

Nuran Ercal to serve as S&T's first Vitek Chair of Biochemistry

Dr. Nuran Ercal, professor of chemistry at Missouri University of Science and Technology and an expert in the study of lead toxicity and free radicals in biological systems, has been named the Richard K. Vitek/Foundation for Chemical Research Endowed Chair in Biochemistry at Missouri S&T. The position took effect June 1, 2009.

The chair was established in 2005 through a lead gift of nearly \$800,000 from Richard K. Vitek, a 1958 Missouri S&T chemistry graduate, and his wife, Marilyn. It will help combine the expertise of faculty from the departments of chemistry, biological sciences, and chemical and biological engineering.

In addition to the gift from the Viteks, major contributions were provided by Missouri S&T's Foundation for Chemical Research (FCR) and other donors. A corresponding match from the University of Missouri brings the total equivalent endowment value to nearly \$2 million to support the faculty member's work. "Dr. Ercal's expertise has led to advances in cancer and HIV research, and her position

as Vitek Chair will enable her to accelerate these important medical advances," says Dr. John F. Carney III, chancellor of Missouri S&T. "This chair will help Missouri S&T bring together several departments to advance research in analytical and environmental chemistry and biochemistry. We are grateful to the Viteks, the Foundation for Chemical Research and the other donors for their vision and generosity in supporting this significant chair."

Ercal began work at Missouri S&T as a research associate in 1990. In 1993 she was named assistant professor and associate professor in 1999. She was named professor of chemistry in 2005. Her research focuses on free radicals in biological systems, metal toxicity – particularly lead poisoning and its treatment with antioxidants – and the benefits of antioxidants in the treatment of free radical-related conditions like radiation, nicotine exposure, alcohol overuse and HIV proteins. Ercal served as visiting research professor at Washington University in St. Louis from 2000-2001 and in July 2004, was named adjunct associate professor of internal medicine at Saint Louis University, a position she still holds.

During her tenure at Missouri S&T, Ercal has won the Faculty Excellence Award five times. She was named Outstanding Teacher twice and in 2003 was named Missouri S&T Woman of the Year. She is an honorary member of Phi Eta Sigma, and a member of Sigma Xi, the Oxygen Society, and the Missouri Academy of Science.

Ercal earned an M.D. degree from Istanbul Medical Faculty in Turkey in 1981. In 1988, she earned a master of science degree in physiology from The Ohio State University. She earned a Ph.D. degree in physiology from Hacettepe University in Ankara, Turkey, in 1990.

Vitek, a founding member of Missouri S&T's Foundation for Chemical Research, is the founder and retired chair and CEO of FOTODYNE Inc., the first company to manufacture laboratory instruments for DNA research. He used his expertise in thin-layer chromatography and electrophoresis to produce equipment for the separation, ultraviolet visualization and analysis of DNA. Throughout his career, he formed several other scientific subsidiaries. He retired in 2002. The Viteks have just relocated to Clermont, Fla., from Dana Point, Calif.

"Giving back to Missouri S&T by way of a chair in biochemistry culminates my lifelong career that started at MSM and expanded into chemical analysis, environmental contaminants and biochemistry," Vitek says. "This chair brings all these disciplines together to help meet tomorrow's needs in protecting our valuable resources from further environmental pollution and to make new scientific breakthroughs in medical care."



Dr. Nuran Ercal Vitek Endowed Chair of Biochemistry



• Dr. Nuran Ercal first Vitek Chair of Biochemistry

- 2009 Graduates
- Accolades
- Hot New Research
- 2010 Phonathon
- Contributions & Gifts

• 2009-2010 Scholarship Recipients

- Greetings from the Chair
- Alumni Updates



Dr. Cynthia Bolon 2009 St. Patrick Honorary Knight May

Cory Cheatham, BA Jennifer Pena, BA Bryce Hamilton, BS Kimberly Level, BS Yi Jen Su, BS Linu Abraham, PhD Elizabeth Kulp, PhD Manikantan Nair, PhD Isaac Stayton, PhD



