,
a Department within the School of Materials,
Energy and Earth Resources**

Now that I have your attention, how do I begin? How about – “And the angel said, ‘Fear Not!’” Or maybe a quote from Shakespeare – “What’s in a name?” Or a simple assurance – “The sky is NOT falling!”

As we entered the academic year last fall, UMR had received yet another reduction in state funding, and the on-campus distribution of that cut was significantly disproportionate to the School of Mines and Metallurgy. The further distribution within the School resulted in a cut-to-the-bones reduction for Metallurgical Engineering. We would lose all state operating funds with the exception of salary and wages, and would have to operate the department on alumni and corporate gifts, along with the overhead generated through external research. Our sister department, Ceramic Engineering, had received a similar assessment.

To make a long story short, we rebelled, or more appropriately, we mutinied! The two materials departments were indeed extremely research productive, but we felt that research resources should support research, and not be diverted to underwrite the core teaching mission of the department. Moreover, the cuts to the School of Engineering departments were not as severe, and it was known that future resources would be distributed across the campus based on departmental “productivity”. We simply wanted to compete on a level playing field. Our initial request was to transfer Metallurgical and Ceramic Engineering to the School of Engineering where we would be welcomed for our research productivity and hoped to receive more equitable treatment. Both of our programs had evolved to less mineral processing and extractive, and more physical and manufacturing, and we felt that we would be a good fit to Engineering. In order to be a viable unit within that School, however, we felt that we would need to form a combined department in order to be comparable in size to the smaller departments within the School of Engineering.

That request was denied. Our administration felt that UMR

needed to preserve its heritage and maintain a School of Mines and Metallurgy. At the same time, they were sympathetic to our situation. We were given new leadership and collectively charged with restructuring the School of Mines and Metallurgy into a healthy and viable unit. Last fall, I was reluctant to communicate much to the alumni and industry because the details were in a constant state of flux.

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Metallurgical Engineering
573-341-4711

Greetings...

What has emerged is the following:

1. The School of Mines and Metallurgy has become UMR's first theme-based school or college with three academic departments, each anchoring one of the three themes of Materials, Energy and Earth Resources.

2. Because "mines" and "metallurgy" are often perceived as "smokestack industries" by prospective students, but the words "materials", "energy" and "earth resources" have positive connotations with companion career opportunities, the name of the School was changed to the School of Materials, Energy and Earth Resources. To prevent our acronym from becoming SMEER (pronounced smear!), the "o" was retained and we are now SoMEER (pronounced So-MEER).

3. The three new departments will continue to offer degrees in the current seven discipline areas. The Department of Materials Science and Engineering will offer degrees in ceramic engineering and metallurgical engineering. The Department of Geological Sciences and Engineering will encompass geology and geophysics, geological engineering, and petroleum engineering. The third unit is the Department of Mining and Nuclear Engineering. The degrees here are obvious. (There was resistance to becoming "energy engineering").

4. Students can enter the new department with only a "materials" preference. In fact, we hope to establish a common beginning, possibly the first three semesters. By the middle of the sophomore year, however, a decision must be made to pursue a discipline-specific degree in either Metallurgical Engineering or Ceramic Engineering. In essence, we hope to attract high school students interested in materials, along the way convert them to Mets or Ceramists, and then assure our supporting industries that we are still training UMR Metallurgical Engineers and Ceramic Engineers.

5. The new Department of Materials Science and Engineering will be in an excellent position to achieve national ranking and recognition. U.S. News and World Report and other national rankings require data to be submitted by academic department. UMR's Metallurgical and Ceramic Engineering programs appeared separately somewhat down on a list dominated by other school's Materials Science and Engineering programs. By combining, we can now report 20 full-time faculty (26 with research professors), \$7 million in funded research, 100 undergraduates, 60 graduate students, etc. In essence, we can present statistics that place us within the top 10 to 15 programs in the nation! Achieving such a ranking nationally will

"The three new departments will continue to offer degrees in the current seven discipline areas."

bring additional recognition and resources when they are distributed on the campus.

