Chemistry Department
Newsletter

Spring 2006 **Volume 3**

http://www.dickinson.edu/departments/chem

Remarks by the Chair

Professor David Crouch

This third edition of the Chemistry Department's newsletter is being issued a bit later than usual. But, given all of the happenings that have occurred in our department over the past year-and-a-half, it isn't too surprising that we're behind schedule! Details of much of my message will be given elsewhere in the Newsletter, but I wanted to highlight a few changes in the Chemistry Department.

The most exciting news is the recent announcement by the Barry M. Goldwater Foundation that two Dickinson chemistry majors have been named Barry M. Goldwater Scholars. Becky Harker '07 and Michele Kondracki '07 are Dickinson's first recipients of this prestigious national honor. The Goldwater Scholarship is awarded annually to approximately 300 students nationwide. This year, 1081 students were nominated by their college or university and 323 were selected based on academic performance and promise. We are very proud of these students and their tremendous accomplishment!

This year, the Department welcomed two visiting faculty members. Professor Jeanne Robinson is a graduate of Gettysburg College and Rensselear Polytechnic Institute and brings extensive teaching experience to Dickinson where she has been filling in during Cindy Samet's sabbatical leave. Professor Benny Chan is a native of Pennsylvania having grown up in Lancaster and completed undergraduate and graduate degrees at Franklin & Marshall and Penn State, respectively. After a post-doctoral fellowship that had him splitting his time between Colorado State and Los Alamos National Labs, Benny joined the department to replace Professor Amy Witter during her sabbatical leave this year. [Both Cindy and Amy are here this year, having chosen to spend the year working on their research in their labs.] Both Jeanne and Benny have been wonderful additions to our department and we're glad to have had them with us.

Much of the spring and summer of 2005 involved a series of lengthy meetings with architects, engineers and lab designers to develop a plan for the new science building that is to be built on the James Center site. As I write this message, the Department has signed off on the final "Design Development" plans and the project will be sent out to bid later this spring. Groundbreaking for this state-of-the-art facility is scheduled for the weekend of May 5-6 when the Board of Trustees hold their next meeting on campus. The current plan has the entire chemistry department moving into the new building during the summer of 2008. Needless to say, the Department is very excited about the prospect of teaching and research in a new building.

One of the more interesting developments in the Department over the past year or so has been an increase in the sophistication of technology associated with teaching. In the spring of 2005, the Department introduced "Clicker" technology into organic chemistry courses. These handheld devices allow students to enter their answers to multiple choice questions posed by the instructor. The results appear on the screen in a format similar to the one used on "Who Wants to Be A Millionaire?" The instant feedback through anonymous responses has proven to be very beneficial as students can gauge their individual mastery of the course material. And, the instructor gets a sense of where the class stands in "real time." Although students were wary of this system at first (some felt that it was a bit too much like Big Brother was watching), by the end of the semester, student comments on the Clickers were overwhelmingly positive.

Professor Mike Holden has also pioneered the use of class blogs and podcasts. The blogs allow him to send reminders to his class and review material. The Podcasts include tutorials of specific topics and include Powerpoint slides that are narrated by Mike. Both have proven to be very popular and Mike promises to let us all know if they help students learn organic chemistry.

If you are in the area of Carlisle, we invite you to stop by the Department and visit. We'd be happy to show you our current facility and share plans for the new building.

Faculty Reports

Ashfaq Bengali

Research in my lab continues to focus on the interaction between transition metals and weakly bound solvent molecules. During Summer '05, Amy Grunbeck ('07) and Laura Bahorich ('07) investigated the bonding between various metal centers and arene molecules using kinetic methods. We studied the reactivity of several weakly bound metal-η^2-arene complexes from the microsecond to hours timescale using a variety of techniques including laser flash photolysis with IR detection and more conventional UV/VIS approaches. These studies were initiated to better understand the ability of some metal centers to dearomatize coordinated arene rings thereby facilitating the functionalization of arene molecules. Amy's work led to a publication in the journal *Organometallics* while Laura's work continues this semester. We are planning on presenting the results of our research at the American Chemical Society meeting in San Francisco in Fall 2006. If any of our chemistry alums are planning on attending, please look us up.

David Crouch

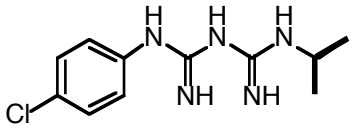
Work in my lab continues to focus on the very different areas of organic synthesis and nanotechnology.

