

University of Michigan Chemistry NEWSLETTER

Letter from the Chair

Greetings from Ann Arbor! I write to provide an update on Chemistry Department activities over the past year, and to thank you all for your continued support of our program. As most of you know, I am pinch-hitting for Carol Fierke, our current chair, who is taking a well-deserved sabbatical break until July 1, 2010.

Despite the severe economic downturn, especially in the state of Michigan, the Department and University continue to weather the storm reasonable well. While many universities/departments around the country have had to implement substantial budget cuts (5-10%), the cuts here at U of M have been relatively modest thus far (2% for coming year). U of M's conservative financial investment strategy appears to be paying dividends during these difficult economic times, and this has allowed the Department to continue hiring new faculty and renovate space to expand our research and educational missions during the past year.

I am very pleased to tell you that the Department had a very successful year in faculty and graduate student recruiting. We just recently welcomed one of largest incoming graduate classes ever, with 63 talented students entering our Ph.D. program. With respect to new faculty, Brandon Ruotolo (Ph.D.: Texas A&M; Post-doc: Cambridge) joined us in late August as assistant professor in the area of analytical chemistry. His research focus is on biological ion mobility-mass spectrometry, especially studying how proteins interact/assemble to form macromolecular

machines responsible for a wide array of important cellular functions. We also successfully recruited Julie Biteen (Ph.D.: Caltech; Post-doc: Stanford) as an assistant professor in physical chemistry. Julie will join us in January, 2010, and her research interests are in single molecule and superresolution microscopy, especially as applied to studying biomolecule motion within live cells. Julie brings with her a prestigious Burroughs Wellcome Fund Career Award to help facilitate her transition from post-doc to an independent academic career. Please read more about these two new faculty within this newsletter.

We also had a strong year in promoting some of our most talented junior faculty. Congratulations are extended to Kristina Hakansson (analytical) who was promoted from assistant to associate professor with tenure, based on her outstanding research accomplishments in the field of high resolution mass spectrometry, and her excellent record in teaching analytical chemistry. A quartet of outstanding tenured associate professors, Zhan Chen (analytical/physical), Adam Matzger (materials), Hashim Al-Hashimi (biophysical) and Nils Walter (biophysical) were all promoted to full professor. Each received glowing praise by outside evaluators for their exceptional research scholarship and commitment to teaching. As acting chair, it was a delight to read the letters from external reviewers in all of these promotion cases. Many of these letters not only highlighted the outstanding work of the individual faculty, but also talked

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2009

The Regents of the University of Michigan:
Julia Donovan Darlow, Laurence B. Deitch, Denise Ilitch, Olivia P. Maynard, Andrea Fischer Newman, Andrew C. Richner, S. Martin Taylor, Katherine E. White, Mary Sue Coleman, ex officio.
Mary Sue Coleman, president.

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glowingly about the enhanced external reputation of our Department as a whole within the chemistry community.

The Department's commitment to high quality undergraduate education continues. Beyond excellent classroom instruction, we have been able to provide more summer research opportunities than ever for our most talented undergraduate Chemistry and Biochemistry majors. This is in large part due to generous financial contributions from you, our loyal alums, as well as industry. Indeed, this past summer more than 27 undergraduates were supported by the Department to conduct research for 10 weeks within faculty laboratories, along with another 13 students from around the U.S. who took part in our Department's 21st year of an NSF funded REU program (Research Experience for Undergraduates). In addition, thanks to Prof. Brian Coppola's efforts, a unique undergraduate student exchange program has been initiated between our Department and the chemistry programs at Peking and Tsinghua Universities in China. Three of our department's undergraduate students conducted research in China, joining 13 other chemistry students from around the US who were supported by an International

NSF REU Site that we administer. As a true exchange, there were also 12 undergraduate students in chemistry from those same two schools in China who joined research groups here in Ann Arbor for the summer.

Some of you may have already heard that the University recently purchased the entire former Pfizer research and development site (some 30 buildings and 173 acres of land), and plans are being formulated to utilize this facility to greatly enhance the interdisciplinary and translational research activities on campus. With > 1,000 fume hoods on that site, hopefully some of the synthetic elements of our own chemistry research program can ultimately benefit from the acquisition of these facilities. Indeed, it is likely the some chemistry faculty/students/post-docs will surely be part of new collaborative university research teams in the areas of drug discovery, new energy production/storage materials, and other evolving research areas that are targeted for emphasis at this new North Campus Research Complex.

In summary, these are challenging but also very exciting times for the Depart-

ment. Our faculty are competing effectively for increased funding for research and infrastructure equipment available from federal agencies as part of the stimulus initiative (e.g., we recently received word that NIH will fund (\$1.3 M) the purchase of a new 700 MHz NMR instrument). We are continuing to hire the best young chemistry faculty available. Our enrollments in chemistry courses remain at an all-time high, and we are committed to provide the best chemical education possible to both our undergraduate and graduate students. As always, I hope that we can count on your continued generosity to help fund various departmental programs in the coming year (including awards/scholarships/fellowships for graduate and undergraduate students, named lectureships, etc.; see remainder of newsletter for examples!). On behalf of all our students and faculty who benefit from your kind support, I wish to express my sincere thanks, and hope that you will stop by to say hello whenever you are back in Ann Arbor.

With all the best,

Mark E. Meyerhoff, Acting Chair
Philip J. Elving Professor of Chemistry

Department of Chemistry

Newsletter

is published once a year by the Department of Chemistry at the University of Michigan, Ann Arbor, MI 48109-1055



Printed on Recycled Paper

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Spotlight: Profiles of New Faculty

We highlight faculty members who have joined the Department since the last newsletter. Their appointment speaks well for our future.

Brandon Ruotolo

Assistant Professor
PhD: Texas A&M University
PostDoc: University of Cambridge

Analytical, Bioanalytical, Biophysical
Chemistry, Chemical Biology

Research and Teaching Interests

Proteins act as the molecular machinery of cellular biology, executing numerous critical functions in the life cycle of every known organism. To perform their biological function, individual proteins associate, often in a transient manner, to form complexes. In some cases, proteins form vast interaction networks capable of performing intricate cellular tasks.



Understanding the function of such protein assemblies is an important scientific goal for disciplines ranging from molecular

medicine to physical chemistry. However, one of the chief bottlenecks in such scientific endeavors is the available technology for determining the structure and architecture of large protein complexes. While high-detail structural information can be obtained by X-ray diffraction analysis, this experiment requires the availability of a sufficient quantity of homogenous material and definition of suitable crystallization parameters. Both conditions are often difficult to meet and the number of atomic structures for multi-subunit complexes deposited in structural databases remains relatively low. Alternative methodologies such as electron microscopy (EM) and small angle X-ray scattering (SAXS) allow the determination of the surface envelope of complexes of sufficient dimensions, but interpretation of these data is aided by detailed knowledge of complex composition and is limited to homogeneous complexes. Consequently, there is a need to develop new approaches capable of defining the subunit stoichiometry, composition, and shape of heterogeneous macromolecular complexes of biological importance.

