



### Welcome from the Chair

Greetings from Ann Arbor! "Experience" is a common thread in the notable work of the Department of Chemistry over the last year.

Bringing considerable research experience with them to the department are four new faculty members. Read more about their explorations in atmospheric chemistry from Andrew Ault and Kerri Pratt, new synthetic methods development from Corey Stephenson, and synthetic organic and organometallic chemistry from Corrina Schindler. We are excited to welcome them to UM.

Several faculty members with more than a decade of experience at UM have been recognized for their distinguished careers with named professorships. I was pleased to honor one of the power couples of Chemistry, Jerome and Isabella Karle, with my distinguished university professorship. We are also proud to announce the promotion of two faculty members based on their outstanding accomplishments: Ann McNeil to Associate Professor with tenure and Kristina Hakansson to Professor with tenure.

Also, numerous external awards over the past year have recognized the research and teaching excellence of the Chemistry faculty.

We have long recognized the value of research experiences for our students. This year marked the 25th summer for our NSF-funded Research Experience for Undergraduates site program. With the support of our faculty, alumni, and friends we are expanding opportunities for student research experience in several ways.

- Koreeda Fund for Student Research recognizes the outstanding research mentoring that Professor Masato Koreeda provides our undergraduates. This new endowment will support student researchers, particularly undergraduates. Read more on page 9.
- Our expanded Summer Scholars Fund provides support for more than 25 UM chemistry and biochemistry majors taking part in summer research experiences.
- A major gift from Wayne A. and Carol H. Pletcher has established a fund providing support for graduate students.
- A substantial bequest from alum James Davis established the James and Madalene Davis Graduate Fellowship Fund, which supports Davis Fellows who spend the summer before starting their graduate studies conducting research.
- A pledged bequest from the Gladysz family will support undergraduate research and endow the Edward and Margean Gladysz Associate Professorship.

Looking back on the experience of almost 50 years in the Department, in a special treat in this newsletter, Professor Emeritus Robert Kuczkowski shares a condensed version of Department history, as the

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University begins to look ahead to its 200th anniversary in 2017.

An experience deferred for 55 years was the PhD hooding ceremony for alum Ken Wyckoff who was unable to participate in commencement with his class in 1958. We were pleased to share this experience in May 2013 with Ken and his family and his accomplishments were recognized with a standing ovation.

An experience not to be missed is a reunion for Chemistry alumni and graduate students being planned by the UM Chemistry Professional Development Organization for late summer or early fall. Watch for details for this opportunity to talk with our students.

I hope that you enjoy hearing about the Department and I invite you to visit anytime that you are in town. I thank you for your support and I look forward to talking with you.

Best wishes,  
 Carol Ann Fierke, *Chair*,  
*Jerome and Isabella Karle Distinguished University Professor of Chemistry, Professor of Biological Chemistry*

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## Spotlight on New Faculty



**Andrew Ault, Assistant Professor**

PhD: University of California, San Diego  
PostDoc: University of Iowa  
*Analytical, Physical, & Environmental Chemistry*

Atmospheric particles and engineered nanoparticles both have extremely complex chemical and physical properties. A single atmospheric particle can contain thousands of different compounds, undergo many types of chemical processes (aqueous chemistry, photochemistry, heterogeneous reactions, changes in phase, surface reactions, and

multiphase chemistry). For nanoparticles, size, morphology, layering, dissolution, and aggregation can have large impacts on usage and health.

Many of the same characterization techniques can be utilized to set both types of particles. The two instruments that form the backbone of our analytical approach are Raman microspectroscopy and an aerosol-time-of-flight mass spectrometer (ATOFMS). Raman microspectroscopy allows us to study individual particles and obtain functional group information (from vibrational spectra), optical imaging, and spectral mapping of specific features. By modulating the relative humidity and temperature of samples, key chemical properties can be probed at atmospheric pressure. The functional group information is complemented by electron microscopy with energy dispersive X-ray analysis that can give information on the elements present. The second critical instrument, ATOFMS, is being built with Prof. Kerri



**Kerri Pratt, Assistant Professor**

PhD: University of California-San Diego  
PostDoc: Purdue University  
*Mass Spectrometry Studies of the Interactions of Atmospheric Trace Gases, Particles, and Clouds with the Biosphere and Cryosphere*

The Pratt group focuses on studies of interactions between atmospheric trace gases, particles, and clouds using novel mass spectrometry techniques. In particular, we tackle the major uncertainties that exist in our understanding of atmospheric aerosols

with respect to interactions between urban pollution and trace gas emissions from forests, as well as feedbacks associated with sea ice loss in the Arctic. We use a field-portable single-particle mass spectrometer to measure the size and chemistry of individual particles in real-time. Trace gas composition is measured using a field-portable on-line chemical ionization mass spectrometer, as well as gas chromatography coupled with mass spectrometry. To study the molecular composition of high molecular weight organics, electrospray ionization coupled with high-resolution mass spectrometry is used to probe ambient samples. These measurements of trace gases, aerosols, and cloud water are complemented by one-dimensional modeling of chemical reaction mechanisms and kinetics to examine and predict chemistry versus altitude and time. These studies will improve our understanding of the feedbacks between natural aerosol sources, anthropogenic emissions, and the Earth system for future climate and air quality predictions.

Pratt's group. This instrument provides size and dual polarity mass spectra for individual particles in real-time. The rapid particle analysis and real-time nature complement the detailed offline analysis by Raman microspectroscopy. Together these tools allow us to study particles formed from low volatility gases in remote forests, to emissions from industry, to engineered nanoparticles in the human gut.



**Corey Stephenson, Associate Professor**

PhD: University of Pittsburgh  
PostDoc: ETH Zurich  
*New Methods Development, Catalysis, Organometallic Chemistry and Complex Molecule Synthesis*

Research in our group is focused primarily upon the development of new strategies and methodologies for the synthesis of natural products. Of particular interest are the discovery of practical new processes which utilize the redox chemistry of visible light activated metal complexes. Visible light sensitization is an attractive means to initiate organic reactions due to the lack of visible light absorbance by organic compounds thereby reducing the side reactions that are often associated with photochemical reactions conducted with high energy UV light. These photocatalysts offer a means to selectively functionalize organic molecules with the appropriate choice of an excited state quencher. These processes offer improved chemoselectivity (and strategic advantages when employed in total synthesis) over current approaches while also enabling

the reduction of stoichiometric waste byproducts. In particular, we are focusing our efforts in the following areas: (1) the development of new methodologies based upon visible light initiated electron transfer reactions; (2) applications of these methods to complex natural product synthesis; (3) technology-enabled reaction discovery and photocatalysis using mesoflow and microfluidics chemistry; and (4) new approaches to biomass conversion.

## Corinna Schindler, Assistant Professor

PhD: ETH Zurich

PostDoc: Harvard University

*Synthetic organic and organometallic chemistry*

Research in our laboratory focuses on innovations in modern synthetic organic and organometallic chemistry to address fundamentally interesting questions of biological importance. It has recently been suggested that certain cancer treatments would benefit from targeting both the tumor itself and the resultant inflammation of the surrounding tissue. Inflammation in the tumor microenvironment has many tumor promoting effects that lead to proliferation and survival of malignant cells, angiogenesis and metastasis. The primary goal of our research program is to develop new synthetic methods based on transition metal catalysis to enable the synthesis of biologically active natural and unnatural products. The compounds prepared within this research program will be evaluated for their specific biological activities both by ourselves and in collaborations established with researchers at the University of Michigan and at the Broad Institute of Harvard and MIT.

The structurally complex motifs of our biologically active targets call for innovative synthetic solutions. In turn, students joining this research program will gain expertise not only in the field of complex target synthesis but also the development of creative synthetic methods. We will specifically target new synthetic transformations that enable us to rapidly access common synthetic intermediates en route to our biologically active natural and unnatural products.

## Distinguished University Professorship for Carol Fierke

**Carol A. Fierke** was named the Jerome and Isabella Karle Distinguished University Professor of Chemistry.

A Distinguished University Professorship recognizes exceptional scholarly achievements, national and international reputation, superior teaching and mentoring, and an impressive record of service. It is one of the most prestigious of the University's recognitions.

Fierke draws from biochemistry, cell biology, enzymology, and physical organic chemistry to research fundamental details of cellular function. She has clarified characteristics of protein and nucleic acid-catalyzed reactions and enhanced knowledge about metal ion homeostasis in cells. In 2012, the American Chemical Society presented her its Repligen Award for her many contributions.

Her laboratory defined the determinants of metal affinity and specificity in carbonic anhydrase, and developed biosensors for the first real-time measurement of cellular concentrations of readily exchangeable zinc ions, opening the way for analysis of cellular zinc homeostasis. She and her team have analyzed catalytic mechanisms and function of important metalloenzymes, which have implications for the development of enzyme inhibitors as therapeutic agents. Fierke has published more than 200 articles in top journals, and has served on editorial boards. Active in a number of professional organizations, she was chair of the American Chemical Society's Division of Biological Chemistry and co-chaired the 2013 American Society for Biochemistry and Molecular Biology national meeting.

Fierke has championed curricular innovations and new courses. She has mentored 18 postdoctoral fellows, 37 graduate students, and 40 undergraduate researchers in her laboratory. As chair since 2005, she has supported the department's increased academic reputation, funding and diversity.

Her efforts to expand opportunities for women and minorities in the sciences have been recognized with the Hollenshead Award for Promoting Equity & Social Change, Harold R. Johnson Diversity Service Award, Sarah Power Goddard Award, and Rackham Distinguished Mentoring Award. An American Association for the Advancement of Science fellow, Fierke has received other honors including the Packard Fellowship, the American Heart Association Established Investigator Award, and UM Distinguished Faculty Achievement Award.

She earned a B.A. in chemistry from Carleton College and a Ph.D. in biochemistry at Brandeis University. Following a postdoctoral fellowship at the Pennsylvania State University funded by the National Institutes of Health, she joined the faculty at the Duke University Medical Center Department of Biochemistry. In 1999 she came to the University of Michigan as a professor in biological chemistry and in chemistry.

This professorship honors the Karles, who both earned doctorates at UM in physical chemistry in 1944. Jerome worked on the Manhattan Project, and was a co-winner of the 1985 Nobel Prize in Chemistry for structure determination. During World War II Isabella Karle devised a procedure for producing pure plutonium chloride for the atom bomb project. Later she became a pioneer in new methods to study the structure of molecules and was awarded the National Medal of Science in 1995. Both enjoyed long careers at the Naval Research Laboratories.

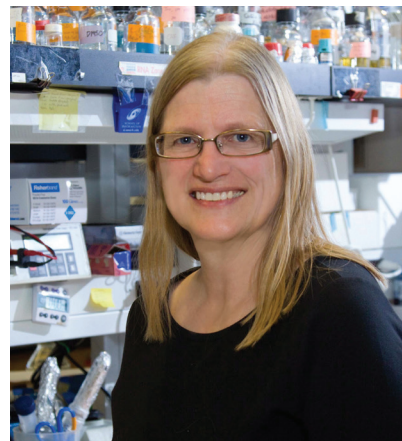


Photo by D. C. Goings

### Chemistry faculty honored with Collegiate Professorships

Three Chemistry faculty have been awarded Collegiate professorships in the past year. Collegiate professorships honor senior faculty members for outstanding research, teaching, and contributions to the College. Faculty members are appointed by the Board of Regents, based upon the recommendation of the provost and dean of the professor's college. The award is a five-year renewable term and includes an annual stipend.

