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gazette

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University of Massachusetts Amherst
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INSIDE

EVENTS for 2012

Marvin Rausch Lectureship
Prof. Robert Bergman
University of California, Berkeley
April 12, 2012

Senior Awards Dinner
May 1, 2012

Alumni Reunion 2012
May 19, 2012

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August 2012

Stein-Bayer Seminar in Polymer Chemistry
Prof. Frank Bates
University of Minnesota
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William E. Mahoney Annual Lecture
Prof. Richard DiMarchi
Indiana University
October 17, 2012

University *of* Massachusetts Amherst

Chemistry Thanks a Dedicated and Distinguished Alumnus and Colleague

After retiring from a distinguished 31 year career with Procter and Gamble, PhD alumnus Raphael (Ray) D'Alonzo decided to give back to his alma mater through direct service and returned to UMass Amherst to teach and mentor our students. It's been a great four year association and we now wish Ray the best of luck as he "retires" from UMass Amherst to pursue new ventures in his longtime home, Ohio, and in Italy. Ray has been for many years an outstanding contributor to his profession, his community, and to UMass Amherst. He received his PhD in analytical chemistry in 1977 from UMass Amherst, working with Prof. Sid Siggia on projects summarized in his dissertation entitled, "Organic functional group analysis by atomic absorption and flame emission spectrometry."

He moved on to a distinguished 31-year career with the Procter & Gamble Company, where he started off using his analytical training in P&G's Food Division. The company rewarded his scientific, management, and people skills by promotions to serve as a Section Head for the analytical chemistry section in the Bar Soap and Household Cleaning Products Division, then as a research program leader in the company's Pharmaceutical Division where he led work that culminated in the discovery of risedronate

... continued on page 3

Getting to Know Our Newest Faculty Members

INTERVIEW WITH PROFESSOR **LARA AL-HARIRI** (LAH)

GG: Where did you grow up?
LAH: I grew up in Lebanon.

GG: When did you realize you loved chemistry?
LAH: During my high school I realized that chemistry answers a lot of my curiosity questions that chemistry is what I wanted to do.

GG: Does the love of chemistry run in your family?
LAH: Although my parent has no interest in chemistry, I and my brother have it under our skin. My brother is a biochemistry researcher at the American University of Beirut.

GG: Did you have a chemistry set when you were little?

... continued on page 20

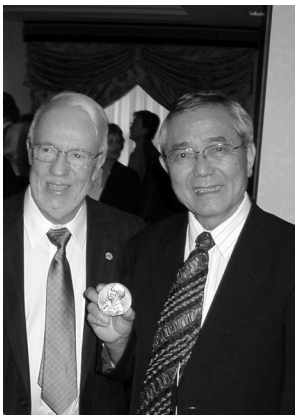
All Alumni are cordially invited to attend the CHEMISTRY ALUMNI REUNION 2012

You are cordially invited to the next Chemistry Reunion on Saturday, May 19, 2012 in the beautiful Integrated Sciences Building (ISB) from 2:00 p.m. – 5:00 p.m. The Department of Chemistry will be honoring Emeriti faculty, staff, and family. Confirmed attendees to date include: Dave Adams, Ron Archer, Ramon Barnes, Dave Curran, Peter Lillya, Bernie Miller, Louis Quin, Earl McWhorter, Jane Rausch, Everett Reed, George Richason, Dick Stein and Peter Uden.

Please contact Carrie Penland (carriemp@chem.umass.edu, 413-545-2585) for more information or to RSVP. **We hope to see you all there in May!**

*alumni*NEWS

Dennis Conlon (BS '76) reports that after 35 years in the medical device industry as an R&D reagent formulation chemist, he has finally done something useful with his life–he started teaching an introductory Chem course at the local community college! He says it's the "perfect opportunity to give back in return for the rich blessings which have come my way as a result of my time in Goessmann." He recalls that while he was a student here, other students wore "Chem 101 Sucks" t-shirts, and says that, and Prof. Reed's inspirational lectures, helped him decide on the major. His ambition is to help students start careers as Chem Techs at local industries.



Dr. Silveira and Dr. Negishi with the Nobel Medal.

Augustine Silveira, Jr. (PhD '62 with **Earl McWhorter**) received an honorary Doctorate of Science and was invited to give the commencement address at SUNY Oswego's 150th Commencement on May 14, 2011. He was honored for his innovation in, and dedication to, chemistry at Oswego. He made tremendous advances in the Department of Chemistry at Oswego during the 30+ years he was chair. **Gus** writes, "teaching is such a rewarding profession; every year you are extending your family and vicariously enjoying your students' successes and trying to help when things are not going well." He began collaborating with 2010 Nobel Chemistry Prize winner **Ei-ichi Negishi** in the early 1970s. They both engaged their students in their collaborative research using the metallic element palladium as a catalyst to synthesize complex carbon-based molecules, and they co-authored papers with students that became part of the overall package that the Nobel honored.

Gus has received many awards throughout his distinguished career, such as 1988-the American Chemical Society Syracuse Section Award for "outstanding contributions in chemistry and chemical education," 1990-received the first New York State/United University Professions Excellence Award "in recognition of outstanding performance and superior service to the State University and the State of New York," 2007-Samuel Stone Lifetime Science Award from UMass Dartmouth, and 2011-Honorary Doctorate of Science from SUNY. **Gus** reflects fondly about his time here and writes "the UMass Amherst Chemistry Department will always have a special place in my wife **Beverly**'s and my hearts." –We wish Dennis, Gus, and all our alumni all the best!

UMASS CHEMISTRY HOODIES

Help chemistry grad students leave their labs and have some fun. GCA is selling maroon hooded sweatshirts for $25 ($30 including shipping). The Graduate Chemists Association (GCA) is a group that plans various events which enhance the department community. Visit the GCA website http://gca.chem.umass.edu to see all past and future GCA events! Show your support for the department and help raise money to fund these and other great activities.

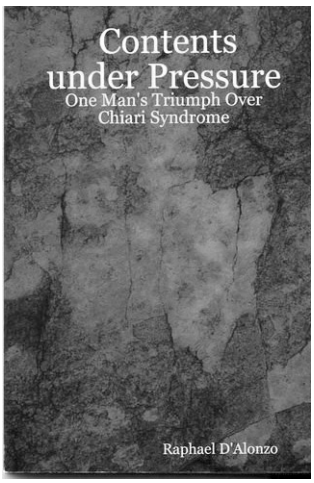
Please send a check to Chemistry Dept. Attn. GCA, 710 N. Pleasant St., LGRT, Amherst, MA 01003 with a note describing the size and quantity you would like by June 1st. If purchasing shipping, please include a mailing address where we should send the sweatshirt and allow 6-8 weeks for delivery.

CHEMISTRY BIDS FAREWELL –continued from page 1

(Actonel®), a widely used and highly successful drug used for the treatment and prevention of post menopausal osteoporosis and similar debilitating bone conditions. He rose to the position of Associate Director of the Pharmaceutical Division, with worldwide oversight responsibility for multiple areas of clinical research. After years of leading contributions to P&G's pharma work–including a Harvard Business School featured review of a pioneering program for gathering and cross-checking clinical study data using the Internet–he transferred in the later part of his P&G career to overseeing the company's University Technical Relations as part of the Corporate Research Division, a position from which he retired in 2008.

Ray has always been active in professional societies, including American Chemical Society work at local, regional, divisional, and national levels. This desire to contribute and organize others to make things better was manifested in the major role that he has played in support of his graduate alma mater. Ray's efforts helped UMass Amherst to benefit from over $2M in grants, contracts, and gifts. He was a major participant in the creation of the Bioanalytical Initiative fund-raising effort of the late 1990's that supported the hiring of Profs. Richard Vachet and Igor Kaltashov, thereby transforming analytical chemistry in the department for the 21st century. Ray's energy, advice, and support are always highly sought, leading to his becoming a charter member of the Advisory Council of the College of Natural Sciences & Mathematics (CNSM, now part of the College of Natural Sciences).

Ray's many professional accomplishments and his strong support of UMass Amherst led to his being awarded a Chancellor's Medal, in 2000. Ray's nomination for the highest honor the campus bestows was highly unusual, in that he was nominated both by CNSM and by the School of Public Health and Health Sciences (SPHSS); the latter even designated him a "foster alumnus" for his efforts to "establish, advise, and obtain funding for research projects and other collaborative efforts" in the School.



Ray wound up accepting his Chancellor's Medal a year late because of life-threatening complications of Chiari Syndrome, a condition that causes the brain to protrude through the opening at the base of the skull. After successful hindbrain decompression surgery and rehab, Ray recovered completely, accepted his medal in person, and carried on to become a eloquent spokesman for understanding and combatting this condition, as described in a book that he authored about his experience, "Contents under pressure: one man's triumph over Chiari Syndrome."

The department has been most recently fortunate in having Ray as a colleague, since after his retirement he joined Chemistry as a Visiting Professor in Fall 2008. Ray gave students the benefit of his experience and knowledge in undergraduate and graduate chemistry courses including general chemistry for non-science majors, the theory of analytical processes, and applied analytical chemistry, a widely popular survey course using real industrial problems as cases studies. In addition to teaching, Ray served on graduate thesis committees and directed 8 undergrads on original research projects. He has given advice about career opportunities and development to numerous graduate students, maintaining an open door policy throughout his time in the department. His long experience in the private sector has made him a well-informed, valuable source of information for all kinds of practical career advice, in addition to his wide scientific knowledge. For those who have had the good luck to work with him in any teaching or outreach effort that he has pursued, his pleasure in helping and encouraging young chemists and scientists is inspirational. We have been truly lucky to "capture the magic" multiple times of Ray's apparently boundless energy and enthusiasm for science, first as a member of our graduate program, then as an influential and exemplary professional scientist, and most recently as a fellow colleague in the department. Ray's industrial post retirement academic involvement efforts were inspired by other P&G employees who preceded him along these lines. Ray deeply believes that retirees from the private sector can make a tremendous contribution to education and encourages then and academic institutions to become more proactive in identifying such arrangements which can also be exceptionally cost effective.

Now Ray's interests are leading him to expanding his family business, Tide Dry Cleaners, a Procter & Gamble franchise, in Liberty Township, Ohio, serving as the chair of the Community Advisory Board to the new Mayfield Chiari Center at the University of Cincinnati, and establishing academic relations with the University of Chieti near his second residence in Altino, Italy, taking advantage of his dual American/Italian citizenship. He clearly is not a rocking-chair kind of retiree. We know that he will be successful in his new ventures, and look forward to hearing stories of what he is doing, even as we (most assuredly) continue to ask for his advice and the benefit of his experience for future departmental ventures. Have fun always, Ray, and remember to come back frequently! g