Our group is primarily focused on developing ion mobility-mass spectrometry (IM-MS), an emerging technology that can determine

the composition, size, and topological organization of protein assemblies from a small amount of sample, in the presence of impurities and structural heterogeneity, as a tool for structural biology. This focus necessitates research projects that span a wide range of topics. Some of these projects are focused on classical analytical chemistry, including IM-MS instrument development (in collaboration with Waters Corporation) and the development of computational tools for IM-MS data analysis and 3D model generation (in collaboration with researchers at Lawrence Livermore National Laboratory and the University of Cambridge). Other projects focus on the study of protein quaternary structure stability in the gas-phase, including elucidating the role of small molecules in stabilizing protein structure in the absence of bulk solvent. Still others involve the study of protein self-assembly, aggregation and amyloid formation. Our long-term aim is utilize IM-MS data alongside other protein structure determination approaches to support the emerging field of integrative structural biology – where many pieces of data derived from disparate techniques are combined to generate a more-complete picture of the assembly than was possible with any one tool.

Julie Biteen

Assistant Professor
PhD: California Institute of Technology
PostDoc: Stanford University

Biophysical, Materials, and Physical Chemistry, Chemical Biology, Energy Science, Optics and Imaging

Single-Molecule Fluorescence, Live-Cell Biomedical Imaging, Plasmonics, Nanophotonics

Research and Teaching Interests

Superresolution Biomedical Imaging in Live Cells

The extension of sophisticated nanoscale optoelectronic tools, techniques and materials to biological systems will enable fundamental discoveries, broaden our understanding of key biological processes, and assist in the development of novel therapeutics. Undertaking such an endeavor at the crossroads of chemistry, biology and engineering requires the development of sensitive experimental methods and careful, quantitative analysis procedures. Research in our group seeks to maximize the impact of single-molecule fluorescence and nanophotonics by applying them to investigations of live cells.

Superresolution techniques based on single-molecule optical microscopy can reach nanometer-scale accuracy. These non-invasive, non-perturbative methods are ideal for investigating biological specimens, and our research is focused on improving these methods and applying them to physiologically relevant problems. Because of their small size and lack of subcellular compartments, the cell biology of bacteria is a particularly difficult challenge for

superresolution imaging. One interest in our group is exploring the role of protein-nucleic acid hyperstructures in a host of cellular processes, which can include chromosome and plasmid segregation, DNA replication, cell division, motility, chemo-sensing and signaling, metabolism, cytoskeletal stabilization, and DNA repair. In order to treat these and other problems, we seek to adapt current methodologies to live cell imaging of proteins and nucleic acids, to combine single-molecule fluorescence imaging with plasmon-enhanced emission and quantum dot photophysics, and to improve existing techniques to address limitations of spatial and temporal resolution.



Nanophotonics for Solar Energy and Device Physics

The tools of nanophotonics are not limited in their utility to biological imaging. In particular, when materials are decreased to a small size scale, their fundamental optical properties are altered. Our group is very interested in the photophysics of small metal particles and semiconductor nanocrystals (quantum dots). The fundamental photophysics of such materials can be explored with a combination of computational, analytical, and experimental tools, and these properties can be applied to solar energy and device physics.

Faculty News

Hashim Al-Hashimi received the 2009 LSA Excellence in Education Award for his outstanding teaching efforts in Chemistry 130, 463 and 480 and a very successful Freshman Seminar course he developed in Biophysics. In September Hashim and his wife Alli celebrated the birth of their first child Basel.

Arthur Ashe has written an invited cover review article on aromatic boron heterocycles in *Organometallics* **2009**, 28, 4236. He is a consultant for Universal Display Corporation.

Mark Banaszak Holl was elected a Fellow of the American Association for the Advancement of Science (AAAS) in 2009. He was honored for his distinguished contributions bridging disciplinary boundaries in studies of chemical and biochemical processes at the nanoscale. In September he began a three year term as Associate Vice President for Research in natural science and engineering at UM.

Brian Coppola has been appointed Associate Director of the UM-Peking University Joint Institute.

Kate Carol received a 2008 American Heart Association Scientist Development Award. She recently published a notable paper in *ACS Chem. Biol.* **2009**, 4, 783. The paper describes a technique for mapping of where reactive oxygen species interact with cell proteins.

James Coward, who retired last year, has moved to the Albany, NY area. He was honored this year as a 50 year member of the American Chemical Society.

Anthony (Rick) Francis has become Associate Dean for Special Projects in LSA (2009-2011).

John L. Gland retired from active status in May and was appointed Professor Emeritus. John came to the University in 1988 from General Motors Research Laboratory and Exxon Research and Engineering Company Corporate Research laboratory. His research interests included molecular mechanisms of hydrogenation reactions on metal surfaces, in-situ X-ray methods for characterizing the bonding and reactivity of adsorbed species, mechanisms of olefin partial oxidation on silver based catalysts, and tin film materials

for chemical sensing. His extensive research work has been summarized in over 180 scientific publications. He trained more than 20 doctoral and postdoctoral students and numerous undergraduates in research.

Theodore Goodson III became a Council for Institutional Cooperation Fellow in 2008.

Marc Johnson left the University and is now at Argonne National Laboratory.

Katrin Karbstein and **Nicolai Lehnert** have each been awarded a 2009 NSF Career Award.

Nancy Kerner is a member of the UM team receiving the 2009 Innovative Use of MERLOT Award. MERLOT is the Multimedia Educational Resource for Learning and Online Teaching. She received the 2009 Chemistry Distinguished Faculty Teaching Award. She was a keynote speaker at the MACTLAC meeting at Hope College.

Robert Kennedy received a NIBB MERIT award from NIH in 2008. This year he is the recipient of a Rackham Distinguished Faculty Achievement Award (UM). In 2010 he will become the Associate Editor of Analytical Chemistry.

Raoul Kopelman delivered the Iddles Chemistry Lecture at the University of New Hampshire, a lecture at the Foster Chemistry Colloquium at SUNY Buffalo and the 29th Pittcom Lectures at the University of Pittsburgh all in 2009. In March he appeared before a Congressional subcommittee at a briefing on "Breakthroughs in Medicine through Medical and Biological Engineering." His testimony was a part of the successful effort to add stimulus funds to the NIH budget.

Robert L. Kuczkowski returned to NSF for a year as Program Director for Chemical Research Instrumentation and Facilities. He was honored this year as a 50 year member of the American Chemical Society.

Daniel Longone served as curator of an exhibit at the William Clemens Library in May 2009. It was entitled, "500 Years of American Grapes and Wines: A Remarkable Journey."

Adam Matzger's research on hydrogen storage techniques was featured on an April 2009 program on the Discovery Channel.

Anne McNeil received the Elizabeth Caroline Crosby Research Award and the

William R. Roush Junior Faculty Career Development Award in 2008. In 2009 she received the Theime Chemical Journal Award. She also received a 2009 Office of Naval Research Young Investigator Award (and grant) and a 3M Non-tenured Faculty Grant. Finally she has been selected to receive a 2009 Beckman Young Investigator Award.

William Pearson, UM faculty member 1984-2003, left his position as Director of Research at Berry and Associates in Dexter, MI and is now consulting in Chicago.

James Penner-Hahn has been named the George A. Lindsay Collegiate Professor of Chemistry and Biophysics in LSA. He became Associate Dean for Budget in LSA in September 2009.

Ayyalulusamy (Rams) Ramamoorthy's studies of islet amyloid polypeptides related to type-2 diabetes have been receiving wide publicity. Rams was a Distinguished Visiting Professor at the Max Planck Institute at Mainz, Germany in summer, 2009. He is also the recipient of a 2009 JSPS (Japanese Society for the Promotion of Science) Fellowship. He coauthored an invited review article with **Neil Marsh**, "Fluorine—a new element in the design of membrane-active peptides," in *Molecular Biosystems* **2009**, 5, 1143.