#### Anna Mapp

Anna Mapp has been named to the Edwin Vedejs Collegiate Professorship in Chemistry. She is also the director of the program in chemical biology and a research professor in the Life Sciences Institute.

As an undergraduate at Bryn Mawr College, Anna Mapp had planned to major in East Asian studies and then attend medical school. Then an organic chemistry class from Professor Frank Mallory set her on a course for a career in chemistry. "After watching my professor apply a simple reaction to a more complex system, I was hooked," she says.

"I was also able to get a work-study job in an organic chemistry lab lead by Prof. Charles Swindell, who was working on strategies to synthesize the anti-cancer agent taxol. That job gave me the opportunity to see research up-close for the first time."

Her research interests continue to have medical implications. She is using the tools of organic chemistry to better understand how genes are regulated.

The process of transcription is the cell's method of copying information from genes into messenger rna, which acts as a blueprint for making proteins. Errors in transcription are linked to diseases like diabetes and cancer. Such diseases could be treated with drugs that target transcription. However, little is known about the molecular interactions that regulate the levels and course of transcriptional activation over time.

Mapp's group, which includes students from the medicinal chemistry program, the program in chemical biology, and the chemistry department, focuses on two approaches for identifying the relevant targets of activator proteins in the transcriptional machinery. One approach is to discover organic molecules that mimic common features in the natural proteins that regulate transcription. She is also working on understanding how multiple activator proteins function and uncovering their regulatory role in transcription.

She completed her A.B. in Chemistry at Bryn Mawr College and then did her PhD at the University of California-Berkeley under the direction of Professor Clayton H. Heathcock. Following postdoctoral work with Professor Peter B. Dervan at California Institute of Technology, Mapp joined the UM faculty in 2000.



*Anna Mapp*

Among the awards she has received in recent years, Mapp was named a fellow of the American Association for the Advancement of Science in 2011. She also received a Arthur C. Cope scholar award from the American Chemical Society in 2012.

Other awards include the Eli Lilly Award in Biological Chemistry (2007), Amgen Young Investigator Award (2006), National Science Foundation Presidential Early Career Awards for Scientists & Engineers (2005), and the A.P. Sloan fellowship (2004).

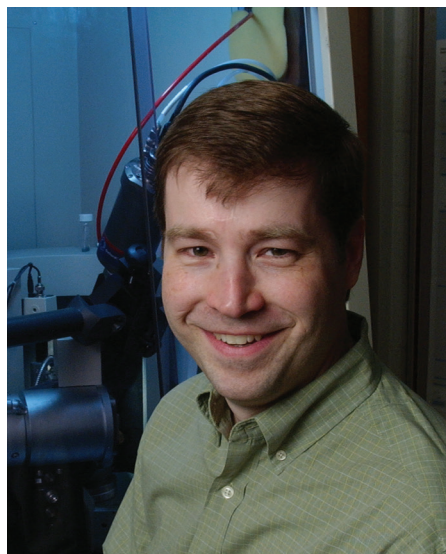
Her skill as a teacher was recognized with the LSA Class of 1923 Memorial Teaching Award in 2006.

Her collegiate professorship honors Edwin Vedejs, who joined the UM Chemistry department in 1999. He retired in 2011. He is internationally known in the field of synthetic and mechanistic organic chemistry. Throughout his career he has been an extremely creative and prolific scholar whose research was highly innovative and interdisciplinary. He is widely recognized as a leader in the development of a synthetic approach to cytotoxic nitrogen-containing natural products. Recently his research focused on the challenging frameworks of certain heterocyclic compounds.

#### Adam Matzger

Adam Matzger has been named to the Charles G. Overberger Collegiate Professorship in Chemistry beginning May 1, 2013. He is also Professor of Macromolecular Science & Engineering, College of Engineering, and Associate Director for Science and Technology, UM Energy Institute.

While many a child thinks science is all about making things blow up, Adam Matzger is in fact doing research on explosives. He is applying his long-standing interest in the crystallization of



*Adam Matzger*

organic molecules, such as pharmaceuticals, to the development of new explosives. The rate at which new explosives enter use is slow, he says. “It makes drug discovery look lightning fast.”

Matzger explores polymorphism in his research. Because the solid form of a drug influences how it dissolves and creates its effect in the body, that fact that one drug molecule can crystallize in more than one arrangement opens the possibility of creating different effects from that drug. This ability to pack molecules in crystals in more than one way is also of interest in explosives, Matzger says.

His group is applying a method from the drug delivery realm, called cocrystallization, to the explosives research. In cocrystallization, chemists pack more than one kind of molecule together in a crystal. To investigate the basic science of this approach, Matzger is heading a Multidisciplinary University Research Initiative (MURI) funded by the Army Research Office for \$6.2 million over 5 years. The project also involves researchers from five other institutions: Georgia Institute of Technology, Kansas State University, New York University, Purdue University, and University of Delaware.

Matzger is also continuing work on porous materials. The goal is to develop materials that can be used to store hydrogen, natural gas or other gases. His group has developed new ways to synthesize materials that can be used in these applications, as well as developing some new applications for these materials. A challenge is how to do this cheaply from existing materials, Matzger explains. Chemists can design more and more complicated molecules but the economic viability falls as we do that. He has patented a method that uses three commercial commodities mixed together to self-assemble complex materials that are usually only created through synthesis.

Other recent recognitions for Matzger include being elected a fellow of the American Association for the Advancement of Science.



*Ayyalusamy Ramamoorthy*

In 2012, he received LSA’s Imes and Moore Faculty Award for exceptional efforts in recruiting and mentoring science graduate students from disadvantaged and non-traditional backgrounds.

Matzger joined the UM faculty in 2000, after a postdoctoral position at the California Institute of Technology. He earned his PhD from the University of California-Berkeley with Peter C. Vollhardt. His B.S. is from Oberlin College.

Overberger was an internationally renowned expert on organic polymer chemistry. He joined the UM chemistry faculty in 1967 as professor and chair. He served as UM Vice President for Research from 1972–1983, and continued to teach, conduct research and publish during those eleven years. He founded the UM Macromolecular Research Center in 1968 and continued to direct the center until 1987. He was also a distinguished teacher. He served as president of the American Chemical Society, among other roles, and received numerous awards for his service and leadership in the field of polymer chemistry. He retired in 1989 and passed away in 1997.

### **Ayyalusamy Ramamoorthy**

Ayyalusamy (Rams) Ramamoorthy is the Robert W. Parry Collegiate Professor of Chemistry and Biophysics, effective Sept. 1, 2013.

Ramamoorthy is an internationally renowned expert in the development of nuclear magnetic spectroscopy (NMR) techniques to investigate atomic-level resolution structures of proteins/peptides associated with cell membranes. These proteins act as enzymes, regulate transport processes, and play a central role in intercellular communication. To understand the diverse functions of membrane proteins and to engineer these functions for biomedical or biotech-



### Montgomery named to Sokol Endowed Professorship

John Montgomery has been appointed the Margaret and Herman Sokol Professor of Medicinal or Synthetic Chemistry, College of Literature, Science, and the Arts, for a five-year renewable term, effective January 1, 2013.

The professorship was established by the Regents in July 2007 as a result of a generous gift from Herman and Margaret Sokol.

Montgomery joined the University of Michigan as a professor in 2005. He has established an internationally recognized research program in organic and organometallic chemistry. He has made enormous contributions to the discovery of new transition metals-catalyzed chemical reactions, the study of the mechanisms of these reactions, and the application of these processes to complex synthetic problems.

He is also the director of the Chemistry-Biology Interface National Institutes of Health training grant, which brings together faculty and students from the College of Literature, Science, and the Arts, the College of Pharmacy, and the Medical School.

Montgomery is well regarded as an excellent teacher and dedicated mentor and has provided leadership and important mentoring to junior faculty in the department. Since coming to Michigan, Professor Montgomery has received the 2007 Pfizer Michigan Green Chemistry award and has been elected as a fellow of the American Association for the Advancement of Science, in addition to numerous other awards.

### Ramamoorthy cont.

nological purposes, it is necessary to determine their high-resolution structure and to describe their dynamics. Structure determination of membrane proteins is one of the most important and challenging aspects of science at the present time, he says. Solid-state NMR spectroscopy is an ideal technique for immobile and non-crystalline proteins that are difficult to study by X-ray crystallography or by solution NMR.

Ramamoorthy's research program orchestrates the theoretical design, experimental demonstration, and application of new and cutting edge solid-state NMR spectroscopic methods. Solid-state NMR methods are composed of a variety of sophisticated techniques including specifically constructed multiple radio-frequency pulses, magic-angle spinning, multiple resonance schemes, sensitivity enhancement procedures, selective observation or hybridization of them. This basic research on spin physics encompasses theoretical and experimental aspects of spin engineering, computer simulations, and instrumentation. Ramamoorthy has made outstanding contributions in this area as well as in aging-related misfolding of proteins and antimicrobial peptides. Evidence of his prominence in the biophysical NMR field can be found in his enormous scholarly publication record. He has published more than 220 articles from his independent research program at Michigan, most in the top journals in his field.

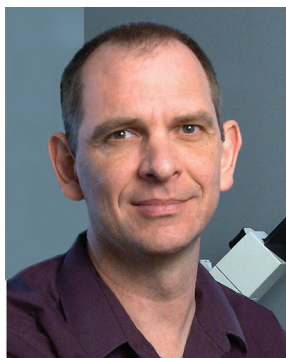
A dedicated teacher and research mentor to both undergraduate and graduate students, Ramamoorthy recently developed a new course as part of the new undergraduate program in the Program in Biophysics. He has demonstrated a deep commitment to mentoring students in his research laboratory where he has graduated 11 Ph.D. students, is working with 6 more, and has worked with more than 40 undergraduate researchers.

His service to the University and the discipline includes hosting several conferences at Michigan and at American Chemical Society meetings. He has also served on several National Institutes of Health study sections and National Science Foundation panels. He is an editorial board member of several top journals in the area of NMR and membrane biophysics.

Ramamoorthy received his Doctorate from the Indian Institute of Technology in 1989, and then undertook a series of research appointments: fellow scientist, Central Leather Research Institute, India, 1989-1992; scientist, Biometrology Laboratory, Japan, 1992-1993; and research associate, University of Pennsylvania, 1993-1996. He began his teaching career as an assistant professor and assistant research scientist at Michigan in 1996. He was promoted through the ranks to professor in 2008.

Robert W. Parry was a faculty member at the University of Michigan from 1946 until 1970. A president of the American Chemical Society in 1982, Parry was the recipient of the Priestley Medal (1993), the highest honor bestowed by the ACS.

**Hashim M. Al-Hashimi**, J. Lawrence Oncley Collegiate Professor of Chemistry and Biophysics, has received an Agilent Thought Leader Award from Agilent Technologies, Inc. This gift will support his research into the development of simple NMR methods for characterizing Hoogsteen base-pairs in DNA. He has also been awarded the Vilcek Prize for creative promise in biomedical science.



**Mark Banaszak Holl** has been awarded a 2013 UM Distinguished Faculty Achievement Award, which honors senior faculty who consistently have demonstrated outstanding achievements in research, teaching, mentoring of students and junior faculty, service, and of other activities. He was cited for his pioneering contributions to organometallic and material science, insights into the nanostructure of type I collagen, mechanistic investigations of poly-

mer gene delivery systems and the creation of new drug delivery systems. Mark has also been named as one of 25 Top STEM professors in Michigan.

