

NEWSLETTER CHEMMUNICATOR

UPCOMING events

2006 Undergraduate Research Conference.....	April 12
Admissions Open House 2.....	April 14
Chemistry Phonathon.....	April 20
2006 Spring Banquet.....	April 28
Spring Commencement.....	May 13
Fall Semester Opens.....	August 13
Homecoming.....	October 20-21
Fall Commencement.....	December 16

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- Moving Science from the Old World to the New World

*Chemistry Department
2006 Spring Semester*

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2 UM-Rolla Chemistry Department Faculty Members Received Arts & Sciences Teaching Awards

Two Chemistry Department faculty members from the College of Arts and Sciences (CAS) at the University of Missouri-Rolla were honored for their excellence in teaching during 2004-2005 at a reception held Friday, October 14, 2005.

Dr. Paula Lutz, dean of the UMR College of Arts and Sciences, presented the awards.

The CAS Excellence in Teaching Award is given each year to College of Arts and Sciences faculty members in two categories. "We wanted to recognize those faculty members who teach well to a large number of students (more than 100 per year) and those who teach labs," explains Lutz. In addition, an award for freshmen - or first year - tenure-track faculty honors those faculty members who achieve this excellence in their initial year at UMR.

Award winners were selected by a committee of Curators' Teaching Professors in the College of Arts and Sciences based on student evaluations of faculty members done by the Committee for Effective Teaching at UMR. All college faculty members, with the exception of Curators' Teaching Professors, are eligible for the awards.

Dr. Yinfa Ma, professor of chemistry, taught more than 100 students in lecture classes during 2004-2005 and was selected for the CAS Excellence in Teaching Award in the lecture category.

Dr. Terry Bone, lecturer in chemistry, taught three or more lab courses in 2004-2005 and was selected for the CAS Excellence in Teaching Award in the lab category.



2006 Chemistry Phonathon



Last year's Chemistry Department phonathon was held on April 19-21 & 24-25, 2005 and was a success. The UMR Chemistry Department received pledges totaling \$9,235.00. Thanks to all who made this possible, and thanks for supporting the students.

This year's phonathon will be held April 20, & 23-26. We will begin calling our alumni on April 20, 2006. When the phone rings, please take a moment to share some of your Rolla experiences with a current student, and say "Yes," when asked to make a pledge. Taxpayer support accounts for 40% of the university's revenue, making your contribution a vital ingredient in the revenue pie. Any amount you give will be appreciated.

Make your contribution today to help our students.

2005-2006 Scholarship Recipients



William Hamlet Webb Endowed Scholarship Fund

Adam Bohlmann Kunz
Christopher Campbell
Taylor Hahn
Kathryn Hilgenbrink
Joel Johnson
Tracie Kost
Martin McPhail
Benjamin Murrell
Emily Speorl
Sherea Stricklin

Scholarship on behalf of Tnemec Company and Its Representatives, in support of the Albert C. Bean, Sr. Scholarship and Loan Foundation

Kyle Anderson
Kylee Hyzer

Davies Family Endowed Scholarship Fund

Marc Armbruster
Nicholas Heady

Wouter Bosch Endowed Scholarship Fund (including The Coatings Industry Education Foundation Scholarship Grant)

Kyle Anderson
Tara Banaszek
David Bonskowski
Brandi Clark
Caroline Cottrell
Elizabeth Garvin
Emily Hackworth
Elyse Hendrickson
Kylee Hyzer
Joseph Kellogg
Virginia Pacey
Rachel Prewitt
William Raine
Angela Rudolph
Emily Stonebarger

James and Julia Stoffer Scholarship Fund

Kylee Hyzer

Kansas City Society for Coatings Technology Scholarship

Angela Rudolph

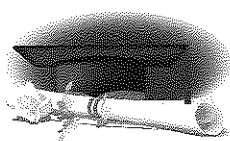
Peter H. Pietsch Scholarship Fund

Jonathan Brace
Kevin Day
Shannon Howell
Yi-jen Su
Stephanie Velez
Elizabeth Zuchek

William & Arlene James Scholarship Fund

Julie Breckenridge
Miranda Ceballos
Shaun Dierker
Melissa Leek
Lynricia Lizama
Megan Kreitner
Amanda Meyer

2005 Graduates



May

Amala Dass Antony Samy, PhD
Connie Marie Gryniwicz, PhD
Douglas Michael Papenmeier, PhD

Sunil Kumar Pillalamarri, PhD
Katherine Ann Durham, BA
Norman Randall Horn, BS
Stephanie Lynn Maiden, BS
Emma Lou Theresa Schmittzehe, BS

