GOESSMANN
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University *of* Massachusetts Amherst

Chemistry Loses a Dear Friend

by David Adams

On April 14th one of the towering figures of the Chemistry Department, Professor George R. Richason, Jr. passed away at Cooley Dickinson Hospital in Northampton. Alongside Goessmann, Lindsey, Chamberlain, Peters, and McEwen, George takes his place among the chemists who shaped and propelled the department to national and international quality and recognition. In George's case, he was part of the Chemistry Department for 82 of its 146 year history! His contributions to the department and the university were profound, widespread, and legendary. In many respects he truly was "Mr. UMass."

In the early 1930s, George, born in the Riverside section of Turner's Falls on April 3, 1916, participated in basketball tournaments on the Amherst campus of the then Massachusetts Agricultural College (MAC). MAC became Massachusetts State College in 1931, and George matriculated at MSC in the fall of 1933. Early in his undergraduate career the basketball coach encouraged him to join the State basketball team after watching him play in Curry Hicks Cage. However, the chemistry curriculum required four 4-hour labs per week, and, to our good fortune, George chose chemistry over basketball. In fall 1936 he took "Doc" Fessenden's P-chem class. This class and its instructor inspired George to think about and pursue graduate school. So, after graduation on June 14, 1937, he enrolled in the graduate program working for "Doc." Completed in 1939, his master's thesis, "The Solubility Product of Mercurous Oxalate at 25°C," studied complex ion formation between metal and oxalate ions. George's academic genealogy goes back to the great German chemist J. J. Berzelius and through the German chemist Friedrich

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Getting to Know Our Newest Faculty Members

INTERVIEW WITH PROFESSOR **EZRA WOOD** (EW), recent hire in atmospheric chemistry (BA Rutgers University, PhD University of California-Berkeley, Postdoc Aerodyne Research, Inc.)

GG: Where did you grow up?
EW: I grew up in Princeton, New Jersey and for college went to Rutgers.

GG: When did you realize you loved chemistry?
EW: My interest in atmospheric chemistry started when I was a pre-teen, right around the time that the ozone hole was

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Chemistry Alumni Reunion

The 2015 Chemistry Alumni Reunion will be held on Saturday, June 6, 2015 in the beautiful Integrated Sciences Building (ISB). All alumni, students, faculty, staff and friends are invited to attend the 2015 Chemistry Alumni Reunion in honor of Bob Weis. Bob joined the department in 1988, and was an Associate Professor and a founding member of the Biological Division in Chemistry. The reunion will provide an opportunity to celebrate his life and to reflect about the tremendous impact he made on our department.

2-3 pm - Reception, ISB Atrium
3-4 pm - Talks, ISB 221

Dr. Anas Chalah, Executive Director of Active Learning, Director of Lab Safety Program, School of Engineering and Applied Science, Harvard University
Dr. Tatiana Besschetnova, Instructor in Developmental Biology, Harvard School of Dental Medicine

4-5 pm - Reception, ISB Atrium

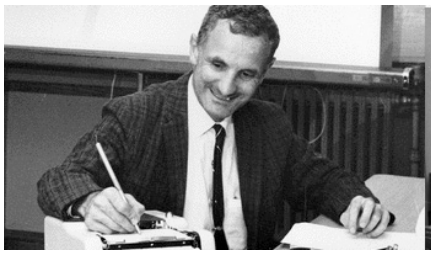
Check our reunion page for detailed information at http://www.chem.umass.edu/alumni/reunion2015.html

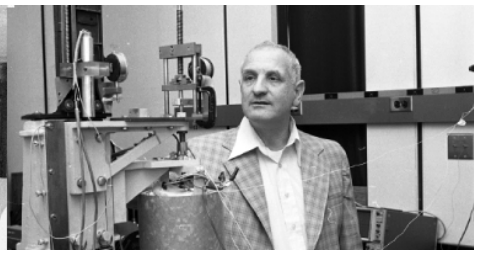
You can register for the event by either going to the Alumni Association website, or by calling or emailing our Alumni Coordinator, Carrie Morrison Penland, at 413.545.2585 or carriemp@chem.umass.edu. You can see what other events the University has planned for alumni weekend as well.

We look forward to seeing you in June 2015!

steinSYMPOSIUM

Friday, August 21, 2015





The Stein Symposium will be a full day of talks and fellowship. It will be an occasion to reconnect with alumni and colleagues, and reminisce about earlier times at UMass Amherst. It will also provide an opportunity to see how the campus has developed, and to learn about the current research and future directions of some of Professor Stein's former students, postdocs and collaborators. Here is a list of some of the speakers that will be attending: Professors Russell Composto, Georges Hadziioannou, Takeji Hashimoto, Benjamin Hsiao, Samuel Krimm, Thein Kyu, Robert E. Prud'homme, Moonhor Ree, Mitsuhiro Shibayama, Yohji Shindo, Mohan Srinivasarao, Garth Wilkes, and Do Y. Yoon.

More details about the speakers and schedule, please check http://www.chem.umass.edu/steinSymposium.html.

Please contact Carrie Penland (carriemp@chem.umass.edu) for additional information or to RSVP.

*alumni*REUNION 2014


Professor Richason enjoying conversion with his son Mark and alumni.

The **2014 Chemistry Alumni Reunion** was held on Saturday, June 7, 2014 in the beautiful Integrated Sciences Building (ISB). We once again honored two of Chemistry's towering figures, Profs. George Richason, Jr. and Richard Stein, people who have created much of the excellence that is Chemistry at UMass Amherst. This event was part of the university-wide Alumni Weekend which was open to all alumni, students, faculty, staff, and friends.


Professor Richason.

A reception for Profs. Richason and Stein was held in the ISB Atrium. That was followed by two talks that were held in ISB 221 given by Prof. Emeritus David Adams, who took us on a visual tour of the history of Prof. Richason's career here at UMass, and Prof. Emeritus Peter Lillya went into great detail about Prof. Stein's impact on science at UMass. Following the talks we convened back to the Atrium where Department Head Craig Martin toasted Profs. Richason and Stein, and many attendees shared their fond memories of the two.


Professor Stein, Anne Stein and former Congressman John Olver.

Just a little history about the two. George Richason is a home-grown product, having grown up in the valley, and earning his undergraduate and graduate degrees from our Chemistry Department before joining the faculty in 1947. As a devoted alumnus and fan of UMass Sports, he not only has an honorary degree, he is also a member of the Athletics Hall of Fame for his passionate support of our teams. His most lasting impact, however, is in teaching and in the strengthening of Chemistry's academic program, and in 1963 he received one of the university's highest honors, the Distinguished Teaching Award. Recipients of this prestigious award are the only faculty allowed to carry the mace at commencement and other academic ceremonies, and George has performed that duty for forty-four years.


Professors Richason and Stein.

From the moment of his arrival on campus in 1950, Dick Stein pushed UMass science forward, as he quickly landed the university's first significant federal grant in the physical sciences. Within a decade he had helped to found the Polymer Research Institute and the Research Computing Center, and the Polymer Science and Engineering Program followed soon thereafter. His efforts helped to establish polymer chemistry as a discipline, not only at UMass, but around the world. In recognition of his accomplishments, Dick was named to both the National Science and National Engineering academies and he has received three honorary doctorates. Today he is actively involved with students and the Amherst community in building awareness of the global threat of our dependence on fossil fuels.


Professor Stein greeting alumnus Diane Stengle.


Department Head Craig Martin giving a toast to Professors Richason and Stein.

The careers of these two beloved professors span the most dynamic period in the history of the department and university–some would call it the golden age of chemistry. Go to http://www.chem.umass.edu/alumni/AlumniReunion2014/ to see photos of the event.

POINTS of PRIDE *in Chemistry*

- **S. Thai Thayumanavan** gave a Distinguished Faculty Lecture on Tuesday, December 2 entitled, "Smart Therapy: The Search for Better-Targeted Delivery Systems."
- **S. Thai Thayumanavan** and his group were featured in the Daily Hampshire Gazette for their discovery and patent of "designer molecules."
- **Dhandapani Venkataraman** talked about photovoltaics on WHMP 96.9 FM.
- Graduate student **Khaja Muneeruddin** (Kaltashov group) received USP Global Fellowship Award for his research on new mass spectrometry-based methods to characterize highly heterogeneous biopharmaceuticals.
- **Dhandapani Venkataraman** and his group invented a way to create versatile, water-soluble nano-modules.
- **Lynmarie Thompson** was promoted to full professor.
- **Ezra Wood** joined the faculty with a research focus on atmospheric chemistry.
- **Gabriella Weaver** joined the University as Associate Provost for Faculty Development, Director for the Center for Teaching and Faculty Development, and Professor in Chemistry.
- Sophomore chemistry major **Ulrich Kakou** spent the summer of 2014 working on research projects in Woods Hole as part of the multi-institutional Partnership Education Program (PEP).
- Professors **George Richason** and **Richard Stein** were both honored with Congressional Citations.
- **Lila Gierasch** was named to the NIH Director Council of Councils. Established to advise the NIH Director on policies and activities of the Division of Program Coordination, Planning, and Strategic Initiatives.
- **Vincent Rotello** was identified on the Thomson Reuters "Highly Cited Researchers 2014" list.
- **Scott Auerbach** and the iCons program were featured in the Boston Business Journal.
- **Scott Auerbach**, iCons Program Director, was honored with an Award of Excellence in Teaching at the UMass chapter of the National Society of Leadership and Success ceremony.
- **Kevin Kittilstved** had an invited manuscript accepted for the "2014 Emerging Investigators" themed issue of the *Journal of Materials Chemistry A* (a publication of the Royal Society of Chemistry).
- **Lila Gierasch** received the 2014 Mildred Cohn Award in Biological Chemistry, awarded annually by the American Society for Biochemistry and Molecular Biology (ASBMB).
- **Lila Gierasch** received the Biophysical Society Fellow award.
- **Vincent Rotello** has been recognized as a University Distinguished Professor.
- **Scott Auerbach** and the iCons program were featured in AAC&U News: Problem-Based Science at University of Massachusetts and undergraduate learning at Research Universities.
- Chemistry '70 alum and Belmont Savings CEO, **Bob Mahoney**, won the Boston Business Journal's Most Admired CEO.
- **Mike Maroney** and graduate student **Carolyn Carr** were awarded a "1+1 fellowship" to work/study at the Biophysical Sciences Institute at Durham University in the UK.
- Graduate student **Tim Gehan**, jointly in the Lahti and DV groups, was awarded an Isenberg Fellowship for his work on assembling organic semiconducting organic polymers into nanoparticles with controlled size and size distribution.
- **Michael Barnes** renewed his Department of Energy research grant "Chemical Microscopy of Conjugated Polymers."
- **Michael Barnes** received the 2014 John Burlew Award from the American Chemical Society's Connecticut Valley section (CVS). This award recognizes Mike's pioneering research in single molecule spectroscopy. He was the featured keynote speaker at the 2014 CVS Undergraduate Research Symposium held at UMass.
- **Vincent Rotello** became the new editor-in-chief of *Bioconjugate Chemistry*.
- **Jeanne Hardy** received a Fulbright Scholar award from the Council for International Exchange of Scholars to pursue her research on Alzheimer's disease.
- **Vincent Rotello** brought low-cost, inkjet-printed nano test strips to Pakistan for drinking water tests.
- **Jeanne Hardy** won the seventh annual Armstrong Fund for Science Award, which this year is granting $30,000 over two years to encourage transformative research that introduces new ways of thinking about pressing scientific or technical challenges.

*lab*NOTES

In the AUERBACH LAB ...

The Auerbach group had another exciting and productive year in 2014 with articles published in the fields of Biofuel Production, Fuel Cell Materials, and Inorganic Network/Zeolite Formation–all from a theoretical chemistry perspective. Particularly noteworthy is an article by senior graduate student **Angela Migues** and co-workers entitled "Density Functional Theory of Aldol Condensation in Zeolites." In this work we model the process of building new carbon-carbon bonds in the "nanoscale" reactors of zeolite nanopores. Building carbon-carbon bonds in controlled environments is an important new technology needed for converting carbohydrates, which are abundantly available in plant biomass, into the spectrum of fuels, pharmaceuticals, and plastics used by society every day. **Angela Migues**' work involves several breakthroughs including technical procedures for modeling zeolite nanopores, and the central insight that building new carbon-carbon bonds in an acidic medium is rate-limited by the process of activating a ketone by converting it into the correspond enol via keto/enol tautomerization. We hope that **Angela**'s work opens the doors for others in the field to apply computational chemistry to understand biomass utilization, culminating in new, sustainable technologies for our children and their children to live by. **Angela Migues** will complete her PhD during the summer of 2015, and is seeking a postdoctoral position in computational biochemistry of proteins.

Auerbach group 2015.

Professor Auerbach remains the founding director of the Integrated Concentration in Science (iCons) Program. This exciting integrated science program for undergraduates is now in its 5th year after having graduated its First Class in May 2014. We are busy re-inventing the iCons curriculum, building our Industry Alliance, and endeavoring to make iCons a national household name. For more information on iCons, please see the update on page 18.