Melanie Sanford was featured in the November 2008 issue of *Popular Science* as one of the "Brilliant Ten." Each year the magazine picks the ten most innovative young US-based scientists and features them in a special issue. In 2009 Melanie received the BASF Catalysis Award. She recently joined the Editorial Advisory Board for JACS. This year she was a plenary speaker at the 41st National Organic Symposium held Boulder, CO and a featured speaker at the 2009 Welch Conference on "Advances in Synthetic Chemistry" in Houston, TX.

David Sherman was elected a Fellow of the American Association for the Advancement of Science (AAAS) for 2009.

Nils G. Walter is an Associate Editor of the Wiley journal *Biopolymers*. He is also co-editing a book on Non-protein coding RNAs for the Springer series in Biophysics. He is a guest editor for two volumes on single molecule techniques and an issue RNA dynamics for *Methods in Enzymology*.

Faculty Profile

Vincent L. Pecoraro presented his inaugural lecture as the John T. Groves Collegiate Professor of Chemistry on April 14, 2009. Collegiate Chairs honor the recipient and a former distinguished faculty member of LSA for whom the chair is named. Professor John T. Groves was a member of our Department from 1969 to 1985 and now holds the Hugh Stott Chair of Chemistry at Princeton. Jay returned to Michigan to help Vince celebrate and also presented a delightful lecture on his current research.

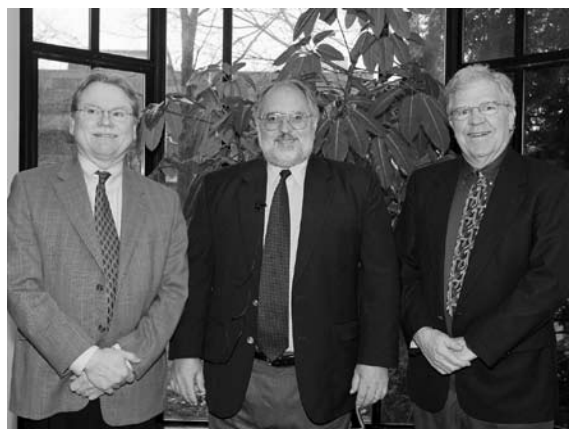
The Department congratulates Professor Pecoraro for his prestigious accomplishments and has chosen to highlight him in this newsletter. Vince Pecoraro, although born just outside of Manhattan, was raised as a "Valley Boy" in Southern California. He received a B.S. in chemistry in just 3 years from UCLA and then moved to the University of California, Berkeley where he completed Ph.D. studies on the chemistry of bacterial and human iron metabolism with Professor Kenneth N. Raymond. Subsequently, Vince returned to the biochemical arena by joining Professor W.W. Cleland's enzymology group at the University of Wisconsin, Madison as an NIH Postdoctoral Fellow. In an effort to nucleate a more biologically oriented group at Michigan, Vince was hired as an Assistant Professor in 1984 with the intent of exploring the role of metals in biology. Since this time, Vince has rocketed through the professorial ranks while establishing himself as one of the world's leading bioinorganic chemists. His achievements have been recognized by numerous awards, plenary lectureships and his appointment as Associate Editor for *Inorganic Chemistry* over fifteen years ago.

Vince's early work focused on unraveling the structure and clarifying the chemical mechanism of the reactive center of the Oxygen Evolving Complex found in algal and plant Photosystem II. His work has been highly collaborative, often publishing with Michigan colleagues Jim Penner-Hahn and Charlie Yocum as well as the top research groups in this field around the world. These studies initially were focused on one of the great questions in biology: how plants, using manganese and calcium, split water to produce dioxygen, protons and electrons. The work has garnered even more attention as our nation focuses on alternative energy sources which may require advanced catalysts for these transformations. In addition to these studies, Vince has used synthetic coordination complexes to elucidate the mechanism of non-heme containing Vanadium Haloperoxidases, a unique enzyme class which uses high valent vanadium and hydrogen peroxide to halogenate or alternatively oxidize organic substrates.

In 1989, Vince ventured into supramolecular chemistry when his group identified a new class of molecules now called metallacrowns. These structures, which were among the very first metallamacrocycles described, have amazingly lovely structures and interesting physical properties. Metallacrowns have now been made into molecular magnets, soft solid hosts for non-linear optical materials and sensors. His group is now hoping to combine and exploit these properties, allowing them to make exciting, new complex molecular systems.

Vince has also developed a research program using *de novo* protein design to explore heavy metal toxicity, metal ion homeostasis and metalloenzymology. His work has been important for understanding the biological chemistry of Hg(II), Pb(II), Cd(II) and As(III). Furthermore, his group recently prepared the first designed metalloenzyme containing both Hg(II) and Zn(II). These studies directly evolved from his early work that was honored in 1986 by the first G.D. Searle Biomedical Scholar prize awarded in the College of Literature, Science and Arts at the University of Michigan. Over the past 25 years, Vince's over 200 publications have been cited nearly 9,000 times. In addition to being a leading research scientist, Vince has served in various roles on numerous committees and boards from the chemistry department to international organizations. He presently is the Director of the Michigan Chemistry Biology Interface Training Program, has served on the Advisory Board of The American Chemical Society's Petroleum Research Fund, has been a member of numerous study sections and review panels for NIH and NSF and has served as a reviewer of scientific programs throughout Europe. Vince is also a dedicated educator. He has chaired over 20 Ph.D. committees and has sponsored nearly 100 undergraduate researchers during his career. He has taught effectively across the full range of didactic and laboratory courses ranging from general chemistry to advanced graduate topics. We know that Vince feels particularly blessed to have worked with such a wonderful cohort of postdocs, graduate and undergraduate students during his career.

With all of these accomplishments, it seems hard to believe that Vince manages a rewarding personal life. He has been happily married to Professor Peggy Carver (UM College of Pharmacy) for 17 years, whom he met on a blind date arranged by former UM Professor Will Pearson. Both Vince and Peggy love traveling (Vince is in such demand as a speaker that years ago, some of his Michigan colleagues anointed him the Northwest Airlines Professor of Chemistry) and the many great friendships they have developed around the world as a result of their scientific pursuits. Both are foodies, enjoying good food, wine and conversation wherever it may be found. Vince also claims to have a deep affection for art (his father is a superb painter), history and languages. In an ideal world, they would split their time between Ann Arbor, Paris and Kauai.