July

Scott Alan Hayes, PhD
Manesh Naduppambil Sekharan, PhD
Maeduff Okuom, PhD
Pavan Kumar Challa, MS

December

Chunyu Li, PhD
Alexander Williams, PhD
Niharika Burla, MS
Hareesh Palli, MS
Arun Sahu, MS
Jonathan Stewart, MS
Monica Coleman, BS
Corey Minter, BS
Jerica Weirich, BS
Elizabeth Zuchek, BS

Honorary Professional Degree & Honorary Doctorate awarded at UMR's Fall Commencement

The University of Missouri-Rolla awarded 12 honorary professional degrees during its winter commencement Saturday, December 17, 2005.

Thomas H. Dunning Jr., Director, National Center for Supercomputing Application (NCSA), University of Illinois at Urbana-Champaign, received the Chemistry professional degree. He earned his bachelor of science degree in chemistry from UMR in 1965. He also holds a Ph.D. in chemistry from California Institute of Technology. Following post-doctoral fellowships at the California Institute of Technology and Battelle Memorial Institute, Dunning accepted a position at Los Alamos National Laboratory in 1973. In 1978 he was appointed group leader of the theoretical and computational chemistry group at Argonne National Laboratory. Beginning in 1989, he held several positions at the Pacific Northwest National Laboratory, becoming director of the Environment Molecular Sciences Laboratory in 1994 and the first Battelle Fellow in 1997. Dunning worked from 1999-2001 as assistant director for scientific simulation in the U.S. Department of Energy Office of Science. He then served as professor of chemistry at the University of North Carolina at Chapel Hill. In 2002, he was appointed director of the Joint Institute for Computational Sciences, distinguished professor of chemistry and chemical engineering at the University of Tennessee, and distinguished scientist in computing and computational sciences at Oak Ridge National Laboratory. He joined the University of Illinois faculty in 2005 as director of NCSA, an organization that leads development and deployment of new computing and software technologies for the scientific and engineering community.

Richard K. Vitek, a UMR Chemistry graduate, retired chair and chief executive officer of FOTODYNE, received an honorary doctorate from UMR.

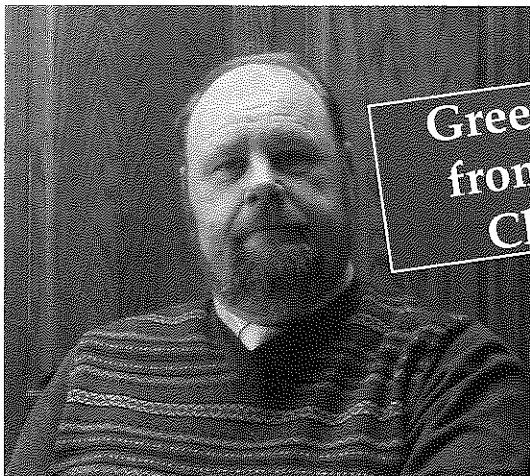
Vitek, immediate past president of the UMR Board of Trustees, has six patents and the discovery of two new chemical compounds to his name. He earned a master's degree in chemistry from UMR in 1958. His bachelor's degree was earned in 1956 at Albion College.

After graduating from UMR, Vitek worked for the Atomic Energy Commission on the production of uranium from ore. He then joined Allied Chemical Corp., where he worked on solid oxidizers for U.S. rockets and missiles. In 1978, he created Vitek Research Inc., V-Tech Corp. and FOTODYNE, all based in New Berlin, Wis. The companies manufacture technology for the photographic supply industry as well as for medical and electronic industries. In 2002, Vitek retired as chair and CEO of FOTODYNE, which was the first company to manufacture laboratory instruments for DNA research.

Vitek, who also worked as an analytical chemistry instructor during his career, has published research in numerous scientific journals. He was awarded an honorary professional degree in chemistry from UMR in 1994, became a member of the Order of the Golden Shillelagh in 1995 and received the Alumni Achievement Award in 1998.

Vitek serves on the advisory board to UMR's Foundation for Chemical Research. He has also served on the board of directors of LaBelle Industries, on the board of directors of the Waukesha County Economic Development Corp., on the business advisory board of the First Bank of Milwaukee and on the board of advisors for Marquette University's biology department. His other interests include the Milwaukee Florentine Opera Co. and Opera America.

Last spring, Dick and Marilyn Vitek established a chair in the UMR department of chemistry. The Viteks now live in Dana Point, Calif.



Greetings
from the
Chair

A warm hello to all recipients of Chemmunicator.