Auerbach group alum **Dr. Usha Viswanathan** (PhD '11) just published an article entitled, "Identification of a Novel Inhibitor of Dengue Virus Protease through Use of a Virtual Screening Drug Discovery Web Portal" in the *Journal of Chemical Information and Modeling*. After completing a previous post-doc position, **Usha** moved with her husband **Raja** to Cincinnati to begin a position in the University of Cincinnati Chemistry Department modeling phase diagrams for surfactants using coarse grained models.

In other exciting news, **Dr. Karl Hammond** (ChemEng PhD '10) has begun a faculty position in Chemical Engineering at the University of Missouri flagship in Columbia, MO. **Karl** continues to apply molecular modeling methods to design new materials for alternative energy applications, such as new zeolites for processing biomass, and new materials for housing Generation IV (super hot) nuclear reactors (see engineers.missouri.edu/hammondk for more details). We wish **Karl** good fortune as he builds his new research program.

We wish all Auerbach group alums a wonderful year, and hope they'll stay in touch and visit campus whenever possible. Go Crunch!

In the BARNES LAB ...

In the past year, Prof. Mike Barnes continued research supported by the US Department of Energy on "Chemical Microscopy of Conjugated Nanomaterials" and successfully renewed this grant totaling $420,000 (through 2016), and the Polymer-based MRSEC at UMass Amherst. In addition, he was co-investigator and team leader on the US Department of Energy EFRC at UMass led by **Tom Russell** and **Paul Lahti**.

Barnes also was named recipient of the ***2014 John Burlew Award*** from the Connecticut Valley Section of the American Chemical Society, and presented the award lecture to area undergraduates on Molecular Photography April 2014.

Our group members and research news:

Kevin Early (PhD '10, "Photophysics of hybrid quantum dot-conjugated organic nanostructures") is now at 3M Corporation in Minneapolis MN where he heads the Quantum Dot Display laboratory.

Austin Cyphersmith (PhD '12, "Probing effects of orientation on the chiroptical properties of single molecules") is now a Microscopy and Imaging Laboratory Manager at University of Illinois-Urbana Champaign.

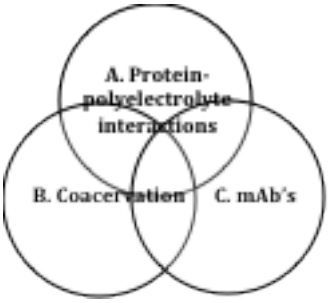
Mina Bahghar received her PhD in Physics in April 2014, and is now a postdoctoral associate in **Prof. Silvera**'s group in the Physics Department at Harvard University.

Joelle Labastide, now a 5th year Chemistry graduate student, continued her thesis work on time-resolved photoluminescence studies of oriented crystalline polymer nanowires.

A number of chemistry undergraduates have made significant contributions to our group's research efforts over the past year: **Derek Maxwell** (BS '14), **Claire Miller** (BS '14), **Sandra McEnroe** (BS '15).

In the DUBIN LAB ...

The Dubin group has been focusing on the overlapping topics of coacervation (liquid-liquid phase separation of oppositely charged macroions), protein-polyelectrolyte interactions, and monoclonal antibodies. PhD student **Daniel Seeman** is completing a project on the coacervation of beta-lactoglobulin and lactoferrin, one particular aspect of this Nestlé-funded project spear-headed by former MS student **Sean Flanagan**. **Daniel** has expanded computational modeling from protein electrostatics to M-C simulations of heparin oligomers complementary to mass spectrometry work done in the **Kaltashov** lab. That research was carried out by **Burcu Baykal**, now a post-doc at MPI-Stuttgart (adding to the list of postdoc placements of other recent alums: Northwestern (**Basak Kayitmazer**), Cornell (**Yisheng Xu**), and MIT (**Ebru Kizilay**). With support from UMass Medical School (co-PI **Seeman**) we have developed a non-chromatographic (coacervation) technique for separation of monoclonal antibodies (Mab's), pioneering work done by undergraduate **Alex Malanowski** (recipient of a ***Jack Ragle Award Summer Fellowship***). BASF is also interested in coacervation (in polyelectrolyte-surfactant systems), the principal effort by postdoc **Yaxun Fan**, in collaboration with visiting scientists **Aydan Elci** and **Jincy Joseph**. A third visiting scholar **Fatemeh Azarikia** has been studying the interactions of polysaccharides (hyaluronic acid and tragacanthin) in the context of an NSF grant (co-PI **David Hoagland**). PhD student **Fatih Comert** in our group been the first to make coacervates with DNA and polysine. Prof. Dubin has been developing (with co-organizers) a symposium on coacervation (ACS, Boston) encompassing: Protocells–**Stephen Mann** (Bristol); Theory and Characterization–**Sarah Perry** (UMassAmherst); Biomedical Applications–**Yadong Wang** (Pittsburgh); and Applications (Dubin).



In 2014 Prof. Dubin visited Ein Gedi (Israel), Wuxi (PRC), and Beijing (hosted by former postdoc **Prof. Yilin Wang**). Other alumni news: **Gavin Kirton** (PostDoc '06) is teaching everything at Rocky Mountain College (Assoc. Prof.); **Pinaki Majhi** (PostDoc '04) is Director of R&D, Dennison Pharmaceuticals; **Emek Seyrek** (PhD '05) has been appointed "Chaire d"Excellence" at University of Paris 7, where she leads a team on the biomechanics of cancer cells; **Elaine Foun** (BS '12) is doing ICP-MS at FujiFilm; **Bingqian Zheng** (BS '14) is first-year PhD student at Stony Brook, in the group of **Surita Bhatia**. **Ram Vanam** (MS '04) is research Assoc. at Regeneron.

In the GIERASCH LAB ...

2014 was a great year for the Gierasch lab with many successes and happy events, and also with many comings and goings. The lab has been thoroughly enjoying its new "digs" as we have made the Life Sciences Laboratory our home!!

We started the year by saying goodbye to postdoc **Mandy Blackburn**. **Mandy** set off to take a position as Assistant Professor of Chemistry at the University of Central Missouri. We are very excited for **Mandy**'s success and wish her the best of luck.

We also said a temporary goodbye to our long-time lab member **Eugenia Clerico**. **Eugenia** spent four months on sabbatical in England learning cutting-edge mass spectrometry techniques in **Carol Robinson**'s laboratory at the University of Oxford. **Eugenia** returned very excited to apply all the new things she learned in the UK to our Hsp70 research program.

Summer 2014 was a lively time in the lab: a high school student, **Monica Beeferman**, came back to lab to continue working on the project she started in summer 2013, and newly minted Amherst High School graduate **Alan Tang** (now at Vanderbilt) also returned to work on a research project. We enjoyed having them working with us and hope they come back again.

The larger lab family grew as well as we welcomed the birth of **Kristine Pobre** and her husband **Francis**'s daughter **Francine**.

We were energized as new undergrads joined the lab: UMass freshman **Todd Morse** (who had visited the lab before as a student from Scarsdale High School in NY), UMass sophomore **Cameron Kilcoyne**, Mount Holyoke sophomore **Ha Dang**, and UMass senior **Lauren Prentis** joined the lab and are actively working on their projects alongside continuing undergrad senior **Nico Fandino**. They all bring a very enthusiastic atmosphere to the lab, and we are very happy to see them grow as scientists. But as some new faces came, we sadly saw others go: undergrads **Samantha Williams** and **Lexi Walls** defended their undergraduate theses and started their graduate experiences: **Sam** is now in medical school at Stony Brook University while **Lexi** is a graduate student in Biochemistry at the University of Washington. We wish them all the best and are certain we will see them flourishing in their future careers.

Excitingly, the whole lab participated in submitting an entry to a Video Contest for recipients of NIH Common Fund grants. Lab members acted as different cellular entities to represent the life of a protein in the cell. You can watch **Lexi**


Gierasch lab NIH YouTube video, The Folding of a Protein in E. coli

as the newly synthesized protein, MCB grad student **Karan Hingorani** as the ribosome, postdocs **Wenli Meng**, **Ben Yang** and **Weiwei Kuo**, research associate professor **Anne Gershenson**, graduate students **Joseph Tilitsky** and **Kristine Pobre**, and undergraduates **Lauren Prentis**, **Nico Fandino** and **Ryan Pepi** all as the different molecular chaperones in E. coli that help proteins to fold. It was a lot of fun making our first lab theatrical product and you can watch it at: http://commonfund.nih.gov/contests/videos (video #23) We weren't yet nominated for an Oscar, but you never know.

We were gratified to publish several papers this past year: We published one collaborative paper with our colleague **Ivet Bahar** from the University of Pittsburgh, four review articles in high visibility journals, and a chapter on "Structure and Function of Hsp70 Molecular Chaperones" in the monograph "Inhibitors of Molecular Chaperones as Therapeutic Agents."

Also, several lab members were recognized for their work: **Lexi Walls** was presented an ***American Institute of Chemists Student Award*** at Brandeis University, Waltham, MA in April; **Nico Fandino** received a fellowship from the NIH to support his summer and academic year research; and **Joe Tilitsky** was chosen to receive a fellowship in the Chemistry-Biology Interface Graduate Training Program. **Monica Beeferman** submitted her work in the lab to the Intel Science Talent Search Competition and was selected as a semifinalist. Congratulations to all for these achievements!!!

Lila received two major awards this past year: She was named a ***Fellow of the Biophysical Society*** at the Annual Meeting of the Biophysical Society in San Francisco in February 2014 and was awarded the ***2014 American Society for Biochemistry and Molecular Biology Mildred Cohn Award*** in Biological Chemistry and presented her award lecture at the ASBMB National Meeting in San Diego, CA in May.

As usual, group members presented their research at local meetings (such as the CBI/BMB/BMP Joint retreat held in Worcester and the UMass MCB Graduate Program Annual Retreat the Undergraduate Research Conference Poster session), and also traveled to other important conferences, including: the FASEB Summer Research Conference "Protein Folding in the Cell" in Saxtons River, VT; the Protein Folding Consortium at the University of Michigan in Ann Arbor, MI; the Gordon Research Seminar on Intrinsically Disordered Proteins at Stone Hill College, Easton, MA; and the Biophysical Society 58th Annual Meeting in San Francisco, CA.

Lila traveled all over the world to speak about the lab's work. Among many other presentations, she gave a University Lecture at the University of Texas Southwestern Medical Center in Dallas, TX, presented the keynote lecture at the FASEB Protein Folding in the Cell in Saxtons River, VT, and gave a plenary lecture at the annual meeting of the Belgian Biophysical Society in Brussels. She served as an opponent for a doctoral dissertation defense at Linköping University in Sweden. And she has continued her active involvement with the National Institutes of Health as a member of the NIH Director's Council of Councils.

We had a great 2014 and anticipate another year of terrific achievements!

In the **HARDY LAB ...**

This has been a global year for the Hardy Lab. Prof. Hardy was delighted to return to campus after her sabbatical last year in the lab of Taisuke Tomita at The University of Tokyo and a ***Fulbright Fellowship*** at the Pasteur Institute in Paris France doing NMR with **Muriel Delepierre** and **Iñaki Guijarro**. This year **Scott Eron** won the ***William E. McEwen Fellowship*** for most outstanding talk at the 24th annual ResearchFest and attended the Gordon Conference on Enzymes, Coenzymes, and Metabolic Pathways. **Kevin Dagbay** is currently probing the domain architecture of caspase-6 for its specific regulation and won the ***William E. McEwen Fellowship Award*** for outstanding poster presentation ResearchFest. He also presented his research at the Gordon conference on proteolytic enzymes and their inhibitors in June in Lucca, Italy. **Bay Serrano** received the ***3M Award*** for Outstanding Poster Presentation during ResearchFest 2014 and a prize for the best poster award during the CBI Joint Retreat. This November **Bay** escaped the cold Amherst weather to attend the Keystone Symposia on Cell Death Signaling in Cancer and the Immune System in Sao Paulo, Brazil as a Keystone-FAPESP Travel Awardee. **Derek MacPherson** passed his Original Research Proposal to achieve PhD candidacy and was awarded a ***NIH Chemistry Biology Interface Fellowship*** to support his work. **Maureen Hill** also successfully defended her Original Research Proposal and in the same semester was the 18th fastest woman overall in her very first half marathon in Newport, RI. **Jacob Lytle**, a junior chemistry/biochemistry double major continued his work to design regulatable allosteric sites and served as a Peer Mentor for the UMass Residential Life Program. This year we added two new undergraduate researchers, **Alesia Vialichka** and **Kyle Swainamer** to our research team and look forward to their successes!

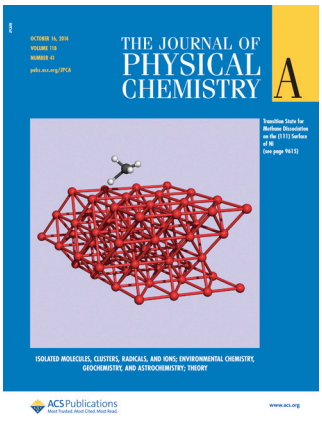
Hardy group 2014

In the HOLDEN LAB ...