In the field of organic synthesis my students and I continue to focus on the synthesis of a series of compounds that are of interest to medicinal chemists. Becky Harker '07 and Anna Williams '06 worked on this project during the summer of 2005. Anna used the summer to gain experience with our new microwave reactor and developed a fast method to accomplish selective deprotection reactions of silyl ethers. In the fall, Anna worked to find the optimum steps for the reactions necessary to accomplish our synthesis of the medicinal agents. Becky focused on the development of a promising and fast method to join two aromatic rings together. Her method uses microwave irradiation which accelerates this process from a sluggish, multi-hour reaction to an experiment that can be completed in less than 30 minutes. Becky and Anna presented their work at the 2006 Atlanta meeting of the American Chemical Society in March.

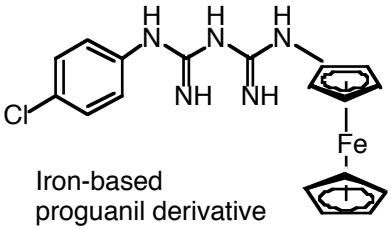
The project in nanotechnology aims to develop new lab activities for use in existing chemistry courses and has been funded by a grant from the National Science Foundation. Amie Richardson ’05 worked in my lab in the summer of 2004 to pull together a first set of experiments to be used in the first edition of our Chem 111 course on nanotechnology and chemistry for nano-science majors. Nikki Perry ’07 added some more labs to the course in the summer of 2005 and currently John Aryeetey ’09 is working to image molecules using scanning tunneling microscopy. The nanotechnology project got a major boost when Dr. Benny Chan joined our department as a visiting faculty member. Prof. Chan and two students, Amanda Janiec ’07 and Michele Kondracki ’07 are working on two projects that involve the use of gold nanoparticles as sensors.

Mike Holden

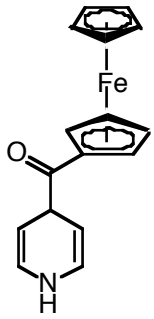
My research continues to move into the realm of bioorganometallic chemistry. This year Natalie Martin ’06 has worked with me in the lab on two projects – the effort to create an iron-containing analog of the anti-malarial compound proguanil and the synthesis of ferrocenyl-containing 1,4-dihydropyridines (DHPs). DHPs are used extensively in the manufacture of a number of important compounds, including calcium channel blockers, vasodilators, and Alzheimer’s drugs.



Proguanil



Iron-based
proguanil derivative



Ferrocenyl-substituted
Dihydropyridine

The DHP project went well, as Natalie synthesized several of the desired products. Future efforts will focus on improving the yields of these reactions. The proguanil project continues to move ahead at a glacial pace – there are inherent difficulties in the synthesis of the required ferrocenyl amine. Natalie will be spending her second summer as a Beckman scholar continuing to work on this undertaking.

Terry Hubert ’07 has started a project that initially was to focus on synthesizing ferrocenyl analogs of acyloxyalkyl esters; compounds that show promising anti-cancer activity. This project has morphed into an investigation into a new, simplified method of generating the esters, with or without the metallic fragment.

I have also started a few projects that fall under the general heading of green chemistry. Sara Baszczewski ’06 and Kelly Hoberg ’06 are working on projects in which corrosive mineral acids are replaced by the more environmentally responsible sulfamic acid. Sara’s work is centered on acid-catalyzed Knoevenagel reactions and Kelly is working on the Ritter reaction. Both undertakings have shown promise – NMR spectra of the products show clean conversion to the desired compounds but yields are still low.
Amanda Macdonald ’06 has been working on a microwave-mediated synthesis of specifically-substituted benzopyrans, compounds which are starting materials for a wide array of bioactive molecules. She has successfully shown that she can get yields comparable to the traditional method of heating at reflux, with

a reduction in reaction time from 6 hours to 15 minutes. She is now working on generating a number of examples to show generality in the method.