The frequent reader will notice that this year a new face is attached to the chair's greeting. Let me introduce myself. I am Phil Whitefield and I took over from Ekk Sinn who passed the baton after 5 years as chair on September 1, 2005. For those of you that do not know me, I have been with the department since 1990, my research focuses on the characterization of aerospace generated particulate matter and I am a member of the analytical division.

This last year has been both one of introspection, change, and of outstanding successes in research and teaching. We completed a comprehensive program assessment and developed an action plan which addresses issues arising from the assessment. The action plan is under implementation and the department is already reaping the benefits of adopting the plan. The campus welcomed a new Chancellor in September. Dr. Jack Carney accepted the challenge of charting the course for UMR as it addresses the challenges of being an effective university in the twenty-first century. Dr. Carney has developed a strategic action plan which has won a unanimous endorsement from the department. Sustaining and expanding our research productivity is essential for the action plan to succeed. Externally sponsored research funding for chemistry faculty was \$3.5M in 04/05 and as we reach the mid-point of 05/06 we are well on the way to exceeding last year's numbers. This type of research productivity puts us in the top six departments on campus (number one in the College of Arts and Sciences). Increasing enrollment is also essential. Through a campaign of effective recruiting we increased the number of our freshman chemistry majors from 12 in 04/05 to 28 in 05/06. Furthermore, this increase in enrollment was accompanied by improved average ACT scores for our incoming freshman, from 24 in 04/05 to 29 in 05/06.

In the next few weeks we will have the pleasure of interviewing a group of exceptional candidates all of whom have been selected as the potential recipient of the Vitek Chair in Biochemistry. Thanks to a generous endowment from our alumnus and friend Dick Vitek a new endowed chair in biochemistry has been established for the department. I sincerely hope that by the next time this letter is written I will be able to report that the successful candidate is onboard and making significant contributions to our biochemistry program.

With best wishes to all,

Phil Whitefield

Chemistry Major can play ball too

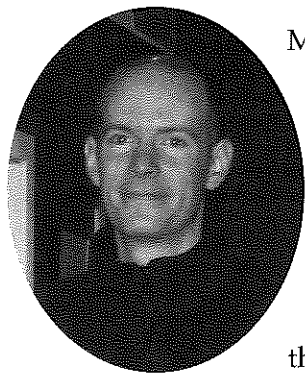


Marc Armbruster, a Chemistry major, broke records in the last UMR football game of the season. Marc, the Miners' senior placekicker, made all six of his extra point attempts to break the career mark for extra points with 89, while making his record-tying 12th field goal of the season as well. UMR finished the season with a record of 7-4.

Chancellor's Leadership Academy

University of Missouri - Rolla

November 2, 2005



Mark Barnett (Ph.D., Chemistry 1997) was invited to UMR as a guest speaker for the Chancellor's Leadership Academy, on Wednesday, November 2. The Chancellor's Leadership Academy is composed of UMR Freshman students selected for their exemplary leadership qualities. After his opening activities, Dr. Barnett focused on the human resources aspect of management, explaining that each participant would eventually be responsible for managing people. He described the difference between skills and talents (skills can be taught, but talents are innate to each person and cannot be taught) and why the best managers have a knack for selecting talent. Barnett continued by making a distinction between great managers and great leaders, emphasizing that in general these are not interchangeable.

Barnett gave an inspiring presentation and encouraged the cultivation of life-long learning and adaptability for an ever-changing world. Although he used examples from his own career experience, he explained that his goal was not to give the students advice (since each person must forge their own meaningful path and learn by making their own mistakes), rather his purpose was to share some of the pivotal resources that had great impact on his professional and personal development, including the books: *Sweaty Palms: The Neglected Art of Being Interviewed* (Anthony Medley); *First, Break All the Rules* (Marcus Buckingham and Curt Coffman); and *What Should I Do with My Life?* (Po Bronson). Barnett concluded the discussion by asking the participants to consider what would be necessary for them to derive satisfaction from work. He asked, "Do you get to do the things you love to do every day? Do you get to use your talents?"

The meeting was attended by nearly 40 participants and followed by dinner with Chancellor Carney, his wife and about 15 students in the new Havener Center. During dinner, Dr. Barnett responded to several questions and gave many words of encouragement. Barnett is Chief Chemist at GEM Gravure Company, Inc., located outside of Boston, Massachusetts, where he has remained for nearly 5 years.