Dr. Robert R. Russell



Dr. David Hoiness

Dr. Cynthia Bolon 2009 St. Patrick Honorary Knight

Dr. Cynthia Bolon is a lecturer in the chemistry department at Missouri S&T. A Rolla native, Bolon is the daughter of Sherrell Bolon and the late Dr. Albert Bolon. She is a 1996 graduate of Columbia College, where she received a bachelor's degree in fashion design and a bachelor's degree in independent studies with an emphasis in chemistry. Bolon later attended S&T, where she received a Ph.D. in nuclear chemistry in 2006. Her dissertation work focused on the interactions of nucleons and the repulsion of nucleons as a source for stellar energy. Since 1996, Bolon has been actively involved with various organizations on campus. She designed the 2001 St. Pat's sweatshirt, helped design new knight's costumes and worked on the coloring book for the 100th St. Pat's anniversary.

December

Brian Howell, BS Christopher James, BS Joseph Kellogg, BS Xiaoqian Liu, PhD



Dr. Robert Raymond Russell

Dr. Robert Raymond Russell, passed away Friday, February 12, 2010 in Rolla, Missouri. Dr. Russell began his career as a professor of organic chemistry at MSM/UMR, now Missouri S & T. He taught at the university from 1948 until his retirement in 1985. He is survived by three sons, Dr. John M Russell and wife Janet, James A Russell and wife Carol Heddinghaus and Bruce Russell and wife Katherine Cook.

GOODBYE DR. HOINESS

Dr. David Hoiness retired from Missouri University of Science and Technology on June 30, 2009. Dr. Hoiness began his third career in the Chemistry Department on September 1, 1995 after retiring from DuPont Corporation and a successful consulting career. He was assistant chair of chemistry and was in charge of all the labs and safety as well as the entire Schrenk Hall building. Dr. Hoiness was also in charge of the scheduling of all Chemistry courses. He has settled in Minnesota where he will be in close proximity to his daughter and mother. We wish Dr. Hoiness good luck in his next career.

Congratulations!!!

Dr. Harvest Collier, vice provost for undergraduate studies and chemistry professor at Missouri S&T, is one of 10 educators in the United States to be selected as Outstanding First-Year Student Advocates from the National Resource Center for the First-Year Experience and Students in Transition.

Missouri University of Science and Technology awarded 11 honorary professional degrees during spring commencement ceremonies held on May 15 and 16, 2009. James O. Stoffer Jr., technical manager of the North America Division of Becker Acroma, received a professional degree in chemistry. His father is Dr. James O. Stoffer, Curators' Professor emeritus of chemistry at Missouri S&T.

Freshman engineering students nominated and voted for their favorite instructors in the annual "We Love Your Class" poll for the 2008-2009 acedemic year. There was a total of 23 instructors nominated and of 8 favorite instructors selected, 3 were from the chemistry department. They are Dr. Cynthia Bolon, Dr. Harvest Collier and Dr. Klaus Woelk. This was the fourth year Freshman Engineering has had the award and Dr.

Woelk and Dr. Yinfa Ma have been nominated every year. Congratulations to Dr. Manashi Nath and Dr. Amitava Choudhury who are the proud parents of a baby boy. Anuraag Dipto Choudhury was born June 24, 2009 and weighed 8 pounds and 2.6 ounces.

Dr. Yinfa Ma has developed a method for pre-cancer screening that uses urine samples for detection. Ma hopes to be able to predict types of cancer as well as severity. "Cancer is the second-highest cause of death among all diseases," says Ma, a Curators' Teaching Professor of chemistry at Missouri University of Science and Technology. "Early diagnosis of cancer is crucial, but not many people want to go to the hospital to undergo costly, invasive cancer screening.'

Dr. Jeffrey Winiarz, assistant professor of chemistry, is part of a research project funded through the National Institutes of Health under the American Recovery and Reinvestment Act. Dr. Winiarz is creating quantum dots to develop a new and better way to deliver and monitor proteins, medicine, DNA and other molecules at the cellular level. Dr. Yue-wern Huang (Biological Sciences) is leading the Quantum dot research.

Dr. Jeffrey Winiarz, assistant professor of Chemistry has won the Committee for Effective Teaching (CET) Outstanding Teaching Award for 2008-2009. The annual award is given to faculty members based on student evaluations.

Dr. Klaus Woelk, associate professor, received the 2009 Teaching Award. The awards are given annually to recognize outstanding faculty. Twenty-six faculty members at Missouri S&T received awards for their achievements, research, service or teaching for 2009.