POINTS of PRIDE in Chemistry

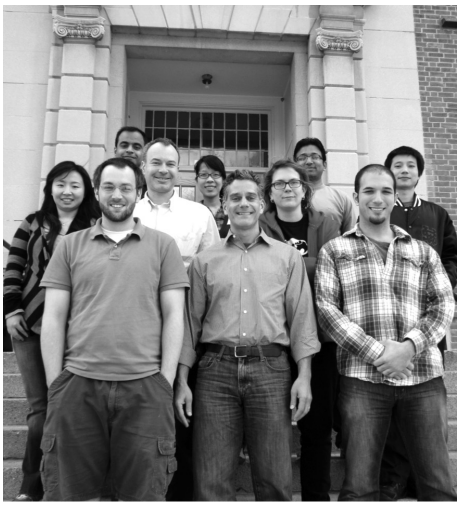
- Ronald Archer, Professor Emeritus was awarded American Chemical Society Fellow from the American Chemical Society.
- Profs. Michael Barnes, Ricardo Metz, Richard Vachet and Igor Kaltashov have all been promoted to full Professors.
- Prof. Justin Fermann recipient of the University Distinguished Teaching Award.
- Nagarjuna Gavvalapalli (DV group) was selected to receive a Eugene M. Isenberg Scholar Award for the 2011/2012 academic year.
- iCons was featured in July 4, 2011 *C&EN*.
- Prof. Bret Jackson's paper describing methane dissociation on Ni catalysts was selected as an Editor's Choice for 2011 by the editors of the *Journal of Chemical Physics*.
- Prof. Paul Lahti has published one of the Top 10 Most Read Articles from *The Journal of Physical Chemistry A*.
- Prof. Paul Lahti's paper on Radicals organized by disk shaped aromatics has been selected as a *CrystEngComm* Hot Article
- Prof. Michael Maroney will be a Senior Visiting Fellow at the Institute for Advanced Studies, Univ. of Bologna, for six weeks in the Summer of 2012.
- Springfield Museums, UMass Amherst and Craig Martin installed a 'Molecular Playground' at the city's science museum.
- Robert Sabola was awarded the 2011 Chancellor's Citation.
- Prof. Vincent Rotello received the Edward Mark Award from the Ohio State University.
- Prof. Vincent Rotello is featured as the 2012 UMass Spotlight Scholar.
- Prof. Vincent Rotello and colleagues' work on Colorimetric Bacteria Sensing (*J. Am. Chem. Soc.*, 2011, 133, 9650-9653) was highlighted on the 22 News TV program.
- Rotello groups', "Tailoring nanoparticles: Suits you sir!" *Chem. Soc. Rev.* paper on surface functionalization of nanoparticles for nanomedicine, was highlighted in the CSR News Blog-February 2012.
- Profs. Vincent Rotello and Richard Vachet are co-leaders of TRG 3 (Sensors and Environmental Monitoring) and are receiving support along with Sankaran Thayumanavan from a $20 million grant from the National Science Foundation through the Center for Hierarchical Manufacturing.
- Prof. Sankaran "Thai" Thayumanavan was honored as 2011 Fellow of the American Association for the Advancement of Science Manufacturing to improve nanomanufacturing technology.
- Prof. Julian Tyson received a grant from ACS Division of Analytical Chemistry for International Year of Chemistry Activities in which he gave a public lecture and demonstration on Dec 8th at 7:30 pm in 135 ISB entitled "How much arsenic do we eat? Analytical chemists make light work in tracking potentially harmful chemicals."

*lab*NOTES

In the AUERBACH LAB ...

The Auerbach group had a great year for publication in 2011, with eight articles published in subjects including Biofuel Production, Fuel Cell Materials, Inorganic Network/Zeolite Formation, and Microwave Heating, all with a theoretical chemistry perspective. The last subject was reported in *Physical Review Letters*, involving a collaboration between molecular dynamics performed in the Auerbach group, and neutron scattering measurements performed by collaborator **Herve Jobic** in Grenoble, France. These studies determined that microwave heated guest molecules in zeolites exist in non-equilibrium states, with different "effective temperatures" for translation, rotation, and vibration. The neutron scattering measurements can probe such temperatures, which agree well with predictions from Auerbach's simulations. This is a landmark in our understanding of selective heating in chemically active solid-fluid interfaces, and opens the door for new design of such systems.

Another exciting development involves a new NSF grant for the Integrated Concentration in Science (iCons) program being created by Prof. Auerbach. This $250,000 grant will support a new partnership between UMass Amherst and Holyoke Community College, with both institutions developing new Renewable Energy laboratory courses. This lab course at UMass Amherst constitutes the third year of the iCons program, whose overall mission is to produce the next generation of leaders in science and technology with the attitudes, knowledge, and skills needed to solve the inherently multidisciplinary problems facing our world. iCons achieves this by setting multidisciplinary student teams to work on societal problems making news right now, such as in Renewable Energy and Biomedicine fields, through case studies, lab work, and research. iCons is establishing a new national model of science education, and was featured in *Chemical & Engineering News* in their July 4, 2011 issue.



Auerbach group, 2012

Present members and alums from the Auerbach group are prospering in myriad ways. Current PhD students **Vishal Agarwal**

and **Lin Jin** both got married in 2011, and are both poised to graduate in 2012. **Chandra "Saru" Saravanan** (PhD '99) came to visit the Auerbach group in late 2011; **Saru** is now a mid-level manager at Reliance in India heavy into the science and engineering of petroleum. **Usha Viswanathan** (PhD '10) is now a postdoc doing computational chemistry applied to biological systems at the University of Texas Medical Branch in Galveston. We wish them all well, and welcome all previous Auerbach group members back to Amherst.

In the BARNES LAB ...

In the past year, Prof. Mike Barnes continued research supported by the NSF ("Single-molecule spectroscopy of Chiral Nanosystems") in collaboration with **Prof. D. Venkataraman** ($420,000 in total costs through 2012). In addition, he was co-investigator and team leader on the newly funded US Department of Energy EFRC at UMass Amherst led by **Tom Russell** and **Paul Lahti**. Barnes continued work under the support from the US Department of Energy on "Chemical Microscopy of Conjugated Nanomaterials" for $390,000 (through 2011), and the Polymer-based MRSEC at UMass Amherst. In September 2011, Prof. Barnes was promoted to Full Professor of Chemistry and maintained an Adjunct position in the Department of Physics.

Our group members and research news:

Austin Cypersmith, now a 4th-year graduate student in the group, and has been investigating orientation effects in single-molecule spectroscopy of chiral molecules in connection with our NSF program.

Mina Bahghar, a 3rd year graduate student in the Physics Department, transferred to our group in May 2010. Mina is working on near-field imaging and optical spectroscopy of polymer nanostructures.

Joelle Labastide, now a 2nd year Chemistry graduate student, published two papers as first-author in her first year of graduate studies, including a cover feature in the December 2011 issue of *Journal of Physical Chemistry Letters*.

Molly Casey, a first-year Chemistry graduate student, is a new addition to the group.

Ebru Yalcin, a postdoctoral associate in the Group, has been working on charge force imaging and optical spectroscopy of charged quantum dots. She was first-author on a paper, "Spectral Properties of Multiply-Charged Quantum Dots," published in *Nano Letters*, September 2011.

A number of undergraduates have made significant contributions to our group's research efforts over the past year: **Jeremy Graham** (BS '11), now a Chemistry graduate student at the University of Florida, **David Ramsdell** (BS '11), now a Chemistry graduate student at the University of Maryland-College Park, **Danielle Sowle** (BS '10), **Michael Louis** (BS '11), and **Greg Fahs** (BS '12), and **David Peltier** (BS '12).

In the CHAMBERS LAB ...

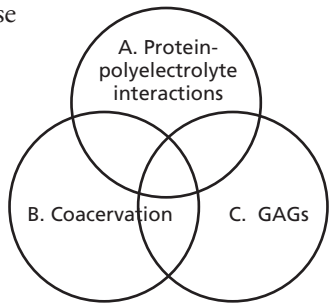
Over the last year, the Chambers lab has pressed forward on their studies of memory-encoding molecules and has begun a study of memory degradation. At the core of all of the work is a combination of medicinal chemistry and neurobiology, quite often with photochemistry thrown in the mix. There remains a paucity of novel tools for the study of some of the most basic properties of neurobiology and we are trying to fill that void. The lab's work has been presented in a variety of formats and in a number of venues including Hope College and Calvin College in Michigan, the Human Frontier Science Foundation annual awardee meeting in Montreal, and University of British Columbia in Vancouver, and the national American Chemical Society meeting.

Presently, the lab consists of three Chemistry graduate students, **Amanda Hussey**, **Steve McCarron**, and **Devon McCarthy**, two Neuroscience and Behavior graduate students, **Rosie Combs-Bachmann** and **Jefferys Nate Johnson**, and one Molecular and Cell Biology graduate student, **Kathryne Medeiros** (ICE Fellowship). In addition, **Dr. Vytla Devaiah** worked with us as a post-doctoral fellow until taking a job in November. Last but certainly not least, the lab continues to host a number of super-talented undergraduates with majors ranging from Neuroscience to Biology to BMB to Chemistry throughout the year. During the past year, the lab has been helped by the efforts of our wonderful and dedicated undergraduate researchers including **Matt Stevens** (Chem; Goldwater Scholar), **Jessica Royal** (Psych; Commonwealth College Research Awardee), **Katherine Williams-Duhamel** (Chem; studying in Manchester, UK on exchange program), **Donald Einck** (Chem), **Tiffany Brucker** (Chem), and **Ben Marsh** (BMB).

Up to date info can always be found at http://www.chamberslab.com

In the DUBIN LAB ...

The Dubin group was joined this year by **Yunfeng Yan** (on leave from Shanghi Normal University) who is working on interprotein assocation and phase behavior. PhD student **Yisheng Xu** published three papers (first author on two) about protein aggregation and its suppression by heparin. He has added surface plasmon resonance (with help from **Bob Weis**) to his vast repertoire



of instrumental methods. Heparin is also a focal point for **Burcu Baykal** who is extending her mass spectrometry studies with **Prof. Igor Kaltashov** to dynamic light scattering and capillary electrophoresis. **Daniel Seeman** has been making significant contributions from protein electrostatic modeling to most of these publications. **Ebru Kizilay** received an award at ResearchFest for her presentation on polyelectrolyte-micelle coacervation and published her research in *J. Phys. Chem.* and *Adv. Colloid Interf. Sci.* Paul Dubin on the other hand did not receive any awards for his presentations in Montreal (Colloid Symposium), Denver (ACS) and Palo Alto (Genencor).

Three collaborative funded projects involving respectively **Tony Dinsmore** (Physics), **Lianhong Sun** (ChemE) and **David Hoagland** (PS&E) have all focused on coacervation (a pleasant surprise given that there is "no groundswell of support for work on coacervation" (NSF reviewer, 2002)). Coacervation is also the theme of a "minisymposium" organized for San Diego ACS in collaboration with **Profs. Y. Morishima** (Osaka) and **R. Huang** (Rutgers). Other collaborators (proposals or publications) that year were **Profs. Vincent Rotello** (nanoparticles), **D. Pink** (Monte Carlo simulations), **D.J. McClements** (biopolymer nanoparticles), **Richard Vachet** (glycosaminoglycans), **H. Bermudez** (microgels), and **S. Peyton** (growth factor/cell culture).

Emek Seyrek (PhD '05) has joined Complex Matter and Systems, CNRS, Paris-Diderot. **Basak Kayitmazer** (PhD '07) is an Asst. Prof. at Bogazici, teaching Biomaterials and Polyelectrolytes, **Ram Vanam** (MS '04) is a research associate at Regeneron, and co-author in *Nature Structural Biology*, 2011. **Gavin Kirton** (Postdoc '02) is coming up for tenure at Rocky Mountain College, same for **Yael Mishael** (Postdoc '04) at The Hebrew University; **Xuhong Guo** (Postdoc '02) published eight papers in 2011 as Assoc. Prof., ECUST; **Pinaki Mahji** (Postdoc '02) is at Precision Dermatology, RI; **Qingrong Huang** (Postdoc '99) Assoc. Prof. Rutgers, published "Nanotechnology in the Food, Beverage and Nutraceutical Industries," **Yajuan Li** (Postdoc '08) at J&J Shanghai, patented "detergent compositions utilizing hydrophobically modified polymer." HS researchers: **Kevin Conley** (BS '06) is a PhD candidate at McGill; **Binqian Zheng** (BS '10) at UMass Amherst, and with the research group again.

In the GIERASCH LAB ...

2011 brought lots of changes to the Gierasch lab. We said goodbye to very much loved lab members. Long-term colleagues, **Beena Krishnan**, and **Rob Smock**, took new challenges and went off far away: After seven productive years as a postdoc, **Beena** went back to India to be a Senior Scientist at the Institute of Microbial Technology in Chandigarh, India. **Rob** successfully defended his PhD thesis after dedicating his efforts to the study of the evolutionarily correlations that describe an allosteric network in Hsp70 proteins and the role of the poorly studied C-terminal disordered domain of the *E. coli* chaperone. **Rob** went to Israel to take a postdoctoral position at the Weizmann Institute of Science in the laboratory of **Dan Tawfik**. After an impressive career as an undergraduate student, **Amanda Clouser** finished her honors thesis in the lab and started grad school at Washington University. It was very hard to see them all go, but we are very happy to watch them succeed in their academic lives. We wish **Beena**, **Rob** and **Amanda** the best.