Electronic Students work on UMR Chemistry Department's Scientific Equipment



Dr. Chusuei (left) collaborating at the Rolla Technical Institute (RTI; a vocational high school in Rolla) with Mr. Keith Schallon (center; instructor in the Electronics Department, RTI) and Mr. Jeremy Clark (right; student at St. James High School attending RTI)

Advancements in technology often require the collaboration of people with different backgrounds and knowledge, all working together to achieve a common goal. Students in Mr. Schallon's Electronic program are working to repair a highly specialized piece of electronic equipment for UMR's Chemistry Department. Dr. Charles Chusuei, Assistant Professor of Chemistry at UMR, describes the equipment as a special power supply, which is part of a Titanium Sublimation Pump. The pump is used by scientists at UMR to achieve extremely low vacuum pressures. Under low vacuum pressures scientists can study the chemical reactions of a wide variety of substance surfaces at the molecular level. Understanding how materials react in low vacuum environments can lead to discoveries in improved plastics, semiconductors and the adhesive properties of inorganic implant replacements of living tissues (such as bone).

Mr. Schallon notes that it's a wonderful feeling to know that our students here at RTI have been able to help the scientific community. Through their work and the efforts of the UMR Chemistry Department it may be possible to provide the world with data that never existed until now.

Money
Matters



Contributions

3M Foundation
Abbott Laboratories
Albert C. Bean Jr. Sch & Loan Fdn
& Tnemec Co.
Aventis Pharmaceuticals, Inc.
Emerson
Engelhard Corporation
Foundation for Chemical Research
Merck Company Foundation
Olin Corporation Charitable Trust
PPG Industries Foundation
Tyco International Ltd.
Altria Group Inc.
Caterpillar Foundation
Coatings Industry Education Fdn.
Frontage Laboratories Inc.
Kansas City Soc. for Coatings Tech.
National Philanthropic Trust
Shell Oil Company Foundation
Union Pacific Corporation

Gifts

Adams, John E.
Akers, David A.
Akers, James E.
Akers, Jill R.
Anderson, Dennis R.
Anderson, Robert K.
Barnett, William M.
Beckmann, Karen L.
Beckmann, Michael R.
Bennett, Garry A.
Bennett, Martha A.
Bertrand, Gary L.
Bierman, Frederick H., Jr
Boulos, Edward N.
Boulos, Mervet S.
Brandon, Kathy A.
Brent, Bill M.
Brummel, Roger N.
Burchfield, Thomas E.
Burns, Harry A.
Byrd, Alicia K.
Byrd, Samuel M.

Cape, Christopher C.
Carman, Frederick R., Jr.
Chen, Szu-Chain F.
Chiou, Kuen-Yuan
Covault, Richard A.
Craig, Mary R.
Davies, Carol A.
DeGood, John S.
Densmore, Crystal G.
Densmore, Jeffery D.
Dong, Feng
Dover, George M.
Dugan, Daniel C.
Dunning, Thomas H., Jr
Eckler, Paul E.
Evers, April M.
Evers, Thomas M.
Faes, John G.
Fischer, Gary R.
Flaim, Tony D.
Flanders, Thomas M.
Giannobile, William V.
Goewert, Joseph C.
Gold, Roy J.
Grannemann, H. Neal & K. Lynn
Griffin, Paul D.
Hardin, David P.
Hawkins, Rodney B.
Haynes, Michael A.
Higgins, Arthur J.
Higgins, Patricia A.
Hoffman, Glenn W.
Horton, H. Robert
Ihms, Ann A.
Ihms, David W.
Iverson, Jon R.
James, William J.
Kaiser, Mark E.
Kennedy, Floyd R.
Kirby, Kurt A.
Knox, James R. & Jane L.
Larouche, Andrew O.
Lee, Jauh-Tzuoh
Li, Song
Little, Billy F.
Lovell, Gregory M.
Lunte, Craig E.
Lutz, Dale R.
Magruder, Gary C.
Manuel, Oliver K.
Mason, Nicole R.
Mathkar, Shilpa Suresh
Matthews Foundation
Matthews, Elizabeth A.