Seven scientists were inducted into the Missouri S&T Academy of Chemists and Biochemists during the academy's induction ceremony held Oct. 23, 2009. New members are Dr. Bryan E. Breyfogle, Dr. Nuran Ercal, Dr. Maciej Gazicki-Lipman, Dr. Janet Lynn Kavandi, Dr. James R. Knox, James Stoffer Jr. and **Dr. Glenn E. Stoner**. Members of the academy are scientists who have made outstanding contributions to their profession.

Dr. Jay A. Switzer and his colleagues at Missouri S&T report in the Journal of the American Chemical Society as well as North Korea Times, that they have constructed a type of superlattice that shows "unique lowto-high and high-to-low resistance switching that may be applicable to the fabrication of an emerging memory device known as resistive random access memory," or RRAM. **Hongfang Zhao** and **Rongpeng Wang** are the proud parents of a baby girl, Ella, born January 8, 2010. Hongfang and Zhao are current PhD students at Missouri S&T.

Joseph Kellogg, a December graduate of Missouri S&T, received a perfect 4.00 GPA in chemistry.

Dr. Frank Blum Curators' Professor of chemistry, retired January 2010 and has taken the position of chair of chemistry at Oklahoma State University in Stillwater. Congratulations Dr. Blum.



Welcome Jonathon Sidwell

Jonathon Sidwell began working in the Chemistry department as well as the Center of Excellence for Aerospace Particulate Emissions Reduction Research lab in November 2008. Jonathon is now a Senior Research Specialist assigned to Building Management relating to environmental health and safety compliance issues, maintenance, repair and construction for Schrenk Hall. He began his new duties on July 1, 2009. Jonathon received his BS in Chemical Engineering from Missouri S&T in 1997 and a M.B.A. from Webster University in 2003. We are happy to have Jonathon join us.



Klaus Woelk Assistant to Chair for Academic Affairs

Dr. Klaus Woelk has been assigned to be responsible for Academic Affairs related to curriculum, teaching schedules and TA assignments as well as space allocation for the Chemistry department. His assignment was effective July 1, 2009. Dr. Woelk is an associate professor at Missouri S&T and began his career in the department in 2003.



Research could lead to new materials

Recent experiments to create a fast-reacting explosive by concocting it at the nanoscopic level could result in more spectacular firework displays. But more impressive to the Missouri University of Science and Technology professor who led the research, the method used to mix chemicals at that tiny scale could lead to new strong porous materials for high temperature applications, from thermal insulation in jet engines to industrial chemical reactors.

Researchers led by **Dr. Nicholas Leventis**, a professor of chemistry at Missouri S&T, reported in the April 8 Journal of the American Chemical Society that they created a new type of flammable nanomaterial by combining an oxidizer (copper oxide) with an organic fuel (a resorcinol-formaldehyde polymer, or RF). Nanomaterials are made from substances that are one billionth of a meter – the size of a few molecules. This achievement has been highlighted in the online edition of Nature Chemistry.

The new nanomaterial burned rapidly when ignited by a flame, leaving behind minimal residue, Nature Chemistry's April 3 Research Highlights section reported on the Leventis

research.

While the Leventis research is based on the hypothesis that the performance of so-called low-order explosives such as gunpowder can be improved by mixing the oxidizer and fuel as closely as possible – at the nano level, nanoparticle to nanoparticle – Leventis is more excited about the "very far-reaching implications" of the experiment.

"The broader impact of this research is in the methodology of making intimate mixtures of nanoparticles that can react efficiently and fast. That will most certainly lead to future innovations in materials science. Energetic materials is just an example," he says.

Mixing materials at the nano level may lead to stronger substances, because the two materials may be more closely woven together. Leventis sees this approach leading to such materials engineering breakthroughs as the development of microporous ceramics that can hold up under extremely high temperatures.

The more immediate application of this research could be in pyrotechnics, Leventis explains. Fireworks are considered loworder explosives, meaning that their reaction rate can be improved by mixing the oxidizer and fuel as closely as possible.

With this research, Leventis and his Missouri S&T colleagues worked with Dr. Hongbing Lu, a professor of mechanical and aerospace engineering at Oklahoma State University, to create a fluffy, low-density mixed aerogel from the copper oxide and the RF nanoparticles.