Dean T. McDonald, Vincent Pecoraro, John Groves at the lecture on April 14, 2009

Graduate Program News

Graduate Degrees - Masters & Ph.D

August 2008, December 2008, May 2009 & August 2009

Doctorates

Sara Buhrlage Dr. Anna Mapp
Small Molecule Transcriptional Activation Domains

Jinhui Chen Dr. Arthur Ashe, III
Boron Heterocycles: from Aromaticity to Electronic Materials

John Dishinger Dr. Robert Kennedy
Parallel Separations on Microfluidic Chips for High Throughput
Monitoring of Insulin Secretion from Single Islets of Langerhans

Trisha Duffey Dr. Edwin Vedejs
Chiral Nucleophilic Catalysts: Applications in the Synthesis of 3,
3-Disubstituted Oxindoles and Parallel Kinetic Resolution

Cory Fix Dr. Mark Meyerhoff
Comprehensive Multidimensional Gas Chromatography and Modula-
tor Development for Portable Instrumentation

Andrea Geyer Dr. Marc Johnson
Development and Investigation of NW(OR)₃, NMo(OR)₃, and
Mo₂(OR)₆ Complexes for Triple-Bond Metathesis

Alexandar Hansen Dr. Hashim Al-Hashimi
Development of ¹³C Nuclear Magnetic Resonance Methods for
Studying the Structural Dynamics of Nucleic Acids in Solution

Ananda Herath Mudiyansele Dr. John Montgomery
Development of Nickel-Catalyzed Cycloaddition and Coupling Reac-
tions

Kami Hull Dr. Melanie Sanford
Palladium-Catalyzed Oxidative Functionalization of C-H Bonds

Anastasia Kalli Dr. Kristina Hakansson
Protein and Lantibiotic Sequencing by Gas-Phase Dissociation Invol-
ving Vibrational Excitation and Ion-Electron Reactions

Dipannita Kalyani Dr. Melanie Sanford
Site Selectivity in Palladium-Catalyzed Oxidative Functionalization
Reactions

Charalampos Kalyvas Dr. Dimitri Coucouvanis
Synthesis of M/Fe/S Clusters Relevant to Biological Systems and
Minerals

Evelyn Kim Dr. David Lubman
Development and Application of Proteomics in Ovarian Adenocar-
cinomas Using Multi-Dimension Separation, Microarray and Mass
Spectrometry

Chinmay Majmudar Dr. Anna Mapp
Mechanistic Investigations of Transcriptional Activator Function for
the Design of Synthetic Replacements

Jingjie Mo Dr. Kristina Hakansson
Characterization of Nucleic Acid Non-Covalent Interactions by Fou-
rier Transform Ion Cyclotron Resonance Tandem Mass Spectrometry
and Gas-Phase Hydrogen/Deuterium Exchange

Shaelah Reidy Drs. Mark Meyerhoff & Franklin Dorman
High-Performance Micro-Fabricated Gas Chromatography Columns
for Complex Mixture Analysis

Curtis Schneider Dr. Vincent Pecoraro
Development of Asymmetric Sulfoxidation Catalysts Based on Fun-
tional Models for Vanadium Dependent Haloperoxidases

Matthew Schulmerich Dr. Michael Morris
Subsurface and Transcutaneous Raman Spectroscopy, Imaging, and
Tomography

Kristin Smith-Koutmous Dr. Carol Fierke
Investigation of the RNA-Protein Interactions in Bacterial Ribonu-
clease P (RNase P)

Xiaoyan Sun Dr. Hashim Al-Hashimi
Investigating Kissing to Duplex Dimer Transition Mechanism of
HIV-1 SL1 by NMR

Thomas Sundberg Dr. Gary Glick
Elucidation of Anti-Proliferative and Pro-Apoptotic Signaling Induced
by the Immunomodulatory Benzodiazepine Bz-423

Rebecca Veeneman Dr. Edward Zellers
Design and Characterization of a Multi-Vapor Preconcentrator for a
Micro-Scale Gas Chromatograph

Salena Whitfield Dr. Melanie Sanford
New Oxidation Reactions of Palladium and Platinum: Synthetic and
Mechanistic Investigations

Li Yi Dr. Ronald Woodard
Studies of 3-Deoxy-D-manno-Octulosonate 8-Phosphate Phosphatase:
Mechanistic Insights and a Gene Fusion Example

Masters

Gwendolyn Anderson
Jameson Bothe
Marchello Cavitt
Tse-An Chen
Travis Clark
Billy Clifford Nunn
Noah Gardner
Deidra Gerlach
Lauren Goodrich
Xiamou Guan
Amanda Hickman
Charalampos Kalyvas
Austin Kizzie
Asako Kubota
Erica Lanni
Stephanie Le Clair

Jonas Locke
Matthew Lorenz
Kaysia Ludford
Eric Majchrzak
Anna Merkle
Lang Ming
Cheryl Moy
Sharon Neufeldt
Joshua Neukom
Corrine Sulok
Benjamin Thompson
Meng Wang
Amanda Ward
Jenna Welby
Crystal Young



Annual Graduate Awards Icecream Social on June 25, 2009

Graduate Awards

Departmental Awards

American Chemical Society Outstanding Graduate Student Award for Research and Teaching

Anne Vázquez - Chen

Robert & Carolyn Buzzard Graduate Chemistry Student Leadership Award

Kara Stowers - Sanford

Alumni Fund for Outstanding Graduate Student Research

Meng Guo - Goodson

Florence Fenwick Outstanding Graduate Student Instructor Award

Laura Zimmerman - Meyerhoff

Milton Tamres Outstanding Teaching Award

Lauren Goodrich - Lehnert

Departmental Fellowships

George Ashworth Analytical Chemistry Fellowship

Wen Zhou - Hakansson

Robert W. Parry Award

Timothy Berto - Lehnert

Peter A.S. Smith Fellowship

Ajdin Kavara - Banaszak Holl

Margaret & Herman Sokol Graduate Summer Research Fellowship

Jing Chen - McNeil

Chemistry Excellence in Research Fellowship

Carlos Baiz - Kubarych
Jing Chen - McNeil
Jiyoung (Annie) Hong - K. Carroll
Christopher Taylor - Mapp
Meng Wang - Kennedy
Kazutoshi Yamamoto - Ramamoorthy
Crystal Young - Karbstein

Chemistry Research Achievement Fellowship

Ryan Baxter - Montgomery
Katie Cychosz - Matzger
Thomas Lyons - Sanford

Chemistry Research Excellence Travel Award

Alexander Johnson-Buck - Walter
Kara Stowers - Sanford

Non-Departmental Awards

Eli Lilly Fellowship

Neil Hershey - Kennedy

Graham Environmental Sustainability Institute Fellowship

Katie Cychosz - Matzger

National Science Foundation Fellowship

Marchello Cavitt - Ramamoorthy
Brannon Gary - Sanford
Amanda Hickman - Sanford
Erica Lanni - McNeil

Novartis Graduate Fellowship in Organic Chemistry

Kara Stowers - Sanford

Pfizer Graduate Fellowship

Meng Wang - Kennedy

Rackham Distinguished Dissertation Award

Matthew Schulmerich - Morris

Rackham International Student Fellowship

Kaysia Ludford - K. Carroll

Rackham Merit Fellowships and Science Awards

Maximillian Bailor - Al-Hashimi
Tanya Breault - Bartlett
Alana Canfield - Brooks
Anette Casiano - Al-Hashimi
Marchello Cavitt - Ramamoorthy
Deidra Gerlach - Coucouvanis
Shana Santos - Soellner
Thu Truong - K. Carroll

Rackham One-Term Dissertation Fellowship

Anastasia Kalli - Hakansson

Rackham Predoctoral Fellowship

Alexander Hansen - Al-Hashimi
Biyun Wu - Meyerhoff

Sandia National Laboratories Fellowship

Cory Fix - Meyerhoff

University of Michigan Substance Abuse Research Center Interdisciplinary Program

Maura Perry - Kennedy

Vaughan Symposium Awards

Oral Presentation Awards:

Dow Chemical Foundation Spring Fellowship - Matt Remy - Sanford
Travel Awards - Jing Chen - McNeil & Anne Vasquez - Chen

Poster Session Travel Awards:

Devayani Bhawe - Carroll
Zachary Buchan - Montgomery
Daniel Flynn - Goodson
Amanda Hickman - Sanford
Sun Kyu Kim - Zellers
Tom Lyons - Sanford
Anna Merkle - Lehnert
Cheryl Moy - McNeil
Ravi Nanga - Ramamoorthy
Candice Paulsen - Carroll
Joy M. Racowski - Sanford
Jennifer Schnobrich - Matzger
Gustavo Serrano - Zellers
Ronald Soong - Ramamoorthy
Grant Sormunen - Montgomery
Meng Wang - Kennedy
Sung-Hei Yau - Goodson
Crystal Young - Karbstein

Training Grants

Cellular Biotechnology Training Program (CBTP)

Kathryn Dooley - Morris

Chemistry-Biology Interface Training Program (CBI)

Matthew Leathen - Wolfe

Graduate Assistance in the Area of National Need (GAANN)

Ryan Baxter - Montgomery
Jameson Bothe - Al-Hashimi
Joseph Jankolovits - Pecoraro
Alan Kiste - Coppola
Allison Knauff - Montgomery
Anne Labut - Karbstein
Rebecca Lahti - Banaszak Holl
Daniel Miller - Vedejs
Cheryl Moy - McNeil
Anne Vázquez - Chen
Amberlyn Wands - Mapp

Microfluidics in Biomedical Sciences Training Program (MBSTP)

Colin Jennings - Kennedy

Molecular Biophysics Training Program (MBTP)

Alexander Johnson-Buck - Walter
Stephanie Le Clair - Ramamoorthy/Chen

Pharmacological Sciences & Biorelated Chemistry Training Program (PSTP)

Grant Sormunen - Montgomery

Regenerative Sciences Training Grant

Kathryn Dooley - Morris
John-David McElderry - Morris

Training Program in Reproductive Endocrinology (RSP)

Gwendolyn Anderson - Kennedy

Kasimir Fajans Dissertation Award

The Kasimir Fajans Award for the most outstanding doctoral dissertation in Chemistry is the Department's most venerable award. The award was established in 1956 by friends and colleagues of Professor Kasimir Fajans (1887-1975) on the occasion of his retirement as an active faculty member and in recognition of his distinguished contributions to science. The Kasimir Fajans Award consists of an honorarium and an invitation to deliver a scientific lecture to the Department. The Awardees' names are on permanent display on a bronze plaque in the main conference room of the Department. These awards are selected by a special faculty committee. There have been a total of 26 prior awards.

For the years 2006-7 there were 79 eligible candidates, a record number! Because of this large number and the high quality of the dissertations, the committee chose to make two awards. The co-awardees are Dr. Xiaoyun Chen and Dr. Katherine Plass.

Dr. Chen's thesis is titled, "Investigating Biointerfaces using Sum Frequency Generation Vibrational Spectroscopy." His thesis advisor was Professor Zhan Chen (no relation) and he is presently employed by the Dow Chemical Company in Midland, MI. On September 10 he delivered his lecture, titled, "Industrial Applications of Vibrational Spectroscopy."



Xiaoyun Chen and Zhan Chen

Dr. Plass' thesis is entitled, "Structure, Symmetry, and Stability of Two-Dimensional Crystals." Her thesis advisor was Professor Adam Matzger. She is currently an Assistant Professor of Chemistry at Franklin and Marshall College in Lancaster, PA. Her lecture is scheduled for March 17, 2010.

The Victor C. Vaughan Symposium

The Vaughan Symposium (<http://umich.edu/vvaughan/>) was held in Chemistry Department on August 7, 2009. The symposium is named in honor of Victor C. Vaughan (1851-1921) who was one of the first students to graduate from the University with a PhD in Chemistry (1876). Dr. Vaughan subsequently earned an MD from Michigan in 1878 and went on to a distinguished career in medicine. He served as Dean of the Medical School 1891-1921 and president of the AMA (1914-5).

The Vaughan Symposium was designed by and is run by Michigan Chemistry graduate students. It serves as a venue in which to share exciting research taking place within the Department. Originally named PECRUM, the first symposium was held in 2003. Through participants presenting their work to the Department as a whole, students foster collaborations, inspire new avenues of research, and nurture a growing sense of community within the Department. The symposium has become an annual tradition within the Department of Chemistry.

This year's symposium was organized and run by a committee of eight senior graduate students and chaired by Nicholas Ball. It started and finished with two excellent plenary lectures on polymer chemistry by Dr. James C. Stevens of Dow Chemical Company and Professor Geoffrey Coates of Cornell University. In between there were six 25 minute talks by graduate students. Student research posters (92) were presented in morning and afternoon sessions. All registrants (>200) received a free lunch and a symposium t-shirt.

The organizing committee selected the oral presentation, "Developing Palladium-Catalyzed Oxidative Oligomerization of Methane: How Mechanistic Study Lead to New Proposed Catalytic Cycle," by Matthew Remy (a Sanford student) to receive the award for the outstanding oral presentation. The award consists of a fellowship for the spring term 2010. There were two other awards for oral presentations and 18 for excellent posters. The awardees are listed in Graduate Student Award Section of this newsletter. These awards of \$500 each are to be used to attend a scientific meeting. We are grateful to the Dow Chemical Company for their generous support of these awards.



A Graduate Student poster presentation at the Vaughan Symposium

Undergraduate Program News

Undergraduate Degrees

August 2008, December 2008, May 2009 & August 2009

Biochemistry

Baccalaureates

Ali Artail
Jared Babcock
Thomas Bander
Kyle Beckwith
Jacob Begres
Kristy Bojazi
Nicholas Boswell
Ashley Budd
Jennifer Buchler
Gina Buiocchi
Maxim Burgman
Jason Chen
Paul Cipriani
Garrett Coyan
Esmaeel Dadashzadeh
Anthony Emanuele
Charles Fehl
Kevin Frank
Robert Gildersleeve
Charles Gray
Ye Hu

Mallory Johnson
Jesse Jun
Daniel Kechele
Jeeyong Kim
James Kornacki
Sora Lee
Schuyler Lee
Brian Lin
Thomas Lin
Brian Magnuson
Stacy Malaker
Katherine Manno
Kalev Maricq
Colleen Mayhew
Admir Mesanovic
Zachary Miller
Roshan Najafi
Kari Neier
Ikenna Nwamba
Jeffrey Osborne
Kiriaki Panagopoulos
Joseph Pawlowski
Hai Pham

Pradeep Poonnen
Andrew Rasmussen
Jason Riley
Kolby Roberts
Lindsay Saunders
Mallory Sherwood
Candice Smith
Jeri Spriet
Alexis Steinmetz
Patricia Szmal
Carmen Tugulan
Kevin Vlach
Anmin Wang
Jeffrey Yackley
Daina Zeng

Samuel Eaton
Katherine Gibney
Tyler Greer
Alica Guzman
Zhe Han
Qiyang Jin
Adam Justusson
Hugh Klavon
Nicola Kuhlmann
Corey Lager
Thomas Lauzon II
Tracy Lent
Alex Martin
Emily Mirkin
Yuki Murata
Andrew Parth
Cherilyn Pascoe
Katie Preston
Andrew Rasmussen
Lahdan Refahiyat
Max Reichwage
Michael Roberto
Rebecca Siegel
Jeffrey Simon
Joel Skaistis
Bryan Tebeau
Nicholas Urban
Jason Witek
Miguel Wong
Jason Wu
David Yancey