6. **Additional resources have already been provided to support the restructuring and revitalization of the School and the Materials program!** We have asked for the chance to prove ourselves, and it appears that we have been given that opportunity. A nationwide (international actually) dean search is currently underway, and we look to have an individual in place by January.

7. Within the department, changes have been rather minimal. Dr. Richard Brow, former chair of ceramic engineering, has assumed the chair position in the combined unit. Dick has been challenged with establishing and enhancing a national presence in materials, along with expanding the research activities within the department. For many years, we have been content to sit here in Missouri and do an excellent job at what we do. As a result, we have cultivated an excellent reputation among the industries that we serve, and are primarily known for the quality of our undergraduate education. It will take some work, however, for both academic and industrial circles (at the national level) to associate "Materials" and "the University of Missouri-Rolla". This is our goal, and we are looking to Dick to provide leadership in this area.

8. I (Ron Kohser) have become Assistant Chair for Undergraduate Matters, and will be responsible for both the Metallurgical and Ceramic Engineering undergraduate programs. I look forward to sustaining the quality of our undergraduate instruction, and have already come to enjoy not having to attend all of the budget and strategic planning meetings (sorry Dick!). While our initial plan was to have a companion position for graduate study and research, it became apparent that we did not want to divert any one individual from their current activity. For now, we will be addressing issues in this area through a three-man committee with a point-man chair. Our secretaries have actually seen greater change than either the faculty or the students as the four full-time individuals have redistributed the work load to more efficiently address the needs of the combined department.

9. Long range, there appears to be some interest in expanding our offerings to include polymers and possibly composites, but the faculty are firm that this should not be at a sacrifice to either Metallurgical or Ceramic Engineering. To divert an open faculty position to polymers, for example, would be unacceptable. Movement into new or additional areas should be through growth and expansion, not reallocation or compromise!

Finally, while we have come to recognize some of the benefits of merger, we are also committed to maintaining a discipline separateness.

Continued on Page 3

Greetings...

Metallurgy scholarships will continue to be awarded to Metallurgy students. We will have separate phonathons, and the funds will be kept separate. The curriculum will offer separate ABET-accredited degrees in each discipline.

There's always a level of discomfort when we are asked to do something different or do it a different way. Most of us are firmly convinced that the outcome of this restructuring will be positive. We have already put in a full year planning and have implemented the initial stages of reorganization while continuing to meet all of our existing obligations. One of our secretaries summed up the situation with a sign announcing the rearrangement of faculty mailboxes --- "Change is good, but the transition stinks!" We're working through the transition, and it's not always easy. At the same time, we can definitely see the benefits of change!

We'd like to hear your opinions, comments and concerns. Continual "assessment" from all constituents is encouraged in program accreditation, and the input of our alumni is vitally important. Let us hear from you as we continue to work through this transition.

Phonathon News

Our past phonathons have been most helpful in providing continuing support for the department. In 2001, metallurgical engineering alumni pledged \$24,262. In 2002, the amount jumped to \$44,000, and last year, we received pledges totaling \$48,125. At present, we have about \$50,000 in our phonathon account, and a successful 2004 effort will put us in good shape to begin addressing our most pressing need.

When we moved to McNutt Hall in 1987, all of the metallography equipment was brand spanking new. The green Leco equipment filled the labs, and provided an excellent base for instruction. All of that equipment is now 17 years old, and has just about outlived its expected lifetime. There was no way that the state allocations were going to permit replacement, but we now appear to be in a position to combine phonathon funds with gifts from supporting industries and alumni and move into a progressive replacement of these key pieces of equipment.

We will be doing the phone contacts sometime in mid-October – so expect the call. Remember, Met monies will be used for Met students. Your help is needed!