To make the mixed network of nanoparticles, the researchers devised a one-pot sol-gel method, in which they used the gelling colloidal solution ("sol") of one component (copper oxide) as the catalyst for the gelation of the second component (RF). In the final product, copper oxide acted as the fuse to catalyze, or ignite, the RF fuel.

The research was published March 17 in the online Journal of the American Chemical Society. Working with Leventis at S&T were **Dr. Chariklia Sotiriou-Leventis**, professor of chemistry, and **Naveen Chandrasekaran** and **Anand G. Sadekar**, both graduate students in chemistry.

Dr. Nicholas Leventis Named Curators' Professor

The Board of Curators of the University of Missouri have conferred the title of Curators' Professor on Dr. Nicholas Leventis during Missouri S&T commencement ceremonies, December 19, 2009. Congratulations Dr. Leventis!

A note from Mrs. William (Ruby) Webb

Mrs. William (Ruby) Webb would like to extend her best wishes to all of the faculty, staff and students. She enjoys receiving letters from everyone here at Missouri S&T. Keep those letters coming!

2009 Chemistry Phonathon

Last year's Chemistry Department phonathon was held in April and thanks to all the alumni it was a great success. The Missouri S&T Chemistry Department received pledges totaling \$9,785.00. Thank you to all those who made this possible, and thank you for supporting the students.

This year's phonathon will be held April 15, 18, 19, 20 and 21, 2010. With the economy as it is, please answer your phone 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 greatly appreciated.

Thank you!!!

Contributions 3M FOUNDATION ABBOTT LABORATORIES FUND ALLIANCE FOR ADVANCED COATINGS BASF CORPORATION BORG-WARNER FOUNDATION, INC CATERPILLAR FOUNDATION DOW CHEMICAL COMPANY FOUNDATION DOW CORNING CORPORATION HALLMARK CORPORATE FOUNDATION KANSAS CITY SOCIETY FOR COATINGS TECH LOCKHEED MARTIN CORPORATION MERCK COMPANY FOUNDATION MONSANTO FUND MSC PPG INDUSTRIES FOUNDATION RESEARCH MISSISSIPPI, INC SANOFI-AVENTIS SUN MICROSYSTEMS SHELL OIL COMPANY FOUNDATION UNION PACIFIC CORPORATION

<u>Gifts</u>

AKERS, DAVID ALLEN AKERS, JAMES EDWARD AKERS, JILL RENEE ALBERT C. BEAN, SR. SCHOLARSHIP & LOAN FDN. ALTEPETER, MICHAEL A ANDERSON, DENNIS R ANDERSON, HOMER L ANDERSON, MYRA S BAER, TEDA BARKLAGE, AARON KEITH BARKLAGE, AMY LEE BARTLETT, RUTH A BENNETT, GARRY A BIERMAN, FREDERICK H BOHANON, JOSEPH T BRUMMEL, ROGER N BURCHFIELD, THOMAS E BUTNER, MICHAEL R

CAPE, CHRISTOPHER C CARMAN, FREDERICK R CHEN, SZU-CHAIN F COVAULT, RICHARD A CRAIG, MARY R CROWDER, CYRUS E CRUMP, JAMIE JOHANNA DAVIES, CAROL A DEGOOD, JOHN S DOVER, GEORGE MARTIN DOWNING, ROBERT G DUGAN, DANIEL C DUNCAN, PAMELA MARIE DUONG, KHANG VAN-SI ECKLER, PAUL E EVERS, APRIL MARIE EVERS, THOMAS MICHAEL FLAIM, TONY DAVID FLORI, BEVERLY J FLORI, RALPH E FORNI, SABRINA FREEMAN, JEFFREY GRANNEMANN, HARRY NEAL GRANNEMANN, LYNN GRASDOCK, ORVILLE GRIFFIN, PAUL D HARDIN, DAVID P HARMON, TRACI DAWN HAWKINS, RODNEY B HAYNES, MICHAEL A HERITAGE, ROBERT L HESCH, RUSSELL J HESSLEY, RITA K HIGGINS, ARTHUR J HIGGINS, PATRICIA A HOINESS, DAVID E HOLDMAN, JON MARK HOLLAND, JEFFERY R HOLLAND, KATHLEEN P HUDWALKER, MARVIN ERNEST IHMS, ANN A IHMS, DAVID W JAMES, WILLIAM J JOHNSON, RICHARD H KAPILA, SHUBHENDER KNOX, JAMES R KROUTIL, JUDE ANTHONY KROUTIL, LISA CAROL KULVARANON, EMERENTIANA KULVARANON, SUVIT LAEGELER, ANDREW PARRY LAEGELER, MOLLY T LAROUCHE, ANDREW OLIVER LINDEMUTH, PAUL MICHAEL LITTLE, BILLY F LUTZ, DALE R MASON, NICOLE RENEE