To see what's new in the Holden lab, please visit **people.chem.umass.edu/mholden/**

In the JACKSON LAB ...

Our group continues to explore the dynamics of several important gas-surface reactions, with a focus in recent years on understanding methane dissociation on Ni-based catalysts. This is the rate-limiting step in the steam reforming of natural gas. In earlier work, two postdocs, **Sven Nave** and **Ashwani Kumar Tiwari**, demonstrated that the observed strong increase in the reaction probability with increasing metal temperature was caused by a variation of the activation energy with the vibrational motion of the metal lattice. We have since developed quantum mechanical methods that allow us to compute the dissociative sticking probability of methane as a function of the temperature of the metal and the translational energy and vibrational state of the methane. In 2014, our studies of these reactions on Ni(111) and Ni(100) surfaces were summarized in an invited feature article in the *Journal of Physical Chemistry* A. **Sven** and **Ashwani** are now assistant professors in Orsay, France and Kolkata, India, respectively. Graduate students **Azar Farjamnia** and **Han Guo** have been applying these methods to other reactions. Azar is examining the dissociative chemisorption of water on the surface of a metal catalyst, which is the rate-limiting step in the water-gas shift reaction. **Han**'s studies of the dissociative chemisorption of CHD3 on Ni(111), being prepared for publication now, have allowed us to more fully understand both mode-specific and bond-selective chemistry. This past summer, graduate student **Inara Colón-Diaz** defended her Master's thesis, based on her studies of how adsorbate coverage modifies the dissociative sticking probability of methane on a Pt(111) catalyst, in collaboration with the **Beck** experimental group at EPFL. This work has been presented in invited talks at several meetings, including the Vibrational Spectroscopy and Dynamics Gordon Research Conference in 2014, and upcoming meetings in Salamanca, Spain and Dalian, China. In 2014, Prof. Jackson was recognized for "Outstanding contributions to the elucidation of gas-surface dynamics" by being named a ***Fellow of the American Physical Society***.



In the KALTASHOV LAB ...

2014 was a very busy year in the Kaltashov laboratory, which included publication of three papers, filing a patent and several presentations given by the group members at numerous scientific meetings and conferences. **Son Nguyen** defended his PhD dissertation and moved to Pacific Northwest National Laboratories. For more information check out our group site at http://www.chem.umass.edu/people/kaltashovlab

In the KITTILSTVED LAB ...

Inorganic materials chemistry was alive and well in the halls of Goessmann laboratories during 2014. Senior graduate students **Swamy Pittala**, **Keith Lehuta** and **Dongming Zhou** all became official PhD candidates in 2014 after successfully defending their Original Research Proposals. Their hard work was also highlighted in publications. Notable was **Keith**'s first author publication on the speciation of trivalent chromium ions during the synthesis of chromium-doped strontium titanate. This was an invited submission in a special Emerging Investigators issue of the *Journal of Materials Chemistry A* (vol 2, pp 6138-6145). **Kevin** was also involved in collaborative projects that resulted in two additional papers in 2014. One of these papers was with colleagues **Mike Barnes** and **Alex Briseño** (PSE). In addition to writing grants and papers, Kevin presented numerous talks at national meetings of the American Chemical Society including an invited talk at the Fall Meeting in San Francisco.

William Harrigan finished his second year in the lab and we also welcomed **Fumi Kato** to the group. **Fumi** is a graduate from Western Washington University and is working with **Swamy** on studying the mechanism of metal ion exchange in small molecular analogs of semiconductor quantum dots. The group also graduated **Jenileigh Harris** with her Master's degree in June 2014. She pursued her passion to teach at the high school level and was quickly offered a position teaching chemistry at Pioneer Valley Performing Arts Charter Public School in South Hadley. We know that PVPA has made a wise decision adding **Jenileigh** to their faculty. The Kittilstved group is looking forward to 2015 and hopefully seeing grass again.

In the KNAPP LAB ...

Go to **http://people.chem.umass.edu/knapplab/** to see what the Knapp group has been up to.

In the LAHTI LAB ...

2014 was a big year for people moving on and doing good things–see the group webpage for news and publication listings, at www.chem.umass.edu/~lahti

Ray Devaughn joined Brewer Scientific, to make use of his skills in making strong absorber molecules.

Group (and friends) picnic in fall 2014 atop Mt. Sugarloaf.

Paul Homnick joined 3M in Minnesota, where group alum **Rajdeep Kaltgutkar** can teach him about cross country skiing on frozen air.

Jeff Lucas joined Tokyo Electron in New York state, where he now is a plasma etcher extraordinaire.

Molly Cocaine of the undergraduate research corps joined FLEXCon at Spenser, MA.

Jon Tinkham has gone west to a postdoctoral position at the National Renewable Energy Laboratory in Colorado. His parting note: "Thanks for all the fish!" (hopefully not prescient in this particular universe).

Tim Gehan (joint group member with DV group) received a prestigious ***Eugene M. Isenberg Award*** for Spring 2014 to to learn how fundamental research in materials chemistry undergoes tech transfer to the real world marketplace. **Tim** also was selected as a speaker at the July 2014 Division of Organic Chemistry Graduate Research Symposium at UCal-Irvine (**Paul Homnick** was selected for the July 2013 Symposium, so two in a row for us)!

Usame Erdem, a visiting student from Middle East Technical University in Ankara Turkey, spent almost two months with the group at the end of Summer 2014, working on conjugated molecule precursors alongside undergraduate research corps member **Elisa Guzman** and postdoc **Handan Akpinar**.

Postdoctoral associate **Rafael Cassaro** and his wonderful wife and son returned to Brazil in Summer 2014, where **Rafael** has now begun his new job on the faculty in the chemistry department at Universidade do Rio de Janeiro (we hear the commute is quite a challenge, however!).

Former postdoc **Prasanna Ghalsasi** is now Professor at Maharaja Sayajirao University of Baroda in India, where he and his group are pursuing structural studies of inorganic compounds.

Former undergraduate research corps member **Anna Qualls** (née De Cheke) is now a higher education consultant, currently working with the graduate school as a senior advisor at the University of Maryland at College Park. She is using a fair bit of her 'extra' time teaching son **Leó** science and other topics (he already knows both English and Hungarian!).

Greg Pearlstein from the original undergraduate research corps came by and said hello, and will be visiting UMass periodically as part of an arrangement from his faculty job at Texas A&M to collaborate at the Math Department.

Cesar Sierra says hello to everyone–he continues to run a lot of marathons, as well as a great and growing group in the National University in Bogata, Colombia.

Hemali Rathnayake reports that son **Bhanuka** is growing up quickly, and that **Hasith** has 'a lot of energy' (appropriate, given Hemali's interest in energy research. **Hemali** has also been appointed an adjunct professor at University at Louisville, in addition to her home position at Western Kentucky University.

Masaki Minato is now based in Cleveland, OH (closer to New England than Houston or Los Angeles, two of his previous, warmer weather locations).

Yilin Qiu reports that she is now working part-time at OMIC (in the Northwest USA), as a quality assurance associate. Husband **Hao** is working at KLA-Tencor as a process engineer, and son **Lawrence** is working at growing fast.

Making friends at a store near Changbai Mountain nature preserve.

PML made scientific trips to Cyprus in May and China in July, thanks to kind invites to talk in both places. Cyprus was a great place for archaeological visits and friendly people. Changchun in China was a great place to visit, both scientifically and culturally, thanks to a wonderful invitation from former group postdoctoral visiting scientist **Jingping Zhang**, who is now Dean at Northeast Normal University. China was amazing and wonderful, including a great visit to Changbai Mountain at the border with North Korea (carefully on the Chinese side). Changbaishan is a gorgeous caldera volcano with a lot of visitors, but very well managed to maintain the countryside. PML visited Milliken Corp in South Carolina, thanks to a kind invite from **Chunping Xie** (who heads the company's Shanghai operations, but who was in the USA with his family at a good time for PML) – the Milliken visit was great for science and for hospitality.

In the MARONEY LAB ...

To follow up on last year's news, my sabbatical is over but turned out to be a great one. In addition to completing two major reviews for the bioinorganic topical issues of *Chemical Reviews*, travel played a major role. I was able to do several seminar trips and was fortunate to receive a "*1+1 Fellowship*" from the Biophysical Sciences Institute, Durham University, in the United Kingdom. This fellowship facilitated my collaborations with researchers at Durham and also provided funding for a student in my lab to spend time working at Durham University. That student was **Carolyn Carr**, who was at Durham April through September. I also had the opportunity to visit the Galapagos Islands during **Sharon**'s February break. Highly recommended for anyone with even a passing interest in biology. Love those blue-footed boobies!

In addition to **Carolyn**, the current Maroney group consists of five other graduate students (**Heidi Hu** (MCB), **Julius Campecino**, **Hsin-Ting (Tiffany) Huang**, **Zeinab Kaboli**, and **Priyanka Basak**) a postdoctoral researcher (**Dr. Roby Kurian**), two undergraduate students and the latest member—**Manju Sharma**. Yes, after all these years, **Manju** has returned to the Maroney group as a Research Fellow. Everything runs much better with **Manju** around. We have a visiting scholar from Iran working with us, **Niloofar Mahlooji**. News from the group includes congratulations to **Heidi** on receiving a Dissertation Research Grant from the Graduate School, and her most recent publication in *Metallomics* in 2015.


The Maroney group.

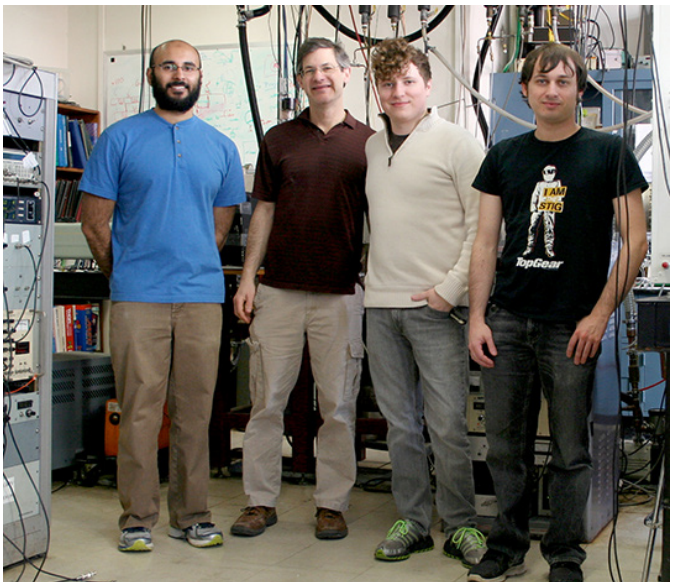
News from recent former group members includes congratulations to **Khadine Higgins** (PhD) who completed a postdoc with **Dave Giedroc** at Indiana University and joined the faculty at Salve Regina University in Newport RI this fall. **Vlad Diaconescu** (postdoc) finished his postdoc with **Serena DeBeer** at the Max-Planck Institute for Chemical Energy Conversion in Muelheim an der Ruhr, Germany, has a job in Spain, and has a new baby boy named **Artur**. **Kelly Ryan** (PhD) is teaching at Hamden Hall Country Day School in Hamden, CT, and has a new publication in *Biochemistry* in 2015. **Crisjoe Joseph** has returned to UCSB and has a position as lecturer in the Chemistry Department. I hear he is a very popular instructor.

In the MARTIN LAB ...

The Martin group has just received word of funding from NSF on a new project that is an outgrowth of Professor Martin's 2013 sabbatical at Caltech. Using tools of synthetic biology (chemistry, really) combined with their well-established enzymology, they will develop a system for the controlled modeling of co-transcriptional folding of RNA. While the last century focused on the roles of proteins in genetic regulation, new efforts are realizing the wide function of RNAs in such regulation. The fact that RNA can fold into protein-like structures points to RNA as the primordial macromolecule in life, pre-dating both proteins and DNA. We are now only beginning to appreciate that such folded RNA molecules continue to play essential roles in nature and that the kinetics of such folding is often key to function.

In the METZ LAB ...

The Metz group continues to try to understand structure and bonding in gas-phase metal ion complexes and to explore their photodissociation dynamics. Graduate students **Chris Copeland** and **Muhammad Affawn Ashraf**, along with undergraduates **Emily Boyle**, **Sandra McEnroe** and **David Suriel-Montero** are studying how binding to transition metal ions weakens the C-H bonds in methane, the initial step in C-H bond activation, by measuring vibrational spectra of iron cluster ion-methane complexes, initially looking at $Fe2^{+}(CH_4)n$, and then moving on to the iron trimer and tetramer. This extends work done by our group on C-H bond activation by atomic metal ions. Graduate student **Dave Johnston** and undergraduates **Sarmad Al-Khamees**, **Matt Gentry**, **Nate Park** and **Artur Wysoczanski** are optimizing our photofragment imaging


The Metz group 2015.

instrument to measure photodissociation dynamics of ions. This instrument measures the amount and direction of the kinetic energy released when ions photodissociate. This allows us to measure bond strengths and reveal information on short-lived excited electronic states. Photodissociation of N_2O^+ produces N atom and NO^+, and they have measured the competition between the spin-allowed and spin-forbidden electronic states of the atom, as well as the vibrational state of the NO^+. Two alums stopped by for brief visits – it was exciting to reconnect with **Kay (Stringer) Gray** (PhD '04, now teaching at Newcastle High School in England) and **Kieron Faherty** (PhD '04), who described what it's like to work at Waters for the Applied Analytical Chemistry class.