The Gierasch group takes over The Mission Cantina to bid farewell to Rob Smock!

On the other hand, we welcomed new friends: At the beginning of the year and after completing their lab rotations, MCB student **Karan Hingorani** and Chemistry student **Gustavo Epalza-Sanchez** joined our lab as graduate students. In October, **Dr. Abhay Takur** arrived (along with the snow storm of the 29th!) to do postdoctoral work in our lab. **Abhay** did his doctoral studies at the Centre for Cellular and Molecular Biology in Hyderabad, India. We are delighted that **Karan**, **Gustavo** and **Abhay** will spend a few years with us! We hosted **Rochelle Samuel** from the Univ. of Maryland, College Park as part of the ICE REU program during the summer; at the end of her stay **Rochelle** presented a poster at the Summer Undergraduate Research Conference (ICE/HHMI). Undergraduate student **Samantha Williams** joined the lab to work on Hsp70 chaperones, and **Ilene Magpiong**, a senior from Mount Holyoke College, will complete her honors thesis work in the lab. We welcome **Sam** and **Ilene**!

In terms of publications, the lab was very productive and successful: we published seven papers: four research articles in very prestigious journals, two review articles, a book chapter, and a commentary by Lila in *Molecular Cell*. We already prepared many more manuscripts to keep them coming in 2012!

As we do every year, the group members presented their research at local meetings (as the Joint retreat CBI/BMB/BMP, UMMS, Worcester) and also traveled to attend to other important conferences, including the ENC-2011, Asilomar, CA; the Gordon Research Conference on Proteins, in Holderness, NH; and the 25th Anniversary Symposium of the Protein Society in Boston. Lila presented a Keynote Lecture at the 12th Upstate NY NMR Symposium, SUNY Albany, a plenary lecture at the 10th German Peptide Symposium, Berlin, Germany, a plenary lecture at the Frontiers of NMR Spectroscopy Symposium, City College, NY, a plenary talk at the Cold Spring Harbor Asia meeting on "Protein Homeostasis in Health and Disease," and a keynote lecture at the Barcelona BioMed Conference on "Macromolecular Dynamics." She also presented a talk in Bethesda, MD based on the lab's research on in-cell protein folding from work supported over the last 5 years by an NIH Director's Pioneer Award.

Lastly, we are happy to congratulate **Ivan Budyak** for the arrival of his daughter **Vera**, born in Oct 2011, and **Gustavo Epalza-Sanchez** for his marriage in December 2011. We hope 2012 is as joyous and productive as 2011 was for us.

In the HARDY LAB ...

This has been an excellent year for the Hardy Lab with several graduations, publications and new additions. **Witold Witkowski** was awarded his PhD degree in May 2011 for his work engineering caspases. **Witold**'s structure of a caspase handcuffed into a reversibly inactivated state was featured on the cover of *Protein Science*. **Witold** is now working as Scientific Liaison and Advisor at Zoucal Advanced Science. An undergraduate researcher, **Greg Tuffy**, who also worked on caspase-7 graduated in May 2011, is now working at Boston Biochem. **Sravanti Vaidya**, who graduated in 2011, was promoted to the rank of Assistant Professor at the Dayanand Sagar Institutions in Bangalore, India.

In January 2012, **Kristen Huber** successfully defended her PhD degree and submitted two manuscripts for publication. **Samantha Nicholls** published her first paper in the *Journal of Biological Chemistry* on a dark-to-bright reporter of cell death she developed. Her work was featured in a press release that was picked up by the NIH publication *Biomedical Beat*. Sam was also awarded a ***William E. McEwen Award*** for Outstanding Poster at ResearchFest for this work and was elected President of the Graduate Chemists Association. **Elih Velazquez** also published his first paper in the journal *Structure* and won one of only two poster prizes awarded at the annual CBI/BMB/BMP retreat for this work. **Elih** accomplished all this concurrently with welcoming a new baby boy, **Mauricio**, in February. **Mauricio** should have several playmates in the Hardy Lab as **Peng Wu**, a Senior

The Hardy Group.

Research Fellow welcomed a son, **Kingsly**, in October and Prof. Hardy welcomed a son, **Axel**, in November.

Second year graduate student **Scott Eron** was awarded an IGERT fellowship from the Institute for Cellular Engineering Integrative Graduate Education and Research Traineeship program, which is sponsored by the National Science Foundation. **Kevin Dagbay** has made exceptional progress on his quest to understand intramolecular interactions in caspase-6. He also surprised the entire lab by returning from a New Year's trip to his native Philippines with a wedding band adorning his left ring finger. **Muslum Yildiz** completed his fellowship from the Turkish Ministry of Education with his work to discover new allosteric sites in Dengue Virus Protease. This year we are also thrilled to welcome two talented new first-year graduate students, **Bay Serrano** and **Yunlong Zhao** and two undergraduates **Di Lin** and **Alex Bogden**, to our group.

In the JACKSON LAB ...

The Jackson group continued its theoretical studies of gas-surface reaction dynamics, with a focus on methane dissociation on the surfaces of Ni catalysts. This is the rate-limiting step in the important steam reforming process, our primary source for H2. Working with **Sven Nave**, our full-dimensional fully quantum Reaction Path model was shown to accurately describe the dissociative chemisorption of methane on both Ni(100) and Ni(111) surfaces. This work has been recently published in *J. Chem. Phys.*, with two more papers in preparation, including a collaboration with the experimental group of **Art Utz** at Tufts University. Our collaboration with theorists at Toulouse continues. Working with **Bruno Lepetit**, we showed how the structure of single-sheet graphene was stabilized through interactions with its support, and that the sticking of H atoms at low energies was anomalously large, due to the phonon properties that cause graphene to distort away from a pure two-dimensional structure. This work was recently published in *Phys. Rev. Letters*. A new collaboration, with the group of **Geert-Jan**

Kroes, in Leiden, the Netherlands, explores the effects of lattice motion on the dissociation of H2 on Cu(111) surfaces. An initial publication has been submitted to *Phys. Rev. Letters*. Over the past year our work has been presented as invited conference talks in Toulouse, France and Santa Fe, NM, as well as some less interesting venues.

This spring we are taking three new graduate students into the group: **Mike Mastromatteo**, **Inara Colon Diaz** and **Yubo Huang**. The three most recent members of the group are all now Assistant Professors: **Zuleika Medina Torres** is at the University of Puerto Rico at Cayey, Puerto Rico, **Sven Nave** is at the Université Paris-Sud, in Orsay, France, and **Ashwani Kumar Tiwari** is at the Indian Institute of Science Education and Research, in Kolkata, India.

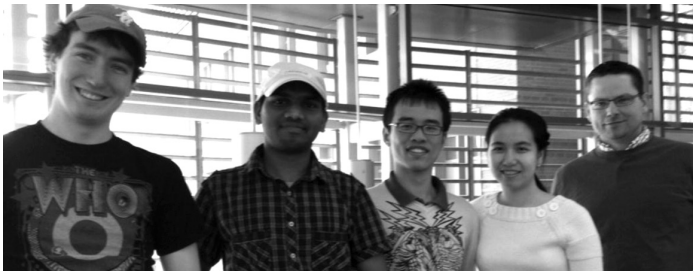
In the KALTASHOV LAB ...

2011 was a very busy year in the Kaltashov laboratory, which included publication of five papers and several presentations given by the group members at numerous scientific meetings and conferences, including a plenary lecture at the 14th International Meeting on Recent Developments in Pharmaceutical Analysis (RDPA-2011) in Pavia, Italy. The group continued to expand in size as a result of two exceptional graduate students joining us in December 2011, **Jake Pawlowski** and **Shengsheng Xu**.

In the KITTILSTVED LAB ...

In its inaugural year the Kittilstved lab has been extremely busy setting up our synthesis and instrumentation labs in Goessmann and the Tower. The Kittilstved lab is interested in understanding and exploiting the electronic structures of transition metal ions in semiconductor nanostructures for optoelectronic and spin-based electronic applications. To this end, we are developing synthetic methodologies to prepare high-quality materials in colloidal form. The electronic structures and photophysics of these materials are investigated by electronic spectroscopic techniques and so far we have received UV-Vis-NIR absorption, luminescence and circular dichroism spectrophotometers. We have also acquired a Fourier transform spectrometer with a unique spectral range that extends from the typical IR to the UV. We are patiently awaiting the arrival of a 7 Tesla superconducting magneto-optical cryostat to transform our CD spectrophotometer into a magnetic CD instrument for investigating materials for spin-based electronics (spintronics) applications.

Shortly after arriving in Amherst, the group quickly grew in size with undergraduate students sophomore **Stan Najmr**; juniors **Tom Foley**, **Jesse Guillet**; senior **William Rowley**, and German exchange-student **Renita Thim**. Many of the undergraduate students work on independent projects or in small teams where they can learn various synthetic and characterization techniques. Also joining the group was first year graduate student **Kim-Ngan Hua** who received her bachelor's from San Jose State University. **Kim** has been working on the synthesis and characterization of inorganic materials for energy applications. Over the summer we were joined by juniors, **Robert Nathan** and **Austin Virtue** who worked on the synthesis of transition metal perovskite nanocrystals.



The Kittilstved Group.

During the fall semester **Stan Najmr** was supported by a Research Assistant Fellowship and **Thomas Foley** received a Honors Research Grant. These competitive awards involved an application process and were funded by the Commonwealth College. The group was also joined by senior **Chris Coakley**.

At the end of 2011 the group grew significantly with the addition of new graduate students **Keith Lehuta** (Illinois Wesleyan), **Swamy Pittala** (University of Hyderabad, India) and **Dongming Zhou** (Zhejiang University, China). **Keith** and **Dongming** are working on energy-related projects involving transition metal oxides for photocatalysis and **Swamy** is working with **Kim** on novel magnetic semiconductors. We are obtaining very promising data in all of our projects and look forward to a productive second year in 2012.

In the LAHTI LAB ...

PML did quite a bit of traveling giving invited talks at conferences at Awaji Island, Osaka, and Nagoya in Japan; Mumbia, India; Patras, Greece; Telluride, Colorado; Pacifichem in Honolulu; Argonne National Laboratory in Illinois. One especially enjoyable invited talk about progress toward organic photovoltaic materials occured at the Georgia Coastal Section of the American Chemical Society, Savannah, GA in April 2011, arranged by **Jon Sanborn** (PhD '00).

Lahti group hosted three year-long scientific visits during 2010-2012. Physics **Prof. Miguel A. Novak** of Universidade Federal do Rio de Janeiro, and Inorganic Chemistry **Prof. Maria G. F. Vaz** of Universidade Federal Fluminense at Rio, both spent a year's sabbatical doing magnetophysics and magnetochemistr, and teaching

the group about magnetism, inorganic chemistry, and crystallography. Overlapping with the last half of their visit, **Vaz** group member **Luiza Mercante** spent a year working on functionalized magnetic nanoparticle synthesis and characterization, with Lahti group as home base, but with **Rotello** group providing a welcoming research base and a lot of expertise for **Luiza**'s work. All three visits were well supported by funding from Brazil.

PML continues his work as co-director with **Prof. Tom Russell** of UMass Amherst PSE, of a major DOE-funded Energy Frontier Research Center named Polymer-Based Materials for Harvesting Solar Energy (PHaSE); see http://www.cns.umass.edu/efrc. He also published an invited chapter on "Structure-Property Relationships for Metal-free Organic Magnetic Materials" in volume 45 of the monograph series *Advances in Physical Organic Chemistry* (**John P. Richard**, editor, 2011).

Gonca Seber visited Argonne National Laboratories to participate in magnetic and crystallographic measurements of organic radical materials under pressure, hosted by **Dr. John Schlueter** and **Dr. Greg Halder** of ANL. She also visited Universidade de São Paulo for two weeks to do sub-2K magnetic measurements, hosted by **Profs. Nei F. Oliveira Jr.** and **Rafael S. Freitas** at the Physics Department of USP. Both visits resulted in published work (Crystal Growth & Design, Journal of the American Chemical Society), which were a major portion of the PhD dissertation that she defended in December 2012!