Class of '54 Alums Return for 50-Year Reunion

Five of our Class of '54 alums returned to campus on June 6-8 for their Golden Alumni Reunion. Attending were:

- **Robert Dahll**—Worked for GM, Aerojet and the U.S. Air Force
- **Daniel Groteke**—Retired from foundry manufacturing and quality assurance
 - Holds 16 patents and has 65 papers and presentations
 - Still active in consulting
- **Ralph Hollocher**—Worked for LeTourneau-Westinghouse, Ford Aerospace, Aerojet Ordnance, and Whirlpool
- **James Hubeli**—Three years with the U.S. Army Signal Corps and 35 years with Laclede Steel
- **Harold Koelling**—Went on to PhD and a career as professor at Mississippi State University

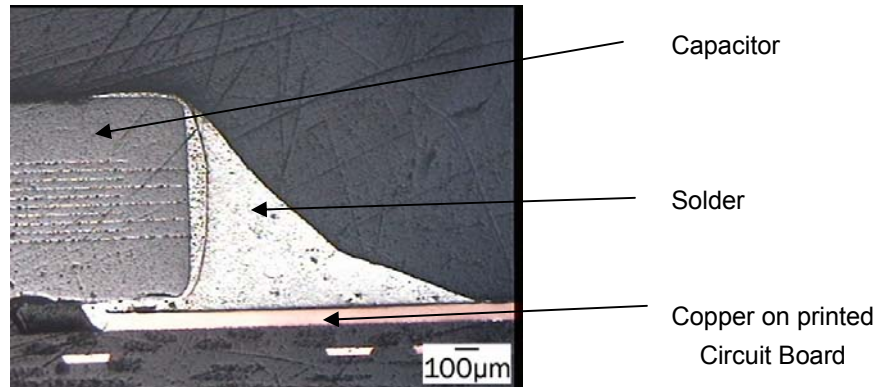
Brandon Kruse Receives ASM Scholarship

Brandon Kruse, a senior in Metallurgical Engineering from St. Louis, was recently named as the recipient of a 2004 William Park Woodside Founder's Scholarship from ASM International. This scholarship provides full tuition for one academic year (up to \$10,000), and is awarded in recognition of exemplary academic and personal achievements, interest and potential in Metallurgy or Materials Science and Engineering, and financial need. Brandon will receive the award at the ASM Materials Solutions Conference in Columbus, Ohio, October 18-20.

Pb-Free Solder Work

There are a number of projects in Dr. Matt O’Keefe’s research group looking at different aspects of implementing Pb-free solders into manufacturing of microelectronic components. A reduction in the use of Pb in all applications is driving industry to look for alternatives and a number of technical challenges are being discovered and addressed. Graduate student Martin Perez has been working with Speedline Technologies soldering equipment manufacturing plant in Camdenton, MO and Speedline’s research and development center in the UK to evaluate the corrosion of stainless steel by Pb-free solders. This work has been a follow on to previous efforts to identify materials that do not react with the high (>97%) Sn content solders. After the solder manufacturing companies were aware that Pb-free solders would corrode the stainless steel components that are used to fabricate wave and reflow soldering equipment, they have been working on developing Pb-free solders that do not react with the stainless steel. The corrosion of the stainless steel into the molten solder changes the composition of the solder due to the presence of Fe, Cr, and Ni in the stainless steel, which in turn changes the fatigue and creep resistance of the solder joints.

Another Pb-free project that is just beginning in cooperation with Boeing-St. Louis as part of the newly formed Center for Aerospace Manufacturing Technologies (CAMT) at UMR. As the consumer based low reliability product electronics industry goes toward use of Pb-free solder it leaves the military and aerospace community searching for ways to build and maintain high reliability systems. One of the unique aspects of the change is the repair of aerospace subsystems which currently have Pb-Sn solder joints. In contrast to consumer electronics where a defective system is simply discarded (think of the cost of repairing your VCR or DVD player compared to the price of a new model), aerospace systems are in operation for decades. Combining Pb-Sn solder with Pb-free solders in order to repair existing systems creates a mixed alloy composition with unknown and variable properties. Initial efforts are looking at examination of components, such as capacitors, to printed circuit boards as depicted in the picture below.