Matthews, Michael W.
Menges, Randy A.
Mongillo, Christopher B.
Mongillo, Helen H.
Naeger, Melanie G.
Naeger, Robert J.
Nickols, Susan M.
Noel, Kenneth D.
Noland, Patrick A.
Otten, Carolyn J.
Patterson, Barbara R.
Patterson, Gary K.
Plume, Walter J.
Reimer, Melissa R.
Reimer, Michael T.
Ridenour, Kristin R.
Sanders, Amelia G.
Schonberg, Jane
Schonberg, William P.
Schroeder, Charles E.
Schucker, Gerald D.
Shackelford, Marshall B.
Six, Ronald K.
Smith, Paul J.
Snarrenberg, James D.
Srirangam, Umamaheswar R.
Strait, Darrell R.
Straub, John C., III
Strehlau, Don. R.
Strite, Russell R.
Student, Patrick J.
Sweeney, Edward G.
Tabor, Kenneth E.
Taylor, Christina M.
Thompson, Larry F.
Thornton, Kay E.
Treasurer, Roberta L.
Vinansky, George, Jr.
Vitek, Richard K.
Vogel, Matthew F.
Warner, Deanna
Webb, Ruby
Wethington, Ann P.
Wethington, Robert L.
Whitney, Dennis L.
Wideman, Lawson G.
Williams, Gary E.
Williams, Margaret L.
Wyzlic, Gerald W.
Zientara, Gina
Zweerink, Gerald L.

Thank you

Alumni Updates

Scott DePriest

(PhD 1989) joined Rosetta Bio-software as director of business development in March.

Claude S. Abshier

(M.S. 1933) was a member of the MSM Band and Epsilon Pi Omicron while attending MSM-UMR. He worked in the testing laboratories of several companies as a food technologist and was an accomplished clarinet player with the Evansville Symphony Orchestra.

David W. Osborne

(PhD 1985) received a Professional degree in chemistry at UMR's May 2005 Commencement; he is vice president of product development at Dow Pharmaceutical Sciences.

James R. Knox, Jr.

(B.S. 1963) retired as emeritus professor for the University of Connecticut in 2002, and is still writing and working on the editorial board of the Journal of Biological Chemistry.

Connie Gryniewicz

(PhD 2005) Has accepted a position with the Food and Drug Administration in St. Louis.

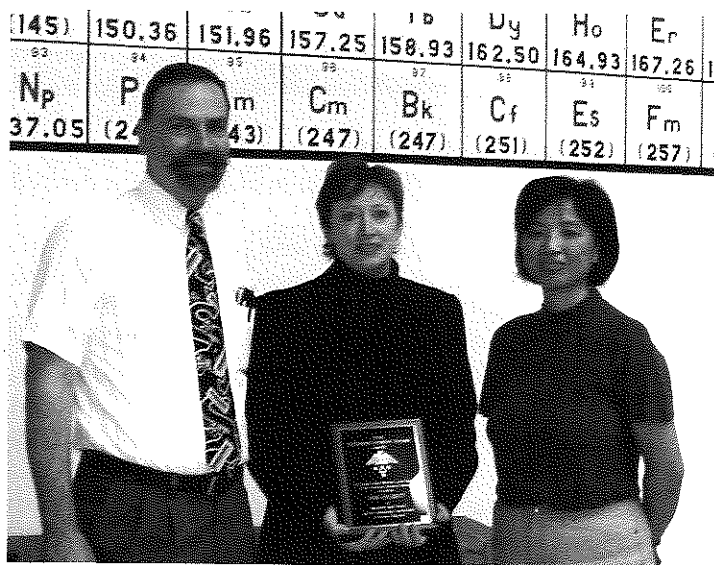
Chunyu Li

(PhD 2005) Has accepted a Post Doc position at Unilever in Chicago, IL

Niharika Burla

(M.S. 2005) Is pursuing her PhD degree at the University of Missouri-Rolla.

Outstanding High School Chemistry Teacher



Pictured above is Frank Blum, ACS Councilor, Pamela Probert, and Xie Shao, ACS Chair

Ms. Pamela Probert, of Mansfield High School in Mansfield, MO, has been awarded the 2005 South Central Missouri - Outstanding Chemistry Teacher Award. The award consisted of a plaque and an honorarium of \$300. The award was sponsored by the South Central Missouri Local Section of the American Chemical Society (ACS). The award was presented to Ms. Probert on Tuesday, November 8, 2005, at 4:30 p.m. in Room G-3 Schrenk Hall at the University of Missouri-Rolla.

Ms. Probert has been described as "an outstanding teacher who puts a great deal of effort into her classes" and "she really believes in the importance of students having the opportunity to participate in their own research projects." She has previously been awarded the Missouri State Educator Award, was a state finalist in the Presidential Award for Excellence in Science Teaching, was awarded the Tandy Prize, and was awarded the Monsanto Teaching Award.

Former recipients of this award include: Bill Brent (Rolla), John Hambacker (Salem), Bill Nelson (Potosi), James Jenkins (St. James), Karen Hammond (Rolla), Gayle Lucian (Rolla), Peggy Brown (Newburg).