Matt Chudomel's work as part of the PHaSE EFRC, "Highly Twisted Triarylamines for Photoinduced Intramolecular Charge Transfer," which included collaborative photophysical studies with the **Barnes** group and crystallography with **Prof. Joel Mague** of Tulane, was reported by *Journal of Physical Chemistry A* as a "top-ten most read" article in a December 2011 e-mail new alert. See *J. Phys. Chem. A*, 115(30), 8361–8368 (2011).

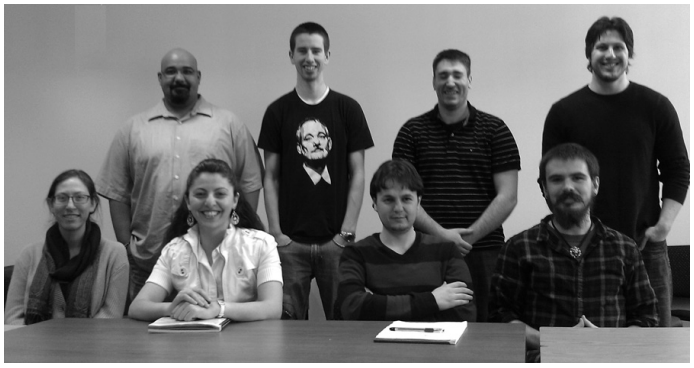
Handan Akpinar's work on magnetostructural investigations of molecular crystals and co-crystals of radicals with pyrene attached as a rigid-rotor substituent, which included collaborative magnetic studies with **Prof. Miguel Novak** of Rio de Janeiro (see above) and **Prof. Jonathan Friedman** of Amherst College, as well as crystallographic studies with **Prof. Joel Mague** of Tulane, was published as a highlight, inner cover article in the Royal Society's highly regarded journal *CrystEngComm* 14, 1515-1526 (2012).

Undergraduate researcher **Tamara Allen**'s work on photogenerated dinitrenes, resulted in publication in *J. Phys. Chem. A*, 115(19), 4922-4928 (2011); and collaborative publication with **Prof. Janice Musfeldt** (Univ. Tenn. Knoxville) in *J. Chem. Phys.* 135, 231101/1-4 (2011). **Tamara** is a 2011 Commonwealth College BS Chemistry graduate, whose work was supported by an NSF Summer REU supplement grant. Undergraduate researcher **Emma Anquilare**, also an NSF Sumer REU grant awardee, graduated from Smith College after very successful year of EPR work on dinitrenes that is being written up.

Zeynep Delen (PhD '07) returned as a featured speaker for the Amherst College and 5-College sponsored workshop in January 2012 describing the international, liberal arts supporting workshop that she founded: Ege'de Atölye, a nonprofit platform based in Foça, Turkey. It is international, interdisciplinary and has no boundaries between classroom and community. If you want to visit Turkey on the beautiful Aegean coast, and take part in both science educational and cultural exchange linkages in 2012, contact **Zeynep** at http://www.egedeatolye.org

Jong Choi (BS '01) has pursued science patent law and is an associate at a firm in Chicago, IL, doing quite a bit of pharmaceutical patent work.

Burak Esat (PhD '01) reports that things are going quite well with his work in Turkey, particularly with a big bio-nanotechnology research center at Fatih University in Istanbul. The Bio&Nanotechnology Research Center welcomes collaborations; see http://binatam.fatih.edu.tr/?&language=EN



The Lahti Group 2012.

Yi Liao (PhD '01) and **Mark Kearley** (PhD '92), who are on the faculty at University of Central Florida and Florida State University, respectively, got together during **Yi**'s visit to FSU this past year.

Ron Gurge (PhD '98) and wife **Tara** report the Summer 2011 addition of their daughter **Caroline**. **Ron** is currently at PreCision Dermatology, a company spin-out from Collegium Pharmaceutical.

Jitapa "May" Sumranjit (PhD '07) continues her work as a research scientist at the Thailand National Nanotechnology Center.

Ahmet Levent Inceli (PhD '96) has been helping high school kids in Turkey to prepare research projects.

Chris Ling (PhD '94) reports that all is well at Abbott Pharmaceutical.

Mark Kearley (PhD '92) won a Florida State University Teaching Award into the group sphere of influence.

For a more detailed summary of the happenings in the Lahti group go to his website at http://www.chem.umass.edu/~lahti/Group/grpstuff.htm

In the MARONEY LAB ...

News from the Maroney lab includes several personnel changes: **Khadine Higgins** successfully defended her dissertation, "Metal Selectivity in the E. coli Ni(II)- and Co(II)-Responsive Transcriptional Regulator, RcnR," in December. She is now a postdoc at Indiana University in

The Maroney Group 2012.

Bloomington. That same month, postdoctoral associate **Vlad Martin-Diaconescu** left for a second postdoctoral position at the Max Planck Institute for Bioinorganic Chemistry in Mülheim. **Carolyn Carr**, a first-year chemistry graduate student, joined the group in January. The group was very active on the national and international conference scene. Professor Maroney and **Dr. Martin-Diaconescu** gave talks on proteins involved in nickel trafficking, and **Nitai Giri** presented a poster on non-heme iron enzymes at ICBIC 15 (International Conference on Biological Inorganic Chemistry) in Vancouver, BC in August. Professor Maroney also served as Chair of the Metals in Biology Gordon Research Conference in January. Metals in Biology launched the prestigious Gordon Conference Series in a new direction in 1962 by introducing life sciences into the chemical and physical sciences mix. It has become the premier small meeting worldwide for researchers studying the many roles metals play in biological processes. This year celebrated 50 years since the first conference. UMass Amherst was well represented (photo), as **Profs. Knapp** and **Vachet**, and distinguished alumnus **Prof. Richard H. Holm** gave talks, and **Nitai Giri** presented a poster. The Maroney group is looking forward to continuing our research efforts in understanding metal ion homeostasis using nickel trafficking as a model, nickel toxicology, hydrogenase mechanism and applications to energy science, and the structure and function of nickel-dependent superoxide dismutase. Professor Maroney is particularly looking forward to spending the summer as a Senior Visiting Fellow of the Institute for Advanced Studies at the University of Bologna in Italy.

In the MARTIN LAB ...

A very exciting story is unfolding in our studies of fundamental structural and energetic processes that underlie the complex nanomachine RNA polymerase. **Ankit Vahia** (MCB '11) completed a story challenging the predominant view in the field regarding the energetic origins of abortive cycling during initial transcription by RNA polymerases by showing that the very large structural rearrangement in the complex on the transition to stable elongation is not an energetic barrier to this transition, as previously thought. **Ankit** has now moved on to a postdoctoral position at Harvard Medical School, where he will study the role of nucleic acid structures and processes in cancer. With a key model now lacking, **Luis Ramirez** (MCB) has wonderful new data that fill in the hole left by **Ankit**'s work. **Luis** has exciting new data arguing that while hybrid push drives structural remodeling of the complex, that remodeling also "pushes back" on the hybrid, leading to the observed instability. Think of a nucleic acid "piston." **Satamita Samata** (Chemistry) has expanded **Ankit**'s and **Luis**' tests into the much more complex bacterial RNA polymerase system, with very similar results-this despite the fact that the multi-subunit bacterial and eukaryotic enzymes show no structural similarity with the T7 family of RNA polymerases. Together these three students are painting a picture in which evolution developed (at least twice) the same system to program and drive release of the enzyme from its initial strong DNA binding interactions, with similar energetic outcomes. **Ketan Mathavan** (MCB) now has the challenge (and opportunity!) of following where these three have led, expanding greatly on the details of the models and perhaps taking us into the human mitochondrial RNA polymerase, where we think there is yet an additional twist to the story–exciting times!

As **Lynmarie** notes elsewhere, we visited **Xiaoqing Liu** (PhD '09) in Suzhou, China, last spring and traveled to Xi'an, Beijing, and Shanghai with her. It was a wonderful experience! Unfortunately, we were there a bit too early to see **Peng Gong** (PhD '06) starting his position as Assistant Professor at the Chinese Academy of Sciences, Wuhan, and we found out too late that **Cuihua Liu** (Postdoc '01), after

working in Boston for a decade, was in Shanghai at the same time beginning her position as Vice President of R&D with Shanghai Biomabs Pharmaceuticals, a position that will involve frequent transit between Boston and Shanghai. **Selase Enuameh** (PhD '08) is now a postdoc at UMass Med, where **Gang Han** (PhD '07) has begun his position as an Assistant Professor in Biochemistry and Molecular Pharmacolgy. We wish them all the best in their new ventures!

In the METZ LAB ...

The Metz group expanded its studies of the spectroscopy and photodissociation dynamics of gas-phase metal ion complexes. After a heroic effort by postdoc **Wright Lee Pearson** and undergraduates **Greg Wang** and **Kevin Dillon** our photofragment imaging instrument is up and running and producing images. 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. Graduate students **Chris Copeland** and **Dave Johnson** recently joined the group, as did undergraduates **Zach Hitzig** (structured programming guru) and **Zach Sallese** (web guru). We're wrapping up, for now, our studies of non-covalent Ni^+- and Co^+-water complexes. **Jennifer Daluz** (BS '10, MS '11), spearheaded the recently-published nickel studies, which formed the basis for her 5th year MS thesis. She is currently in the Chemistry PhD program at UC San Diego. A paper on the cobalt studies, headed by **Abdulkadir Kocak** and **Geoff Austein-Miller** (BS '10), has been submitted. These studies measure the vibrationally and rotationally resolved electronic photodissociation spectra of the M^+-water complexes, determining the M^+-water bond strength. They also determine the geometry of the complex from the rotational structure in the spectrum and measure how binding to the metal affects the O-H stretches by combining vibrational excitation in the IR with photodissociation in the visible. Professor Metz was promoted to full Professor. He wishes to thank his former and current group members, whose hard work and achievements over the years made it possible.

In the ROTELLO LAB ...

2011 featured comings, goings and much happening in the Rotello Lab. **Myoung-Hwan Park**, **Jiang Xu** and **Chaekyu Kim** received their PhDs, with **Myoung** heading to MIT, **Jiang** heading to sunny Scripps in San Diego and **Chaekyu** off to Johns Hopkins for postdocs. Vince Rotello received the ***Edward Mack Award*** from Ohio State University. Publications continued apace, with 26 in 2011. A partial tally includes one *Nature Chemistry*, two in *Nature Nano*, two in *Advanced Materials*, two in *Small*, one in *Angewandte Chemie*, and three in *JACS*. Industrial collaboration featured strongly in the group, with funding from Ferminich, Teijin,

The Rotello Group Fall 2011.

and an SBIR with Aerodyne. New Federal funding included $1.2M for sensing, $300K (with **Prof. Richard Vachet**) for an imaging ICP-MS, $400K (with **Lori Mintier**) for a FACS cell scanner, and a collaborative grant ($138K for our group) with **Tony DiCaprio** (Florida International) for new analytical techniques for detecting carcinogen exposure.

For up-to-date news, please check out http://sites.google.com/site/rotellogroup/home

In the SCHNARR LAB ...

It was a busy year for the Schnarr lab group members. **Jon Amoroso** received the prestigious ***Richard K. and Meryl M. Brown Graduate Scholarship in Chemistry Award*** for his work outlined in an inspiring talk at ResearchFest last fall. **Gitanjeli Prasad** published her first "first author" paper in *Organic and Biomolecular Chemistry*, in addition to winning the ***William E. McEwen Fellowship Award*** for Outstanding Poster Presentation at ResearchFest. **Tsung-Yi Lin** and **Lawrence Borketey** both presented their work at the ACS National Meeting in Denver. **Adam Gann**, now in his second year, continues to learn the ropes and is currently developing a light activated conjugation reaction with potential value to members of the chemical, biological, engineering, and polymer science communities alike. This winter, the Schnarr lab welcomed a new member, **Sean Flanagan**, who is working with **Gitanjeli Prasad** toward a streamlined technique for examining the substrate specificity of a crucial enzyme involved in natural product biosynthesis. Finally, two talented undergraduates, **Stephanie Waters** and **Silas Chan**, have joined the lab and are working with **Lawrence Borketey** and **Tsung-Yi Lin** on the biosynthesis of antifungal and antiviral compounds.