Cross sectional image of a capacitor solder joint on a printed circuit board.

Start the Semester with a Steel Mill Tour

Last winter, a group of Metallurgical Engineering students started their semester with a two-day tour of three of the most modern and unique steel mills in North America. Under the supervision of Dr. Peaslee, the students traveled to Fort Smith, Arkansas, and were the guests of the Arkansas Division of MacSteel where they observed the production of round bar and the operation of a unique rotary caster that produces round billets. On the following day, the group toured the facilities of Nucor-Hickman (Blytheville, Arkansas) where they saw DC electric arc steelmaking, and thin-slab casting leading to hot- and cold-rolled sheet. That afternoon, they moved to the Nucor-Yamato plant, the largest producer of structural shapes in the Western Hemisphere. All of this was completely free—courtesy of the steel companies and the Iron and Steel Society (now AIST). What a way to start a semester!

Research Addresses U.S. Steel Shortages

On August 12th, Dr. Kent Peaslee, Associate Professor of Metallurgical Engineering, appeared on the KRCG Channel 13 (CBS affiliate in Jefferson City, MO) evening news discussing his research seeking to make steel production quicker, cheaper and more efficient.

The U.S. steel industry is currently running at about 90% capacity. This steel is made in batches, with raw materials being added to furnaces, where they are melted, mixed and refined prior to pouring into ladles where it is further processed and degassed. While batch steelmaking produces excellent quality steel, it is not the optimum way of producing metal in terms of energy and productivity, and requires transfer of the batch from location to location.

Peaslee and a team of UMR researchers are working to develop a new process that will be completely continuous. Scrap metal will be fed into a furnace which melts and then discharges the molten metal to a series of treatment vessels which alloy and further process the material prior to casting into solid shapes. Scrap metal would be transformed into new steel in about two hours. The cost of building a new plant would be as much as 50% cheaper than current facilities.

This project is supported with \$670,000 in funds provided by the U.S. Department of Energy and industrial partners, including Nucor Steel, TXI-Chaparral Steel, SMI Steel, Gerdau Ameristeel, and Bayou Steel. The goal of the project is improved production and cost reductions that would enable more steel to be produced in America.

Assisting Peaslee in this effort are: Dr. David Robertson, Professor of Metallurgical Engineering; Dr. Von Richards, the Robert V. Wolf Professor of Metallurgical Engineering; Dr. Jeff Smith, Associate Professor of Ceramic Engineering; and Dr. Brian Thomas, Professor of Mechanical Engineering at the University of Illinois at Urbana-Champaign.

Alumni Accomplishments

D. Scott MacKenzie, currently employed with Houghton International in Valley Forge, PA, is a co-editor of the two-volume Handbook of Aluminum, Vols 1 & 2, published by Marcel Dekker. The 1320 page Volume 1 covers the physical metallurgy of aluminum, and the 736-page volume 2 addresses alloy production and materials manufacturing.

Dan Scott, B.S. '70 recently received his 52nd patent. He is employed at Hughes Christensen in Woodlands, TX.

Arthur Shrubshall, BS, '33 attended his 70th class reunion on campus, and was recognized as the oldest active alumnus in attendance.



First Mines & Met Academy Scholars Selected



Laura Castle

The alumni Academy of the School of Mines and Metallurgy elected to expand their ranks through the creation of "Academy Scholars" – a recognition given to graduating seniors with exceptional promise of becoming future leaders and contributors to their profession. Two students were selected for the initial class: **Laura Castle**, a graduate of Metallurgical Engineering, and **Craig Heimricks**, a Nuclear Engineering grad. Each received a \$500 award and a Tag Heuer watch engraved with their initials and year of recognition. Laura is a native of Rolla, and is the granddaughter of the late Jim Scott (Mining Engineering), who was one of the founding members of the School's Alumni Academy.