Chemistry Baccalaureates

Thomas Bratton
Sarah Breed
Lyndsey Brown
Maxim Burgman
Brandon Chan

Undergraduate Awards

CRC Outstanding Freshman Achievement Award

Justin Priest

Alpha Chi Sigma Outstanding 1st Year Student Award

Apurba Chakrabarti

Alumni 1st year Achievement Awards

Juan Andino • Melissa Gildenberg • Aaron Goodman • Rachna Goswami •
Nikhil Iyer • David Springstead • Matthew Stier

Alumni Outstanding Awards

2nd year Student Jonathan Mahlow, Kaitlin McLoughlin
3rd year Student Esmaeel Dadashzadeh, Jesse Jun
Senior Student Paul Baciu, Jennifer Raymond

Summer Research Awards

2009 Seyhan Ege Undergraduate Research Fellowship Award

Azhar Carim • Melissa Hoffman • Michael Holland • Jesse Song • Benjamin Throesch

2009 James E. Harris Scholarship Award

Vivek Behera • Umair Daimee • Hang (Helen) Shi • Brittany Worley

2009 Novartis Undergraduate Research Fellowship Award:

Rebecca Chota • Tamar Shrikian

2009 PPG Undergraduate Award

Ryan Bradstreet • Kaitlin McLoughlin • Saman Mirkazemi

2009 William G. Smeaton Memorial Award

Kenneth Chen • Jennifer Cui

2009 Margaret and Herman Sokol Endowment Award

Christina Galloway • Melanie Sabbagh • Chen Wang • Yefim Zaltsman

Alumni Outstanding Awards:

Second Year —Michael Kheir • Christina Suh • Grace Zhu
Third Year —Sarah Garnai • Christina Galloway • Christine Morrison
Senior —Lindsay Saunders

Honors College Vanko Award

Esmaeel Dadashzadeh

Huron Valley Section-Outstanding Student Leadership Award

Matthew Stier

Seyhan N. Ege—WISE Award

Tracy Lent

American Chemical Society Analytical Chemistry Award

Azhar Carim

Merck Index Award to Outstanding Seniors

Samuel Eaton • Charles Fehl • Alica Guzman • James Kornacki • Andrew Rasmussen

American Institute of Chemists Award

Anthony Emanuele • Jeffrey Simon

Undergraduate Programs

Research Experience for Undergraduates (REU)

The department once again hosted a successful NSF-funded REU program, as it has continuously since 1989. A group of students with exceptionally diverse backgrounds spent 10 weeks on campus doing full time research in one of our groups. The program also provides for weekly sessions on understanding different research options in the department, an introduction to the graduate school application and funding process, in addition to field trips to local industrial settings. This list includes students from the REU Site

and those on REU Supplements. Professors Coppola and Sanford as the co-directors of the domestic REU Site.

At the end of the summer, all of our students participate in a regional presentation and poster session that rotates between the REU programs at U-M, Notre Dame, and Hope College. This year's symposium, which had over 175 student posters, was held at Notre Dame.

PKU

International REU and exchange program with China
<http://umich.edu/~michchem/UMPKU>

In 2007, the department piloted a summer undergraduate research exchange in chemistry between U-M and Peking University. Three UM students went to PKU for a 10-week program (2 weeks orientation, 8 weeks of full time research) and four PKU students spent 8 weeks in the labs in Ann Arbor.

In 2008, we received 10 positions per year, for 3 years, from the National Science Foundation for the US-to-China direction (recruitment from around the US required, although up to 3 of these 10 could be used for UM students). A critical feature of our proposal was putting up an additional 3 positions per year of our own, exclusively for U-M students.

Also in 2008, we assisted our colleagues in China to help ensure a true exchange program. Currently, there are no structured sources of funds for supporting Chinese undergraduates to do work abroad. Based on the successful proposal to NSF, Pfizer Global R&D in Shanghai supported six 50% positions, with the matching funds coming mainly for Peking University along with a smaller contribution from U-M faculty mentors.

In 2009, we expanded the exchange program to include the Biological and Life Sciences. U-M students (and faculty hosts for the PKU students) were be drawn from Chemistry, Ecology &

Evolutionary Biology, and Molecular, Cellular & Developmental Biology. Pfizer has increased its commitment to include students from the biological sciences.

Because the other world-class university in Beijing, Tsinghua University, is located right across the street from Peking University, we pursued a successful expansion of the summer program to include both schools.

The students, regardless of which direction they travel, return home with a strong sense of confidence and comfort about their potential to participate and collaborate in an international setting, and with having formed a strong network of professors and students in their host country.

One important feature of our international REU program is the existence of the UM/PKU Joint Institute, which provides us with complete staffing and communications support for getting work done in Beijing, whether we are present or not. Professor Brian Coppola, who is the Associate Director of the Joint Institute, and Professor Jim Penner-Hahn, are the co-directors of the International REU Site.



PKU students in a light moment

Gifts

Contributions from private and corporate donors received from July 1, 2008 – June 30, 2009 (* Indicates corporate matching funds.)

Chemistry Alumni Fund

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Cargill Foundation*
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Gerald Fong and Day-Lih Tung
David J. Hart
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Chemistry Graduate Fellowships

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Dow Chemical Company Foundation
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Lisa A. Lanning
Eli Lilly & Company Foundation
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Mark and Marsha Meyerhoff
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Lubrizol Foundation
Novartis Institute for BioMedical
Research, Inc.
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Chemistry, Presidential Challenge for Grad Support

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David W. Stewart Estate

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Marjorie L. and Donald J. Carter
Seyhan N. Ege Estate

James E. Harris Scholarship Fund in Chemistry

Marian E. Harris

Milton Tamres Teaching Award

Marjorie L. and Donald J. Carter

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Charles S. Weinert

Peter A.S. Smith Fellowship

Roy and Judith Pointer

Robert & Carolyn Buzzard Grad Chem Stud Leadership

Robert and Carolyn Buzzard

Robert Kuczowski Faculty Award

Robert and Ann Kuczowski

Willard Memorial Lecture Fund

Graham D. Stewart

* Indicates corporate matching fund

Alumni News

E-Mail your news: chem.alum@umich.edu

Update your contact information: <http://www.umich.edu/~michchem/alumni/>

If errors or misstatements are noted in any of the following items, the Editors of the Newsletter would appreciate such being called to their attention. Mistakes can and do, inadvertently, creep in. Corrections can easily be inserted in the next edition.

Sultan T. Abu-Orabi (PhD 1982, Arthur Ashe) became the President of Yarmouk University (Irbid, Jordan) in March 2009. Yarmouk is the oldest university in Jordan. Dr. Abu-Orabi had previously served as the Presidents of Tafila Technical University (2005-9) and Irbid National University (2001-5).

Jessica Pankuck Alexander (PhD 2003, James Coward) was a postdoctoral with Professor Benjamin Cravatt of the Scripps Research Institute in La Jolla, CA following graduation from Michigan. In 2004 she married Matthew Alexander. In 2007

she moved to New Jersey where she is a Senior Research Biochemist with Merck Research Laboratories in Rahway.

Matthew Alexander (PhD 2003, James Coward) was a postdoctoral with Professor Michael D. Burkart at University of California at San Diego. Since 2007 has been a Senior Research Scientist in Medicinal Chemistry at TetraLogic Pharmaceuticals in Malvern, PA. He and Jessica live in Cream Ridge, NJ.