**Bart Bartlett** is the recipient of the Seyhan Ege Junior Faculty Development Award from the Department, beginning this September, as well as an Excellence in Education Award from LSA (UM). He has also received an NSF CAREER Award for the synthesis of compositionally complex oxides for energy conversion and storage.



**Julie Biteen** has received an NSF CAREER Award for her work on increasing the power of single-molecule bioimaging with plasmon-enhanced fluorescence. She delivered the keynote speech on, "Single-molecule studies of biomolecular structure, cooperativity, and dynamics in living bacteria," at the University of Illinois Molecular Biophysics Training Grant Symposium. This fall she presented her work on nanoscale photonics at the Third Infinity Conference on the Physics of Biological and Complex Systems held in Goettingen, Germany.

**S. M. Blinder** is working as a full-time scientific software consultant for Wolfram Research (Mathematica, etc.).

**Brian Coppola** was the L. Carol King Lecturer at Northwestern University.

**Amy Gottfried** has been named a Learning Analytic Fellow by the UM Provost. She will study the effectiveness of the Chemistry Department's internal placement examinations.

**Theodore Goodson, III** has been elected an AAAS fellow. He was honored for fundamental studies of linear and non-linear optical properties of nanostructured organic macromolecular and inorganic metallic clustered materials.

**Henry C. Griffin** and **Daniel Devries** (PhD 2007, Griffin) organized a five-day workshop on radiochemistry in June. The workshop was held on the UM North Campus.

**Nancy Kerner** has been awarded an Excellence in Education Award by LSA (UM).

**Raoul Kopelman** presented the Etter Lecture at the University of Minnesota in May 2013.

**Mi Hee Lim** has left the UM. She has joined the faculty of the School of Nano-Biosciences and Chemical Engineering, Ulsan National Institute of Science and Technology, Ulsan, Korea.

**Nicolai Lehnert** has become a member of the editorial board of the Journal of Biological Inorganic Chemistry.

**Anne McNeil** has been awarded the 1923 Memorial Teaching Award by the university. Award recipients have demonstrated outstanding teaching during their first years on the faculty. While this award recognizes teaching, it is given to individuals whose achievements and promise auger well for a productive career as a scholar.



**Stephen Maldonado** has been named an A. P. Sloan Fellow and a Camille Dreyfus Teacher-Scholar. He also received the Young Investigator Award of the Society of Electroanalytical Chemistry, and the 2013 Michigan Green Chemistry Governor's Award in the academic category. The award recognizes research on developing simple benchtop electrochemical methods to synthesize technologically important crystalline semiconductors, representing a key step towards 'greening' the semiconductor industry.



**Mark Meyerhoff** will be awarded the Ralph N. Adams Award in Bioanalytical Chemistry at Pittcom 2014. The award recognizes significant contributions to the field of bioanalytical chemistry.

**Pavel Nagorny** has received the 2012 Theime Journal Award.

**Ayyalusamy (Rams) Ramamoorthy** organized an International Symposium on, "Atomic View of Biomolecular Function," which was held at the UM July 11-13, 2013. He is the guest editor for a special issue on, "Biophysical Studies on Protein Misfolding and Amyloid Diseases," in *Physical Chemistry Chemical Physics*. He was recently selected for the editorial boards of *Science Reports (Nature)* and *Peer J* Journals. Rams was the plenary speaker at international conferences at Nara Institute of Technology (Japan) and Nankai University (China). He was also the keynote speaker at the 15<sup>th</sup> Bollum Symposium at the University of Minnesota and the Canadian Chemistry Conference in Quebec City.

**Brandon Ruotolo** was awarded an NSF CAREER Award to develop next generation analytic tools for high-throughput protein-ligand and mutiprotein complex analyses.

**Melanie S. Sanford** was awarded a 2013 Raymond and Beverly Sackler International Prize in Physical Sciences by Tel Aviv University, Israel. The award was made in recognition of her work on functionalization of C-H bonds. These highly prestigious awards are made to younger scientists who have made significant contributions to either chemistry or physics. Melanie is the first UM faculty member to be so honored.



**Jadwiga (Dotie) Sipowska** has been named Kasimir Fajans Collegiate Lecturer.

**Corey Stephenson** has been awarded a 2013 Camille Dreyfus Teacher-Scholar Award.

**Nils Walter** received a 2013 UM Faculty Recognition Award. He was honored for his single molecule experimental and computational research on folding and function of non-coding RNAs and RNA enzymes in vitro and in the cell. Nils has also received the Imes and Moore Award from LSA (UM) for excellence in directing the Single Molecule Analysis in Real-Time (SMART) Center and for mentoring minority graduate students.



**John P. Wolfe** was elected an AAAS Fellow. He was honored for developing new palladium catalyzed C-N, C-O and C-C bond forming reactions for the synthesis of heterocycles.

**Dominika Zgid** has been selected to be member of the Office of Science, DOE 2013 Early Career Research Program.

**Paul Zimmerman** has been given an Emerging Technologies in Computational Chemistry Award from the ACS Computational Chemistry Division.

### Chemistry has a new web address

Keep up-to-date on faculty, student, staff and alumni news on the UM Chemistry Department website. Over the summer, the Department has refreshed its website. The new address is: [www.lsa.umich.edu/chem](http://www.lsa.umich.edu/chem).

## Chemistry Faculty well represented in University's MCubed Initiative

A first-of-its-kind, real-time research funding initiative at the University of Michigan puts \$15 million into the hands of professors to jumpstart new projects. Called MCubed, it is designed to encourage bold research at the interfaces of academic fields. Each project includes faculty from three different disciplines. The seed funds are intended to generate data for groundbreaking, high-impact publications, or preliminary results for innovative research proposals. The program also includes campus-wide research symposia to showcase the research.

Chemistry department faculty are involved in at least 18 different cubed projects, and gave presentations at the MCubed Symposium held in November. Among the projects proposed by Chemistry professors are:

- Climate and Air Quality Impacts of Greenhouse Gases and Atmospheric Particles in Northern Michigan (Kerri Pratt)
- Weighing Individual Ribosomes: Developing Structural Mass Brandon Spectrometry to Study Ribonucleoprotein Complexes (Brandon Rutolo)
- Discovery of Natural Products for Probing the Structure and Function of tRNA Processing (Carol Fierke)
- How bacteria in the human gut recognize, bind to and help digest starches (Julie Biteen)
- DNA origami scaffolds for single-particle EM visualization of membrane-associated protein complexes (Nils Walter)

Learn more at: <http://mcubed.umich.edu/>



## Masato Koreeda, Outstanding Undergraduate Research Mentor

Teaching Honors Chemistry 215 provided Professor Masato Koreeda the inside track on promising undergraduate scholars who wanted to gain research experience. "I know how good they are," he says. Over his 35 year career at UM, Koreeda has mentored more than 100 undergraduates and supervised 40 PhD dissertations, which his colleagues point out is a high number. He has collaborated with 15 post-doctoral scholars and hosted 4 visiting scholars. He averaged 3 undergraduate research students per term for more than 20 years.

Now on retirement furlough, Koreeda continues to mentor six undergraduates this fall. Currently without graduate students or post docs to provide supervision, he must be in the lab any time an undergraduate is there. He works with the students doing experiments together. "I am picky in terms of experimental detail," he says. His days run well into the evening to accommodate their academic schedules.

His undergraduate students often pursue long-standing questions that Koreeda really wants to bring to some conclusion.

A major focus of his work is on glycoconjugates, developing stereo-selective attachment of various carbohydrates. He is also developing new asymmetrical dihydroxylation reactions that do not use metal catalysts. Traditionally these reactions involve toxic metals that create environmental concerns. Koreeda's approach would be environmentally benign. A continuing interest is new transformations of synthetic biological compounds, though he explains he was not originally trained as a synthetic chemist but got interested in the field with his graduate students in synthetic chemistry.

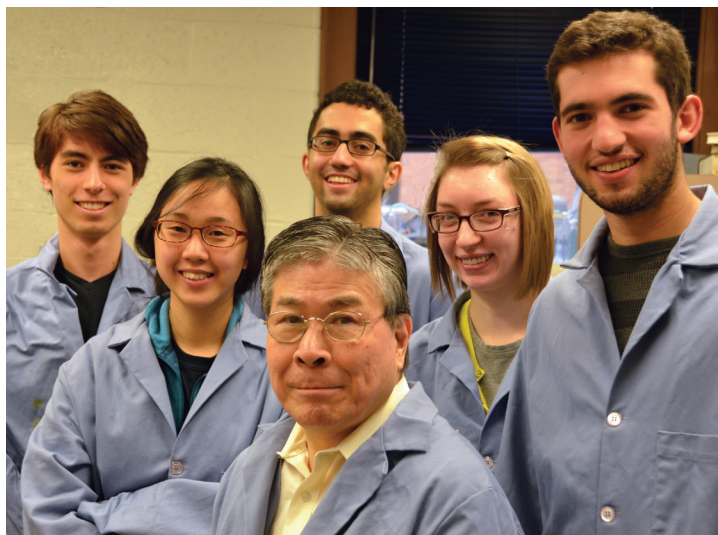
Koreeda often begins working with sophomores, mentoring them for their remaining years at UM. He explains that undergraduates are very sharp but often not ready for experimental work. He has to be extremely patient teaching them procedures. By the time they are seniors, they are able to do good research. "Once they get hands-on experience and learn the tricks and techniques, then they do a great job."

Though many of his students are pre-meds, it is nice to see highly motivated students go into chemistry, despite the lure of medicine, he says.

Koreeda came to UM as an associate professor of chemistry in 1978 from Johns Hopkins University, where he was an assistant professor of chemistry. He earned his B.S. and Ph.D in chemistry from Tohoku University, Sendai, Japan.

He was promoted to full professor in 1984 and made Professor of Medicinal Chemistry in College of Pharmacy. He served as associate chair for research and facilities for the Chemistry Department from 2005-2008, and associate chair of curriculum and faculty affairs in 1998-2002 and 2011-2012.

He has published 151 referred articles and patents and was funded by the National Institutes of Health (NIH) for many years. He has been a consultant for pharmaceutical companies and served on NIH study panels, as well as review committees for tobacco-



*Masato Koreeda with his current undergraduate researchers: (L to R) Sho Harvey, Christina Na, Ryan Soheim, Megan Kwiatkowski and Noah Eisen.*

related disease research program for the State of California and the Biomedical Research Program for the State of Florida.

Koreeda has taught organic chemistry courses at both the undergraduate and graduate levels, including laboratory courses and special topics. He was twice the recipient of an LSA Excellence in Teaching award, in 1997 and 2011. Now that he is no longer teaching two classes per term, he has more time for his undergraduate researchers, he says.

### Chemistry Department Establishes Koreeda Fund to Support Student Research

In recognition of the mentoring that Masato Koreeda has provided to our undergraduates over his career at the University of Michigan, the Department of Chemistry is establishing the Koreeda Fund for Student Research. Contributions to this fund will help foster research, especially at the undergraduate level, by covering the cost of supplies and salaries for student researchers.