Non-Chrome Corrosion Coatings

Coatings and surface finishes are essential components of minimizing corrosion on most manufactured parts. Chromium based coatings have been used for decades due to excellent corrosion resistance. Chromate coatings on metallic parts are common in a number of industrial applications, including automotive and aerospace. However, based on medical studies, the Environmental Protection Agency (EPA) lists chromium compounds as persistent, bioaccumulative, and toxic. The elimination of hexavalent chrome from the workplace is the subject of environmental legislation that takes effect within the next year. Changing from chromate based corrosion coatings to non-chrome coatings is a major technical challenge, especially for military and commercial aircraft manufacturers. For the past several years UMR has been working with Boeing-St. Louis and the Air Force Research Lab (AFRL) to develop non-chrome corrosion coatings for protection of aluminum alloys.

A team of faculty and students, lead by principal investigators Dr. Tom O'Keefe of the Met Department/Materials Research Center (MRC) and Dr. Jim Stoffer (Chemistry/MRC) along with co-investigators Dr. Bill Fahrenholtz (Ceramic Engineering/MRC), Dr. Tom Schuman (Chemistry/MRC) and Dr. Matt O'Keefe (Met/MRC), have been working on two types of non-chrome coatings. The first is a conversion coating that is in direct contact with the aluminum alloy surface, and the other is a primer (paint) that goes on top of the conversion coating. The conversion coating work has focused on the deposition of rare earth metal oxides, in particular cerium oxide, from aqueous solutions. To date three methods for depositing the cerium based conversions coatings, electrolytic, immersion and spray, have been developed and a few patents have been filed. Corrosion testing of the effectiveness of the corrosion coating is done by placing the samples into a salt fog chamber for up to two weeks. Failure occurs when pitting and salt tails are visible, as shown in the figure below.



**Cerium Oxide Coated
Al 7075 Panel Before
Salt Fog Testing**



**Cerium Oxide Coated
Al 7075 Panel After
Salt Fog (Pass)**



**Uncoated 7075 Al
After Salt Fog
Testing (Fail)**

The majority of the chrome used in the coating system is in the primer and efforts to find a suitable replacement have met with only limited success. An innovative approach by the UMR team has resulted in a non-chrome primer technology that has demonstrated as good as, or better, corrosion protection on standard chromate conversion coatings during salt fog testing compared to other non-chrome primers currently available. As a result of the promising corrosion results at UMR and similar evaluations done by Boeing-St. Louis for the non-chrome primer on a chromate conversion coating, two patents have been filed and the primer technology has been licensed by a leading paint supplier for additional testing and product evaluation. Supporting technology transfer from the laboratory to industrial application will be a focus of the effort in the near term. A long term goal is to complete the development of the non-chrome conversion coating process and combine it with the non-chrome primer to create a non-chrome coating system. Developing a complete non-chrome coating system is one of the thrusts of the new Center for Aerospace Manufacturing Technologies (CAMT) here at UMR.

Alan Burgess Joins the Mines & Met Alumni Academy

Last October, Alan Burgess became the most recent Metallurgical Engineering alum to be inducted into the School of mines and Metallurgy Alumni Academy. Alan received his BS in 1954 and MS in 1955 from MSM/UMR and added another MS in Nuclear Engineering from Cal-Berkeley and an MBA from Santa Clara. Alan began his career at General Electric at their Hanford Operation in Washington state. He moved to Aerojet General in Berkeley, California, and then returned to General Electric in 1974 where he stayed until retirement in 1991. At the time of his retirement, he was Project Manager of the Commercial Nuclear Power Division. Alan is pictured receiving his plaque and statuette from Academy member and Curator's Professor Tom O'Keefe and Academy President Kent Weisenstein.