Julie Arslanoglu (BS 1987, MS Penn. State U.) has been an Associate Research Scientist in the Department of Scientific

Research at the Metropolitan Museum of Art (NY), since 2006. She works closely with the paintings and Paper Conservation Departments and has expertise in the analysis of paint and coating composition, stratigraphy and technology. She is accomplished in the analysis of both traditional and non-traditional artist's materials as well as polymeric materials. Her fields of interest include the application of mass spectrometric and immunological techniques to the study of organic polymers. Her prior training included a Fellowship at Smithsonian Museum Conservation Institute, a Diploma in Conservation of Easel Painting from the Courtauld Institute of Art (London) and a Mellon Fellowship at the Balboa Art Conservation Center, San Diego (CA).

Eric Baker (Postdoctoral 1994, Raoul Koppelman) has become a Chaired Professor at the University of Western Australia.

Susan Barker (PhD 1999, Raoul Kopelman) now works for System Planning Corporation. She lives in Charlottesville, VA and works part time so she has enough time for her children Rachel (6) and Caleb (4).

Heather (Crocker) Clark (BS 1994, PhD 1999, Raoul Kopelman) now at Draper Labs (associated with MIT) exhibited a new medical nano-tool, called "Nano-Tattoo." When Nano-Tattoo is embedded into the skin of diabetic patients, its color changes from blue to yellow to red according to the patient's sugar level.

Jacqueline Cole (presently a postdoctoral with Michael Morris) won the ASBMR/Harold Frost Young Investigator Award to attend and present a paper at a meeting of the International Bone and Mineral Research Society.

Douglas Daniels (BS 1995, PhD Scripps, La Jolla) has been with Novartis in Boston since 2006.

Xinggao Fang (PhD 1999, Arthur Ashe) has moved to Afton Chemical in Richmond, VA. He and his wife have just celebrated the birth of their daughter Abigail, born on September 15, 2009.

Jon P. DeGnore (BS 1991, PhD 1997 U. Florida) is an Assistant Professor in the Department of Physiology of the Tufts Medical School. He is the Director of Proteomics and Mass Spectrometry.

John Gladysz (BS 1971, PhD 1974 Stanford) was named Distinguished Professor of Chemistry at Texas A & M University in September 2008. He also holds the Dow Chair in Chemical Invention. He has recently been named an American Chemical Society Fellow.

Val Goodfellow (PhD 1986, Richard Lawton) has founded a new company in San Diego, CA and serves as its CEO. Califia Bio Inc. is involved in collaborative research projects with NIH funded academic research groups and biotech companies. Their interests are in medicinal chemistry drug discovery in the areas of neurodegenerative diseases, stroke, and inflammation.

Adam Gresiak (PhD 2008, Adam Matzger) and **Lidaris San Miguel Rivera** (PhD 2008, Adam Matzger) are both at Dow Chemical Company in Midland, MI. They recently celebrated the birth of their daughter.

Tara Conser Hagena (PhD 2008, James Coward) is an Instructor in the Department of Chemistry at Western Washington University in Bellingham.

Matthew C. T. Hartman (PhD 2002, James Coward) is an Assistant Professor of Chemistry at Virginia Commonwealth University in Richmond.

Todd Houston (PhD 1993, Masato Koreeda) is a Senior Lecturer in the School of Biomolecular and Physical Sciences at Griffith University in Nathan, Australia.

Kami Hull (PhD 2008, Melanie Sanford) was awarded an NIH post doctoral fellowship. She is working with Professor Barry Trost at Stanford University.

George W. Kabalka (BS 1965, PhD 1970 Purdue) is a Professor of Chemistry at the University of Tennessee. In 2009 he was elected a Fellow of the American Association for the Advancement of Science (AAAS).

William C. Kaska (PhD 1963, John Eisch) is a Professor of Chemistry Emeritus after serving over 40 years in the Department of Chemistry in the University of California at Santa Barbara. His research spanned the areas of organophosphorus and heterocyclic nitrogen pincer ligands with applications for C-H activation of saturated hydrocarbons; organometallic superbase complexes of platinum, rhenium and ruthenium; the synthesis of juxtaposed metal complexes of substituted naphthyridine complexes; electrochemistry of cobalt cyanide complexes and transition metal carbonyl anions of chromium, molybdenum and tungsten.

Charles M. Kausch (PhD 1989, Arthur Ashe) works on Polyfluorooxatanes with Omnova (formerly GenCorp) in Akron, OH. He is the secretary of the Akron ACS section. His wife Meridith is an internist and they have two children, Emily (12) and Ian (9).

David Konas (PhD 2002, James Coward) is an Assistant Professor of Chemistry and Biochemistry at Montclair State University in Montclair, NJ.

James Kornacki (BS 2009) won a poster award at the 57th ASMS Conference on Mass Spectrometry in June.

Herman Krabbenhoft (PhD 1974, John Wisemean) was a Research Chemist at GE's Corporate Research and Development Center in Schenectady, NY for over 25

years. He worked in the areas of monomer and polymer synthesis for applications in engineering plastics. He retired in 2001 and is pursuing another passion of his: baseball research. In 2006 his first book was published by McFarland, "Leadoff Batters of Major League Baseball – Complete Statistics 1900-2005." He also published several articles in the *Baseball Research Journal*, *The National Pastime*, and *Baseball Digest*. Currently he is working on his next two books: "The Uniform Numbers of the Detroit Tigers, 1931-Present," and "Consecutive Games Runs Produced Streaks, 1920-Present."

Jennifer Kwichak (PhD 2007, Nils Walter) has recently become an Assistant Professor of Chemistry at Albion College, Albion, MI

Robert B. Marcus (PhD 1962, Lawrence Brockway) is retired on Cape Cod after a career of research at Bell Labs, teaching and research in the Physics and Electrical Engineering Departments of the New Jersey Institute of Technology and commercialization of some inventions. He is still involved in his long-time love of creating sculpture and has published a book of jokes and humor, "A Priest, a Minister, and a Rabbi" (Lulu press).

Liz McDowell (PhD (Biophysics) 2008, Nils Walter) is now a Visiting Assistant Professor of Physics at Carleton College, Northfield, MN.

Marcia Moss (BS 1993, PhD 1989 U. Wisconsin) cofounded BioZyme Inc. She has developed a urine assay to detect breast cancer and is developing a protein therapeutic for the treatment of cancer and inflammatory diseases.

Brandon McNaughton (PhD 2007, Raoul Kopelman) is an Assistant Research Scientist in the UM Biomedical Engineering Department.

Shahid Murtuza (BS 1994, PhD 1999 Penn. State) has enrolled in the MBA program in the Kenan-Flagler Business School at the University of North Carolina at Chapel Hill.

Matthew Neu (postdoctoral 2006-9, Kevin Kubarych) is now an Assistant Professor of Chemistry at Western Kentucky University

Sam Pazicni (postdoctoral 2006-9, James Penner-Hahn, Brian Coppola) is an Assis-

tant Professor of Chemistry at the University of New Hampshire.

Gorka Peris (PhD 2006, Edwin Vedjs) is currently a Laboratory Leader in Chemistry-Fungicide Department of Bayer CropScience located in Monheim am Rhein, near Cologne, Germany.

Katherine Plass (PhD 2007, Adam Matzger) is an Assistant Professor of Chemistry at Franklin and Marshall College, Lancaster, PA. She won several awards including a Dreyfus Faculty Start-up Award, Cottrell College Science Award and Petroleum Research Fund Undergraduate New Investigator Award.

Kendra Reid (PhD 2009, Robert Kennedy) has accepted an offer as an Assistant Professor at U. Detroit Mercy.