In the ROTELLO LAB ...

2014 featured comings, goings and much happening in the Rotello Lab. Vince was appointed as a University Distinguished Professor, and was recognized by Thomson Reuters in their "World's Most Influential Scientific Minds 2014" report. Vince also finished his first year as Editor-in-Chief of *Bioconjugate Chemistry*, with **Bradley Duncan** getting social media up and running ("like" us at https://www.facebook.com/bioconjugatechemistry!).

Our group members won three prizes at ResearchFest 2014. Congratulations to **Ying Jiang**, **Gülen Yesilbag Tonga**, and **Rubul Mout** for their Outstanding Poster Awards. On the departure side, **Bo Yan**, **Xiaoning Li**, **Youngdo Jeong**, **Yi-Chuen Yeh** and **Krishnendu** ("**Krish**") **Saha** received their PhDs, with **Bo** heading to Boston University, **Xiaoning** off to Rensselaer Polytechnic Institute, **Youngdo** to LG in South Korea, **Yi-Cheun** going to the University of Pennsylvania and **Krish** joining Intel. Postdoctoral researchers **Dr. Vikas Nandwana** and **Dr. Sung Tae Kim** have left the group with **Vikas** off to Northwestern University and **Sung Tae** going to AmorePacific Skincare in South Korea. While visiting scholars **Dr. Eunhee Jeoung** (a 2002 group alumnus), **Dr. Yongdoo Choi**, **Dr. Ya Ding**, **Dr. Lin Sun**, and **Premsak** ("**Prem**") **Puangploy** have returned home, we have had a strong influx of new faces including **Mahdieh Yazdani** and **Yiwei Lee** who have officially joined our group as graduate students, **Dr. Young-Kwan Kim** as a postdoctoral researcher and **Federica Scaletti**, **Rafael M. Freire**, **Shuaidong Huo**, **Long Bai**, **Dr. Li Wang**, **Dr. Wenbing Shi**, and **Dr. Rajesh Ramanathan** all joining as visiting scholars. Welcome to the group! Our previous group visitor, **Takashi Kushida** from Teijin Limited, Japan received his PhD degree from Osaka Prefecture University, Japan this year. Congratulations again!

Publications continued apace, with 31 in 2014. These publications are making an impact, with over 2,700 citations last year, and Vince hitting an h-index of 74. Industrial collaboration featured strongly in the group, with funding from GE, Firmenich, and Flexcon.

For up-to-date news, please check out http://www.umass.edu/rotellogroup.

In the THAYUMANAVAN LAB ...

It has been another productive year for the Thayumanavan group in 2014. Please visit our website at https://elements.chem.umass.edu/thaigroup/ for more on our news and achievements. Also follow our group on Facebook or Twitter (links provided in our website). If you are a group alum and we do not have your updated whereabouts, please let us know. Below, we are listing a few of the people highlights from the group.

The group welcomed **Wardah Ejas**, **Jingjing Gao**, **Vikash Kumar**, **Sara Wojtas** and **Zheyi Yi** as new graduate students. Current graduate student, **Kishore Reddy Raghupathi** has taken an internship for the spring at Genzyme in the Boston area. We had quite a number of students graduating this year. **Diego Amado Torres** is now Senior Membrane Scientist with Oasys Water in the Boston area. **Rajasekhar Ramireddy** is a Postdoctoral Fellow at Johns Hopkins School of Medicine. **Ambata Poe** is now working as a Textile


The Thayumanavan group.

Applications Development Specialist at Invista Corporation. **Jing Guo** finished her PhD and will be starting a family. **Judy Ventura** is now working at Genzyme.

There have been some changes with our alumni graduate students as well. **Michael Lartey** is now Lecturer at the University of Energy and Natural Resources, Ghana. **Bhooshan Popere** has moved from the University of California, Berkeley to the University of California, Santa Barbara, because of his postdoctoral advisor's move to UCSB. **Elamprakash Savariar** is a Research Scientist at Vertex Pharmaceuticals in San Diego. **Kratae Wanwong** is now working as a Researcher at the School of Energy, Environment and Material, King Mongkut's University of Technology Thonburi, Thailand.

Joining the group for their undergraduate research this year are: **Matthew Caissy**, **Nancy Chinnappan**, **Daniel Estabrook**, **Bailey Ingalls**, **Donnie Rollings**, **Austin Snyder**, and **Connor Walsh**. We said goodbye to undergrads **Brendan Abbott**, **Adam Finne** (now an Analytical Chemist at BIND Therapeutics in Cambridge, MA), **Matthew Jennings**, **William Rowley** (now a PhD student at the University of Nevada Reno), **Laura Stirchak** and **William White** (now pursuing PhD in UC Irvine).

We welcomed **Wei Bai** to the group as a postdoctoral associate in July. The work of our postdoctoral alumni included some updates as well. **Sreedhar Reddy Jaggavarapu** is now a Scientist at Sabic Technology Center (STC) Bangalore, India. **Narayana Murthy Sekar** recently began work as Assistant General Manager at Bal Pharma Ltd, Bangalore (R&D Division). Group alumnus, **Ja-Hyoung Ryu**, visiting from UNIST, Ulsan, Korea, gave a seminar here at UMass in August entitled: "Drug Delivery Vehicles for Stable Noncovalent Encapsulation."

The group bid farewell to **Cunfeng Song** and **Yiting Xu**, visiting graduate student and visiting faculty respectively; they both returned to Xiamen University in China. Three new visiting scholars, funded through the China Scholarship Council, arrived in September: **Ding Hu**, **Pingsheng Huang** and **Xiaochi Liu**. Former visiting scholar, **Warathip Siripornnopakhun** is now a Researcher at PTT Global Chemical Public Company Limited, Thailand.

Finally, Thai was chosen for the prestigious Distinguished Faculty Lecture Series. His talk, which he presented on December 2nd, was entitled: "Smart Therapy – The Search for Better-targeted Delivery Systems."

In the **THOMPSON LAB ...**

In research news, the Thompson lab is very excited to begin using the new 600 MHz solid-state NMR instrument installed in January 2015! The increased resolution, sensitivity, and new capabilities will make it possible to show the power of solid-state NMR for directed measurements probing structure and mechanism in complex membrane protein systems such as bacterial chemotaxis receptor arrays. We are also excited that our approach for hydrogen exchange mass spectrometry of membrane-bound multiprotein complexes is revealing signaling-related changes in chemoreceptor structure and dynamics [paper by **Seena Koshy** (PhD '14) and current student **Xuni Li** published in *Biochemistry* this year]. It is very satisfying to have this approach to address interesting questions raised by the work of early alumni from the lab, **Stacy Seeley** (PhD '95) and **Owen Murphy** (PhD '01).

Our NIH-funded ***Chemistry-Biology Interface Training Program*** is one of the longest-running CBI programs in the country, celebrating its 20th birthday this year! Having just submitted the CBI renewal proposal in January, Lynmarie notes that it is a very exciting time for CBI research at UMass: our highly collaborative community now enjoys excellent new laboratory and instrumentation facilities, and connections to the new Institute for Applied Life Sciences.

Lynmarie enjoyed reconnecting with several group alumni this year, including **Stacy Seeley** (PhD '95) is now Professor and Head of Chemistry and Biochemistry at Kettering University, and **Julissa Gonzalez** (summer research 2010) is now a graduate student at University of Puerto Rico Rio Piedras, and **Yael Balazs** (PhD '99) who is now living in Boston on leave from her position as NMR Facility Manager at Technion University in Israel. Lynmarie also co-organized a platform session at the Biophysical Society Meeting in February honoring the memory of our colleague and collaborator **Bob Weis**. A number of leading scientists in chemotaxis presented talks and also paid tribute to **Bob**'s insightful science and sense of humor.

News of our group members includes congratulations to undergraduate **Karen Li** who was awarded a ***CURE fellowship*** for research in the lab in summer 2014, to graduate student **Libbie Haglin** who won a ***William E. McEwen Fellowship Award*** for Outstanding Poster Presentation at Researchfest in Fall 2014, and to undergraduate **Meaghan Molloy** who was awarded a ***Commonwealth College Research Grant*** for her work in Spring 2015. Congratulations to **Michael Harris**

who completed his postdoctoral work in the Thompson lab last spring and accepted a position as an Applications Engineer at Bruker Biospin in Billerica, MA. Last but not least, a very happy congratulations to **Seena Koshy** (PhD '14) and her husband on the birth of their baby girl last October.

In the TYSON LAB ...

In the Tyson lab, in the spring semester, undergraduates **Harry Lu** and **Dan Piersiak** continued their work from the fall and were joined by **Cassandra Martin** and **Nancy Githui**. **Harry** explored methods for extracting arsenic compounds from rice, **Dan** obtained more data on the variation of arsenic concentrations in individual rice grains, **Cassandra** explored the possibilities for replacing the zinc reductant in the Hach kit with borohydride immobilized on an anion-exchange resin, and **Nancy** did more calculations on the applying a t-test to compare the results obtained by a lab with the information on the certificate of a reference material. In the fall, **Harry** continued his work on the development of our "kitchen" method for the determination of arsenic compounds in rice, showing that inorganic arsenic could be separated from the starch that is co-extracted from rice by "reverse" dialysis (the rice was outside the dialysis bag). **Cassandra** switched over to looking for arsenic in individual rice grains and was helped by **Jem Sibbick**, a first-year student in the College of Natural Sciences First-Year Research Experience. The t-test project was continued by **Manas Sarma**. The arsenic project ran in the spring in the new venue of ISB 355, but with only eight students. As Prof.Tyson was teaching CHEM 111, CHEM 101 (on-line), CHEM 726, and co-teaching two sections of the Junior Year Writing course, the arsenic project did not run in the fall. Several analytical chemistry alums contributed to CHEM 726 (Applied Analytical Chemistry) including **Terry Tougas**, **Chris Palmer**, **Ben Mohimen**, and **Juma Bridgewater**. In addition, the program benfitted from talks and advice from alums **Banafshe Larijani** and **Kieron Faherty**. **Banafshe**, who is now an Ikerbasque Research Professor at the University of the Basque Country, is putting together a UMass on-line course entitled, "Introduction to Interdisciplinary Science," which will feature a star-studded cast of lecturers from around the world. At a more humble level, Prof. Tyson's CHEM 101 course (How much arsenic do we eat?) ran successfully in both of the summer sessions as well as in the fall. The Department is expanding the number of on-line courses being offered during the summer. Prof. Tyson's contribution to University administration was kicked up a notch when he served as the Associate Dean of the Commonwealth Honors College for the first eight months of 2014. He has now stepped down from coordinating the College's First-Year Research Experience and will shortly step down as the liaison with Continuing and Professional Education. In December, Prof. Tyson was named as one of the University's first cohort of Public Engagement Fellows (see http://www.umass.edu/pep/). He has ambitious plans; stay tuned.

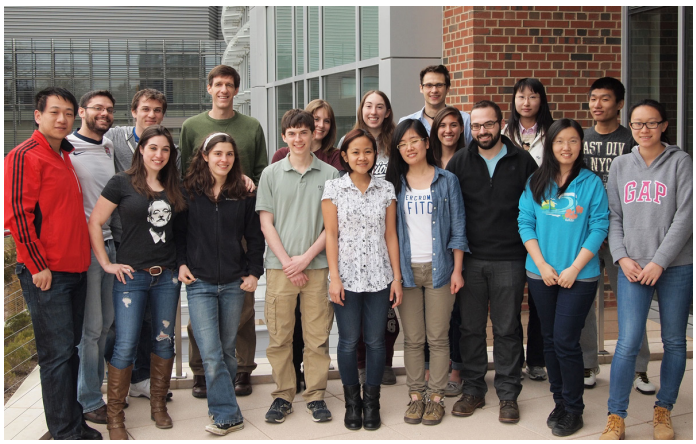
In the VACHET LAB ...

Research in the Vachet group continued in the areas of (i) amyloid fibril formation of β-2-microglobulin; (ii) new mass spectrometric tools for detecting nanoparticles in cells and tissues; and (iii) biomarker detection by mass spectrometry. We published seven papers in 2014, and Prof. Vachet and his group also made 15 presentations at various conferences, meetings, and universities.

In other group news, we were sad to say good-bye to **Bo Yan** and **Yuqing Xing**. **Bo** successfully defended his PhD in March, just before heading off to do a postdoc with **Cathy Costello** at the Boston University School of Medicine. **Bo**'s selfless and cheerful attitude will be sorely missed. **Yuqing** finished her Master's degree during the summer and has enrolled in a Statistics graduate program. Long-time undergraduate researchers **Billy Warren**, **Katie Love**, and **Raquel Leblanc** also graduated in May. **Billy** is working for Excellims; **Katie** began grad school in Chemistry at Boston College, and **Raquel** is studying Forensics Science.