Campus News

- Three members of the Metallurgical Engineering faculty were among nineteen professors that received Faculty Excellence Awards last December 16th. Those recognized were **Rajiv Mishra, Matt O'Keefe and Kent Peaslee**. Two Ceramic professors, **Bill Fahrenholtz and Greg Hilmas** were similarly honored – so “Materials” accounted for over 25% of the awards.
- Two Metallurgical Engineering seniors received \$2000 Outstanding Scholars awards at the ASM Materials Solutions Conference held last fall in Pittsburgh. **Nathan Switzner and Nick Wheeler** were each recognized for their scholarship, leadership and service in Materials Engineering. Only ten student scholarship awards were made at the conference, and UMR students were selected for two!
- Three Metallurgical Engineering professors were honored with 2003 Outstanding Teaching Awards. Those recognized included: **Kent Peaslee, Chris Ramsay, and David VanAken**. Thirty-three awards were given across the campus, so once-again, Metallurgical Engineering's share was disproportionate!

Department Scholarships

During the past academic year, Metallurgical Engineering awarded nearly \$125,000 in departmental scholarships to undergraduates enrolled in the department, and all awards were additions to existing sources of financial aid or student support. This makes Metallurgical Engineering the number one department on the campus in terms of supporting its students. Even more impressive, this amount does not include scholarships received in national competitions or those received from off campus sources.

In the past 30 years, Metallurgical Engineering has faithfully honored its pledge that a 3.0 or better grade point average will guarantee departmental support. Scholarships with special stipulations are often awarded to students below that level. Last year, and again this fall, every entering freshman with a declared Metallurgical Engineering preference received a department scholarship that is theirs to keep or lose depending on academic performance. Each semester, every student in the department is evaluated for scholarship support.

**\$125,000 in
Department
Scholarships
Awarded**

A special thanks to all of the alumni whose generosity has made possible the large number of Met awards.

Lorna O'Rourke (B.S. '84) Receives UMR Professional Degree

The department was proud to sponsor Lorna O'Rourke, Vice-President of Operations at Northern Precision Casting Co., Lake Geneva, Wisconsin, for professional degree recognition at the May, 2004 commencement. Lorna began her career at Northern Precision immediately following graduation, and has worked through the ranks as Metallurgist, Process Engineer, Estimator, Technical Director, Vice President and Director of Quality, and currently Vice President of Operations. In her

present position she oversees day-to-day operations that include production, engineering, quality, purchasing, information systems, maintenance, international suppliers, and staffing. She and her husband, Bob (Met. E. grad of 1983, now with Wells Dura-Bar) have been active alums and regular visitors to the department! This is a well-deserved recognition for a really neat person!

AFS Student Chapter and Open Foundry

Four open foundry experiences were held for the AFS Student Chapter for 2003/2004 Academic year. Also, demonstrations were held for Jackling students, ASM Materials Camp and high school guidance counselors.

The AFS Student chapter had a number of interesting speakers this year:

- **Bruce Dienst** from Simpson-Gerosa
- **Steve Pruss** from GM Powertrain
- **Raymond Monroe** from Steel Founders' Society of America
- **Vasco Popovski** from Elkem Metals

Steve Pruss and Vasko Popovski spoke to overflow crowds of 80 -100 students as an open invitation went out to the freshmen engineering students through Dr. Chris Ramsay.



Pouring iron for the high school counselors

Campus News

- Three UMR Met. students received \$1500 national scholarships at the Foundry Educational Foundation College-Industry Conference, last November 13-15. **Barbara Monroe-Allyn** (a senior) received the Robert Reesman Memorial Scholarship; **Brandon Kruse** (a junior) received the Burleigh Jacobs Scholarship; and **Nick Wheeler** (a senior) received the Robert V. Wolf Memorial Scholarship. Only 15 scholarships were awarded, and the scholarship committee elected to break a long-established rule limiting a single school to no more than two awards.
- The UMR Met. Department received \$18,900 in additional funds from the Foundry Education Foundation last year. A good portion of this was distributed as on-campus FEF scholarships.
- **Lucie Johannes**, a metallurgical engineering grad student, was the 2004 St. Pat's Queen of Love and Beauty.
- **Mark Tschopp**, a recent grad and current graduate student at Georgia Tech, was selected to receive a prestigious National Science Foundation Graduate Research Fellowship.
- Over the next three years, UMR will receive more than \$800,000 to fund six Ph.D. fellowships for students to conduct research in materials engineering. The fellowships are being funded through the Department of Education's Graduate Assistance in Areas of National Need (GAANN) program.