MAYER, CLARENCE D MILNE, ANNIE HALL NAEGER, MELANIE G NAEGER, ROBERT J NARAYAN, SUBRAMANIAM NICKOLS, SUSAN MARIE OSBORNE, CAROL JEAN OSBORNE, DAVID WADE PATTERSON, BARBARA R PATTERSON, GARY K PAYNE, KATHRYN E PERKINS, TRACY SUZANNE POWELL, JOHN DWIGHT PUCKETT, JAMES L REDMAN, WILLIAM LYNN REIMER, MICHAEL TODD RIDENOUR, KRISTIN RENEE ROTH, STEVEN PAUL SANDERS, AMELIA G SCHROEDER, CHARLES E SCHUCKER, GERALD D SCHUMAN, THOMAS SENKEVICH, JAY J SHACKELFORD, MARSHALL B SHERMER, WILLIAM D SILKWOOD, BLAKE E SILKWOOD, LAURA ANNE SMITH, PAUL J SNARRENBERG, JAMES D SRIRANGAM, UMAMAHESWAR RAO STEVENS, ANTHONY A STEVENS, LEISA C STRAIT, DARRELL R STRAUB, JOHN CHRIS STRITE, RUSSELL R SWEENEY, EDWARD G TABOR, KENNETH E TAYLOR, CHRISTINA MARIE THOMLISON, CLYDE D THOMPSON, LARRY F TREASURER, ROBERTA L VINANSKY, GEORGE VOGEL, MATTHEW F WARNER, DEANNA LYNN WEBB, MRS. WILLIAM (RUBY) H WETHINGTON, ANN P WHITNEY, DENNIS L WIDEMAN, LAWSON,G WILSON, MELISSA R WYZLIC, GERALD W YEOMAN, SHERREE LEE ZIENTARA, GINA ANN

<u>Thank you!!!</u>



GREETINGS FROM THE CHAIR

Despite the precarious state of the global economy, 2009 has been a great year for the department and 2010 is looking to be equally good. There have been several important developments since I last wrote to you. In June the department was pleased to announce that Dr. Nuran Ercal was appointed to the Vitek chair. Nuran was the best candidate in a strong field of contenders. We look forward to seeing biochemistry flourish at Missouri S&T through her leadership. In that same month we said goodbye to Dave Hoiness, our assistant chair, who elected to retire. When I became chair in 2005 Dave taught me the ropes and was my invaluable assistant from that time on. In

his absence we have divided his responsibilities into two parts. For academic affairs, in particular the teaching schedule, Klaus Woelk has been appointed as assistant chair, and the physical facilities and environmental health and safety aspect has been taken over by Jonathon Sidwell. In December the department was honored when Nick Leventis was appointed to the rank of Curators' Professor and in that same month Frank Blum announced his retirement and his subsequent appointment as Chair of Chemistry at Oklahoma State University. Frank had a distinguished career at Missouri S&T, we wish him well in Oklahoma and are happy to note that significant joint research projects are planned in the near future between our two institutions. Immediately prior to Frank's retirement Congress announced \$2.4M in funding for a DOD project spearheaded on the S&T campus by Frank and Nick. This award will lead to the establishment of a state of the art campus 400MHz NMR facility to be housed and operated in the chemistry department.

Our research and teaching remain strong. In 2009 the average research expenditures per tenured and tenure-track faculty exceeded the campus 2012 target by 40% and total expenditures approached \$3M in 2009. Our teaching, particularly in service courses, continues to receive praise and excellent student evaluations – no mean feat when you realize that the Chem 1 and Chem 2 instruction teams both taught in excess of 1000 freshmen during the last academic year and are scheduled to teach an ever larger class in 2010. As a measure of the quality of teaching performance by the faculty, the department is proud to announce that Klaus Woelk was awarded one of the six prestigious 2009 Teaching Awards.