Melissa (Batchelor) Reynolds, (PhD 2004, Meyerhoff) has been appointed assistant professor of analytical chemistry at Colorado State University

Samuel W. Root (BS 1940, MD 1943) of Jacksonville, FL sent a copy of a handwritten letter which he had received in 1936 from Professor R. K. McAlpine of the UM Chemistry Department. Dr. Root had inquired what he might expect to do and earn as chemistry graduate. In reply

Professor McAlpine observed that for BS the starting salary is about \$100/ month and for a MS or PhD about \$150/ month, but afterwards advancement depends on ability, initiative and personality. A delightful letter!

Amethyst Smith (BS 1999) has received a JD degree and is employed by the law firm of Schiff Hardin LLP. She works in pharmaceutical patent litigation and has ample opportunity to use her chemistry background.

Zeev Rosenweig (Postdoctoral 1995, Raoul Kopelamn) is a Program Director at NSF in the Analytical Chemistry Division.

Harold F. Sanford (PhD 1979, Arthur Ashe) is a Research Chemist at Fresenius Medical Care, Lexington, MA.

Thomas W. Smith (PhD 1973, Charles Overberger) retired from Xerox in 2002 and is now a Professor of Chemistry at the Rochester Institute of Technology. He was recently named an ACS Fellow.

Kurt H. Stern (MS 1950, PhD 1953 Clark U.) has written three books on the chemistry of molten inorganic salts. He is also a composer and has had several compositions performed in the Washington, DC area.

Ian Steward (BS 2002, PhD 2006 U.C., Berkeley) has just started work with Exxon Mobil in Houston.

Weilhong Tan (PhD 1993, Raoul Kopelamn) is a Professor of Chemistry at the University of Florida (Gainesville). He also has an appointment in the Brain Institute at Florida and is a Research Professor at the State Key Laboratory of Chemo/ Biosensing and Chemometrics at Hunan University, China.

Renato Zenobi (Postdoctoral 1991, Raoul Kopelamn) has become Professor of Chemistry at the Swiss Federal Institute of Technology (ETH) in Zurich.

Liming Zhang (PhD 2004, Masato Ko-reeda) moved his research group from the University of Nevada, Reno to the University of California, Santa Barbara in July 2009. He is currently Assistant Professor of Chemistry.

Xinnan Zhang (PhD 2007, Adam Matzger) has moved from National Starch and Chemical Company to become a Staff Scientist at Symyx Technologies in Sunnyville, CA.

James Zimmerman (PhD 2000, Henry Griffin) is Associate Professor of Chemistry and Associate Director of the Research Academy for University Learning at Montclair State University in New Jersey.

In Memoriam

We are saddened to announce the deaths of the following faculty, alumni, alumnae and friends of the Department.

David W. Holmes (PhD 1940, Werner Bachmann) died on January 2, 2009 at the age of 94 in Hockessin, DE. Dr. Holmes graduated from Amherst College in 1937 with a BA in Chemistry. After obtaining his PhD in Organic Chemistry with Bachmann, he did a one year post-doctoral before joining the DuPont Company. After 36 years at DuPont, he retired a Director of Sales for the Elastomers Department. In his retirement Dr. Holes was very active in community services. In particular he served for more than 25 years with the Service Corps of Retired Executives (SCORE). With his wife Barbara (Zechiel) he helped found the Mary Campbell Center of Wilmington, DE. The Mary Campbell Center is dedicated to serving the needs of multi-handicapped, allowing its participants to play an active role in the community.

Hymin Shapiro (MS 1936) died at the age of 93 on November 1, 2008 in Kirkland, WA. He was born in Detroit and received a BS from Wayne State U. in 1934. After graduation from UM Shapiro obtained a position as a chemist with Ethyl Corporation (now a part of NewMarket), where he would spend the rest of his career. He became Assistant Director of Chemistry Research. In 1957 he was transferred to the company's major facility in Baton Rouge, LA, where he served as Senior Research Advisor. He retired in 1985. Among his many accomplishments he generated 110 patents, mostly in the field of organometallic compounds. Notable among these was a patent on new organomanganese compounds, which became the basis for a commercial anti-knock agent in gasoline. In 1968 he was the coauthor with Fredrick

Frey of, "The Organic Compounds of Lead," published by Wiley/Interscience.

John T. Yoke, III (PhD 1954, Robert Parry) died at the age of 80 on February 12, 2009. He was born in New York City and received a BS from Yale in 1948. Following graduation from UM, he served in the US Army Chemical Corps and was a research chemist at Proctor and Gamble. He later held faculty positions at the University of North Carolina and the University of Arizona. In 1964 he joined the Chemistry Department of Oregon State University, where he retired as a Professor of Chemistry in 1990. Professor Yoke's research involved inorganic synthesis and the reactions of phosphorus and nitrogen ligands in metal complexes.

Faculty

- Hashim M. Al-Hashimi**, Professor of Chemistry; Associate Professor, Biophysics. *Chemical Biology*.
- Philip Andrews**, Professor of Biological Chemistry, Chemistry, Comp Med & Biology, Medical School and Director MLSC-Core Tech Alliance Proteomics Center. *Bioanalytical Chemistry*
- Mark M. Banaszak Holl**, Professor of Chemistry; Professor, Macromolecular Science & Engineering. *Synthetic and Mechanistic Solution, Surface, and Solid State Chemistry*.
- Bart M. Bartlett**, Assistant Professor of Chemistry *Inorganic, Materials Chemistry*.
- Charles L. Brooks III**, Warner-Lambert/Parke-Davis Professor of Chemistry and Biophysics. *Physical Chemistry/Biophysical Chemistry/Theoretical and Computational Chemistry and Biophysics*.
- Heather A. Carlson**, Associate Professor of Medicinal Chemistry; Associate Professor, Chemistry, *Computational Chemistry, Drug Design, Theoretical Biophysics*
- Kate S. Carroll**, Assistant Professor of Chemistry; Research Assistant Professor, Life Sciences Institute. *Chemical Biology, Bioinorganic and Biochemistry*.
- Mary Anne Carroll**, Professor of Atmospheric, Oceanic and Space Sciences; Professor, Chemistry. *Atmospheric Chemistry*.
- Zhan Chen**, Professor of Chemistry; Associate Professor, Macromolecular Science & Engineering. *Biomaterial and Polymer Surface, Biocompatibility*.
- Mary Sue Coleman**, UM President and Professor of Chemistry
- Brian P. Coppola**, Arthur F. Thurnau Professor of Chemistry; Associate Chair for Undergraduate Chemistry. *Organic Chemistry, Science Learning and Instructional Methods*.
- Dimitri Coucouvanis**, Lawrence S. Bartell Collegiate Professor of Chemistry. *Synthesis, Structures and Reactivities of Metal Clusters and Supramolecules*.
- Barry Dunitz**, Assistant Professor. *Theoretical and Computational Chemistry*
- Carol A. Fierke, Chair**, Jerome and Isabella Karle Collegiate Professor of Chemistry; Professor, Biological Chemistry. *Chemical Biology, Bioinorganic Chemistry*.
- Anthony H. Francis**, Arthur F. Thurnau Professor of Chemistry; Associate Dean, LS&A. *Magnetic Resonance, Vibrational and Electronic Spectroscopy of Materials*.
- Eitan Geva**, Associate Professor. *Theoretical and Computational Chemistry*.
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