Air Force employs technology developed at UMR to coat F-15 fleet



F-15 is painted with the Deft Coatings non-chromate primer. (Air Force Photo) log on to <http://www.afri.af.mil/index.cfm?objectid=FCF7CBF1-BDBE-23C7-E5C4A04E60272E74> for details.

The entire fleet of F-15s in the U.S. Air Force is getting primed for future flights, thanks to chrome-free inhibitor technology originally developed at the University of Missouri-Rolla.

Chrome-based coatings prevent corrosion of aircraft but also pose a health hazard to workers applying primer and paint. The first F-15 was treated with non-chrome primer earlier this year. The Air Force has now started a full production cycle involving the repainting of all F-15s in the fleet. The aircraft are repainted every six years or so.

"The chrome on your car bumper doesn't present a health risk because the toxic form is the chromate," says Dr. Thomas O'Keefe Sr., Curators' Professor emeritus of metallurgical engineering. "But if you were to grind up that chrome and disturb materials and form the chromate, that would cause a potential health hazard. The risks are mainly associated with those involved in production."

Applying chrome-based primer can cause severe respiratory problems, and in some cases may lead to lung cancer. The U.S. Occupational Safety and Health Administration (OSHA) plans to initiate new rules in 2006 to significantly reduce the amount of chrome exposure to U.S. workers.

While the Air Force is helping lead the way in reducing chrome-based risks to workers, primers with the non-chrome inhibitor may soon have a number of commercial applications too. Boeing Corp., along with the Air Force, has supported UMR's research in this area since it began about 10 years ago.

The work at UMR attracted the attention of a company called Deft Industrial Finishes, which eventually licensed the chrome-free inhibitor technology from UMR and further developed it into paint formulations, including the primer used to coat the F-15s.

Though many researchers have played key roles in the process, UMR graduate Dr. Eric Morris, who is now employed by Deft, was a major contributor as a post-doctoral student. Morris says the research involved chemistry challenges and intellectual challenges.

"The materials you want to use as active corrosion inhibitors may not always be compatible with the paint," Morris explains. "The problem with the materials that were compatible was they didn't always perform well in providing the desired corrosion protection. We're not the only ones who were trying to solve this problem."

The answer, or at least part of the solution, occurred to Morris one day while bass fishing at a lake near Rolla. He won't divulge secrets, but he says an idea came to him after observing how particular reactions occur slowly in nature. Back at UMR, with the help of faculty, he applied that observation to the team's ongoing research.

"As long as you had an idea, faculty were always willing to support you," Morris says.

With UMR's permission and at Boeing's invitation, Morris took new test panels coated with chrome-free primer to St. Louis, where he eventually met with Larry Triplett, who was leading Boeing's Environmental Assurance Research and Development Group. Morris says he'll never forget when Triplett turned to him and said, "You just might have something here."

After earning his Ph.D. in chemistry at UMR in 2000, Morris continued his work by joining Deft, the company that licensed the chrome-free inhibitor technology from UMR.

UMR, Boeing and Deft have each played significant roles in the development of the chrome-free primers in production today, including those currently used by the Air Force.

"It's a good example of how ideas move from academia to industry to implementation," Morris says.

It takes approximately 10 gallons of the Deft primer to coat one F-15. The non-chrome primer, which can be sprayed through the same equipment used to apply the old chrome-based coating, is an aqua green color. The aircraft are later painted gray.

Dr. James Stoffer, Curators' Professor emeritus of chemistry at UMR, was a principal investigator on the project, along with O'Keefe. Among the other researchers who have been involved are Dr. Paul Yu, a research assistant professor at UMR's Materials Research Center, and Dr. Scott Hayes, who earned a Ph.D. in chemistry at UMR in 2005.

Coatings Institute

We formally established the UMR Coatings Institute in 1992. The institute encompasses our industrial outreach program which aids the exchange of technical information with the coatings industry. Our short course programs at UMR are now housed in the institute. In addition to short courses, the institute will sponsor symposia, technology exchange and in-house education at companies.

Michael R. Van De Mark, an Associate Professor of Chemistry at UMR, has been the UMR Coatings Institute Director for 18 years, and is involved in polymer coatings and organic synthesis research. His areas of research interest include flash rust inhibition, water reducible resin synthesis and characterization, phthalocyanine pigment research, low VOC and water borne formulation, and organic photo-electro-chemistry. He is the author of many papers and has developed several new protocols for industry including four patents.