We also welcomed four new members to the lab – **Bo Zhao**, who is co-advised by **S. Thayumanavan** ("**Thai**"), **Meizhe Wang**, **Tianying Liu**, and **Tyler Marcinko**. **Bo** is synthesizing new polymers to be used for our breast cancer biomarker work, and **Meizhe** is using polymers made by **Bo** and others in the **Thai** group to extract phosphopeptides and phosphoproteins. **Tianying** and **Tyler** are both studying inhibitors of β-2-microglobulin amyloid formation.

In alumni news, former graduate student **Kwasi Antwi** (PhD '07) started a new position at Thermo Fisher Scientific in Tempe, AZ. **Matt Miller** (PhD '06) took on a new role at Forest Research Laboratories after Forest was acquired by Actavis. **Matt** is now Associate Director of Pharmaceutical Sciences Strategy. **Matt** and **Juma Bridgewater** (PhD '06) both spoke during the fall semester in the Chemistry Department's Applied Analytical Chemistry course run by **Julian Tyson**. Congratulations are in order for **Jihyeon Lim** (PhD '04), who was recently promoted to Research Associate Professor at the Albert Einstein College of Medicine. In



Vachet group 2014 on a balcony of the LSL.

The Vachet group at the ASMS conference in Baltimore in June, where current and former members were gathered for dinner.

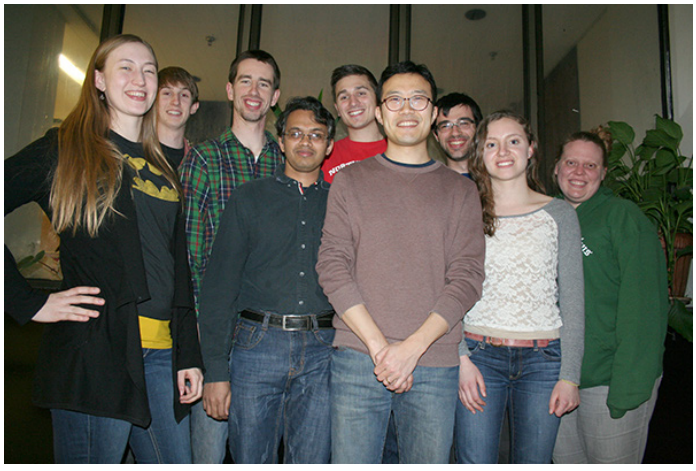
baby news, **Andrea Gomez Escudero** (PhD '10) and her husband, **Alfonso**, celebrated the birth of their twins **Sofia** and **Alejandro** in July. Congratulations to **Andrea** and **Alfonso**!

Finally, Prof. Vachet was very busy professionally in 2014, but things should lighten up a little in the near future. He finished a 5-year term on the Editorial Board for the *Journal of the American Society for Mass Spectrometry* and a 3-year term on the Features Panel for *Analytical Chemistry*. He also co-chaired the Sanibel Meeting on Mass Spectrometry in January.

In the VENKATARAMAN LAB ...

The DV Group had a great year in terms of research and recognition. **Tim Gehan**, a graduate student co-advised by **Lahti**, and **Dr. Monojit Bag**, a postdoctoral associate, optimized the process to fabricate efficient organic photovoltaic cells from water-based dispersions of conjugated polymer nanoparticles! This work received a good deal of publicity. Visit thedvgroup.com to learn more about this discovery, and see the press clippings/videos. **Tim** was also selected by the American Chemical Society (ACS) organic chemistry division to present this work as a talk in its annual Graduate Research Symposium. **Tim** received the *Eugene M. Isenberg Scholar Award* to probe the large manufacturing of photovoltaic cells using this process. This award recognizes UMass graduate students with demonstrated academic merit and a commitment to integrate science with management. He also received the *Marvin D. Rausch Scholarship Award* for Outstanding Presentation in ResearchFest 2014. Graduate students **Dana Algaier**, **Connor Boyle**, and **Larry Renna** are making exciting discoveries in the fabrication and characterization of polymer nanoparticles and their assemblies. The group also welcomed **Seung Pyo Jeung** in Spring 2014 and **Christie Cutting** in Spring 15 as graduate students. **Marco Eres** (BS '05), an undergraduate researcher in the DV Group was awarded the *2014 Barry Goldwater Scholarship* and Excellence in Education. **Gautam Satishchandran** (BS '05, Physics and BMB) was awarded the 2014 ACS Connecticut Valley Section 'Best Poster Award' for his work with **Larry Renna**, a graduate student in the DV Group, on understanding and controlling interactions between nanoparticles. Undergraduates **Eric Schott** (BS '04) and **John Charest** (BS '04) were recognized with awards from Chemistry for their academic and research accomplishments. **Eric Schott** received the *Richard W. Fessenden Memorial Award*. **John Charest** received the *2014 ACS Division of Organic Chemistry Undergraduate Award* in Organic Chemistry. **Eric Schott** was also named a *2014 CNS Commencement Student Speaker*!

From the alumni side, **Jason Field** (PhD '02) became President and CEO of Life Sciences Ontario. **Rattan Gujadhur** (PhD '03) is now the Associate Director of Strategic Outsourcing at Gilead. This year, **Rattan** helped secure Gilead as a major sponsor for 2014 ResearchFest, an annual event in Chemistry. He also initiated a poster award in this event to honor the memory of *Dr. Uche Anyanwu* (PhD '05), a DV Group alum. **Rattan** visited Amherst this summer to present this award. Here are some updates—**Derek Van Allen** (PhD '04) moved from Naval Research Lab in Maryland to Pratt & Whitney in Connecticut as an Advanced Materials Engineer. **Craig Bates** (PhD '05) is a Principal Research Scientist at ArQule. **Nestor Chevere-Trinidad** (PhD '09) is now an assistant professor at American International College in Springfield, MA. **Travis Benanti** (PhD '08) is a senior scientist at Chemutra. **Serkan Yurt** (PhD '10) is a Senior Scientist at 3M. **Serkan** was instrumental in securing financial support for a *3M Award for outstanding Poster Presentation* in ResearchFest. **Dipankar Basak** (PhD '12) is a research associate at the Indian Association for the Cultivation of Science. **Nagarjuna Gavvalapalli** (PhD '12) completed his second year at a Postdoc at the University of Illinois with **Prof. Jeff Moore**. **Sravan Surampudi** (PhD '14) is now a postdoctoral scholar at Johns Hopkins University with **Prof. Rebekka Klausen**. **Sravan** came back to Amherst in May to receive his degree. It was first convocation attended by DV! In October, **Sravan** and **Lalitha** became proud parents of **Aadya**. **Amarnath**



The DV group.

Bheemaraju (PhD '11) finished his postdoctoral work at Wayne State and has returned to India.

Dan Toscano (BS '11) founded Chill Solutions, a company providing cutting edge cooling technologies for aquarium and hydroponics. He repeatedly threatened to visit Amherst in Summer '14 but never carried out his threat. **Thomas van der Poll** (BS '09) received his PhD from University of California, Santa Barbara working with **Prof. Gui Bazan**. **Tom** is now an Engineer at Intel. **John Charest** (BS '14) is now a Forward-osmosis Membrane Scientist at Oasys Water, MA. **Tom Hill** (BS '02) is now a Senior Product Development Chemist and Technical Response Lab Team Leader at FLEXcon. DV is proud of all of your achievements and would like to hear from all of you. So drop a line when you can to dv@umass.edu. For group updates and news, visit us on the web at thedvgroup.com and follow us on twitter @dvgroupumass.

In the **VOIGTMAN LAB ...**

I will be retiring in summer, 2015, so best of success to all and please stay in touch!

GETTING TO KNOW...–continued from page 1

discovered, the Montreal Protocol (which banned most ozone depleting substances) was enacted, and the 20th Earth Day. It all made quite an impression on me!

GG: What did you study for your PhD?
EW: I developed a new laser-induced fluorescence instrument for quantifying the concentrations of gas-phase N_2O_5 - a trace radical that's important for night-time chemistry in the atmosphere.

GG: What is the most useful tool in your lab?
EW: Wrenches!

GG: Do you work in any collaborations?
EW: Almost all my work is collaborative, this is true for most atmospheric chemists. This summer I'll be characterizing radical chemistry in a forest in Indiana with collaborators from France and the University of Indiana, and during summers 2016 and 2017 I'll be working with a much bigger group of collaborators from the US and Europe in forests in Michigan and Colorado. For my work in aviation I collaborate with a number of research organizations and environmental consulting firms.

GG: Have you ever had a job in industry?
EW: Yes, after graduating from Rutgers I worked for less than a year as a chemist in a small contract laboratory testing the environmental fate of agricultural chemicals. It was good motivation to go to graduate school! My postdoc was at Aerodyne Research in Billerica, MA, and I stayed on as a Senior Scientist for four

more years. It's a private research & development lab that can be classified somewhere in between industry and academia.

GG: Assuming your research is wildly successful, how will it impact society?
EW: We will have a much better understanding of how certain air pollutants are formed and be better able to manage air pollution. We will also be more capable of modelling climate change and choosing effective mitigation strategies.

GG: Which is more stressful, grant proposals, research or teaching?
EW: I enjoy these activities – this is why I do this job! Whenever I find myself feeling stressed about any of these, I put it all in context. I'm not going into a war zone or sending others into combat, I'm not worried about my day-to-day safety, I'm not a surgeon trying to save someone's life. I teach, conduct research, and write proposals for a living.

PROFESSOR **GABRIELA WEAVER**

Gabriela Weaver came to UMass Amherst in summer, 2014 as Vice Provost for Faculty Development and Director of the Center for Teaching and Faculty Development, and a Professor in the Department of Chemistry. She holds a BS in Chemistry from the California Institute of Technology and a PhD in Chemical Physics from the University of Colorado, Boulder. Prior to coming to UMass, she was Professor of Chemistry and Science Education at Purdue University and Director of the Discovery Learning Research Center. Her research is in key issues in science education, especially in effective ways to teach large, introductory classes, to incorporate authentic research experiences into introductory chemistry, and to evaluate the effectiveness of these innovative approaches.

She has won numerous awards and honors during her career, including the 2012 Science Prize for Inquiry-based Instruction and is a Fellow of the American Association for the Advancement of Science. As Director of the Center for Teaching and Faculty Development, she oversees a wide range of programs to provide guidance, instruction and feedback to faculty and instructors on teaching, mentoring, writing and professional development.

*chemistry*RETIREMENTS

A retirement luncheon was held on Tuesday, September 16, 2014, 11:30 a.m. in the Campus Center Amherst Room. Five outstanding Chemistry colleagues were honored.

PROFESSOR STEVEN S. HIXSON, faculty in organic chemistry, retired in June 2014 after 44 years at UMass. He finished up his PhD in 1969 at Wisconsin-Madison with famous organic photochemist Howie Zimmerman, did a brief postdoc at Harvard and joined UMass as an Assistant Professor in 1970. He was promoted to Associate Professor in 1974 and to Full Professor in 1979. He transformed his strong background and started a research program in organic photochemistry to pursue the design and synthesis of bio-probe molecules (photoaffinity labels) which are incorporated into transfer-RNA and can be photo-cross-linked to study tRNA binding sites on the ribosome. This led to a long and strong, inter-departmental collaboration with biochemist Robert Zimmermann. Steve was also extensively involved in teaching Introductory Organic Chemistry and made major contributions to developing web-based tools for organic chemistry web-tutoring, homework, and assessment, including training and assisting other faculty members to make best use of the OWL system. Steve's colleagues knew his passion for running (which turned into a passion for swimming), his excellence as a teacher in some very large (and often unforgiving, at least to other instructors) orgo sections up to 300 people, his dedication as a collaborator, and the calm and competence he brought to the constant calls from the department for higher level service. Steve was a frequent member of both departmental and college level personnel committees. His experience, his level-headedness, and his straight-up honesty in many a hard discussion or decision was always invaluable, and already missed. We understand that he is now enjoying the salubrious atmosphere in California, hopefully working on his Vitamin D photochemistry.


Professor Steven Hixson

PROFESSOR BEATRICE "BEE" BOTCH, a computational physical chemist, lecturer, and Director of General Chemistry, retired at the end of 2014. Bee received her PhD from Michigan State, pursuing electronic structure calculations on transition metals and negative ions, did postdoctoral work with the flamboyant and inventive Bill Goddard at CalTech, taught for a time at Wittenberg University in Ohio, and joined our department in 1988. In addition to the tens of thousands of General Chemistry students she taught directly (and for which she won the College Outstanding Teacher Award in 1998), her work with online instruction has influenced hundreds of thousands more. She was one of the initial developers of the OWL (online web-based learning) system for General Chemistry and worked tirelessly to expand its use and capabilities. Indeed, she developed a "Chem Prep" program for students to use prior to taking General Chemistry, and she recently completed the authoring and testing of an eBook for General Chemistry that fully integrates OWL tutorials and homework directly into the text. Finally, she was a major driving force for our department's recent creation of the iExams program for electronic chemistry exams, another major innovation at UMass that came through Chemistry, and one that has received much attention and praise. Bee was a fierce advocate for both chemistry majors and any other students taking chemistry, during her time as the Director of the Chemistry Resource Center (CRC) in Goessmann Laboratory, as the Undergraduate Program Director, and as the Director of General Chemistry. Whether she was tirelessly juggling the many CRC activities at its inception, writing proposals like that leading to the Northeast Regional Molecular Modeling Workshops in the 1990s (which seeded computation-assisted instruction throughout the New England area and in several places abroad), or being a campus transformer in the Online Web-based Learning (OWL) program, everything Bee has done for the department has seemed to be on fast-forward. It was never easy to keep up with her. She and Peter Samal are now enjoying kayaking and hiking, while we in Chemistry try to find ways to replace her boundless energy and enthusiasm.