You may designate your gift to this fund by checking the appropriate box on the enclosed envelope. If you would like to donate online, see the Giving Online link on our website, <http://www.lsa.umich.edu/chem>

This Fund constitutes a gift for endowment, and distributions from it will be made in accordance with the University's then endowment distribution policy. Any unspent distributions may be added back to the principal at the department's discretion. If a minimum threshold of \$25,000 to establish an endowment is not met by June 30, 2015, the funds will be used on an expendable basis for the stated purpose of the Fund.

# Undergraduate Program News

## Undergraduate Awards

**Alpha Chi Sigma (ΑΧΣ) Outstanding First Year Student Award**  
Megan Kwiatkowski

**Alumni First Year Achievement Awards**  
Noah Eisen • Blake Arnold • Ana Kutschat  
Rachel Kurecka • Robert Polik • Tiffany Brocke

**Alumni Outstanding Awards**  
Second Year: Nirbhay Jain  
Third Year: Troy Tenbrunsel  
Senior: Patrick Kurecka

**American Chemical Society Analytical Chemistry Award**  
Courtney Talicska

**American Institute of Chemists Award**  
Biochemistry: Nicole Stegmeier  
Chemistry: Henry Kuang

**Ash Stevens Undergraduate Research Award in Organic Chemistry**  
Weiwei Wu

**CRC Outstanding Achievement Award**  
Felix Hsieh

**Seyhan N. Ege WISE Award**  
Cydney Seigerman

**Honors College Vanko Award**  
Benjamin Levin

**Huron Valley Section Outstanding Student Leadership Award**  
Daniel Semaan

**Merck Index Award to Outstanding Senior**  
Sara Ginzberg

## Summer Research Awards

Each year, thanks both to endowment funds and the generous donations of private and industrial sponsors, we are able to support many students for summer research. Based on recommendations by the faculty, as well as their academic records, the following students were selected for summer 2013.

### James E. Harris Scholarship Award Recipients:

Maria Agostini • Omar Beleh • Sarah Caruso  
William Dixon • Kevin Durand • Taylor Evans

### Albert Euclid Hinsdale Memorial Endowment:

Jeremy Gerick • Nirhay Jain • Micah Katz  
Christopher Kubitskey • Megan Leander • Sichen Lian

### William Smeaton Memorial Award Recipients:

Michael Manning

### Margaret and Herman Sokol Endowment Award Recipients:

Roberts Matthews • Grace McKenna • Alex Medvedeff  
Christina Mei • Christina Na

### Undergraduate Research Fellowship Award Recipients:

Ian Nilsen • Andrew Rizzi • Donghyuk Suh • Ian Vonwald  
Ying Zhang • Milena Westarb • Catherine Vogt • Rachel Choi • Osama El-Sayed • Brianna Chamberlin • Milan Kaushik • Jordan Stern

## Gomberg Chemistry Scholarship

Awarded to students based on financial need and/or academic achievement concentrating in Chemistry. This scholarship was established in 1936 by friends and old students of Professor M. Gomberg in honor of his seventieth birthday. Professor Gomberg was a Chemistry professor and researcher. In 1900, he discovered free radicals, which formed the basis for modern organic free radical chemistry.

2012-2013: Kelly Lynn Lamiman,

2013-2014: Paul Joseph Russell • Fahad Sarvari  
Brandon McDole • Kelsey Kerr

## 2013-14 Carlene Friedley Memorial Scholarship

Awarded to students based on financial need and/or academic achievement. This scholarship was established in 1991 in memory of Alyce Carlene Friedley by her husband, Wilbur C. Bigelow. She was a University of Michigan graduate with two Chemistry degrees: B.S. (1947) and M.S. degree (1948). She was also a Lecturer in Chemistry at Michigan in the early 1950s.

This year's awardee is **Brittany Christina Clawson**, a senior honors student majoring in biochemistry from Pinckney, Michigan. She is a student researcher in UM Pharmacologist Lori Isom's laboratory. Among her activities at Michigan, Brittany is currently the vice president of Motley Crew. This 170 member student group creates events for children and their families at UM Mott Children's Hospital and other medical facilities in southeastern Michigan.



Courtesy of Brittany Clawson

Brittany Clawson



*Summer 2013 participants  
(mentor in parentheses)*

*Front L-R: Alexa Carollo (Sension),  
Desiree Garcia-Torres (Fierke), Sarah  
Cox (McNeil), Sarah Neville (Lehnert),  
Jessie Rafson (Maldonado), Sara Tweedy  
(Carlson)*

*Back L-R: Taylor Kelson (Kopelman),  
Grayson Ritch (Szymczak), Daniel Steyer  
(Kennedy), William Crosby (McNeil),  
Amber Lott (Matzger), Burke Gao (Biteen),  
Steven Boggess (Martin), Joshua Ostrander  
(Kubarych), Joseph Thomaz (Sension),*

## 2013 Marks 25 Years for Michigan's NSF-Funded Research Experiences for Undergraduates (REU) Site Program

If you ask any chemistry faculty member about a key moment that cemented them to chemistry, they will invariably mention their undergraduate research experience as the first item on the list, says Brian Coppola, Arthur F. Thurnau Professor and professor of chemistry. Coppola is the principal investigator for the Chemistry Department's Research Experience for Undergraduate (REU) site.

For 25 summers, the program has brought undergraduates from around the country to the Ann Arbor campus for ten weeks of research experience, mentoring, field trips, and exposure to graduate programs. The National Science Foundation (NSF) piloted the idea in 1988. The Michigan program was first funded in 1989. "We have been continuously funded ever since," Coppola says.

REUs, and undergraduate research more generally, have been a staple of chemistry departments for over 100 years, he adds. "In general, departments are good at it. The dedication which their own mentors showed to them is definitely being paid forward when faculty members agree to work with undergraduate research students."

For most of its history, the Michigan site program has had ten participants per summer. In the current three-year cycle, there is funding to support fifteen each year. Students receive a \$4000 stipend, housing, and all travel expenses.

There is usually a one-to-one placement of faculty mentor to student. "There is definitely an art to the process of bringing inexperienced students into an ongoing program and providing a high-value experience. My colleagues are really, really good at this," Coppola adds.

Participants come from all around the U.S., including its territories, and from a large diversity of schools, although per NSF guidelines the program is restricted to U.S. citizens and permanent residents.

"We focus on providing opportunities for students who are not likely to be able to have ever been in a graduate research environment before," Coppola says.

"Our assessment program shows that an authentic, full experience in a research-active department contributes greatly to students confidence to pursue graduate studies, and to their ability to make an informed decision about choosing scientific careers," he explains.

Students who are hesitant or uncertain of their ability to join and prosper in a large graduate environment show measurable and substantial change by the end of their 10-week experience.

Michigan has tracked, at least in part, 91 percent of the students from 1989-2010. Of these 214 students, at least 66 have their Ph.D. degrees, 18 have M.S. degrees, and 25 are currently attending graduate school. More than 55 have at least earned the B.S. and more than 30 have sought careers in industry. At least 9 have obtained their MD, DDS or JD, and 14 are still undergraduates.

"We will continue to emphasize the importance of diversifying the population of chemists," Coppola says. "To date, 65 percent of our REU participants have been women, and one third have been underrepresented minority students." That proportion is growing. In the most recent funding period, 66 percent, or 16 of 24 students, were underrepresented minority students, up from 29 percent in the previous period.

For five years, there was a complementary REU in Beijing, China that sent U.S. students to Peking University and brought Chinese students to UM but funding for international programs has dried up.

# A Faculty Retrospective

## Taking Stock of Almost Fifty Years, Looking Toward The Next Twenty-Five

By Professor Emeritus Robert L. Kuczkowski

Gazing into a crystal ball is a perilous endeavor. Nevertheless, it is tempting as an emeritus observer to try to assume the mantle of wisdom colored by one's past. As an observer for some 47 years of this University and particularly the Chemistry Department, one has various memories which smoothly paint a picture of constancy but also change and evolution. Change in a university is slow but nevertheless inevitable. The constant influx of new student generations and faculty, the incessant encroachment of external forces and society's needs induce reaction displacing equilibrium constantly forward, to sound like a chemist.

My early years in Ann Arbor as an assistant professor occurred during the escalation days of the Vietnam War and the growth of the civil rights movement. Demonstrations and sit-ins were occurring across the campus. Even the chemistry building, less a hotbed for student activity than other units in the LSA College, had its share of demonstrations and calls for student strikes. I can recall one of my classes in lecture hall 1210 being disrupted one morning by a student parade which announced that class was cancelled. Students again picketed the loading dock and entrances in the mid-1970s as the fledging graduate student union fought for recognition. So much for the ivory tower at Michigan. The Diag seems quieter recently. The Michigan Daily remains my bastion for keeping informed of student concerns and issues.

Besides the political atmosphere in the background, the 1970s was not an auspicious time for the department as budget difficulties at the state level depressed morale and initiatives. The 1980s began more positively. Newly installed President Harold Shapiro (1980-88) began an initiative to improve the physical and biological sciences and mathematics in the College of LSA. For Chemistry this included new facility construction and increases in its base budget. The leadership of department chair Tom Dunn (1972-1983) is credited with bringing these needs vigorously to the attention of the administration during the 1970 decade. In response, the University released funds for a feasibility study in 1980 (gross architectural plan, preliminary cost estimate). The Regents subsequently approved a \$60M project in May 1983. Schematic and construction drawings were prepared over the next three years commencing in ground breaking in fall 1986 on the former site of the Waterman-Barbour gymnasiums. Occupancy of the new 1988 building commenced thereafter with completion of the full project including renovation of the contiguous 1908 and 1948 facilities progressing through 1994. This upgrade in facilities was a monumental step forward in advancing the department's efforts in teaching and research.

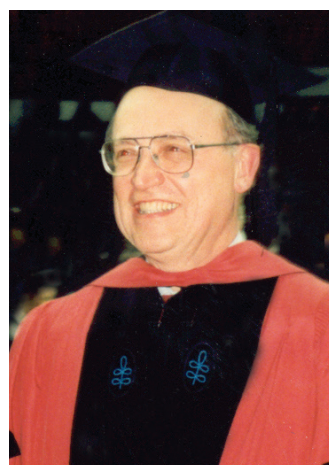
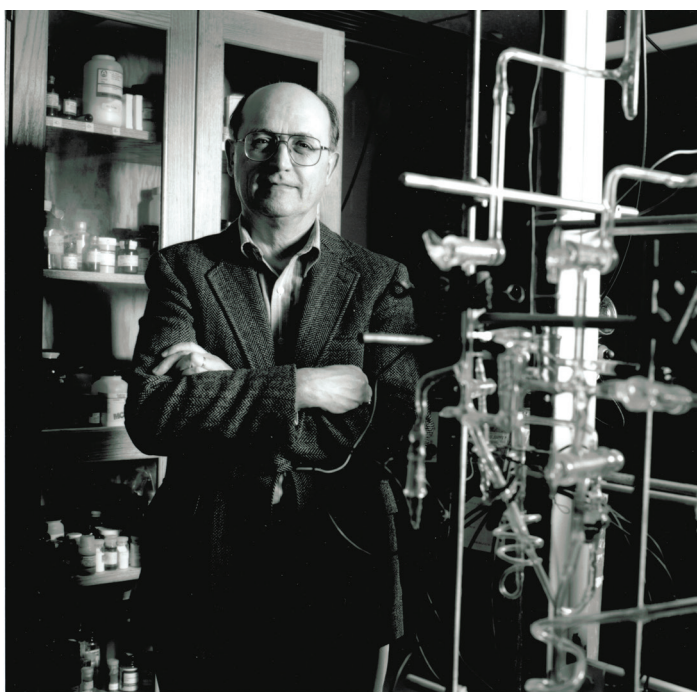
The growth in modern instrumentation, especially NMR, mass spectrometry, x-ray crystallography and computerization have had a profound effect on research and teaching since the late 1970s. UM was an early leader in university computing with

visionary access to early main frame IBM machines (e.g. S360/67). Development of the Michigan Terminal System for time sharing of computer resources for batch and terminal input began in the late 1960s and was widely copied. As a physical chemist utilizing such early computer resources to calculate and assign spectra, Michigan was computer nirvana to me. Of course, today with more power in my personal computer than the whole campus had in 1967, this period seems like the Stone Age in computing history. Will quantum computers evolve soon and provide another revolution in what is capable?