Also involved with the Coatings Institute are:

Dr. Harvest Collier, Professor of Chemistry at UMR, is involved in the basic research of transition metal compounds, inorganic materials, polymer synthesis, polymer characterization, and their application. Dr. James Stoffer is Professor Emeritus of Chemistry at UMR where he taught and did research in polymers and coatings science for more than 20 years. Dr. Thomas Schuman, an Associate Professor of Chemistry, is involved with coatings research, spectroscopy, corrosion, adhesion to metal and plastic substrates, metallic and non-metallic corrosion inhibitors, surface adsorption, organic polymer synthesis, development of industrial agricultural materials and applications.

For more information about the Coatings Institute, contact: Dr. Michael R. Van De Mark, Director, UMR Coatings Institute. You may reach him at (573) 341-4882 or 4419, or e-mail: mvandema@umr.edu or fax: (573) 341-4881.

Short Courses

"BASIC COMPOSITION OF COATINGS"

This is a 5 day course held twice each year, on the UMR-Rolla Campus. The spring 2006 course will be held March 13-17, 2006.

"INTRODUCTION TO PAINT FORMULATION"

This is an intensive 5 day course held on the UMR-Rolla Campus twice each year. The spring 2006 course will be held May 15-19, 2006.

NEW SHORT COURSE OFFERING!

"INTRODUCTION TO COATINGS COMPOSITION AND SPECIFICATIONS"

This is a two and a half day course which is less technical than "Basic Composition of Coatings" and "Introduction to Paint Formulation". The spring 2006 course will be held June 19-21, 2006 in St. Louis, MO.

For more information visit the Coatings Institute web page at <http://web.umr.edu/~coatings/short.htm>

Moving Science from the Old World to the New World ...

... sometimes only comes together when scientific equipment is moved along with the scientist and his family across the ocean. The very true anecdote described in this article started as early as 1999, when Dr. Klaus Woelk first applied for a position as associate professor of chemistry at UMR's Chemistry Department. Several rounds of negotiations followed, and it wasn't before the summer of 2003, when hands were shook, contracts signed, and a move arranged from Bonn, Germany, to Rolla. For more than nine years, Dr. Woelk had taught at the University of Bonn, which is rich in tradition and known for scientists like Heinrich Hertz (Physics) and August Kekulé (Chemistry).

Klaus was born in Aachen, Germany, the city that is known as Charlemagne's favorite capitol and for its 1200 years old octagon-shaped cathedral. He studied chemistry at the University of Bonn finishing with a PhD in physical chemistry and experimental physics. With his expertise in nuclear magnetic resonance (NMR), he joined the fluid-catalysis program under Dr. Jerry Rathke at the Chemical Engineering Division of DOE's Argonne National Laboratory near Chicago. After about two and a half postdoctoral years, he returned to Bonn as assistant professor of physical chemistry. It was only one week before his move that he married Madonna Bychowski of Des Plaines, Illinois. Klaus and Madonna have two daughters (Marlena, 9 and Christina, 6) and a son (Johannes, 3), who were all born in Germany enjoying the privileges of dual citizenship, German and American.

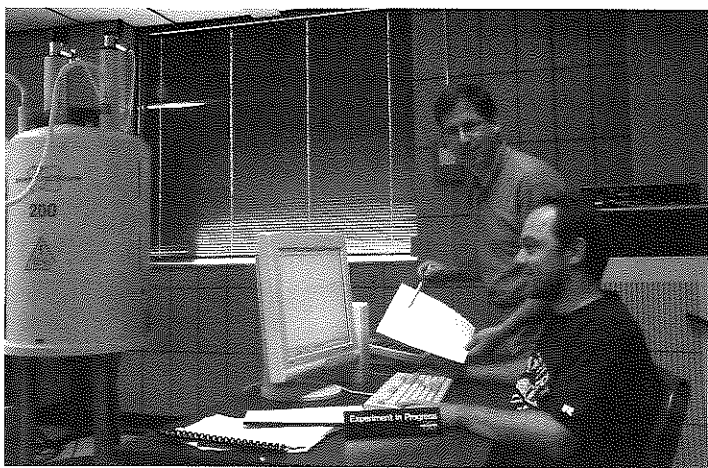


Dr. Woelk is known for unconventional ways of moving NMR equipment: Transportation of a 300-MHz NMR magnet in his small BMW limousine. The picture from 1999 shows former graduate student Sabine Wiemann.