Professor Bee Botch and Department Head Craig Martin

DONALD TAYLOR, the Organic Chemistry teaching laboratory technician, retired in Summer 2014 after 28 years of service at UMass. Don joined the General Chemistry teaching labs in 1988, and later moved to Organic Chemistry laboratory technician support role. Don received the Chancellor's Citation Award in 2006, in recognition of outstanding and exemplary service to the University of Massachusetts Amherst. Don's dedication always went well beyond just preparing samples and solutions and getting experiments ready on time. Even during times when he was already doing other regular duties, he was enriching depart-


Prof. Emeritus Peter Lillya and Don Taylor

mental summer and outreach programs. For example, the National Cancer Institute supported, multi-departmental Summer Enrichment Program, led by Math Professor Don St. Mary and offered during the 90s to high-school sophomores, was hugely enriched by his technical support, which was an add-on job for him, beyond his regular duties. Don not only kept all the experiments for that program working superbly, but was virtually an extra teaching assistant for the lab sessions, keeping an eye on the (initially) inexperienced students, and encouraging them to try things out (but always in a safe manner). He was an effective and stalwart steward for on-campus union activities, but also a man who put in plenty of extra hours beyond his job description, because he just always loved being part of helping other people to learn. His smiling work ethic around students (with occasional firmness in enforcing safety protocols!), and his efficiency in getting the lab preps ready, every day, were great assets to anyone taking or teaching our lab courses. Chemistry was very lucky to have so dedicated a technician, and we all hope that Don will continue to pursue his love of learning and helping others to learn, for example in his love of the outdoors and bird-watching (for which he is a known authority to those of us wondering what bird we just saw, or what birdsong we just heard).

MARIE WHALEN retired in summer 2014 as Undergraduate Program Manager (UPM). She joined the chemistry department in 1999, after 4 years at learning support services. After some years in the Lederle Tower as part of Chemistry's departmental staff team that keeps our department functioning, Marie took over the UPM duties after the retirement of long-time Gen Chem stalwart Linda Warren. She moved to Goessmann Lab in the old Gen Chem Offices, as part of the transformation of that area, which included renovation of the space with better utilization of the offices. (However, that huge, NORAD-esque safe remained, as it still does, with Marie as the gatekeeper!) In 2009, Marie then joined the rest of the Chemical Education group in migrating from Goessmann to the brand-new Integrated Sciences Building, where she was part of the flurry of activity leading to the setup of a new Undergraduate Program Office to welcome Chemistry Majors and chemistry course students alike. In this new venue, Marie managed, organized and handled registration and scheduling for the thousands of students who take chemistry courses every semester and did it with a kind smile, charm and (somehow) serenity. She was recognized for her outstanding service by a 2010 Chancellor's Citation Award. We hear she now pursues different managing, organization, and greeting activities, as she and her husband enjoy time with their grandchildren. Far fewer "customers," but great quality -- it's great to hear that the whole family is enjoying the time together (and no need to use SPIRE to schedule it).


Bernie and Marie Whalen

PROFESSOR PETER SAMAL, Organic and Inorganic Laboratory Director and lecturer, retired at the end of 2014. Peter received his PhD in 1976 from Tufts, combining NMR and computations to study conformational equilibria of cyclohexanes. After teaching at Brandeis for some years, Peter came to UMass in 1993 to run the organic chemistry teaching labs. Prior to that time, lab teaching rotated among organic division faculty, but once Peter arrived, the whole division now had the advantages of his energy and drive as a focusing lens to revamp completely the laboratory practical syllabus. He worked extensively to develop online tutorials and assessment tools for organic chemistry instruction and to apply (quite new at that time) computational molecular modeling and (later) online chemical literature searching as skills learned in his courses. One of the biggest transformations of the orgo lab curriculum was a transformation from standard glassware to Williamson type microscale experiments. This involved a huge amount of evaluation, planning, and lobbying for a one-time major payout to replace student lab kits. The result was the inclusion of many new experiments, and major reductions in both the annual expense of running the lab courses, and in the amount of chemical waste produced. In 2009, Peter and technician Don Taylor joined the Big Move of the Chemical Education group into the Integrated Sciences Building, a bit after everyone else, since the needs of organic lab teaching required some extra preparation of the new space. Peter and Don made the move flawlessly, a major tribute to their organizational capability. As enrollment steadily grew in the new building (up over 20%), Peter found ways to schedule new lab sections and the time needed for safe lab prep and organization. He also selected and oversaw installation of major new equipment in orgo teaching labs (e.g., IR and NMR spectrometers), in a major modernization of the lab experience. Peter did all this with an engaging smile, a Zen-like calm (really helpful in dealing with a burning distillation setup), a no-nonsense but always welcoming attitude, and a total commitment that the students' safety and learning are the top priorities in any classroom or lab that was his responsibility. Now that they have escaped the pressure of providing top-notch education for thousands of students, Peter and Bee Botch are probably already planning their next walkabout or outdoors trip (if winter 2014-2015 ever totally lets go). If you see them somewhere thumbing a ride from the side of the Connecticut River to UMass with their kayaks, please pick them up -- the stories will be worth it.


Professor Ruthanne Paradise and Peter Samal

iCons GRADUATES & INDUSTRY ALLIANCES

Poster session–ISB Atrium

Just after the 2015 New Year, iCons Program Director **Scott Auerbach** was treated to a delightful surprise from a colleague at Mount Holyoke College (MHC), who attended the centennial conference of the Association of American Colleges and Universities (AAC&U) in Washington DC. According to Auerbach's MHC colleague, "the president of the AAC&U gave a keynote lecture lauding top programs across the country that challenge students to solve real-world problems, and guess which program was her first shining example? That's right, the iCons Program!"

This national recognition from the country's leading authority on undergraduate higher education was a fitting way to end 2014, a year filled with milestones for the iCons Program: The graduation of the first full cohort of students, the evolution of the pioneering partnership with *Waters Corporation* as captured in a new video, and the growth of the iCons Industry Alliance.

"iCons' mission is to nurture scientific leadership."

BEYOND GRADUATION

On May 3, 2014, the members of the iCons "First Class" celebrated the completion of the program in an event embodying its mission to nurture scientific leadership. More than just a graduation, the first annual iCons Senior Research Exposition was a showcase for the students' yearlong research projects that reflected the attitudes, knowledge, and skills developed over the course of the entire four-year program.

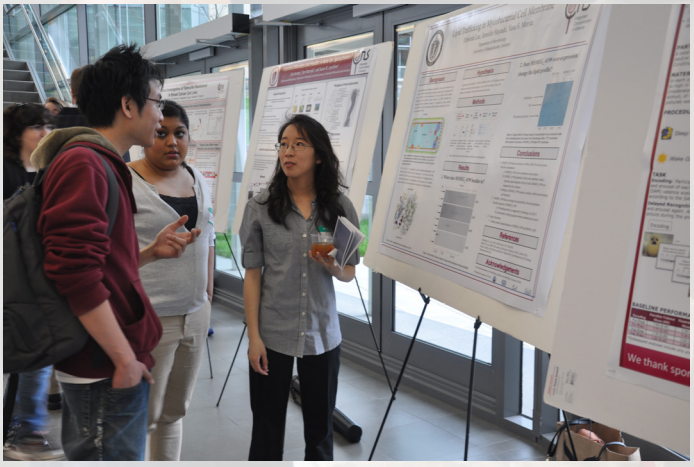
All iCons 4 students shared their work during a poster session held in the atrium of the Integrated Sciences Building that drew peers, friends, family, faculty, staff, and special guests from the university and from industrial partners. Then four of the students had the special distinction of delivering oral presentations describing the societal impact of their research on the following topics:

Austin Barnes, Physics: "Scanning probe measurements of surface potential on insulating surfaces"

Ayesha Sundaram, Microbiology and Biochemistry & Molecular Biology: "Characterization of novel aromatic glycoside-metabolizing bacteria from the human gut microbiome"

Kevin Cavanaugh, Mathematics: "Optimizing institutional investment in renewable energy through corporations"

Seamus Hughes, Biochemistry & Molecular Biology: "Expression and characterization of monomeric human alpha-galactosidase; a proposition for second generation enzyme replacement therapy for Fabry Disease patients"



Poster session–ISB atrium

To learn more about the iCons program, please visit our website: www.cns.umass.edu/icons-program.

iCons graduates (left to right) Zach Smith, Kurt Schultz, Seamus Hughes, and Balaj Rai discuss career options with College Advisory Board member Dr. Peg Crowley-Nowick (center).

Following the awarding of iCons completion certificates, the celebration continued with a special dinner for the students and their families.

The students of the First Class are already making a mark on the world. Post-graduate placements include the Langer Lab at MIT, the Jackson Laboratory, Mercer Consulting, and the University of Illinois MD/PhD Medical Scholars Program.

AN EVOLVING PARTNERSHIP

Last year, the iCons Program secured its first industrial ally in the *Waters Corporation* of Milford, MA, an analytical services company with over a billion dollars in annual revenues.

The alliance with *Waters* has given rise to new possibilities for both the company and the program. In March of 2014, **Dr. Lauren Mullin**, staff scientist at *Waters*, visited campus to launch a collaboratively developed case study in iCons 1 focusing on the company's response to the 2008 Melamine milk poisoning in China.

She gave the students a challenging assignment: Work in teams to examine an environmental toxicant in a particular system, and design a device, model, or experiment for less than $20 that will improve scientific understanding of that contaminant. Three weeks later, **Dr. Mullin** returned to campus to learn how the iCons 1 teams developed their own solutions to the problems of emerging contaminants in the environment.

The *Waters*-iCons partnership then moved to the *Waters* corporate research labs in Milford, as portrayed in a new video released in December 2014 highlighting the first two iCons Program interns at *Waters*. Students **Marco Eres** and **Cindy Hession** were selected to join the company during the summer of 2014 for an opportunity to use their iCons training to address real world problems for the company. You can hear about the experience from the students in the video on the iCons website: https://www.cns.umass.edu/icons-program/news/2014-12-18/new-video-tells-the-story-of-icons-interns-at-waters-corporation

The company is currently reviewing the final iCons applicants for this summer's 2015 positions.

NEW OPPORTUNITIES

The invaluable training offered by the iCons Program is opening doors with more companies looking for students who can hit the ground running in industry. iCons now has four members of its Industry Alliance – *Waters*, *Accuratus*, *Zipher* and *Anika* – companies that recognize the value of the program, and are investing in its vision to train industry ready leaders in science and technology.

As iCons continues to built its Industry Alliance, the program is developing a more acute sense of the skills students need to succeed in the workforce, and to bring success to their companies.

The iCons Program could not reach any of these important goals without your support – the support of our loyal alumni base. We thank you for all you've done to bring iCons to national prominence. Our goal is nothing short of making iCons at UMass Amherst a nationally recognized household name. Stay tuned for next year's installment to see what progress we've made!

iCons 1st Graduating Class 2014

2014 SEMINAR SERIES

The 2014 UMass Amherst Department of Chemistry seminar series brought many outstanding scientists to our campus to share their insights and recent developments. Some of the highlights of the 2014 seminars included several distinguished speakers from various fields in chemistry.


Professors Tobin Marks and Jane Rausch

Professor Tobin Marks from Northwestern University was the ***Marvin D. Rausch Lecturer in Organometallic Chemistry*** this year. Prof. Marks is a world-renowned leader in numerous fields in chemistry and has research interests that range from transition metal and f-element organometallics for catalysis to solid-state chemistry and molecular electro-optics. He has authored over 1100 publications, numerous book chapters, and over 220 patents. On February 27, he gave a talk entitled "Thermodynamic Strategies for New Catalytic Process Design. Biofeedstock Processing and Oxidatively Coupling Methane to Ethylene." In his talk, he described novel strategies for converting abundant feedstocks particularly from biomass into useful chemicals.