### Education

Reflecting on the department's education efforts over the years, I recall from my early years the standard for excellence in undergraduate instruction set by faculty such as Bob Parry, Milton Tamres and Bob Taylor in general, inorganic and physical chemistry. It was from these and others that I learned how to use acid-base reactions to convert scarlet and grey solutions to maize and blue on the Friday before the Bo vs. Woody battle. The clock reaction, ending dramatically in Michigan Blue, also brought applause and once a standing ovation. Organic and analytical chemistry had their purveyors of wisdom and knowledge including Seyhan Ege, Rich Lawton and Phil Elving to single out a few. This concern for excellence in undergraduate instruction was admirably demonstrated in the late 1980s and 1990s with culmination of what was known as "The New Curriculum". The most noteworthy change was allowing well prepared first year students in 1989 to bypass general chemistry and enroll in a two sequence course of chemical principles and organic chemistry. Course renewal advanced upward with changes in the traditional general, organic, analytical, physi-





*Robert L. Kuczowski in 1989 and (right) more recently*

*Watercolor of the Willard Henry Dow Laboratory addition to the Chemistry Building dedicated in 1989.*



cal sequence of courses over the next some five years.

There have been continued changes in undergraduate instruction. You will notice elsewhere in the newsletter the list of undergraduate degrees now includes BS majors in biochemistry, molecular sciences, and chemistry as well as the traditional BS in Chemistry degree. The biochemistry concentration introduced in 1995 is now the most popular offering. Undergraduate research has increasingly become a popular option for more than honor students. Significant numbers of students helped by departmental fellowships remain on campus during the spring and summer semesters engaged in research which they continue during the academic year. (See also the vignette of Prof. Koreeda on page 9; undergraduate research news on p. 10 and the REU Program on p. 11). The Department is proud to have been recognized in 1993 with the first LSA College Undergraduate Initiative Award for its contributions to undergraduate education, and recognized again in 2009.

Graduate instruction has also evolved. Qualifying exams for entering students and the language requirement for the PhD have been eliminated. A research rotation requirement in two laboratories for first year students before joining a research group was introduced. The number of new courses grew significantly as research interests of the faculty evolved including courses in chemical biology, materials chemistry, organometallic chemistry, molecular modeling and simulation to name a few. A unique Future Faculty program was inaugurated in the 1990s led by Prof. Brian Coppola. The program assists graduate students who intend academic careers to develop their teaching credentials along with their research expertise. This program has been more recently extended to include a training program for post doctoral fellows to gain experience in undergraduate instruction.

### Faculty Interests

On the research front, the department has reflected international trends at building strength at the interdisciplinary interfaces with the classical core areas of inorganic, physical, analytical and organic chemistry. One needs to merely peruse in this newsletter the titles of the PhD theses in the past year or the faculty profiles to perceive an evolution. Or visit the department's website. Faculty interests include fields that were largely non-existent or of little interest to chemists in the 1970s such as nanoscience, neuroscience, ultrafast processes, computational chemistry, sustainable chemistry, energy and environmental chemistry. These fields accompany the growth in interest at the interface of biological and materials chemistry with the core areas. As the field of chemistry



*The old Chemistry Library*

is often heralded as the central science, one should not be too surprised at the changes. The research thesis remains the *sine qua non* requirement for the PhD.

The broad interests of the faculty can also be observed by perusing the faculty list on the department website. The more quantitative minded reader will find that over half of the some 50plus research faculty have an appointment in another unit. This can be contrasted with 1991, for example, when 20 percent of 39 appointees were cross listed elsewhere. The number of FTEs i.e. full time equivalent or college funded tenure level positions in chemistry this year is 38 positions. This number has fluctuated within about 10 percent of 40 over the past four decades. The total research faculty count currently of over 50 includes joint appointees partially or fully funded with another unit, the latter a so-called dry appointment in chemistry. The growth in jointly appointed faculty accelerated starting in the 1990s with the relocation of the Biophysics Research Division from North Campus to renovated space in the 1908 chemistry building. This proved to significantly increase the interaction with the two units and led to several jointly funded appointments between Chemistry and Biophysics. The latter is now a unit in LSA.

The renewal of the faculty cohort fostered by retirements and departures commencing in 2001 has been remarkable. A wave of retirements commencing in the mid-1990s was a consequence of the expansion of the department post Sputnik in 1957, which accelerated the growth in incremental appointments through 1970, including mine. Over the period 2001-2013 thirty funded appointments (five partial) were made including five at the tenured level. Ten appointments were women, one was Hispanic and two were African Americans, significantly increasing the gender and ethnic diversity of the faculty. Graduate student diversity also rose. Of 39 PhD degrees awarded in 2009, 54 percent were to women and 8 percent to underrepresented minorities. The number of PhDs to women (21) placed Michigan first in this category nationwide.

One noteworthy change is the relocation of the chemistry

library. A milestone event occurred in 1995 when the natural science, chemistry, physics/astronomy and mathematics libraries were consolidated into the new Shapiro science library on the third and fourth floors of the undergraduate library (UGLI). This move of the department's in-house collection was not welcomed at the time but the computerized access to journals advanced quickly over the following decade, which made physical trips to the library largely unnecessary. I am still called upon to referee papers and proposals and can attest that this effort has been considerably eased and sped up by desk top access to journals and powerful, quick search engines. This ready access to the literature has surely been a boon to research efforts and manuscript preparation.

### Past, Present, Future

Budgetary crises in the 1970s at the state level hindered the efforts of the university to improve the department's facilities and strengthen its activities. Nevertheless, over the years energetic efforts by the chemistry faculty, driven by periodic 5-year departmental long range planning reviews, were focused at strengthening the program. Three strategic external reviews undertaken by the college provided key advice to the administration. Leadership and subsequent support at the college and university level since the 1980s have furnished the critical resources needed for facility and faculty renewal. External support from industry, foundations, government agencies and alumni/alumnae were also a vital component. Federal support contributed the largest external portion of support for the research program. Michigan was ranked as 17th nationally in federal support for chemistry research and 12th in support from all sources in 2010.

As the preceding suggests, the department has evolved in various areas since my arrival in 1966. This has led to a rise in the department's national prestige ranking of 30-40 in the 1970s to the midteens in the 2010 decade according to popular surveys such as US and News Reports (cf. on-line, University Record, April 15, 2010). National awards, editorships of journals, invited lectures, research productivity, departmental reviews, college and university recognition (see faculty news and profiles) attest to a vigorous department at the cutting edge of education and research.

Does this short, selective history and reminiscence provide any insight on the next 25 (or 47) years? Faculty and student ambition is unlikely to wane. Disciplinary change will certainly continue. However, beyond this my crystal ball is cloudy regarding details. The future job prospects for our students in the chemistry and pharmaceutical industry will play a role. The growth of on-line education, if it continues, could have a significant effect. Budget contractions at the national and state level and the growing concern of the cost of tuition are current concerns. Will environmental and sustainability concerns increasingly drive research focus? Even murkier to me are the technological advances that will open up new avenues to uncover nature's secrets. It is easy to raise questions. It takes visionaries to lead the way. I trust that Michigan will continue to be blessed with ambitious leadership and continued excellence in education and research. For, to quote our football coach Brady Hoke, "This is Michigan."

# Undergraduate Program News

## Undergraduate Degrees

December 2012, May 2013 & August 2013

### Bachelor of Science, Biochemistry Major

Matthew Abbott	Kelly Lamiman
Alexander Allweil	Dale Lee
Katherine Balaskas	Austin Leske
Ahmad Bazzi	Benjamin Levin
Kelly Behnke	Justin Liedel
Sarah Block	Vincent Lizzio
George Boychev	Brenden Magnan
Morgan Brisse	Benjamin Maynard
Kent Brummel	Frank Mei
Dillon Buessing	Eleanor Melfi
Laura Burr	Paige Miller
Michael Chang	Millie Mo
Dana Chavez	An Nguyen
Kari Chen	Martin O'Brien
Eric Cheng	Jun Sup Park
Brian Das	Dana Pausch
Cassie Diamond	Francis Prael III
Zein El-Zein	Monica Ray
Kevin Englar	Kolby Roberts
Matthew Franz	Matthew Roth
Noah Frydenlund	Samantha Schwartz
Jordan Gavin	Daniel Semaan
Arnold Huang	Spencer Shepherd
Tien Huynh	Daniel Smith
Binyamin Jacobovitz	Ethan Srinivasan
Nathan Jacobs	Nicole Stegmeier
Patrick Jenkinson	Vanessa Sui
Anna Jones	John Syverson
Ashley Kaatz	Tessa Tekieli
Christopher Katanski	Benjamin Thompson
Doohak Kim	Zachary Thwing
Seth Klapman	Jacob Vander Weide
Kasha Krul	Carly Warden
Henry Kuang	Ruth White
Patrick Kurecka	Timothy Wiryaman
Juhi Kushwaha	Emily Wu
Kurt Kwiatkowski	Adam Ziolkowski
	Ruixiao Zuo

### Bachelor of Science, Biomolecular Sciences Major

Alice Baek  
Hassan K. Bazzi  
Hassan R. Bazzi  
Jeremy Brill  
Benjamin Chandler  
Alex Chopp  
Stephani Cisek  
Madeline Connick  
Thomas Ferreri  
Christopher German  
Sara Ginzberg  
Jennifer LaFreniere  
Kyong Lee  
Alexander Ludwig  
Rita Matta  
Tessa Maynard  
Phuc Nguyen  
Rebecca Racz  
Nadia Sion  
Carson Smith  
Nathan Tipper  
Emily Wang

### Bachelor of Science, Chemistry Major

Andrew Dodson  
Victor Gu  
Bradley Keller  
Hyun Chul Park  
David Patterson

### Bachelor of Science in Chemistry

Peter Allison  
Dana Anderson  
Tyler Elias  
Laura Essex  
Elizabeth Keenan  
Henry Kuang  
Patrick Kurecka  
Jacob Lapping  
Nathan Layle  
Sarah Matteazzi  
Jonathan Mayers  
Stacy Monk  
Jordan Morningstar  
Christina Nieh  
Andrew Phillips  
Erika Price  
Vi Quach  
David Quist  
Halley Rycenga  
Heeju Ryu  
Paul Schnau  
Emily Seeley  
Cydney Seigeman  
Christof Smith  
Dakota Suchyta  
Courtney Talicska  
Weiwei Wu  
Stephen Zelda  
Ruixiao Zuo

## ACS Student Chapter Earns Honorable Mention

The American Chemical Society (ACS) has presented the student chapter at the University of Michigan with an Honorable Mention award for its activities during the 2012-13 academic year. Professors Bart Bartlett and Paul Jones, faculty advisors of the chapter, were mentioned for special commendation. Their efforts represent "the best in undergraduate science education and mentoring around the country," according to the ACS.