In the THAYUMANAVAN LAB ...

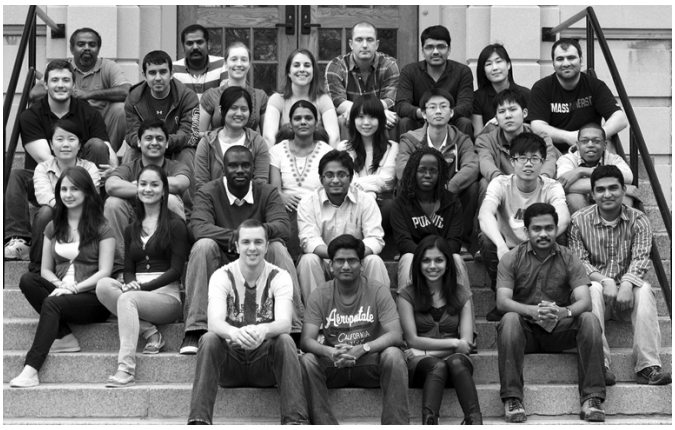
The Thayumanavan group enjoyed another productive year in 2011. We are listing here some of the highlights of the group. Please visit us also at http://www.umass.edu/thaigroup for more on our news and achievements. If you are a group alum and we do not have your updated whereabouts, please let us know.

Graduate student update: **Jack Fuller**, **Longyu Li**, and **Hui Wang** joined the group early in 2011. The group hosted

Conghui Yuan and **Johannes Mannsperger** as visiting graduate student researchers from China and Germany, respectively. **Volkan Yesilyurt** finished his PhD and took a postdoctoral position in MIT with **Langer** and **Anderson** groups. **Michael Lartey**, after finishing his PhD, is now a postdoctoral associate at the National Energy Technology Laboratory in Pittsburgh. **Siriporn Jiwapnich** took up a job in 3M Thailand and therefore returned to Bangkok, after spending a few cold months in 3M Minnesota. **Nagamani Chikkanagari** took up a job at Intel Corporation in Portland, after her graduation. **Yangbin Chen** moved to Corning Corporation. **Subhadeep Basu** also became an Intel employee, after finishing his postdoctoral stint at Northwestern with **Fraser Stoddart**.

Undergraduate students update: After spending a year in the group after graduation, **Sean Bickerton** is pursuing his MD/PhD degree at Yale. **Shilpa Vijayakumar**, **Jen Wilcox**, and **Breanna Zerfas** are pondering their post-graduation options, while holding multiple medical school or graduate school offers at various schools. **Jill Carlson**, **George Peklaris**, **Avital Percher**, **Louis Pires**, **Julie Reynolds**, **Laura Stirchak**, **Will White**, and **Paul Yao** joined our group for undergraduate research recently.

Postdoctoral associates update: **Prakash Babu Rajendran** and **Anupat Potisatityenyong** returned to India and Thailand, respectively. **Byron Collins** returned to Dallas area to become a fire fighter. **Deepak Dharmanghadan** returned to India to take up a job in Dow India and **Ja-Hyoung Ryu** returned to Korea to become Research Faculty member at Seoul National University.


The Thayumanavan group.

Thai was honored by election as a Fellow of the American Association for the Advancement of Sciences. Here is a recent group picture.

In the THOMPSON LAB ...

The Thompson lab continues to investigate structure and function in membrane proteins, with the goal of understanding fundamental mechanisms of transmembrane signaling and transport. We also develop tools for probing functional states, including solid-state NMR measurements of structure and hydrogen exchange mass spectrometry measurements of dynamics in membrane protein complexes.

We welcomed several undergraduate and graduate students into the lab this year. In Fall 2010 undergraduate **An-Khanh Ives** joined the group for the year and has now moved on to a masters program in Biomedical Engineering at NYU Polytechnic. Last summer we enjoyed working with undergraduate **Kate Otley** of Hamilton College as part of the CURE program, and **Justin Charlantini**, a UMass Amherst Microbiology major. **Justin** continued to work with us this year and was joined by freshman Biology major **Pratichi Mishra**. During the fall semester we appreciated the smiles and hard work of **Yuzhou Tang**, a first year MCB student, who did a rotation in our lab. Last but not least, in January we welcomed a new Chemistry graduate student **Libbie Haglin** into our group: **Libbie** comes to us from a job at Pacific Northwest National Lab, and she loves to purify proteins!

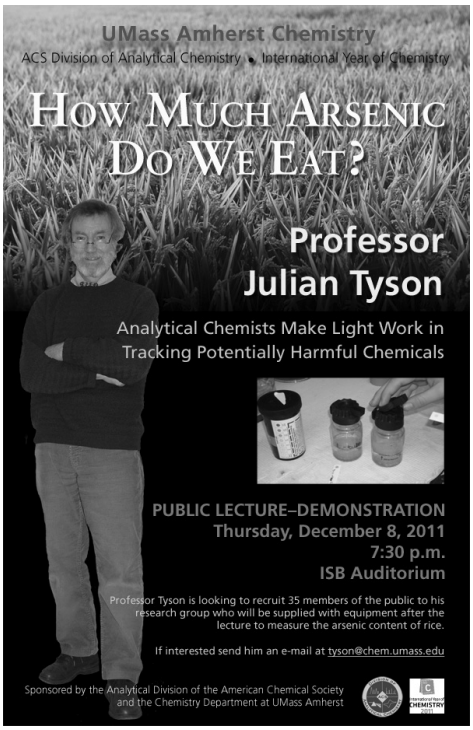
We have two happy, life-changing events to report: current lab member **Xuni Li** (Chemistry graduate student) and lab alumnus **Yael Balazs** (PhD '99) each gave birth to a baby boy in summer 2011.

In May 2011, Prof. Thompson thoroughly enjoyed her first trip to China. First she presented an invited seminar at a very interesting meeting on "Membrane Proteins: Structure & Function," part of a new Cold Spring Harbor Asia meeting series in Suzhou. Then she and her family traveled for a week with **Xiaoqing Liu** (PhD '09 with **Craig Martin**) to see the sights near **Xiaoqing**'s native Suzhou, and then on to Xi'an, Beijing, and Shanghai: what a great way to spend time with **Xiaoqing** and see her amazing country!

Finally, Prof. Thompson is happy to report that the Chemistry-Biology Interface training program successfully renewed the training grant, and for the first time ever NIH approved our request for an increased number of Traineeships! Career Day 2011, now an annual event co-sponsored by several programs, included panel discussions with successful professionals in industry and academia. The Industry Panel featured two CBI alumni, **Juma Bridgewater** (**Vachet** lab, PhD '06, now at ImmunoGen) and **Pete Bryngelson** (**Maroney** lab, PhD '06, now at Biogen IDEC), sharing their insights with current students and postdocs. We would love to hear from other alumni who would like to participate in future Career Day events!

In the TYSON LAB ...

In the Tyson lab, graduate student personnel remained unchanged, but we said goodbye to **Prof. Dr. Latif Elci**, who returned to Pammukale University in Turkey to resume his senior faculty position there after a very productive year



with us. We look forward to several manuscripts from this collaboration, all related to the determination of arsenic compounds (what else?). We are doing our best to help **Prof. Antonia Foias** from Williams College devise a procedure for the determination of trace elements in Mayan pottery. This is a tough analysis for a number of reasons, but "we" (for which read **Lindsay Drennan-Harris**) are persevering. **Lindsay**, together with **Tiffany Berg**, **Monique Johnson**, and **Chengbei Li**, is well into her final year as a doctoral student; they should all finish up this coming summer. **Lindsay** has maintained our collaborative link with Perkin Elmer, working on a new sample introduction system that has now been unveiled, and **Monique** has renewed our ties with NIST, spending a few months in alum **Dr. Bryant Nelson**'s lab working on the interaction of metallic nanoparticles with nematode worm *C. elegans*. **Monique**'s productive collaboration with **Prof. Dr. Sergei Oustromov**, who was visiting the **Xing** lab in PSIS, but who has now returned to Moscow State University has resulted in several publications. Arsenic-in-rice has emerged as quite a hot topic at the moment (following the concerns expressed about arsenic in apple juice). **Tiffany**, our expert, helped with the STEM Digital summer workshop for K-12 teachers that featured our method for measuring arsenic in rice "in the kitchen" with the help of the appropriate chemistry and a digital camera. Digital Images in Geoscience Investigations: Teaching Analysis with Light is an NSF-funded program enabling high school and middle school teachers and students to conduct environmental research aided by the analysis of images from digital cameras, scanners, and the Internet (see http://k12s.phast.umass.edu/digital/). The arsenic-in-food topic was selected by the reviewers of proposals at the American Chemical Society for outreach projects that will inform the public as well as the chemistry community about the important role of analytical chemistry in the International Year of Chemistry themes of environment, energy, materials, and health. Professor Tyson gave a public lecture-demonstration with the catchy title "How Much Arsenic Do We Eat" and the more informative subtitle of "Analytical chemists make light work in tracking potentially harmful chemicals." As a result of this activity, we have recruited a number of "citizen scientists" to help us with the arsenic-in-rice project. **Chengbei** has devised a method for measuring relevant arsenic compounds in water with a quartz crystal microbalance and is now bringing the power of plasma source mass spectrometry and hydride generation atomic fluorescence spectrometry (with help from **Nan Wang**) to bear on a study of the kinetics and thermodynamics of the reactions of the Gutzeit-modified Marsh test. **Nan** has revived our work with tetrahydroborate-form ion-exchangers for hydride generation, which appear to work well for arsenic compounds.

There have been a number of undergraduate students both helping with these projects and pursuing their own. We ran two semesters of the arsenic project for the Chem 121H and 122H students that brought the total numbers of participants up to 438. **Melanie Muller**, **Matt Tuttle**, **Lucia Tringali** and **Shaina Boyle** have all worked on semester-long independent studies during the past year. The Tyson group is still providing support for the water analysis lab of the Environmental Institute, with **Chengbei** providing the leadership. Faculty members **Peter Uden** (emeritus), and **Ed Voigtman**, continued to make welcome inputs to group activities. Congratulations to former graduate students **Dr. Chris Palmer**, and **Dr. Chris Hanna** both of whom are now fathers. Professor Tyson can be found on LinkedIn.com, and, if you look hard, even on facebook.com. He is still the associate dean for academic affairs of the College of Natural Sciences (http://www.cns.umass.edu/) and is now a member of several University Senate Councils and Committees

In the VACHET LAB ...

Professor Vachet and his lab had another busy, productive, and successful year. The group continued work on understanding the amyloid fibril formation of β-2-microglobulin and developing new mass spectrometric tools to detect nanoparticles in cells and tissues. The group published several papers, including an exciting one on the intracellular stability of quantum dots that appeared in *Nature Chemistry*, and made close to 20 presentations at various conferences, meetings, and universities. Professor Vachet was also promoted to full professor in September.

In other group news, **Bo Yan** and **Nick Borotto** won poster awards at the Chemistry Department's annual Research Symposium in September. This was the second year in a row that **Bo** won an award. The group was also very sad to say good-bye to **Tan Rodthongkum**, **Zheng-jiang Zhu**, **Shaynah Browne**, **Gladys Murage**, and **Helene Philogene**. **Tan** finished her PhD and returned home to Thailand as a professor at the Chulalongkorn University. **Jiang** also finished his PhD and began a postdoctoral position at Scripps in San Diego. **Shaynah** and **Gladys** both finished their Master's degrees, and **Shaynah** just recently began a position at the

Albert Einstein College of Medicine. **Helene**, who was a post-baccalaureate student in the group, left to start a PhD program at Temple University. We also welcomed two new members to the lab–**Ryan Sullivan** and **Ramesh Venna**. **Ryan** is a PhD student who is figuring out a way to sensitively detect nanoparticles in tissues. **Ramesh** is a postdoc in the group, and he is investigating new covalent labeling methods to study the three dimensional structures of proteins by mass spectrometry.