Each year the UMass Amherst and Smith, Mt. Holyoke, Amherst and Hampshire Colleges co-host the ***5-College Lecture Series in Chemistry***. For 2014, we welcomed Prof. Dennis A. Dougherty from the California Institute of Technology as the 5-College Lecturer. Prof. Dougherty has won numerous awards including the Arthur C. Cope Scholar Award and the Javits Neuroscience Investigator from the National Institutes of Health. He is also an elected Fellow of both AAAS societies (American Academy of Arts and Sciences & American Association for the Advancement of Science) and a member of the National Academies of Science. The title of his seminar at UMass was "Chemistry on the Brain: Understanding the Nicotine Receptor." Prof. Dougherty discussed his group's recent work on the unraveling the specific modes of nicotine-binding with acetylcholine receptors, which is responsible for nicotine addiction. Using modern physical organic chemical methods, Dougherty has been able to elucidate specific H-bonding and strong cation-π interactions as responsible for nicotine's high potency.


Professors Richard Stein, David Tirrell, and Don Wardius (Bayer)

Professor David Tirrell from the California Institute of Technology presented the ***Stein-Bayer Honorary Seminar in Polymer Chemistry*** on October 2. Prof. Tirrell is an UMass alumnus with a PhD from Polymer Science and Engineering with Otto Vogl. Prof. Tirrell is the Ross McCollum-William H. Corcoran Professor of Chemistry and Chemical Engineering, and Director of the Beckman Institute, at CalTech. Tirrell's research interests lie in macromolecular chemistry and in the use of non-canonical amino acids to engineer and probe protein behavior. His contributions to these fields have been recognized by his election to the National Academy of Sciences, the National Academy of Engineering, the Institute of Medicine, and the American Academy of Arts and Sciences. Prof. Tirrell presented a lecture on "Reinterpreting the Genetic Code: From Polymers to Proteomics." In this talk, he described how his group engineers proteins with natural and synthetic amino acids to enable the design of new macromolecules and provide insight into complex biological processes.


Robert Mahoney and Prof. A. Paul Alivisatos

On November 13, the 2014 ***William E. Mahoney Annual Lecture*** was given by Prof. A. Paul Alivisatos from the University of California at Berkeley. Prof. Alivisatos is a pioneer in the field of nanotechnology and in particular the chemistry and physics of semiconductor quantum dots and metallic nanocrystals. He is the Samsung Distinguished Professor in Nanoscience and Nanotechnology Research and Director of the Lawrence Berkeley National Laboratory. In addition, he is a founder of two prominent nanotechnology companies, Nanosys and Quantum Dot Corp, now a part of Life Tech. Dr. Alivisatos has been recognized for his accomplishments, with awards such as the Wolf Prize in Chemistry, the Linus Pauling Medal, the American Chemical Society Award for Colloid and Surface Science, the Von Hippel Award of the Materials Research Society, and most recently, the 2014 ACS Materials Chemistry Award. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. His lecture, "Design and Synthesis of Multi-component Colloidal Nanocrystals for Catalysis and Solar Energy Harvesting" described recent advances in imaging the growth of nanoparticles in real time using the graphene liquid cell inside of a transmission electron microscope and the development of all-inorganic core-shell quantum dots for luminescent solar concentrators.

We are grateful for the generous contributions of our alumni and corporate sponsors, who make the success of the seminar program possible. More information about the upcoming seminars and events can be found at www.chem.umass.edu/events/. We look forward to another exciting seminar series in the next year!

dissertation DEFENSE SEMINARS

GRADUATE STUDENT	SEMINAR TITLE	DATE	PI
Burcu Baykal Minsky	*"Protein Behavior Directed by Heparin Charge and Chain Length"*	January 6, 2014	Paul Dubin & Igor A. Kaltashov
Nan Wang	*"Studies in the Atomic Spectrometric Determination and Speciation of Arsenic in Environmental Samples"*	January 13, 2014	Julian F. Tyson
Diego Amado-Torres	*"Ligand-Receptor Interactions for Supramolecular Disassembly with Applications in Screening and Drug Delivery*	January 28, 2014	S. Thayumanavan
Abdulkadir Kocak	*"Spectroscopic Studies of Non-Covalent Metal Ion-Ligand Interactions"*	February 6, 2014	Ricardo B. Metz
Bo Yan	*"Mass Spectrometric Characterization and Imaging of Nanoparticles in Biological Samples"*	March 13, 2014	Richard W. Vachet & Vincent M. Rotello
Paul J. Homnick	*"Molecular Engineering Strategies for the Design and Synthesis of New Organic Photovoltaic Materials*	March 27, 2014	Paul M. Lahti
Xiaoning Li	*"Engineered Nanoparticles for Detection and Treatment of Bacteria and Biofilms"*	June 23, 2014	Vincent M. Rotello
Jeffrey M. Lucas	*"Flexible Tethers in Multi-chromophoric Systems: Linking Photophysics with Assembly"*	June 25, 2014	Paul M. Lahti
John A. Hangasky III	*"Factor Inhibiting Hypoxia Inducible Factor's (FIH) Structure Controls O2 Activation and Reactivity"*	June 26, 2014	Michael J. Knapp
Youngdo Jeong	*"Nanoparticle as a Building Block for the Fabrication of Functional Structures"*	June 26, 2014	Vincent M. Rotello
Yi-Cheun Yeh	*"Engineering Surface Functionality of Nanoparticles for Biological Applications"*	July 7, 2014	Vincent M. Rotello
Tsung-Yi (Steven) Lin	*"The Discovery and Study of Fluvirucin B1 Polyketide Synthase"*	August 5, 2014	Nathan Schnarr
Krishnendu Saha	*"Understanding Structure-Property Relationships at the Nano-Bio Interface for Delivery Applications"*	August 22, 2014	Vincent M. Rotello
Ziya Aydin	*"Developing Fluorescent Sensors for the Bioimaging of Chelatable Iron(III) Ions"*	September 3, 2014	Maolin Guo
Rajasekhar R. Ramireddy	*"Design, Synthesis and Bio-relevant Applications of Zwitterionic Amphiphilic Macromolecules"*	September 8, 2014	S. Thayumanavan
Ambata M. Poe	*"Design, Syntheses and Study of BODIPY-based Materials for Use as Electron Acceptors in Organic Photovoltatics"*	October 22, 2014	S. Thayumanavan
Jing Guo	*"Stimuli-Responsive Supramolecular Assembly, Disassembly and Implications"*	November 10, 2014	S. Thayumanavan
Judy Ventura	*"Design and Synthesis of Polymeric Nanoparticles for Drug and Protein Delivery"*	December 17, 2014	S. Thayumanavan

ALUM HELPS GRADUATE STUDENTS AND POSTDOCS PREPARE FOR THE FUTURE

Dr. Michael Tarselli, Senior Business Analyst at Novartis Institutes for Biomedical Research, returned to his alma mater last April to engage graduate students and postdoctoral scholars in an interactive discussion about career path possibilities for those with advanced degrees. **Dr. Tarselli** reflected on his academic experiences and how he leveraged his evolving skill set to serve a variety of roles in biopharma companies, start-ups, and contract research organizations. **Dr. Tarselli** was hosted by the Graduate School Office of Professional Development (OPD), as part of a monthly Career Path Seminar Series to increase awareness of non-academic career paths options for graduate students and postdoctoral scholars.

undergraduate SENIOR & AWARDS DINNER

The 2014 Senior Class.

On April 30 we held our annual Undergraduate Honors and Awards banquet in the Amherst Room at the Campus Center to honor our students who have proven themselves to be among the very best this University has to offer. During the spring, the Undergraduate Honors and Awards Committee had the pleasure of examining the records of students who had chosen to be a part of our department in order to determine who shall be recognized for their achievements. Last spring we recognized the hard work and dedication of 30 graduating seniors. In addition, many students were recognized for their work within the department: see the complete awards list. These awards are only possible because of the generous support the department receives from our alumni, industrial partners and professional organizations. With considerable pride and gratitude, the committee wishes to thank our outstanding students for their contributions to the department and university and wishes to thank those who, in turn, support our students.

The following students received awards:

Alexandra N. Barbato, Ali J. Jamali, Nicole M. Kirby, Alexandra M. Santigo–CRC Freshman Chemistry Award
Jonathan M. Gigas, Mark M. Hanna, Geoffrey W. Small–Robert Maxwell Williams Memorial Scholarships
Michael J. Mortelliti–ACS Analytical Chemistry Award
Kate V. Daborowski , Nicole M. Kirby, Jianlong Li, Walter P. Rice, Jr., Kanae E. Sasaki–Edward Shapiro Scholarship
Matthew D. Richard–Jay A. Pirog Scholarship
Soo Lim Park, Nicholas J. Sargent, Abigail R. Sossen–American Chemical Society-Hach Fellowship
Abigail R. Sossen–John A. Chandler Memorial Scholarship Award
Artur Wysoczanski–Oliver Zajicek Memorial Scholarship Award
Meaghan A. Valliere–ACS Inorganic Chemistry Award
John R. Charest–ACS Organic Chemistry Award
Melanie P. Muller–Hypercube Scholar Award
Katie L. Love, Meaghan A. Valliere, William J. Warren–Uche Anyanwu Memorial Award for Outstanding Research 2014
Walter P. Rice, Jr.–Mr. Tompkins Award
Jacob D. Lytle–Bates Research Fellowship
Bingqian Zheng–Bradspies Research Fellowship
Alexander J. Malanowski–Professor Jack Ragle Research Fellowship
John R. Charest and William J. Warren–Departmental Recognition Award
Eric O. Schott and Meaghan A. Valliere–Richard W. Fessenden Award
Bingqian Zheng–Connecticut Valley Section of the American Chemical Society (CVS/ACS) Student Award
William J. Warren–American Institute of Chemists Award
Laura T. Stirchak–Senior Class Award
Stefan (Marco) Eres–Barry Goldwater Scholarship Award

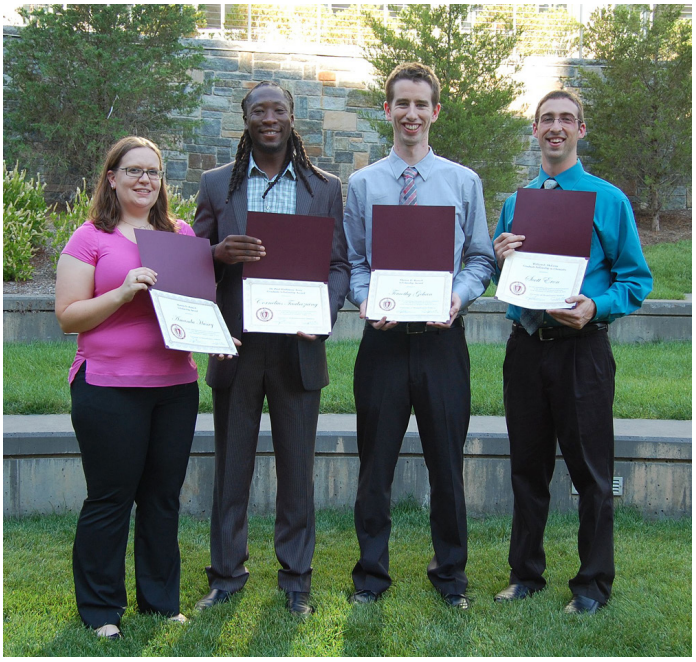
degrees AWARDED

BA/BS DEGREES

Apichaya Bunyatratchata	05/2014
John R. Charest	05/2014
Hong Suh Choi	05/2014
Tim S. Choy	05/2014
Sean M. Clements	05/2014
Molly A. Cocaine	05/2014
Micah D. Collins	05/2014
Maxim T. Donnelly	05/2014
Gino C. Dos Santos	05/2014
Richard J. Dusablon	02/2014
Adam J. Finne	05/2014
Nancy N. Githui	05/2014
Cynthia Honorat	05/2014
Joshua K. Hussey	05/2014
Raquel A. LeBlanc	05/2014
Jin Yi Lee	05/2014
Katie L. Love	05/2014
Victoria Lu	05/2014
Derrick S. Maxwell	05/2014
Rafael Medina	02/2014
Claire E. Miller	05/2014
Melanie P. Muller	05/2014
Paula Preap	02/2014
Eric O. Schott	05/2014
Laura T. Stirchak	05/2014
Meaghan A. Valliere	05/2014
William J. Warren	05/2014
William N. White	05/2014
David Yang	05/2014
Bingqian Zheng	05/2014

RESEARCHFEST 2014

The Chemistry Department welcomed the 2014-2015 academic year with the 24th annual research symposium, Researchfest. This event was held on August 26, 2014 and was a huge success thanks to the support of participants, organizers, and sponsors. The event featured four oral presentations by graduate students who were selected by a faculty committee



Amanda Hussey, Cornelius Taabuzuing, Tim Gehan and Scott Eron.

through a nomination/evaluation process. **Scott Eron** (Hardy Group) was chosen to receive the *William E. McEwen Graduate Scholarship in Chemistry* for his work on "Death of a Cellsman: The Business of Apoptosis." **Cornelius Taabazuing** (Knapp Group) received the *Dr. Paul Hatheway Terry Graduate Scholarship Award* for Outstanding Presentation for his work on "Gas Binding and Substrate Triggering in an αKG-Dependent Oxygenase." **Tim Gehan** (Lahti Group) received the *Marvin D. Rausch Scholarship Award* for Outstanding Presentation for his work on "From Molecular to Meso Scale: Establishing Structural Control in Organic Photovoltaics." **Amanda Hussey** (Chambers Group) received the *Marvin D. Rausch Scholarship Award* for Outstanding Presentation for "Development of an Activity-Dependent Polyamine Based Probe for the Detection of Calcium-Permeable AMPA Receptors."