# Graduate Program News

## Doctorates Awarded December 2012, May and August 2013

Student and thesis title	Research Advisor	
<b>Gwen Anderson</b> <i>Development of Microscale Electrophoresis and Blotting Methods for Analysis of Small-Volume Biological Mixtures</i>	Robert Kennedy	<i>Bench Stable Sugar Silanes for Use in Copper-Catalyzed Dehydrogenative Silylations</i>
<b>Timothy Berto</b> <i>Synthetic, Spectroscopic, and Theoretical Investigations into the Interactions and Detoxification of Nitric Oxide in Biology</i>	Nicolai Lehnert	<b>Kira Landenberger</b> <i>Cocrystallization of Energetic Materials</i>
<b>Joey Braymer</b> <i>Understanding the Roles of Metal Ions in the Fate of Reactive Oxygen Species and in Alzheimer's Disease</i>	Melanie Sanford & Mi Hee Lim	<b>Stephanie LeClair</b> <i>Cytochrome B5 and Cytochrome P450 2B4</i>
<b>Tanya Breault</b> <i>Complex Metal Oxides for Photocatalytic Applications</i>	Bart Bartlett	<b>Xin Liu</b> <i>Investigation Towards Molecular Recognition of Inhibitors and Metal Ions by Ribonuclease P Using Fluorescence Polarization and Atomic Mutagenesis</i>
<b>Wenyi Cai</b> <i>Novel Biocompatible/Antimicrobial Materials Based on Nitric Oxide Release/Generation</i>	Mark E. Meyerhoff	<b>Jonas Locke</b> <i>Conjugated Copolymers of Controlled Sequence</i>
<b>Travis Clark</b> <i>Ultrafast and Nonlinear Spectroscopy Utilized as a Sensitive Probe for Amyloid Peptide Aggregation</i>	Theodore Goodson III	<b>Becky Matz</b> <i>Polyplex Exposure Inhibits Cell Cycle, Increases Inflammatory Response, and Can Cause Protein Expression Without Cell Division</i>
<b>Billy Clifford Nunn</b> <i>Mass Spectrometry Cleavable Crosslinkers and Tags for Protein Structural Analysis</i>	Philip Andrews	<b>John David McElderry</b> <i>Dynamics of Mineralization During Bone Development</i>
<b>Alaina DeToma</b> <i>Bioinorganic Chemistry in Human Neurodegenerative Diseases</i>	Mi Hee Lim	<b>Cheryl Moy</b> <i>Investigations of Disassembling Polymers and Molecular Dynamics Simulations in Molecular Gels, and Implementation of a Class-Project Centered on Editing Wikipedia</i>
<b>Ming Fang</b> <i>Type I Collagen Nanomorphology in Relation to Fibrillogenesis, Tissue Hierarchy and Disease</i>	Mark Banaszak Holl	<b>Sharon Neufeldt</b> <i>Palladium-Catalyzed Ligand-Directed C-H and C=C Bond Functionalization</i>
<b>Di Gao</b> <i>Novel Tandem Mass Spectrometry (MS/MS) Approaches for Structural Characterization of Cancer Stem Cell Glycans</i>	Kristina Hakansson	<b>Bo Peng</b> <i>Studies of Miniature Tear Glucose Sensors and Electromodulated Nitric Oxide Delivery Devices</i>
<b>Lauren Goodrich</b> <i>Model Complexes of Cytochrome P450 Nitric Oxide Reductase</i>	Nicolai Lehnert	<b>Aleksandrs Prokofjevs</b> <i>Generation of Highly Electrophilic Cationic Boron Complexes and their Application Toward Formation of C-B bonds</i>
<b>Ariel Jenkins</b> <i>Development of Nickel-Catalyzed Reductive and Alkylative Cycloadditions</i>	John Montgomery	<b>Archie Rinaldi</b> <i>Ligand Mediated Folding with Insights into Genetic Regulation of Translational Riboswitches Using Single Molecule Microscopy</i>
<b>Alex Johnson-Buck</b> <i>Detection of Stochastic and Heterogeneous Behaviors in DNA Nanodevices by Super-Resolution Fluorescence Microscopy</i>	Nils Walter	<b>Shana Santos</b> <i>Understanding the Enzyme-Inhibitor Interaction within the Substrate Pocket of Protein Tyrosine Kinases</i>
<b>John King</b> <i>Ultrafast Chemistry Dynamics of Hydrogen Bonding Environments: From Alcohols to Crowded Proteins.</i>	Kevin Kubarych	<b>Tom Slaney</b> <i>High Temporal and Spatial Resolution In Vivo Neurochemical Monitoring Using Low-Flow Push-Pull Perfusion</i>
<b>Allison Knauff</b> <i>Development and Application of a Regioselective Nickel-Catalyzed Macrocyclization Method; and Development of</i>	John Montgomery	<b>Peng Song</b> <i>Mass Spectrometry Based Techniques for in Vivo Neurochemical Monitoring</i>



# Graduate Program News

**Yuta Suzuki**

*Fluorine Nuclear Magnetic Resonance Studies to Probe Changes in Dynamics and Structure of Biologically Important Peptides*

E. Neil Marsh

**Yingda Ye**

*Investigations into Transition-Metal Catalyzed/Mediated Arene Trifluoromethylation and Fluorination Reactions*

Melanie Sanford



*Amanda Dugan and Heidi Phillips received the Robert & Carolyn Buzzard Graduate Chemistry Student Leadership Award from Professor John Montgomery.*

## Graduate Awards

### Departmental Awards

#### American Chemical Society Outstanding Graduate Student Award for Research and Teaching

Casey Dougherty      Banaszak Holl

#### Robert & Carolyn Buzzard Graduate Chemistry Student Leadership Award

Heidi Phillips      Geva  
Amanda Dugan      Mapp

#### Florence Fenwick Outstanding Graduate Student Instructor Award

Grace Winschel      Nagorny

#### Milton Tamres Outstanding Teaching Award

Wendi Hale      Hakansson

#### Alumni Fund Outstanding Graduate Student Research Award

Garrett Goh      Brooks

### Departmental Fellowships

#### George Ashworth Analytical Chemistry Fellowship

Wencheng Ge      Ramamoorthy

#### Robert W. Parry Award

Tim Tseng      Szymczak

#### Peter A.S. Smith Fellowship

Kate McMurtrey      Sanford

#### Margaret & Herman Sokol Graduate Summer Research Fellowship

Eli Fahrenkrug      Maldonado

#### Research Excellence Award

Neranga Abeyasinghe      Goodson  
Wenyi Cai      Meyerhoff  
Yu Chen      Fierke/Al-Hashimi  
Nathan Cichowicz      Nagorny  
Andrew Crawford      Penner-Hahn  
Debasis Das      Marsh  
Shawn Eady      Lehnert  
Mahmoud El Azzouny      Kennedy  
Ming Fang      Banaszak Holl  
Di Gao      Hakansson

Garrett Goh  
Peter Goldberg  
Ping Guo  
Linjie Han  
Jeanne Hankett  
Brett Hopkins  
Rui Huang  
Evan Jackson  
Laura Kiefer  
Soojeong Kim  
Akiko Kochi  
Vishalakshi Krishnan  
Yi Liao  
Jean Lodge  
Monica Lotz  
Ming Qin  
Surma Talapatra  
Kuei-Nin Tseng  
Wen Wen  
Theodore Wiley  
Matthew Wolf  
Joseph Yourey  
Fangting Yu  
Huiqing Zhou

Brooks  
McNeil  
Matzger  
Ruotolo  
Chen  
Wolfe  
Ramamoorthy  
Montgomery  
Kubarych  
Penner-Hahn  
Lim  
Walter  
Biteen  
Mapp  
Sanford  
Kopelman  
Geva  
Szymczak  
Maldonado  
Sension  
Lehnert  
Bartlett  
Pecoraro  
Al-Hashimi

### Other Awards

#### ACS Division of Organic Chemistry Graduate Fellowship

Alina Borovika      Nagorny

#### National Science Foundation Fellowship

Ian Pendelton      Sanford

#### Howard Hughes Medical Institute (HHMI) International Student Research Fellowship

Ansis Maleckis      Sanford

#### Barbour Scholarship

Bei Ding      Chen

#### ProQuest Distinguished Dissertation Award

Joseph Braymer      Lim

#### Susan Lipschutz Award

Jessica Donehue      Biteen

#### Rackham Centennial Spring/Summer Fellowship

Eli Fahrenkrug      Maldonado

#### Rackham One-Term Dissertation Fellowship

Tanya Breault      Bartlett  
Melissa Zastrow      Pecoraro

#### Rackham Outstanding Graduate Student Instructor Award

Russell Bornschein      Ruotolo

#### Rackham Science Awards

Nicole Camasso      Sanford  
Chelsea Cates      Szymczak  
Kimberly Daley      Kubarych  
Phi Doan      Goodson/Laine  
Ian Pendleton      Zimmerman/Sanford  
Hira Qayyum      Pecoraro  
Nomaan Rezayee      Sanford  
Sydonie Schimler      Sanford

#### Rackham Graduate Student Research Grant

Casey Dougherty      Banaszak Holl  
Billy Clifford Nunn      Lehnert  
Shawn Eady      Lehnert  
Deidra Gerlach      Lehnert  
Xiaoguang Hao      Bartlett  
Linjie Han      Ruotolo  
Sameer Phadke      Soellner  
Molly Soper      Ruotolo  
Fangting Yu      Pecoraro

### Training Grants

#### Microfluidics in Biomedical Sciences Training Program

Erik Guetschow      Kennedy

#### Cellular Biotechnology Training Program

Cynthia Cipolla      Kennedy

## Graduate Program News



Eli Fahrenkrug, Sokol Graduate summer research fellowship awardee

## The Victor C. Vaughan Symposium

More than 240 people attended the annual Vaughan Symposium held in the Chemistry Department on August 9, 2013.

Designed and run by graduate students, it serves as a venue for sharing exciting research taking place within the Department of Chemistry. The keynote speaker was Jerzy Klosin, Dow Chemical Core R&D Fellow. The afternoon address was delivered by Andrei Tokmakoff, Henry G. Dale Distinguished Service Professor at the James Franck Institute and Institute for Biophysical Dynamics at the University of Chicago

Also included were six 25-minute talks by graduate students and two student poster sessions.

This year's symposium was chaired by Heidi Phillips. We are grateful to the Dow Chemical Foundation for their generous support of the awards made at the symposium.

The symposium is named in honor of Victor C. Vaughan (1851-1921) one of the first PhD graduates in Chemistry (1876), who later served as Dean of the Medical School (1891-1921) and president of the AMA (1914-15).