Meet Dick Brow



Dick Brow, Professor of Ceramic Engineering, is now the Chair of the new Department of Materials Science and Engineering. Dick is a glass specialist who received his B.S. in Ceramic Engineering from Alfred University in 1980, his M.S. in Glass Science from Alfred in 1982, and his Ph.D. in Ceramic Science from Penn State in 1985. From 1985 to 1998, he was a Professional Staff member in the Ceramics Development Division of Sandia National Laboratories in Albuquerque, New Mexico. From 1990-1996 he was also an Adjunct Professor at the University of New Mexico where he taught a graduate course in Glass Science.

Dick came to UMR in the fall of 1998 as a Professor of Ceramic Engineering and Senior Investigator in the Graduate Center for Materials Research (MRC). He assumed the Chair of the Ceramic Engineering department in January, 2001, and became Chair of the combined Department of Materials Science and Engineering, effective July 1st of this year. He and his wife, Theresa, have two children, Katie (age 9) and Adelaide (age 5).

ASM/UMR Materials Camp

Last December, the department was approached by ASM International and invited to submit a proposal to host a one-week Materials Camp for high school students entering 11th or 12th grades. Our request was approved last spring, and 21 students from across the U.S. spent the week of July 25-30 exploring metallurgical and ceramic engineering. Ron Kohser and Mary Reidmeyer co-directed the program, which included faculty presentations, seven small-group research projects, and tours and demonstrations in various research labs. Off campus field trips included the Rolla facility of Briggs & Stratton (die casting and assembly), Mo-Sci Corporation (a high-tech glass operation in Rolla), Olin Corporation in East Alton, IL (casting plant and brass mill), and the Saint Gobain glass plant in Pevely, MO that manufactures the bottles for Anheuser-Busch.

Teams of participants also designed and constructed “walk-on-water” shoes that would allow an individual to walk across the TJ swimming pool. Teams were formed on Monday morning, and each team had to decide on a design and submit a materials list first thing Tuesday morning. Up to \$50 of materials were purchased for each team and these were delivered on Tuesday evening. The final product then had to be completed by Thursday evening for “on-the-spot field testing”. The resulting designs were quite varied, but three of the four teams actually made it across the pool. We all had fun, and look forward to the possibility of a Materials Camp becoming an annual activity.

4.0 Grade Point Graduates



I know that sounds like a total contradiction to many of you, but we've come to have our share.

In May, 2003, **Marty Rust** became the first student (that I know of) to complete the Metallurgical Engineering curriculum with a 4.0 gpa. Marty stayed on for graduate study with a National Science Foundation Graduate Research Fellowship. Upon completion of his M.S. this fall, he will be moving on to a Ph.D. program at Oxford University (England) in October.

In December, 2003, **Richard Colfax** matched their accomplishment, and has elected to stay for graduate study under Matt O'Keefe.

This past May, Metallurgical Engineering graduated **four 4.0 graduates -- Alicia Adams, Barbara Monroe-Allyn, Nathan Switzner, and Nick Wheeler**. Alicia is continuing graduate study at UMR under Dr. Rahaman (Ceramic Engineering). Barbara has accepted employment with GM (Defiance), and both Nathan and Nick are working at Honeywell in Kansas City.