In alumni news, former graduate student **Juma Bridgewater** took a new position at Immunogen (Waltham, MA). He was also able to use his acting skills to star in a promotional video for UMass Amherst (see http://www.youtube.com/watch?v=ZkIUQDowRms). Former undergraduate researchers **Emily Carino** and **Kevin Anderson** also successfully defended their PhD dissertations at the University of Texas and Boston University, respectively. **Emily** will be doing a postdoc at the University of Delaware and Brookhaven National Lab, while **Kevin** will now finish up his MD at BU.

Finally, Prof. Vachet was very busy professionally. He served on the Editorial Board for the Journal of the American Society for Mass Spectrometry and the Features Panel for Analytical Chemistry. He also completed his first year as a member of the Board of Directors for the American Society for Mass Spectrometry.

In the VENKATARAMAN LAB ...

The DV Group had a fantastic year in terms of research and recognition! Graduate student **Mr. Nagarjuna Gavvalapalli** was selected to receive a *Eugene M. Isenberg Scholar Award* for the 2011/2012 academic year. This award was established in 1994 by **Eugene M. Isenberg** ('50, CEO of Nabors Industries, Inc.) and **Ronnie Isenberg** to aid UMass Amherst students who demonstrate academic merit and an interest in and commitment to interdisciplinary studies focused on the integration of science and/or engineering with management. **Nag** spent the last year taking courses in ISOM and learning key things about starting a new business. **Nag** was also awarded *Dr. Paul H. Terry Scholarship* of $1000 for his talk on "Next Generation Electron Conductors for Organic Photovoltaics" in ResearchFest 2011. DV Group member **Sravan Surampudi** won *William E. McEwen Award* ($250.00) for his poster on the synthesis of apically functionalized heterohelicene molecules. Undergraduate **Kyle Reeves** received the best presentation award for his talk on P3HT nanoparticle inks at the CVS-ACS meeting held in Trinity College Mather Hall. The award carried an undisclosed sum of money (rumored to be in the hundreds). **Kyle** also received the ACS-CVS for the best undergraduate chemistry student from the University of Massachusetts Amherst. **Drake Niedzielski**, an eighth grade student working in our lab won the second place at the Regional Science Fair in North Adams for his work on 'Photovoltaic Solar inks'. He also received honorable mention at the Massachusetts Science Fair in Worcester. The DV Group paper on the use of nanoparticles to fabricate organic photovoltaic devices was featured on the cover of the *Journal of the Physical Chemistry Letters*.

Amarnath Bheemaraju defended his PhD thesis. He studied the role of side chain interactions on the donor-acceptor complex formation in solution and its impact on electron transfer kinetics. **Amar** is currently a postdoc at Wayne State University. **Kedar Jhadav** successfully defended his Master's thesis on the synthesis new electron-accepting polymers. Undergraduate researchers **Dan Toscano**, **Kyle Reeves**, **Josh Stacey**, **Shashi Parmar** and **Matt Liu** graduated with a BS degree from the University of Massachusetts Amherst. **Josh** joined Intel Corporation in Arizona. **Dan** is a research associate at the Sloan-Kettering Foundation in New York. **Kyle** is current a graduate student at the University of North Carolina in Chapel Hill. **Oliver Traynor** and **Adam Hoyle** returned to University of Manchester after a 1-year exchange program at UMass Amherst.

Jason Field (PhD '03) has been appointed as the Executive Director of Life Sciences Ontario, an organization that fosters the relationship between life sciences companies/organization and the Canadian government. **Rattan Gujadhur**, an Alum from our group has been promoted as Associate Director for Outsourced Manufacturing at Gilead. **Travis Benanti** (PhD '08) moved back to Connecticut and is now working at Chemutra. **Serkan Yurt** (PhD '10) is now working at 3M. He is now married to **Deniz**. **Nestor Chevre-Trinidad** (PhD '09) is now a teaching faculty at STCC. **Mike Doherty** (BS '05) and his wife **Kelly** welcomed **Lucy Q. Doherty** on Jan 20, 2012. **Mike** is working for Scynexis, Inc. in North Carolina. **Jeremy Kintigh** (BS '00) successfully defended his PhD thesis. He worked with **Prof. Miller** at the University of New Hampshire and DV served as the external examiner. **Dan Burke** (BS '06) is working with **Prof. Craig Hawker** at UCSB and is expected to finish his PhD soon. **Thomas van der Poll** (BS '09) is working with **Prof. Gui Bazan** at UCSB and now holds the record for highest efficiency for small molecule-based organic photovoltaics. **Gordon Smith** (BS '07) is now a wine chemist at Rack & Riddle, a custom crush operation in Mendocino county that specializes in sparkling wines. DV wishes to hear from all of you. Please go to thedvgroup.com for group and alumi updates.

In the VOIGTMAN LAB ...

I published two papers this past February and continued on as undergraduate program director, associate department head and vice-chair of the personnel committee. They are all getting VERY old. Looks like I will be retiring in three years and I am very much looking forward to my sabbatical leave in Spring 2014! Best of success to all!

*iCons*UPDATE

It has been a tremendously exciting year for the up-and-coming Integrated Concentration in Science (iCons) Program. We are in the middle of iCons' 2nd year, with much accomplished already and with many opportunities ahead. In particular, iCons has:

- Launched concentrations in Biomedicine and Renewable Energy (we plan to launch new concentrations in Clean Water and Climate Change when funding and laboratories become available).
- Recruited its 1st and 2nd cohorts of outstanding iCons Scholars.
- Launched iCons 1 and iCons 2 pioneering courses in Integrated Science for undergraduates.
- Received national publicity in C&E News (http://cen.acs.org/articles/89/i27/Preparing-Real-World-Research.html).
- Received campus recognition through the Chancellor's Award for iCons Manager, Jane Markarian.
- Met with Swiss scientists from EPFL (10/19/11) who will adopt the iCons method for their programs.
- Won NSF funding to support an innovative partnership with Holyoke Community College on building Renewable Energy Lab courses at both institutions.

In Fall 2010 and 2011, we recruited our first and second cohorts of iCons students – denoted the First Class and Second Wave, respectively. We received nearly 100 applications each semester, leading to 41 students in the First Class and 50 in the Second Wave. These iCons scholars hail from over ten departments spanning the College of Natural Sciences, the College of Engineering, and the School of Public Health, heading for work in the Biomedicine and Renewable Energy iCons tracks. Congratulations to these trailblazing iCons scholars!

Last Spring 2011, we completed the inaugural running of our first course, iCons 1: Global Challenges, Scientific Solutions. iCons 1 was team-taught by Profs. Justin Fermann (Chemistry), Steve Petsch (Geosciences), and Sue Leschine (Microbiology), who pioneered a problem-based approach to teaching integrated science. iCons students pursued solutions to cholera in Haiti, Alzheimer's disease, the Gulf oil spill, and biomass utilization. Quantitative and qualitative assessment data on iCons I suggest it was a tremendous success in integrative learning, and in skill development in leadership and multi-disciplinary communication. This course is presently running again in Spring 2012.

Chemistry Professor and iCons Director Scott Auerbach with the 2nd Cohort of iCons Students in ISB for New iCons Student Orientation on Dec 3, 2011.

In July 2011, iCons was featured in Chemical & Engineering News, the trade magazine for the American Chemical Society (ACS). ACS is the world's largest professional organization with over 160,000 members, offering great international exposure for iCons and UMass Amherst. You can find the article, written by Dr. Mitch Jacoby, at http://cen.acs.org/articles/89/i27/Preparing-Real-World-Research.html.

This story caught the attention of a team of scientists in the Swiss Federal Institute of Technology (EPFL) in Lausanne, Switzerland. The Dean of Science from EPFL arrived in Amherst for a day of meetings on October 19, 2011, to learn about the iCons program and how our innovations can inform a new integrated science program in EPFL. The fact of this visit verifies that iCons – as a signature UMass Amherst program – has created a new international model of integrative science education to be emulated across the globe.

iCons 2 (Integrative Scientific Communication) is presently debuting in Spring 2012, with a Biomedicine-focused section being team-taught by Profs. Scott Garman and Bob Zimmerman, and a Renewable Energy section team-taught by Chemistry Profs. Scott Auerbach and D. Venkataraman. We look forward to debates in iCons 2 on issues such as The Future of Nuclear Energy in the Renewable Energy track, and on How to Strengthen the Pharmaceutical Pipeline in the Biomedicine track.

We also launched a new collaboration with Holyoke Community College on building iCons 3 Renewable Energy laboratories at both campuses. This innovative partnership between 2-year and 4-year institutions will be supported by a grant from the National Science Foundation program in "Transforming Undergraduate Education in the Sciences (TUES)." The grant, which is for $250,000 ($200,000 for UMass Amherst), will support course development activities beginning early in Spring 2012. Winning this NSF grant indicates that iCons as a concept and a program has won support from experts in science education at the highest levels. To keep up to date on iCons, please see http://www.cns.umass.edu/icons-program

2011 SEMINAR SERIES

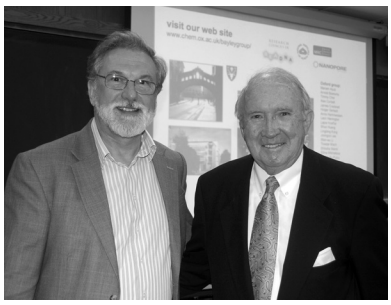
The 2011 seminar series hosted by the UMass Amherst Department of Chemistry offered a full and vibrant schedule. The Department has continued the tradition of attracting renowned scientists from around the globe to present their ideas, findings, and hypotheses. The speakers who kindly participated have ranged from traditional chemistry research to interdisciplinary fields of science. The program has continued the tradition of encouraging a dialogue between the visitor and UMass Amherst students and faculty, offering a number of venues besides the formal seminar, for interaction.


Professors Jane Rausch, Thomas Bitterwolf and Michael Maroney.

The inaugural ***Marvin D. Rausch Lectureship in Organometallic Chemistry*** featured **Prof. Thomas E. Bitterwolf**, Professor of Chemistry at the University of Idaho. **Professor Bitterwolf** taught classes and conducted research at the Naval Academy and it was during this period that he became a colleague and friend of **Prof. Marv Rausch**. For the Rausch lecture, **Tom** presented his talk entitled, "'And then a Miracle Occurs': Recent adventures in mechanistic inorganic photochemistry." Before the formal seminar began, **Prof. Peter Lillya** gave a wonderful introduction of the ***Rausch Lectureship*** and described and reminisced a bit about the past. **Professor Michael Maroney** then introduced the speaker, offering much in the way of applause – and laugh-fetching anecdotes. Once introductions were complete, **Prof. Bitterwolf** began his presentation and began with some history, speaking fondly of **Marv**, and he then went on to describe the central theme of the research in his group. The **Bitterwolf** research group is focused on determining the mechanisms of organometallic and inorganic reactions, with a specific eye towards photochemistry. His group has developed some technological simple, yet highly sensitive, instrumentation for measuring the photochemically-induced, reversible reaction of metal nitrosyl-containing compounds. In addition, to explaining these mechanisms, **Tom** described his path to discovery, clearly implicating **Prof. Marvin Rausch**, as the catalyst that inspired his career and whose encouragement and suggestions were instrumental in his move towards photochemistry.

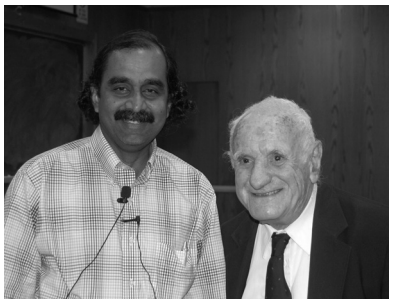

Professors James Chambers, Benjamin Cravatt and Craig Martin.