A total of over 60 posters were presented this year. **Bay Serrano** (Hardy Group) received the *3M Award* for her poster entitled, "Phosphorylation Controls Caspase-9 Through Diverse Mechanisms." **Gulen Yesilbag** (Rotello Group) received the *Gilead Award* for his poster entitled, "Allosterically-Controlled Bioorthogonal Catalysis in Cells using Nanoparticle-Embedded Transition Metal Catalysts." The following eight students received *William E. McEwen Fellowship Awards* for Outstanding Posters:

- **Muhammed Ashraf** (Metz Group), "Vibrational Spectroscopy of Complexes of Copper and Silver Cations with Methane"
- **Libbie Haglin** (Thompson Group), "Novel approach to measure orientation constraints in membrane protein complexes by solid-state NMR"
- **Ying Jiang** (Rotello Group), "Direct Cytosolic Delivery of siRNA Using Nanoparticle-Stabilized Nanocapsules"
- **Alyssa Marsico** (Vachet Group), "Inkjet Printed Gold Nanoparticle Surfaces for the Detection of Biomolecules by Laser Desorption/Ionization Mass Spectrometry"
- **Kevin Dagbay** (Hardy Group), "Probing Caspase-6 Domain Architecture Reveals Mechanisms for Regulation"
- **Mahalia Serrano** (Vachet Group), "Detecting Peptide and Protein Biomarkers in Serum Using Polymeric Reverse Micelles and MALDI-MS Analysis"
- **Keith Lehuta** (Kittilstved Group), "Synthesis of Distorted Chromium Doped Strontium Titanate"
- **Rubul Mout** (Rotello Group), "Environmentally Responsive Histidine–Carboxylate Zipper Formation Between Proteins and Nanoparticles"

A whole day with Chemistry and scientific discussions was brought to an end with a delicious cookout served in the beautiful area behind the ISB by the Student Development Committee and graduate student helpers. The BBQ brought the students, faculty, staff, and their families together to socialize.

Muhammed Ashraf, Keith Lehuta, Libbie Haglin, Rubul Mout, Kevin Dagbay, Ying Jiang, Alyssa Marsico, Gulen Yesilbag, Mahalia Serrano, and Bay Serrano

We gratefully acknowledge the financial support we received for this event from the UMass Amherst Department of Chemistry, *Marvin D. Rausch Scholarship Fund*, *Dr. Paul Hatheway Terry Scholarship*, *William E. McEwen Endowment Fund*, *3M and Gilead*, the Graduate Chemistry Association, and alumni support. We also had these following vendors who came to show us what their company had to offer: Thermo Scientific, Chemglass Life Sciences, Bio Rad, Fisher Scientific, Eppendorf, Promega, and EMD Millipore.

If you are interested in contributing to this event, please contact **Vicki Hubby** at vicki@chem.umass.edu


Professor Richason in his Goessmann office.

Wöhler, a lineage similar to Charles Goessmann, who was the first UMass Amherst chemist! Incidentally, Wohler's name, along with six other agricultural chemists, is carved in stone on the façade of Goessmann Lab.

George taught chemistry and physics at Turners Falls High School from 1939 until 1942 when he enlisted in the US Naval Reserve as an ensign. He taught electronics and radar engineering at MIT from 1943 through 1945 and concluded his active naval service as a Patent Advisor in the Office of Naval Research until his 1946 discharge. He then returned to teaching at Turners Falls High School for the 1946-47 school year. George served in the active naval reserve from 1946 to 1969 when he retired as the Commander of the UMass Naval unit.

In 1946 MSC was expanding rapidly with large numbers of returning GIs and women. In May 1947 MSC became the University of Massachusetts and "Doc" Fessenden convinced his former student to join the department that fall as assistant professor. At the time of his death George was the only faculty member who had actively served for the entire history of the University.

In the early 1950s Fessenden directed the expanding general chemistry program in which George taught. In the mid-1950s when Fessenden became ill, George picked up the reins. During George's tenure as director of the general chemistry program from the mid-1950s to the early 1970s, enrollment grew from around 200 students a semester to over 1500. George and his general chemistry team, including George Oberlander, John Chandler, Al Wynne, Everett Turner, and Everett Reed, instituted the first evening exams at the University, wrote and published standard student laboratory manuals and problem solving guides, established the first lab fees at the university, and instituted what were likely the first student evaluations at the university.

By the late 1950s more space was needed. Once again George, as chairman of the departmental physical facilities committee, stepped forward to handle this assignment. During 1957-1959 George was the faculty director of the project to design and construct the Goessmann Laboratory Annex, or "new" Goessmann as it is known today. The annex contained Peters Auditorium, Chamberlain Library, and a non-critical nuclear reactor to support the then popular nuclear technology courses in both the chemistry and chemical engineering programs in which George taught.

Throughout the years, George was a huge UMass Redman or Minuteman fan. After viewing a particularly bad 41-0 loss suffered by the UMass Redmen football team in 1953 at the hands of archrival UConn, George suggested to Athletic Director Warren McGuirk that the University should strive for the same quality in its athletic teams as it did in the classroom. McGuirk proceeded to enlist George in efforts to bring higher quality coaches and student athletes to campus. That began his nearly six-decade involvement with the Athletic Council (member 1961-2015), usually as its chairman (1967-75) or secretary (1975-1997). George attended every meeting of the Council until late 2014 and was instrumental in its actions. He was involved in hiring UMass coaches Vic Fusia, Dick McPherson, John Calapari, and Jack Leaman. George acted as UMass' NCAA faculty representative from 1978-93. He was elected to the University's Athletic Hall of Fame in 1982. George was and remains the only Athletic Council member so honored. He regularly attended UMass football and basketball contests until a few months before his death. He was one of the dedicated fans who rode the charter flight to Orlando to watch the 1964 Tangerine Bowl in which UMass lost to East Carolina, 14-13.

In 1960 John Lederle came from Michigan to become UMass President. That year he hired I. Moyer Hunsberger to replace the retiring Walter Ritchie as chemistry department head. Hunsberger asked George to become Associate Head. After about seven months Hunsberger became Dean of Arts and Sciences, and George stepped in as acting department head for what should have been a few months, but turned out to be 18! Finally, in 1962 William McEwen came from the University of Kansas to become department head. McEwen, knowing a good thing when he saw it, asked George to continue as Associate Head for a few years. George served in this capacity for thirty-two years until 1994. He continued to serve as assistant to the Department Head after that.

In 1963, George was named the second recipient of the University Distinguished Teaching Award, the University's highest faculty teaching honor. The first recipient was physics professor William Ross. Since its inception in 1962, chemistry department faculty have received ten of these awards. Only faculty from the English and Biology

CHEMISTRY LOSES...–continued from page 24

Distinguished Teaching Award-Professors Richason, Cannon and McWhorter

departments have won more. Other chemistry winners include Earl McWhorter (twice -1968 & 1974 - the only UMass professor so honored), George Cannon (1969), John Chandler (1986), Bill Vining (2000), Dave Adams (2004), Mike Barnes (2010), Justin Fermann (2012), and Dhandapani Venkataraman (2015).

By tradition since 1968, the oldest able faculty recipient of the University Distinguished Teaching Award has carried the University Mace at commencement. Only three professors have carried the mace in UMass history - Hans Christian Duus in 1967, Bill Ross from 1968 to 1974, and George from 1975 through 2014. George carried the mace at commencement for 40 consecutive years!

The Lederle Graduate Research Tower (LGRT) opened in 1972 and, once again, George had a major role in its design and construction. For George, however, the most important event of this decade was his "retirement" in 1976. At this event more than 150 supporters and friends gathered to wish him good-bye. Characteristically, he never did leave. In "retirement", he merely reduced his workday to part-time and assisted the department for the last 39 years. He was the Chief Undergraduate Advisor, Chief Scheduling Officer, graduation degree auditor, as well as acting department head when called upon. He also recorded the minutes at department faculty meetings since 1976 until recently.

In the 1980s and early 1990s George received several major honors from the university recognizing his long and valuable UMass service. As mentioned earlier, he was inducted into the Athletic Hall of Fame in 1982 - the only member of the UMass Athletic Council so honored. In 1991 he received an honorary Doctorate in Science (D.Sc.) from his alma mater, only the second alumnus department member so honored (Joseph B. Lindsey was the first in 1933).

From 1968 to 1994 he served on both the Board of Directors and Executive Committee of the UMass Amherst Alumni Association. In recognition of this long and effective service, in 1974 he received the Alumni Association Award for Distinguished Service, and in 1994 he was honored as an Emeritus Member of the Alumni Association's Board of Directors, again the only person so honored.

On October 14, 2005 during Homecoming Weekend the Chemistry Department named its research facility in 256 Goessmann Laboratory the George R. Richason, Jr. Chemistry Research Laboratory. The Richason Laboratory currently houses the research team of Professor Mike Barnes, the 2010 University Distinguished Teaching Award winner. The Chemistry Department honored George both in 2004 and 2014 at their annual June reunion. In 2014 he was presented with a Certificate of Special Congressional Recognition for his contributions to the department and university.

George is a true UMass legend. In summing up there are two particularly well-written quotes about George. In 1994 he received a Special Citation from the UMass Amherst Alumni Association that said, "When Alumni Awards were invented, they must have had you in mind. Out of the thousands of volunteers in our modern history, no one has ever qualified higher for any one of the categories than George R. Richason. Whether in teaching, administering, doing scholarly research, supporting athletics or Alumni Affairs, we could always count on one hundred percent effort from you. Your ever present wisdom, good humor, and energetic loyalty made your presence on innumerable councils a magnet for others who wanted to serve with you…" In 1977 upon the occasion of the testimonial recognizing his retirement, Chancellor Randolph W. Bromery wrote "Once in a while in the history of major institutions, a person emerges who stands out in all endeavors during a long and fruitful career, a person who gains the esteem of all. I believe you are one of those select few."

George's knowledge of all things UMass, his professionalism, and his stabilizing influence and loyalty to the Chemistry Department are already missed. His many contributions to and achievements at the university stand in testimony of his expertise in chemistry and academia, and his character, dedication, and integrity. He was known and beloved by thousands of UMass alumni; hundreds of chemistry graduates have fond recollections of George's personal contributions to their careers. For as long as UMass Amherst exists, and whenever its history is debated, the name Richason will be heard. In order to continue to honor George and assist the students he cared about most, the George R. Richason Jr. Scholarship Fund has been established. Contributions in his honor may be made to the Department of Chemistry, 710 North Pleasant Street, University of Massachusetts, Amherst, MA 01003.

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DEAR ALUMNI AND FRIENDS OF THE DEPARTMENT OF CHEMISTRY,

Last year's alumni reunion, honoring Professors George Richason and Dick Stein was a wonderful success. Thanks to all who attended or sent along their best wishes. We look forward to another wonderful reunion on June 6, as noted on page 2, and we hope that you can join us!

The recent loss of our dear friend and colleague, George Richason, at the age of 99, prompts us to reflect on the amazing achievements in Chemistry over his very long and distinguished career. You are all a part of those achievements, and with George, should take pride in our successes. The transition from a relatively small agricultural teaching college to the flagship University of the Commonwealth of Massachusetts is huge, and George was there for it all!

UMass is again in a significant stage of re-birth, with an impressive building campaign proceeding with vigor. Ground breaking for the new Physical Sciences Building, housing all of our synthetic chemists, will proceed this summer and prep work has already begun. With a new Provost, Katherine Newman, and a Director for the new Institute for Applied Life Sciences, Peter Reinhart, we are poised to grow our impact on the overall economy of the Commonwealth, much as Mass Aggie did a century ago. New buildings, new facilities, and great students and faculty bode very well for the future.

Following on the opening of the Integrated Sciences Building in 2009, the newly opened Integrated Learning Center is again providing a focus for creative undergraduate education. The quality of our students has never been higher and our teaching innovations are on pace with that growth in student achievement. From eBooks, to eExams, to the iCons program, the Department of Chemistry continues to be at the center of educational innovation. Indeed, the new Vice Provost for Faculty Development and Director of the Center for Teaching and Faculty Development, Gabriela Weaver, is a nationally recognized chemical educator. Finally, the selection of "DV" Venkataraman as a recipient of both the Graduate School's Distinguished Graduate Mentor Award and the University Distinguished Teaching Award, the highest honor in undergraduate teaching, continues a long tradition in Chemistry, of which we are rightly proud.

Finally, we continue to be deeply grateful to all of you who have contributed so generously to our department over the years. Your gifts are invaluable towards improving our teaching and research facilities and providing scholarships to students. With your support, we will forge ahead, pushing the frontiers of knowledge and training top-notch chemists!

Sincerely,

Craig Martin, Department Head

Telephone: 413-545-2318
Fax: 413-545-0011
Email: depthead@chem.umass.edu