Faculty Recognized for Teaching Excellence

Last year, the School of Mines and Metallurgy began its own recognition of teaching excellence, and awards were made for “Sustained Excellence in Teaching” and “Innovation in Teaching”. This year, awards were given for Innovation in Teaching, Sustained Excellence in Lab Instruction, and Most Improved Lab Instruction. Dr. Scott Miller was recognized for sustained excellence in lab instruction, and Dr. Von Richards received one of two “Most Improved Lab Instruction” awards. Dr. Matt O’Keefe received honorable mention for Innovation in Teaching for his series of senior design projects that won “best paper” honors at a national conference. The photo below shows the five School of Mines and Metallurgy honorees.



Left to Right: Dr. Bill Fahrenholtz (Ceramic Eng), Dr. Eric Bohannon (MRC), Dr. Scott Miller (Metallurgical Eng), Dr. Larry Grayson (Mining Eng), and Dr. Dave Wronkiewicz (Geology Eng)

New Patents

This year, four UMR faculty members were recognized for receiving patents. Two of the four were in metallurgical engineering. **Dr. Rajiv Mishra** received Patent 6,655,575 on “Superplastic Forming of Micro-components” on December 2, 2003, and Patent

6,712,916 on “Metal Superplasticity Enhancement and Forming Process” on March 30, 2004. **Dr. Joe Newkirk** received Patent 6,342,181 on “Corrosion Resistant Nickel-based Alloy” on January 29, 2002.

Another of the patent recipients is in Ceramic Engineering, so materials accounted for three of the four individuals!

Send Us Your Corroded, Your Failed, Your Rotten

Professor Mark Schlesinger has revived the corrosion course formerly taught by Chemical Engineering, and is now teaching it as a Met elective. He could use some good examples of different types of corrosion to illustrate concepts. If you have corroded stuff which you'd like to share with the world, send them to Mark!

Met Picnic September 25, 2003



Thanks To All Our Recent Donors!

The faculty, staff and students would like to thank the following for donations made to the Metallurgy Department this past year. The list was obtained from UMR's Annual Giving Office and if you gave to the department but do not appear on the list please let us know so that we can update the records and include you in future newsletters.

Akers, Becky A.	Brunts, Stephen C.	Dowd, James D.
Akers, David Allen	Buhr, Mark Joseph	Downey, Gary W.
Akmakjian, Charles	Bumps, Edson S.	Dreyer, Dennis G.
Allen, Jeanne Kay	Bundy, Gregory Kirk	Dunehew, J. Matthew
Alyea, Jerrold M.	Burgess, John Michael	Dunlay, Mark John
Amend, Dennis Christopher	Byers, Stacy Renee	Dye, Bobby Scott
Anderson, Harvey A.	Cardetti, Richard J.	Eckert, Jason Philip
Andriano, Richard Max	Carner, David Edward	Elbaum, Jerome K.
Arzabe, Humberto Q.	Carroll, James V.	Elder, Robert Ryan
Avis, Scott David	Carter, Jason Andrew	Ellis, Walter H.
Bachman, Bruce C.	Castor, Lawrence W.	Epperson, Joseph
Bailey, Rob D.	Chen, Szu-Chain F.	Erskine, Robert H.
Bain, Christine Adele	Chronister, Donald J.	Feldeworth, Dianne Marie
Ballantyne, David E.	Chronister, Thomas G.	Ferrill, David J.
Barklage, Aaron Keith	Chu, Ming-Yuh	Fesler, Dennis J.
Basden, Barry L.	Cismoski, Shannon Lynette	Fick, Armin F.
Becher, Mary F.	Coffet, Frank J.	Field, Alicia Jean
Becka, Gary A.	Connor, Zayna Marie	Fiatovs, George J.
Becker, Charles P.	Cooper, Donald G.	Finley, Thomas J.
Bemelmans, Christel M. A.	Corum, Christine L.	Fischer, Robert John
Bench, Mike W.	Cotter, Kenneth T.	Fitzgibbons, David Patrick
Benhardt, Heather Ann	Cottrell, Ricky H.	Flanigan, Lee A.
Benner, Robert I.	Courtois, James Alan	Fleischut, Paul I.
Berglund, Ralph H.	Cox, Bobby T.	Foehrweiser, Gery R.
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