Professor Benjamin F. Cravatt from the Scripps Research Institute was our ***Procter & Gamble Lecturer*** in 2011 and presented his talk entitled, "Activity-based proteomics - applications for enzyme and inhibitor discovery." **Professor Cravatt** is a leader in the development of using small molecules to screen, in an activity-dependent manner, the function of proteins of basic and clinical relevance. His talk was very well-attended, attracting faculty and students from the Department of Chemistry and a large number of other academic departments and programs on campus. In his talk, he described how both eukaryotic and prokaryotic organisms possess an enormous number of enzymes that are currently uncharacterized. This untapped knowledge could lead to a better understanding and, eventually, better treatments for disease. What sets **Prof. Cravatt**'s research apart from the rest is his use of activity-based protein profiling (ABPP). This clever strategy utilizes active site-directed chemical probes to determine the functional state of large numbers of enzymes in native proteomes. This method allows for the functional annotation of enzymatic pathways and offerings insight and new data for researchers working in today's post-genomic era. The ABPP methodology is an amalgam of chemical, proteomic, and metabolomic technologies that offers "global" enzyme activity profiles in complex biological systems including mammalian cells and tissues, specifically cancer and the central nervous system.


Prof. Hagan Bayley and Mr. William Mahoney.

Visiting the Department from the University of Oxford for the 2011 ***William E. Mahoney Seminar Lecture*** was **Prof. Hagan Bayley**. He is a world-renowned chemical biologist who has truly pioneered the field of nanoscaled biological materials for the development of novel nanotechnologies. The mere announcement of the presentation by **Prof. Bayley** garnered a great deal of interest on campus and the seminar room was at capacity. Before the scientific portion of the talk began, the audience was treated to a heart-felt introduction from **Prof. Mahoney**, whom was himself quite impressed with **Prof. Bayley**'s accomplishments, scientific and otherwise. In his presentation entitled, "Engineered Protein Pores for Nanotechnology," **Prof. Bayley** described his group's work on using small, protein-based pores for the direct and indirect analysis of single molecules. These nanoscopic pores have been borrowed from nature and are called alpha-hemolysin. Using some very clever electrical and molecular devices, the research group has been able to employ these pores as nanoreactors to measure covalent and non-covalent chemical dynamics and to monitor transition state populations, all at the single-molecule level with sub-millisecond time resolution. **Professor Bayley** has also founded a company based on facets of this technology. Oxford NanoPore is developing this nanodevice for applications in personalized medicine, crop science, and security.

2011 SEMINAR SERIES –continued


Professors Mohan Srinivasarao and Emeritus Richard Stein

The ***Stein-Bayer Lecture*** (named after **Prof. Emeritus Richard Stein** and sponsored by Bayer Material Science) was presented this past year by **Prof. Mohan Srinivasarao** from Georgia Tech. **Professor Srinivasarao** holds dual appointments in the School of Materials Science & Engineering and in the Department of Chemistry & Biochemistry and his research program specializes in study of some truly beautiful natural phenomena. **Professor Srinivasarao** employs the methodologies of physical chemistry and optics to the study of nematic liquid crystals, polymeric fluids, and polymer/liquid crystal dispersions. **Professor Srinivasarao** presented his seminar entitled, "Optics in the Natural World: Iridescent Colors of Butterflies and the Twisted Beetle!" to a packed room. While the subject matter of his talk was rooted in the principles of physical chemistry, his presentation was quite easy to understand, a testament to a great educator. His research program also has offshoots to materials science, chemistry, and photophysics and even to biology and biochemistry. This fact was quite clearly apparent based on the turnout for his talk. UMass faculty and students from a wide variety of disciplines were in attendance to learn more about the color of butterfly wings, beetles, moths, and bird feathers.

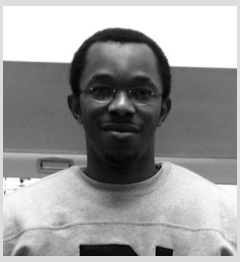
The success of this year's UMass Amherst Chemistry seminar program was made possible through the generous contributions of our alumni and corporate sponsors. The students and faculty are immensely grateful for the unique opportunity of face-to-face interaction for learning and enrichment that the alumni and sponsorship support provides. We look forward to continued success in 2012.

*in*MEMORIUM

On July 4, 2011, *Everett Turner*, our colleague and long-time chemistry teacher at UMass Amherst, died in Amherst. *Everett* shares this date with the former presidents **John Adams** and **Thomas Jefferson**, and like them was a unique American. He was born in Brooklyn, earned degrees at Long Island University (BS) and University of Massachusetts (MS) and taught introductory chemistry and general education at UMass Amherst for 46 years.

His students saw a teacher who was as likely to bring in an article from the day's *Boston Globe* or *New York Times* to weave skillfully into the day's lesson, as he was to talk about what appeared in their textbook. Demonstrations were a specialty, and his sense of humor pervaded almost every lecture. He successfully charmed students from chemistry majors to varsity athletes. Chemistry was never so much fun. His Chemistry 101, 102 general education chemistry courses were so popular that enrollment surged past 500 and were moved across campus to Herter Auditorium. He served as chair of the local American Chemical Society Connecticut Valley Section and was a founder and long supporter of the Chemistry Olympiad.

Everett enjoyed a wide circle of friends that included colleagues, former students and non-academic people in the community. His wide interests included music and the Amherst Railway Society, an interest he shared with his friend and colleague **Alfred Wynne**. He was a long-time member of Grace Episcopal Church in Amherst. His office was filled with piles of books and papers with no apparent organization, he could often find just the article that was relevant to what you were discussing with him. To the very end of his life, *Everett* was fascinated by what life and his favorite newspaper had to offer and never lost his engagement with current issues and things intellectual. He delighted in the UMass and Amherst scenes enjoying them in countless ways and enriching them with his presence. Memorial gifts to the department will be directed to the class demonstrations to which Prof. Turner was so dedicated.



Uche Anyanwu, the first member of the **DV** group, passed away on February 21. He lost his bravely fought four-year battle with thymoma. He came to the University of Massachusetts Amherst in 1998 after receiving a BSc degree from University of Nigeria, Nsukka and working for a year at the Nigerian National Petroleum Corporation. He joined the **DV** group in 1999 to work on 'self-regulating catalysts.' He then focused on the soluble polymer-supported catalysts and showed that the linker between the catalyst and polymer impacts the activity and selectivity of the catalyst. He also modified the soxhlet apparatus for performing dynamic dialysis for the separation and recycling of the polymer-supported catalyst. He graduated from the **DV** Group in 2005 and was awarded PhD for his work on "Soluble Polymer-supported Catalysts and Initiators." After his graduation, he worked for Momentive (formerly GE Materials) as a senior scientist, was an active supportor of UMass Amherst and fostered connections between the two.

Many of his colleagues fondly remembered *Uche* and his days at UMass Amherst. **Jay Field** (PhD '03) remembered *Uche*'s 'easy smile that was disarming yet mischievous; and always contagious.' **Derek Van Allen** (PhD '04) called *Uche* 'an excellent scientist, artist and a great human being.' **Rattan Gujadhur** (PhD '03) termed *Uche* as a person with 'a constant natural ability to lean towards what is true'. **Noah Trembley** (BS '04) termed *Uche* as 'admirably self sustaining, confident, fun, funny, and humble.' "He was an excellent scientist, artist and a great human being. He was the best first student I could have ever asked for. All of us who knew him will miss him dearly"– **D. Venkataraman** (DV), Associate Professor of Chemistry.

undergraduate SENIOR & AWARDS DINNER


The 2011 Senior Class.

Every spring, the Undergraduate Honors and Awards Committee has the pleasure of examining the records of students who have chosen to be a part of our department. Every May, as we have done for many years now, we honor those students who have proven themselves to be among the very best this University has to offer. Last May, at our annual Undergraduate Honors and Awards banquet, we recognized the hard work and dedication of 35 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:

Kyle Reeves – Connecticut Valley Section of the American Chemical Society (CVS/ACS) Student Award

Dennis S. Kim – American Institute of Chemists Award

Josephine L. Harrington and Jake W. Pawlowski – Richard W. Fessenden Award

Thomas F. Foley– John A. Chandler Memorial Scholarship Award

Christopher G. Gunderson and Amanda L. Batten – Merck Index Award

Kyle Reeves – Senior Class Award

Jeremy O. Graham – Hypercube Scholar Award

Matthew Liu and Thomas Broome – Departmental Recognition Award

Emma Anquillare and Matthew C. Stevens – Outstanding Undergraduate Researchers 2011

Robert H. Witherall– ACS Analytical Chemistry Award

Shera A. Demchak – Jay A. Pirog Scholarship

Lee R. Accomando – Bates Research Fellowship

Sean M. Fleuriel – Bradspies Research Fellowship

Kelvin S. Laurore and Kathryn M. Liedell – American Chemical Society-Hach Fellowship

Michael J. Boucher, Danielle J. LaValley, Tina K. Truong and Spencer T. Wyant – Robert Maxwell Williams Memorial Scholarships

Felix S. Alfonso, Sean M. Fleuriel, Robert T. Nathan, David E. Peltier and Katherine Y. Williams-Duhamel – Edward Shapiro Scholarship

Lee R. Accomando and Apichaya Bunyatratchata – CRC Freshman Chemistry Award

Jennifer L. Wilcox – Mr. Tompkins Award

Alan G. Stebbins – Lillya Undergraduate Research Award

Jennifer L. Wilcox – Oliver Zajicek Memorial Scholarship Award

Jacquelyn M. Dorhout – William F. Field Alumni Scholar Award

Matthew C. Stevens – Barry Goldwater Scholarship Award Nomination

degrees AWARDED

BA/BS DEGREES

Maxwell K. Barton	05/2011
Thomas H. Broome	05/2011
John R. Clarkson	05/2011
Matthewn A. Cormier	05/2011
Luis M. Cristian	05/2011
Nicholas E. D'Eramo	05/2011
John J. Freal	05/2011
Jeremy O. Graham	05/2011
Christopher G. Gunderson	05/2011
Nathan J. Harnois	05/2011
Josephine L. Harrington	05/2011
Munhong Ho	05/2011
Geoffrey K. Jablonski	02/2011
Alex J. Johnson	05/2011
Lyes Khendek	05/2011
Dennis S. Kim	05/2011
Jamison D. Leger	05/2011
Matthew Liu	05/2011
Michael E. Louis	05/2011
Abigail C. Lynn	05/2011
Benjamin H. March	05/2011
Artem Maksov	05/2011
Kyla R. McDonald	05/2011
David Morales	05/2011
Sophia A. Murray	05/2011
Thuan P. Nguyen	05/2011
Jake W. Pawlowski	05/2011
Betty H. Phan	05/2011
David C. Ramsdell	05/2011
Kyle Reeves	05/2011
William F. Rowley	05/2011
Danielle L. Sowle	05/2011
Daniel T. Toscano	05/2011
Martin H. Valdes	05/2011
Michael Wellen	05/2011

MS DEGREES

Jacqueline M. Cormier	09/2011
Jennifer Silva Daluz	05/2011
Breanne Holmes	09/2011
Shiela Marie Jones	02/2011
Yao Lu	02/2011

PHD DEGREES

Sarit Agasti	02/2011
Malar Azhagan Azagarsamy	02/2011
Amarnath Bheemaraju	09/2011
Fe de la Cuesta Consolacion	05/2011
Shannon Coates Flagg	09/2011
Siriporn Jiwpanich	05/2011
Tejaswini Kale	05/2011
Debabrata Patra	05/2011
Lubna Al-Challah Richter	05/2011
Nadnudda Rodthongkum	09/2011
Evren Saban	09/2011
Oscar Mirando Sanchez	02/2011
Sravanti Vaidya	05/2011
B. Harihara Venkatraman	09/2011
Usha Viswanathan	05/2011
Witold Witkowski	05/2011

RESEARCHFEST 2011

The Chemistry Department welcomed the 2011-2012 academic year with the 20th annual research symposium, Researchfest. The event was held on August 30, 2011 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 through a nomination/evaluation process. **Jon Amoroso** (Schnarr Group) was chosen to receive the *Richard K. and Meryl M. Brown Graduate Scholarship in Chemistry*, a prize of $5,000 for his work on "Novel Strategies for Selective Modification of Polyketide Synthases and Polyketides." **Nagarjuna Gavvalapalli** (Venkataraman Group) received the *Dr. Paul Hatheway Terry Graduate Scholarship Award* for Outstanding Presentation for his work on "Next Generation Electron Conducting Materials for Organic Photovoltaics." **Ebru Kizilay** (Dubin group) received the *Marvin D. Rausch Scholarship Award* for Outstanding Presentation for her work on "Complexation and Coacervation in Mixtures of Micelles and Polyelectrolytes: Electrostatic Self-assembly of Soft Colloids." **Guanbo Wang** (Kaltashov group) received the *Marvin D. Rausch Scholarship Award* for Outstanding Presentation for "Understanding Mechanisms of Protein Aggregation Using New Analytical Tools."