Learn more at: <http://umich.edu/~vvaughan/>

### Vaughan Symposium Awards

#### Dow Chemical Oral Presentation Travel Award

Brett Hopkins

#### Oral Presentation Travel Award

Jeanne Hankett (Chen) • Rui Huang (Ramamoorthy)

#### Poster Session Travel Awards

*Analytical Cluster:* William Collin (Zellers) Colleen Dugan (Kennedy) • Ying Zhou (Kennedy)

*ChemBio Cluster:* Meghan Breen (Soellner) Jean Lodge (Mapp) • Sriram Vaidyanathan (Banaszak Holl) • Jessica Rabuck (Ruotolo)

*Inorganic Cluster:* Monica Lotz (Sanford) Fangting Yu (Pecoraro) • James Branch (Bartlett)

*Materials Cluster:* Junsu Gu (Maldonado) Laura Pfund (Matzger) • Laura Thoma (Kuroda) • Peter Goldberg (McNeil)

*Organic Cluster:* Ian Pendleton (Zimmerman & Sanford) • Anna Wagner (Sanford) Jeremiah Alicea (Wolfe)

*Physical Cluster:* Beth Haas (Biteen) • Surma Talapatra (Geva) • Leslie Upton (Goodson) Jessica Donehue (Biteen)

## Gifts

Contributions from private and corporate donors received from July 1, 2012 – June 30, 2013.

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## Pletchers Endow Fund for Graduate Students in Chemistry

As the Victors for Michigan campaign goes into full swing, the Department of Chemistry announces a major gift of \$100,000 from Wayne A. and Carol H. Pletcher to establish a fund to support graduate students. This gift will be augmented by matching funds. "These additional graduate fellowship funds will significantly enhance our graduate program and we are very grateful for this gift," says Carol Fierke, UM Chemistry department chair. Wayne Pletcher earned his M.S. and PhD (1970, Wiseman) in Chemistry at the University of Michigan and was a postdoc at UM. Currently an adjunct professor at the University of Minnesota, he was formerly the director of Corporate Technical and Business Planning at 3M and president and CEO of Minnesota Technology, Inc. Carol Pletcher earned an M.S. in Chemistry (1968) from UM and a PhD in Biochemistry from the University of Minnesota. She is a former vice president at Cargill and the current president of Pletcher Incorporated.

## Gladysz Family Pledges Bequests for Chemistry Department

John Gladysz (B.S. 1971) a distinguished professor of chemistry and Janet Bluemel, professor of chemistry, at Texas A&M University, have pledged more than \$1 million from their estate to endow the Edward and Margean Gladysz Professorship, which will provide research support for an associate professor in Chemistry. They also plan to establish a fund that will provide research support for advanced assistant professors. Additional bequests will support undergraduate students and provide discretionary support to the department. The professorship fund is named in honor of John's parents, who have also made a generous bequest to this fund. John's sister, Margean V. Gladysz, has also provided a bequest through her estate to support the professorship. John worked with Daniel Longone while an undergraduate at Michigan. Texas A&M, the University of Utah, and Western Michigan University are also recipients of John's and Janet's generosity. John began his studies at Western Michigan University and the family has Kalamazoo roots.

### Chemistry Alumni Fund

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### Chemistry, Pres. Challenge for Grad Support

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### Graduate Fellowships Funds

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### James & Madalene Davis Graduate Fellowship Fund

James K. Davis

### Robert & Carolyn Buzzard Graduate Chemistry Student Leadership

Robert A. and Carolyn Buzzard

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### Milton Tamres Teaching Award

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### Undergraduate Research in Chemistry

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### Seyhan N. Ege Junior Faculty Development Award

Marjorie L. Carter  
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### Robert Kuczowski Faculty Award

Raoul Kopelman  
Robert L. Kuczowski  
Nils G. Walter

### Robert W. Parry Scholarship

William J. DeJarlais  
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### Richard D. Sacks Memorial Student Travel

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Class of 1957  
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### Peter A.S. Smith Fellowship

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### Robert C. Taylor Fund

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### Werner E. Bachmann Memorial Lecture Fund

Frederick L. Crane

### Kent P. Lanini Memorial Library Fund

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### Future Faculty Program for the Department of Chemistry

Baylor University  
Carol A. Fierke  
Mark M. Banaszak Holl

### Other Support

Sigma Aldrich  
Dow Chemical Co Fdn  
Proctor and Gamble

\*matching gift

## In Memorium

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



*As scientists we are tremendously curious and awestruck by the workings and beauty of nature.— Jerome Karle*

**Jerome Karle** (MS 1942, PhD 1944, Brockway), awarded the 1985 Nobel Prize for Chemistry, passed away on June 6, 2013 just 12 days before his 95th birthday. After receiving his PhD, he worked on the Manhattan Project studying the chemistry of plutonium. He met his future wife, Isabella Lugowski (PhD 1944, Brockway) at adjoining desks in a UM chemistry class. In 1946, they moved to the Naval Research Laboratory (NRL) in Washington, DC. He was chief scientist and later head of the Laboratory for the Structure of Matter until his retirement in 2009.

Karle received his PhD for an investigation by electron diffraction of the carboxyl group in formic, acetic, and trifluoroacetic acids. This initial experience in diffraction analysis of gaseous compounds led to his interest in the determination of crystal structures by diffraction techniques. Karle began collaborating with Herbert Hauptman at NRL in the 1950s. Their seminal work led to their award of the Nobel Prize for Chemistry in 1985 “for their outstanding achievements in the development of direct methods for the determination of crystal structures.” The practical usefulness of this technique was demonstrated in NRL work in the 1950–60s led by Isabella Karle on increasingly complex molecular crystals. This probabilistic based technique was widely adapted as computer power grew in the 1970–80s. His enthusiasm for science continued throughout his long career at NRL.

Karle received many honors including membership in the National Academy of Science, the President’s Award for Distinguished Federal Service and the A. Patterson Award of the American Crystallographic Society. He received an honorary degree from the University of Michigan in 1990 and the Distinguished Alumnus Award of the Chemistry Department in 1995. He was a charter member of the Department of Chemistry’s Alumni Advisory

Board, which first met in 1992. He is survived by Isabella, three daughters (two alumnae of the Chemistry Department) and four grandchildren. A seminar room in the 1988 chemistry building and a university distinguished professorship are named in honor of Jerome and Isabella Karle.

**James (Jim) E. Boggs** (PhD 1953, Brockway) passed away on June 2, 2013 at the age of 91. Boggs was Professor Emeritus of Chemistry at the University of Texas, Austin where he joined the faculty in 1953. He was active in research up to his death with over 400 publications.

Jim was a co-founder and organizer from 1966–2010 of the biennial Austin Symposium on Molecular Structure. Now sited in Dallas and broader in scope to include structure, dynamics and computational chemistry, the 25th symposium will be held in March 2014 and celebrated to his memory.


Jim was a dedicated educator who often taught freshman chemistry and science to non-majors. He was a strong proponent of international exchange programs for science undergraduates at his university and nationally. He encouraged and supported international participants to the Austin Symposium as well. Jim was elected a fellow of the American Chemical Society in 2010. His wife, Ruth Ann, who was known for her hospitality to all participants of the Austin Symposium died in 2002. He leaves three daughters and grandchildren.

**James K. Davis** (BS 1936, MS 1937, PhD 1940 F. Bartell) died on March 30, 2012 in Boca Raton, FL at the age of 96. He was born in Cleveland, OH. As a Michigan undergraduate he was inducted into Phi Beta Kappa. In 1940–1 he was a Rackham Fellow at UM. Parts of his PhD thesis entitled, “Adsorption at water-air and water-organic liquid interfaces,” were published in *J. Phys. Chem.* 1941, 45, 1321.

Dr. Davis joined the Corning Glass Works in 1941 where he had a highly successful career as a scientist and research administrator. During WWII his work included contributions to the Manhattan project and subsequently to the US Navy involving work on nuclear submarines. His research work included adsorption of liquid interfaces, semiconductors, glass resistors, glass attenuators, capacitors and resistors. At the time of his retirement in 1981 he was the Manager of Development Business for Corning.

After retirement he moved to Florida where the milder climate allowed him to play golf throughout the year. He was predeceased by his wife of 63 years Madalene Lamb Gorman and is survived by a nephew Patrick Gorman of Atlanta, GA.

Dr. Davis was a generous benefactor of the Department of Chemistry. He left a bequest which established the James and



Madalene Davis Graduate Fellowship Fund, which will support a cohort of Davis Fellows who will spend the summer preceding the formal start of their graduate studies conducting research in the Chemistry Department.

**Robert A. Gregg** (MS 1940, PhD 1943 Bachmann) died in Woodbridge, CT on November 28, 2012 at the age of 94. Dr. Gregg was born on the family farm in Dundee, MI. He received his BA from Albion College in 1937, where he was inducted into Phi Beta Kappa. He was an instructor for one year at Albion prior to enrollment at UM. His doctoral work involved syntheses of analogues of the steroid hormone equilenin.

In 1942 he joined U.S. Rubber-Uniroyal where he worked for almost 42 years. His career started in fundamental research on the mechanism of free radical polymerization then moved into development and personnel management. He was spectacularly successful! His inventions included the polyurethane elastic fiber Spandex and a flexible vapor barrier for rubber fuel tanks for airplanes which solved the problem of explosions of pockets of gasoline vapor which had migrated through the tank walls. He worked on improving the rubber to steel wire adhesion particularly as applied to improving the properties of steel belted automobile tires. This later work led to Dr. Gregg being awarded the New Haven ACS Section's Maurice R. Chamberland Award in 2003. Dr. Gregg retired from Uniroyal in 1984.

After retirement to Woodbridge, Dr. Gregg was active in conservation and other local government issues. He was an officer in the Woodbridge Land Trust for more than 30 years. In this capacity he was a prime mover in the town preserving open space. He was also interested in trying to bring back American chestnut trees which had been nearly wiped out by the chestnut blight in the early 20th century. He was on the board of the Connecticut chapter of the American Chestnut Foundation.

Dr. Gregg is survived by a son Timothy of Carmel, NY. His wife of 61 years, Jean Westerman Gregg, passed away June 22, 2013.

Dr. Gregg has left a bequest to endow the Robert A. Gregg Professorship in the Department of Chemistry. Through prior arrangement with Dr. Gregg, some of these funds were available earlier and allowed the Department to hire Assistant Professor Pavel Nagorny. [See the 2007 Newsletter at <https://www.chem.lsa.umich.edu/chem/alumni/news/07newsletter.pdf>]

**Milton D. Heller** (BS 1942, MS 1947, PhD 1952 Bachmann) died in New City, NY on September 22, 2012 at the age of 91. Dr. Heller was a native of New Jersey. After he obtained his BS in Chemistry at the UM, he worked for a year at DuPont. He then entered the US Navy where he served as an engineering officer on a submarine chaser doing convoy duty. After his discharge as a Lieutenant, he returned to the UM where he earned his MS

and PhD on a project involving steroid chemistry with Werner Bachmann.

Dr. Heller then joined the Lederle Laboratories (division of American Cyanamid) in Pearl River, NY. At Lederle his group synthesized the widely used drug Triamicolone. He was awarded 16 patents and published 42 papers in peer-reviewed journals, most of which were in the area of steroids. As an editor-analyst he supervised a group of physicians involved in drug testing for FDA approval. He retired in 1986. Dr. Heller was deeply involved in public education and served on the local school board for a number of years.

Dr. Heller is survived by his wife of 66 years, Dorothy, daughters Suzanne Heller Hiatt and Jeri Heller and eight grandchildren.

**Anne Bender Lawton**, wife of Professor Emeritus Richard Lawton, died on January 9, 2013 at the age of 79. She is survived by Richard and their five children.

**Karl R. Lindfors** (BS 1959) died on February 15, 2013 at the age of 75. Dr. Lindfors had been awarded a PhD in Chemistry from the University of Wisconsin-Madison in 1963.