I have only touched upon a few of the many highlights of the last year and hope you will enjoy reading more about the good works going on in Chemistry at Missouri S&T in this edition of the Chemmunicator. Here's wishing you all a good year ahead and thanking you once again for your continued support.

Best wishes

Phil Whitefield

Alumni News

Dr. David W. Ihms (PhD 87) and wife Ann operate their own business, Criterion Water Labs, LLC, a state certified water testing lab in Indiana.

Dr. John Adams (BS 74) professor of chemistry at the University of Missouri-Columbia received the University of Missouri President's Award for Outstanding Teaching.

Steven Roth (BS 82) is a lab manager for Carboline Company in St. Louis, Missouri.

James Snarrenberg (BS 72) is chief of staff at Phoenix Baptist Hospital, is married, and has a set of twins in college and a son in high school.

Walter Keith Dean (MS 41) passed away January 19, 2009. We extend our sympathy to his family and friends.

Academic Scholars 2008-2009

This recognition is given to full-time students who earned a 3.5 or above GPA for that semester.

Fall 2008

Acar, Selin Anderson Jr., Charles Clark. Brandi Hahn, Taylor Hamilton, Bryce James, Christopher Koenig, Amanda Marting, Caleb McPhail, Martin Mentis, Dava Mollhagen, Ariel Oldroyd, Megan Porter, Ashley Porter, Bradley Porter, Matthew Smiley, Timothy

Su, Yi Jen Wilmes, Joshua

Spring 2009

Acar, Selin Clark, Brandi Hamilton, Bryce Howell, Brian Jentsch, Nicholas Jordan, Kelsey Kellogg, Joseph Marting, Caleb McPhail, Martin Mentis, Dava Mollhagen, Ariel Moore III, James Oldroyd, Megan Pena, Jennifer Pfaff, Annalise Porter, Ashley Porter, Bradley Porter, Matthew Rader, Ryan Vernon, Hamilton Wilmes, Joshua Windhausen, Alan

2009-2010 Scholarship Recipients

Bean Scholar Mahala, Benjamin

Porter, Bradley

Wouter Bosch Scholarship

Babcock, Brett Chambers, Chantal Hill, Katelin Kellogg, Joseph Marks, Richard Mentis, Dava Pfaff, Annalise Porter, Matthew Teague, Hannah Walcher, Megan Wilkerson, Ryan Willmering, Matthew

KCST Scholarship

Porter, Bradley

Davies Scholarship

Wilmes, Joshua

William & Arlene James **Scholarship** Acar, Selin Bass, Kelsev Bracht, Callie Burre, Curtis Burton, Casey Carey, Cassidy Collin, Aline Hallier, Gabrielle Howell. Brian Jentsch, Nicholas Miller, Andrew Mollhagen, Ariel Moore III, James Moore, Heath Porter, Ashley Smiley, Timothy Walker, Jessica Williams, Courtney Witt, Emitt

Pietsch Scholarship Basler, Brandon Rader, Ryan

Windhausen, Alan

Stoffer Scholarship Hull, Caleb

William H. Webb Scholarship

Anderson Jr., Charles James, Christopher Koenig, Amanda Kurath, Dustin Marting, Caleb McPhail, Martin Meyer, Laura Moore, Aubrey Oldroyd, Megan Vernon, Hamilton Walsh, Kelly Wessel, Andrew

Let us know where you are and what you are doing. fax to (573) 341-6033 mail to

Chemistry Department Missouri University of Science and Technology 142 Schrenk Hall Rolla MO 65409 fax to (573) 341-6033 email to eudalyk@mst.edu or chem@mst.edu

| Name | Ygar | r attendin | g UMR | /Missouri d | 5&T_ |
|------|-------|------------|-------|-------------|------|
| | _y¢ui | anenani | g unn | /Masouri (| |

Current activities/interests_____

Family

News/Plans_____

Missouri University of Science and Technology Chemistry Department 142 Schrenk Hall 400 W. 11th Street Rolla, MO 65409-0010