Jon Amoroso, Guanbo Wang, Ebru Kizilay, and Nagarjuna Gavvalapalli

A total of 62 posters were presented in the event, surpassing the number of posters from the past Researchfest events. The following ten students received *William E. McEwen Fellowship Awards* for Outstanding Posters:

- **Chandramouleeswaran Subramani** (Rotello group), "Fabrication of Biocompatible Nanostructures for Cellular Patterning"
- **Sravan K. Surampudi** (Venkataraman group), "Controlled Apical Functionalization of Bridged Triarylamines"
- **Samantha B. Nicholls** (Hardy group), "Mechanism of a Genetically-Encoded Dark to Bright Reporter for Caspase Activity"
- **Gitanjeli Prasad** (Schnarr group), "Investigation of Polyketide Synthases by Heterocycles"
- **Andrea Della Pelle** (Thayumanavan group), "Cyclopentadithiophene-Based Organic Semiconductors: Experimental and Theoretical Investigation into the Effect of Fluorinated Subsitutents on Electrochemical and Charge Transport Properties"
- **John Hangasky** (Knapp group), "Mechanistic and Kinetic Studies on the Human Oxygen Sensor, Factor Inhibiting HIF"
- **Kristen Huber** (Hardy group), "Caspase-9 is Regulated by Zinc Mediated Inhibition and CARD Domain Interactions"
- **Bo Yan** (Vachet/Rotello groups), "Structural Characterization and Quantitative Detection of Nanoparticles Using Mass Spectrometry (MS)"
- **Krishnendu Saha** (Rotello group), "Differentiation of Cell Surface Glycosylation and Cell States Using a FRET Based Biosensor Array"
- **Nick Borotto** (Vachet group), "Scrambling of Covalently Labeled Amino Acids During CID"

Top Left: John Hangasky, Nick Borotto, Krishnendu Saha, Chandramouleeswaran Subramani, Sravan Kumar Surampudi
Bottom Left: Gitanjeli Prasad, Bo Yan, Kristen Huber, Samantha Nicholls, Andrea Della Pelle

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

We gratefully acknowledge the financial support we received for this event from UMass Amherst Department of Chemistry, *Richard & Meryl Brown Scholarship Fund*, *Marvin D. Rausch Scholarship Fund*, *Dr. Paul Hatheway Terry Scholarship*, *William E. McEwen Endowment Fund*, *Rohm & Haas*, *Fisher Scientific*, *Proctor & Gamble*, the Graduate Chemistry Association, and alumni support. If you are interested in contributing to this event please contact **Amanda Hussey** at ahussey@chem.umass.edu or **Dana Algaier** at dalgaier@chem.umass.edu – Student Development Committee

LAH: Yes, I had a chemistry set when I was little.

GG: What was your worst job ever?
LAH: I like all the jobs I had. I learned and gained a lot of experience from each one.

GG: What convinced you to go to the grad school you attended?
LAH: The interesting research of the group that I joined at the grad school that I attended excited me and I had no doubt that I wanted to work on that field and attend that grad school.

GG: What did you study for your PhD?
LAH: An integral part of my research was the synthesis of novel polymers and modification of polymer toward polyelectrolyte synthesis. One of the more developmental areas of my research was the production of polyelectrolytes used in organic light emitting diodes (OLED) and solar cells. The emphasis of my research here was to develop new assembly of these polyelectrolytes toward high luminescence OLED by using nanoscale thin film and low temperature route. One of the projects I worked on was studying the factors that affect wettability of surfaces in an attempt to develop thin films that have applications ranging from anti-corrosion to anti-fogging.

GG: What was your proudest moment ever (chemistry related or otherwise)?
LAH: My proudest moment was defending my dissertation at that stage I knew for fact that my hard work will help develop the field.

GG: Who do you admire and why?
LAH: I have high admiration to the chemists of the old time that had no access to all the technology we have nowadays yet they made a difference and pushed the field forward with the minimum amount of instruments yet with a lot of smart ideas.

GG: Who in chemistry and related fields do you admire and why?
LAH: There are many scientists that are worthy of admiration, but I really admire scientists that have been able to span many different fields with extraordinary success. One that comes to mind was **Leslie Orgel**. He was best known for his work as a biochemist working studying anti-cancer agents, however, he started out his career as a theoretical inorganic chemist and developed the well-known concept of phase-coupled ligation that occurs commonly in coordination compounds containing bidentate ligands.

GG: Have you ever had a job in industry?
LAH: No.

INTERVIEW WITH PROFESSOR **SARMAD HINDO** (SH)

GG: What was your worst job ever?
SH: I worked as a cook for about 1 year during high school and all I have to say is the environment wasn't that pleasant.

GG: What convinced you to go to the grad school you attended?
SH: After doing research for a few semesters during my undergraduate coursework, I knew that graduate school was in my future. I really enjoyed being in the laboratory. Research is challenging, however, when you start making progress it is really rewarding.

GG: What did you study for your PhD?
SH: My PhD work was in Inorganic Chemistry with an emphasis in Metal-containing Soft Materials and Medicinal Chemistry.

GG: What was your proudest moment ever (chemistry related or otherwise)?
SH: My proudest moment was when my younger brother graduated with his BBA.

GG: Who do you admire and why?
SH: The people I admire the most are my parents. I grew up in a fairly large family and both my parents provided my siblings and I with a nurturing environment and necessary support to pursue our personal and professional endeavors.

GG: Who in chemistry and related fields do you admire and why?
SH: There are numerous scientists that I admire and to name only one is difficult. I believe any scientist who is capable of crossing disciplines with significant outcome is worthy of admiration.

GG: What is the most useful tool in your lab?
SH: My current research efforts are in the area of chemical education, therefore, I do not have a laboratory.

GG: Which is more stressful, grant proposals, research or teaching?
SH: I have done research for many years and currently, my primary duties are teaching and I can say that both have their own degree of stress and challenges.

NEWEST FACULTY MEMBERS –continued

GG: What do you do when you're not being a chemist?
SH: When I am not working, I enjoy spending time with my wife and family.

INTERVIEW WITH PROFESSOR **RUTHANNE PARADISE** (RP)

GG: Where did you grow up?
RP: Whitinsville Massachusetts, south of Worcester.

GG: When did you realize you loved chemistry?
RP: It was my junior year of chemistry in high school, in a class where we weren't even able to actually do an experiments because the laboratory was under construction. The reason I came to love chemistry was the concepts introduced in the course.

GG: Does the love of chemistry run in your family?
RP: The love of chemistry does not, but the love of mathematics does. My parents, my brother, my uncle, and myself were all math majors in college.

GG: Did you have a chemistry set when you were little?
RP: There were no chemistry sets, but I did have a number of crystal growing kits and various other homemade science experiments.

GG: What was your worst job ever?
RP: My worst job ever was shoveling snow in college for minimum wage.

GG: What convinced you to go to the grad school you attended?
RP: The faculty that I met when I visited and the location convinced me to attend University of Massachusetts, Amherst.

GG: What did you study for your PhD?
RP: For my PhD, I studied the interaction of light and matter at the single molecule level. I investigated how chiral organic molecules responded to left and right handed excitation.

GG: What is the most useful tool in your lab?
RP: Two of the most useful tools that I introduce my students to are the UV-Vis and the HPLC. Most of them will encounter these or equipment very similar when the graduate from college.

GG: How does industry impact your science?
RP: Current trends in industry affect the choices I make for the experiments my students will perform during their course.

GG: What do you do when you're not being a chemist?
RP: When I'm not being a chemist, I'm a wife and I love to read, bike, hike, play board games, and swim.

INTERVIEW WITH PROFESSOR **CHRISTOPHER McDANIEL** (CM)

GG: Where did you grow up?
CM: Colorado Springs, CO.

GG: When did you realize you loved chemistry?
CM: High School I had an interest, but loved when was talked into taking organic by my organic prof teaching gen chem!

GG: Does the love of chemistry run in your family?
CM: My younger sister is studying chemistry now!

GG: Did you have a chemistry set when you were little?
CM: Yes.

GG: What was your worst job ever?
CM: Wendy's

GG: What convinced you to go to the grad school you attended?
CM: Location and Research faculty

GG: What did you study for your PhD?
CM: Synthetic organic chemistry with an emphasis on new organocatalytic methods.

GG: Who in chemistry and related fields do you admire and why?
CM: Jon Parquette for his work ethic and dedication to science for the sake of knowledge.

GG: Have you ever had a job in industry?
CM: No. I turned down 2 offers to work in the private, custom synthesis sector.

GG: What do you do when you're not being a chemist?
CM: Anything outdoors and spending time with my wife and son.

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DEAR ALUMNI AND FRIENDS OF THE DEPARTMENT OF CHEMISTRY,

I'm delighted to report that we have big plans for the 2012 reunion on May 19 (see page 2 for details). As noted in previous Gazettes, we have a wonderful cadre of new faculty to brag about and construction of new facilities on campus continues at a rapid pace. With funding from the National Institutes of Health, and from the University, construction is about half done on the complete renovation of three lab floors in Lederle. Imagine knocking down everything out to the four walls and the rebuilding from scratch – very exciting. Similarly, the new Laboratory Sciences Building is coming along nicely. We expect occupancy of both projects by the beginning of the new year. Come see the changes to your alma mater!

Adding to recent new hires in the tenure track, detailed in the last Gazette, I'm delighted to report on new hires at the lecturer level: Lara Al Hariri from Florida State, Chris McDaniel from Ohio State Univ., Sarmad Hindo from Wake Forest Univ., and Ruthanne Paradise (Hassey), a distinguished alum from our own Department! Read more about them in the story on page 20. They are already pioneering new approaches to education, in collaboration with our more seasoned faculty. Speaking of seasoned faculty, Vince Rotello was recently named a University "Spotlight Scholar," bringing to two the number of Chemistry faculty so honored in only the first two years of this program's existence. This adds to the numerous national and international honors that Vince has earned in the recent past (which include being selected as both a Fellow of the American Association for the Advancement of Science and a Fellow of the Royal Academy of Science in Great Britain.

This has been the inaugural year for iCons, the campus' new interdisciplinary training opportunity for undergraduates, and we are indebted to Scott Auerbach, DV Venkataraman, and Justin Fermann for their leadership on this pioneering effort. Last Spring saw our first Chemistry Demo night for the community, led by Raina Kittistved, with support from Ed Voigtman and a collection of Chemistry grads and undergrads. It was such a success that we expect capacity problems when we repeat it again this semester (but they'll manage)!

I would like to express the Department's most sincere thanks to Ray D'Alonzo (PhD '78, with Sid Siggia), who after retiring from a very successful 31 year career with Procter and Gamble, returned in 2008 to teach, mentor, and advise students here at his alma mater. His contributions have ranged from offering very personal and practical mentoring of students launching their first job searches, to connecting young faculty with potential industrial ties, to teaching in our large enrollment Chemistry for Nonmajors (101) course. His course on Industrial Chemistry, where he offered real world insights to students, was a big hit. Ray has a number of new initiatives up his sleeve as he returns to Cincinatti and we wish him all the best!

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 scientists!

Sincerely,

Craig Martin, Department Head

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