He joined the faculty at Central Michigan University in 1964 as an Assistant Professor and was promoted to Professor in 1972. He served as Departmental Chair 1978-84 and again from 2001 until his retirement in 2003.

He is survived by his wife Joanne, son Bryan, daughter Britt Price and three grandsons.

**Duward F. Shriver** (PhD 1961, Parry) died on March 6, 2013 at the age of 78. Professor Shriver was an eminent member of our profession. He had published more than 400 scientific papers and was the author of the book, *The Manipulation of Air-Sensitive Compounds*, and the undergraduate textbook, *Inorganic Chemistry*. Professor Shriver was born in Glendale, CA and was raised in Oahu, HI. Years later he recalled that as a boy he had seen the Japanese planes fly over the hill in back of his house as they attacked the US fleet in Pearl Harbor.

He received his BS in Chemistry from UC-Berkeley in 1958. After receiving his PhD from Michigan in 1961 he joined the chemistry faculty at Northwestern U. where he spent the rest of his career. He was named Morrison Professor of Chemistry in 1987 and served as Departmental Chair 1992-95. Professor Shriver was the recipient of many professional awards including a Guggenheim Fellowship, an A.P. Sloan Research Fellowship, the RSC Ludwig Mond Medal, the Materials Research Society Medal and the ACS Award for Distinguished Service in Inorganic Chemistry.

He is survived by his wife Shirley, sons Justin and Daniel and two grandchildren.

## Alumni News

**Tim Berto** (PhD 2012, Lehnert) is now a postdoctoral fellow with Chemistry Prof. John Berry at the University of Wisconsin-Madison.

**Suzanne Blum** (BS 2000) received her PhD from UC-Berkeley in 2004 and was a post-doctoral fellow at Harvard Medical School 2004-06. She has been promoted to Associate Professor of Chemistry with tenure at UC-Irvine. She received an international research award from the Japan Society for Promotion of Science to lecture in Japan for one month this fall.

**Susan B. Butts** (BS 1975), who received her PhD in 1980 from Northwestern Univ., is an independent consultant based in Midland, MI. She retired from the Dow Chemical Company in 2010. This fall she is a candidate for Director-at-Large of the ACS.

**Tanya Breault** (PhD 2013, Bartlett) has begun a post-doctoral position with Professor Levi Thompson in UM Chemical Engineering.

**Katie Craigo** (MS 2012, Lehnert) is now a Volunteer for Teach for America.

**Natalie Walker Crist** (PhD 2012, Meyerhoff) is an Instructor in Chemistry at the University of Hawaii, Hilo.

**Megan Frost** (PhD 2004, Meyerhoff) has been promoted to Associate Professor in Biomedical Engineering at Michigan Technological University. She revisited the Department this fall to deliver a lecture on her research.

**Stephen Gaudio** (PhD 1972, Dunn) writes that he retired in July 2012 after 39 years working for Xerox in Webster, NY. He worked in a wide variety of areas, starting with research, then competitive assessment, product development, manufacturing, and finally finished his career as the Worldwide Strategy Manager for the Consumables Development & Manufacturing Group. He traveled overseas extensively for Xerox, including trips to Europe, Asia and South America. He is now involved in various volunteer and church related activities, as well as golfing, photography and travel. He notes that his eldest daughter received her PhD under the direction of Carol Fierke, when she was at Duke.

**Lauren Goodrich** (PhD 2012, Lehnert) is now a postdoctoral with Roche Applied Science in Madison, WI.

**John A. Gladysz** (BS 1971) Distinguished Professor and Dow Chair in Chemical Invention at Texas A&M University presented the Werner E. Bachmann Memorial Lecture at the UM in May 2013. John was accompanied by his wife Professor Janet Bluemel who also presented a lecture in the Department.

**Silverio A. Henriquez** (PhD 1973, Westrum) retired from the Panama Canal Commission after 27 years of service. He is a Technical Expert for a European Consortium dealing with handling nuclear residues and decommissioning old nuclear power stations.

**Bill Hoover** (PhD 1961, DeRocco) and his wife Carol have been enjoying the cattle-ranching life in Nevada's Ruby Mountains since 2005. They spent a good part of 2011 working together on the book, *Time Reversibility, Computer Simulation, Algorithms, Chaos*, published by World Scientific in 2012. The Hoovers spent their research careers at UC-Davis and the Lawrence Livermore National Laboratory.

**Rebecca A. Ihrle** (BS 2000 Biochem) and **Jonathan M. Irish** (BS 1998 Chem, Biochem, Biol) were married in 2002 and have a son, Alexander. They are Assistant Professors of Cancer Biology at the Vanderbilt Medical School in Nashville, TN. Jonathan received his PhD (2004) and Rebecca received her PhD (2006) both from the Stanford University School of Medicine.

**Dipankar Koley** (Postdoctoral 2011-13, Meyerhoff) has been appointed as an Assistant Professor of Chemistry at Oregon State University.

**Ginny S. Lin** (MS 1961) was awarded a PhD from the California Institute of Integral Studies in San Francisco in 2008 at the age of 73! She writes that she is proud of her connections with the UM where her late husband Chaote Lin received his PhD (Comparative Literature) and her son Kenneth received a fellowship in Physics.

**James Lipka** (BS 1976) received his PhD from Columbia in 1982. He is the CEO of Jim Lipka LLC, Medical Device Quality Systems, Columbia Heights, MN. Jim's career has gone from inorganic biochemistry to biomedical and diagnostic product development to quality systems. Jim currently makes consulting visits to Ann Arbor. In January he toured the chemistry facility and attended a lecture commemorating the centenary of the birth of Raoul Wallenberg (UM Arch. 1935).

**Justin Lomont** (BS 2008) and **Ian Stewart** (BS 2002) are coauthors of *The Handy Chemistry Answer Book*, published by Visible Ink Press, 2013. Justin is an NSF Graduate Fellow at UC-Berkeley, while Ian is a PhD graduate of UC-Berkeley. Ian is employed by ExxonMobil and lives in Houston, TX.

**Anderson Marsh** (PhD 2003, Gland) has been promoted to Associate Professor of Chemistry with tenure at Lebanon Valley College, Annville, PA. He is the recipient of the E. Emmet Reid Award in Chemistry Teaching at Small Colleges, which is awarded for the ACS Middle Atlantic Region. He also recently received the 2013 Thomas Rhys Vickroy Teaching Award from Lebanon Valley College.

**Kelly L. McDow** (BS 1992 Chem, Cellular M.B.) received a JD degree from Chase College of Law, Northern Kentucky University. She is Associate General Counsel at the Proctor and Gamble Co., Corporate Innovation. She heads the legal aspects of P&G's Connect and Develop Programs and has responsibility for the design of intellectual strategies for the company's Corporate Platforms.

**Cheryl Moy** (PhD 2012, McNeil) is currently a Visiting Assistant Professor of Chemistry at Willamette Univ., Salem, OR.

**Anna Merkle** (PhD 2012, Lehnert) works as an Assistant Information Analyst at the Chemical Abstracts Service in Columbus, OH.

**Shahid Murtuza** (BS 1994) is a Senior Consultant with Roland Berger Strategy Consultants in Boston. His office specializes in advising corporate and business unit executives in the chemical industry. He lives in West Newton, MA with his wife Noma and their three children.

**Rebecca Appleman Peebles** (PhD 2000, Kuczkowski) and **Sean Peebles** (Postdoctoral 1996-2000, Kuczkowski) have been promoted to Associate Professors with tenure at Eastern Illinois University, Charleston, IL. They conduct a vigorous NSF supported research program on weakly bonded van der Waals complexes in the gas phase.

**Bo Penny Peng** (PhD 2013, Meyerhoff) has accepted an R&D position at Siemens Healthcare, Newark, DE.

**Douglas Raber** (PhD 1968, Lawton) is the 2013 President of the Chemical Society of Washington (the DC section of the ACS).

**Michael Stern** (MS 1984, Groves), who received his PhD also with Groves at Princeton, is a Vice President and Commercial Row Crop Lead at Monsanto. He delivered a 2012 Rackham Centennial Lecture, entitled, "From Chemical Process Technology to Biotechnology: The Science Behind Modern Agriculture."

**Michael Tubergen** (Postdoctoral 1991-94, Kuczkowski) has been reappointed as Chair of the Department of Chemistry and Biochemistry at Kent State University.

**Sheng Zheng** (BS 2012) is pursuing a PhD in Chemical Engineering at UM.

### Networking Reunion Planned

A networking opportunity for all Chemistry alumni is being planned by the Chemistry Professional Development Organization (CPDO). A way to connect with current graduate students and post docs, this event will provide a great opportunity for alumni to start a conversation with the talented students in the department. Please look for more information on the event in an upcoming e-mail. Learn more about CPDO at <http://cpdo.chem.lsa.umich.edu>.

E-mail your news to: [chem.alum@umich.edu](mailto:chem.alum@umich.edu)

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

Please notify us of errors or misstatements in news items.

Corrections can be included in the next newsletter.

## Ken Wyckoff "graduates" from U-M 55 years after earning his degree



Photos courtesy of the Wyckoff family

*Ken has a keen appreciation for higher education and through the years he has attended the graduations of his children and grandchildren. (LtoR) Grandson Tim, son-in-law John Luchini, Ken, grandson-in-law Dr. Dirk Colbry, and granddaughter Dr. Kathleen Colbry.*

As he approached his 90th birthday, **Kenneth K. Wyckoff** (PhD 1958, Blicke, Elderfield) commented that one of his biggest regrets was that he never attended his own graduation. He had left Ann Arbor for a job two years before completing his dissertation. So in May 2013, his daughters made arrangements with Department of Chemistry and the Graduate School to attend the 2013 commencement.

Ken was the last of hundreds of graduates to cross the stage. He was presented with his diploma and a handshake from Dr. Janet Weiss, Dean of the Rackham School of Graduate Studies. Then he got a hug from UM President Mary Sue Coleman, and a standing ovation from the 3000 people in the audience.

In 1976 Wyckoff founded a fine chemicals pharmaceutical company, building and operating a plant in South Haven, MI. By 1999 Wyckoff Chemical Company, Inc. employed approximately 150 people and became a division of Catalytica Pharmaceuticals. In 2006 Albermarle Corp. acquired the South Haven plant.

After retiring from the chemical industry, he went into real estate in the Traverse City, MI area, where he currently resides.



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## We'd like to hear from you!

Please direct address corrections to UM Alumni Office website at: <http://alumni.umich.edu/>

We would like to hear your news. Please return this form to the address above, or email the information to [chem.alum@umich.edu](mailto:chem.alum@umich.edu). Include news of your current activities or suggestions for the next *Newsletter*.

Name _____	Name of Spouse _____
University _____	Degree _____ Year _____ Advisor _____
University _____	Degree _____ Year _____ Advisor _____
Residence Address _____	Home Phone _____
City, State, Zip _____	
Firm/Institution _____	Position _____
Business Address _____	Business Phone _____
City, State, Zip _____	E-mail _____

**NEWS ABOUT YOURSELF:** (Unless you request otherwise, we will feel free to mention any of this in future *Newsletters*)

I do NOT wish to have my news in the *Newsletter*.

**The Regents of the University of Michigan:**

Mark J. Bernstein, Julia Donovan Darlow, Laurence B. Deitch, Shauna Ryder Diggs, Denise Ilitch, Andrea Fischer Newman, Andrew C. Richner, Katherine E. White, Mary Sue Coleman, *ex officio*.

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