Klaus eventually earned his associate professorship at the University of Bonn through a habilitation thesis, which is a prerequisite for tenure at a German university. He had developed and homebuilt worldwide unique NMR equipment with which he investigated chemical reactions in situ and under extreme conditions such as high pressure and high temperature, and in supercritical fluids. The German National Research Foundation (Deutsche Forschungsgemeinschaft, DFG) had funded a complete NMR spectrometer to accommodate his specialized probes and equipment. The capital equipment facilitated exciting research opportunities such as in situ studies of catalytic reactions in supercritical carbon dioxide, quantitative measurements of the properties of non-Newtonian fluids, and, most recently, investigations into the

contrast enhancement in magnetic resonance imaging utilizing hyperpolarization techniques such as parahydrogen induced polarization. Several of his innovative probe designs are backed by patents.

When the time came to relocate to the United States, Klaus still had graduate and undergraduate students operating the unique NMR instrumentation in Bonn while conducting research for their theses or special projects. It was obvious that a successful continuation of Dr. Woelk's career depended crucially on the replication of his existing equipment. However, while one student after another finished the studies in Bonn under remote supervision from Rolla, it became evident that the University of Bonn would not replace Dr. Woelk and, particularly, would not have further use for his sophisticated instrumentation. Thus, the idea arose to move the entire equipment from Germany to the United States. Eventually, an agreement was reached between UMR, the DFG, and BRUKER Biospin, (the manufac-



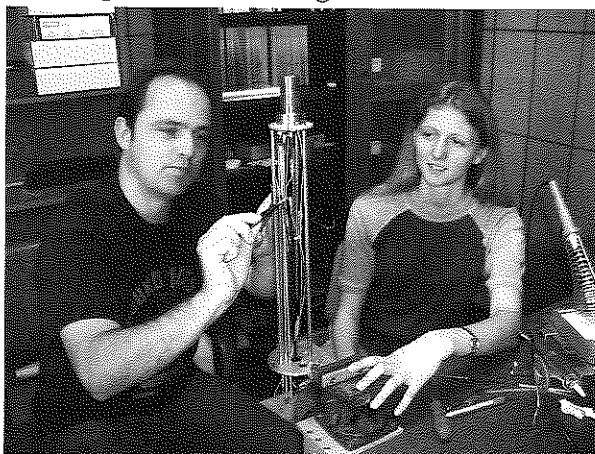
In the NMR lab at Schrenk Hall, Klaus Woelk (standing) and postdoctoral fellow Sander Kluwer prepare for a scientific experiment with the recently installed NMR spectrometer.

turer of the spectrometer) to de-energize the spectrometer in Bonn, ship it to Rolla, and re-energize it in Schrenk Hall.

When the last graduate student under Klaus' supervision in Bonn finished his Ph.D. thesis, events picked up pace. On the day before the final thesis defense, technicians from BRUKER arrived in Bonn for packing up the equipment and storing it in the company's warehouse. These men were so efficient and enthusiastic about their job that several peripheral instruments such as printers, network analyzers, and temperature controllers, were also packed. They had to be located later at the warehouse only to be returned to Bonn. The other equipment was to be shipped to the U.S. as soon

as UMR and DFG had agreed upon the terms of shipping and release. And while UM procurement and DFG were still arguing about legal terms of insurance and shipping responsibilities, it was again BRUKER that set the pace for success. Without any authorization and at the risk of having to ship everything back to Germany, the spectrometer manufacturer just set off the shipment because there was still space left on a chartered FedEx flight. Like a surprise from Santa, Dr. Woelk got notified only a few days before Christmas 2004, that his instrumentation had arrived in Chicago.

The surprise shipment caused some confusion among the different parties involved in the negotiations, particularly, because it occurred during the holiday season, where things progress slower anyway. But it abruptly ended the discussions about the terms of agreement and made both UMR and DFG surrender to the facts. Klaus' research group also needed to react quickly and clean out an assigned laboratory that, for several years, had only been used as a storage area. At last, the spectrometer was successfully re-energized, and Dr. Woelk and his research team are enjoying the instrumentation again that had been so vital for his scientific career. Furthermore and for reasons unknown, the instrumental specifications of the spectrometer are even better than they were in Bonn. Exciting studies have been initiated about fluid dynamics of polymers, colloid-catalyzed reaction in supercritical carbon dioxide, and further development of NMR instrumentation. Several groups from Europe and the U.S have inquired about collaborations to use this unique equipment. It is expected that Dr. Woelk's Old-World NMR spectrometer once again becomes a focal point of exciting research, but this time in the New World.



Sander Kluwer showing graduate student Emma Schmitzehe how to assemble a specialized probe for in situ investigations under high-pressure and high-temperature conditions.

We would love to hear from you.

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Name _____ Year attending UMR _____

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