On the teaching side, I continue to teach organic chemistry and Bioorganic chemistry. I am director of the program in Biochemistry and Molecular Biology and serve as a member of the Clarke Center Steering Committee. I am also, along with Dave Crouch, the department's representative on the new science facility committee. For those of you who remember my family, son Chris is now a college sophomore (at Kenyon College) and daughters Mel (high school senior trying to decide between Kenyon and Colgate) and Megan (8th grader) are growing up all too quickly. You can see a photo of them on my website (www.dickinson.edu/~holden)

Pamela Higgins

My research interests in designing new chemical nucleases continues on with the assistance of some new students. Amanda Matz Gellett ('06) has been busy synthesizing and studying the nuclease properties of a lysine-ferrocene conjugate. We had to overcome some humidity problems in Althouse last summer, but we will be presenting our results at the ACS MARM meeting in Hershey this coming summer. Jennifer Mytar ('06) has begun to devise and carry out a synthetic route for a glutamic acid-Fe(II) salen conjugate as a potential new nuclease and we hope to investigate its ability to cleave DNA this coming summer.

Despite a very busy year in the classroom, I presented a poster at the ACS national conference in San Diego last March with Profs Crouch and Bengali, had two publications appear in prominent chemical educational journals, and attended the Pacifichem conference in Hawaii in December with Professor Witter. In addition, I have taken a few short trips involving rock climbing, camping, hiking and sailing. In conclusion: worked hard, played hard!

Cindy Samet

Professor Samet is on a one year research sabbatical (05-06), working in her lab here at D'son, continuing her studies of C-H--O and C-H---N hydrogen bonding.

Amy Witter

Professor Witter has been enjoying a year-long sabbatical after receiving tenure in Spring 2005. During her sabbatical she has been working in her laboratory at Dickinson on two separate research projects. The first falls into the realm of analytical biochemistry and she is studying differences in protein glycosylation amongst different species of marine bacteria. Protein glycosylation is a common post-translational modification that has only recently been recognized as being important in prokaryotes. However, whether or not a protein is glycosylated has a large effect on its reactivity in biological systems. With the development of recombinent proteins as therapeutics, there is a need to understand how protein glycosylation patterns affect clearance rates and efficacy in model systems. She has been working to characterize these modified proteins using techniques such as high performance anion-exchange chromatography with electrochemical detection and gel electrophoresis.

A second project she is working on falls into the category of environmental analytical chemistry. She is measuring polycyclic aromatic hydrocarbons (PAHs) and sterols in sediments from the Conodoguinet Creek in Carlisle to better understand how land-use along the Creek impacts surface water resources. Carlisle and other towns along the creek utilize the Conodoguinet for both drinking water as well as sewage treatment. Ultimately, sediments act as the ultimate repository for many chemical contaminants that enter the stream, and by examining different sites along the Creek, from the pristine headwaters on Kittatinny Mountain, to where the creek joins the Susquehanna River in Harrisburg, she is hoping to learn about the impacts that traffic and population have on the stream ecosystem.

In July, Professor Witter takes over as Chair of the Chemistry Department, so drop me an email and let me know what you are doing with your Dickinson chemistry degree.

Scholarly Research

Asfaq Bengali

Publications

1. "The Mechanism and Energetics of Silane and THF Displacement from the $(\eta^6\text{-}C_6H_6)Cr(CO)_2(HSiEt_3)$ and $(\eta^6\text{-}C_6H_6)Cr(CO)_2(THF)$ Complexes", Ashfaq A. Bengali and Robert Fehnel*, *Organometallics*, **24**, 1156, (2005).

2. "Displacement of the heptane solvent from $(\eta^5\text{-}C_5H_5)Re(CO)_2(heptane)$: A flash photolysis study using infrared detection", Ashfaq A. Bengali, *J. Organomet. Chem.*, **690**, 4989, (2005).

3. "Investigating the reactivity of the $(\eta^6\text{-}C_6H_5R)Cr(CO)_2\text{-}(\eta^2\text{-}C_6H_5R)$ [R = H, CH_3, CF_3] bond: A laser flash photolysis study with infrared detection" Ashfaq A. Bengali and Amy Grunbeck*, *Organometallics*, **24**, 5919, (2005)

Presentations

1. The Mechanism and Energetics of Silane and THF Displacement from the $(\eta^6\text{-}C_6H_6)Cr(CO)_2(HSiEt_3)$ and $(\eta^6\text{-}C_6H_6)Cr(CO)_2(THF)$ Complexes", Ashfaq A. Bengali, 229th National Meeting of the American Chemical Society, San Diego, CA, March 14th, 2005.

David Crouch

Publications

R. David Crouch, Anna B. Williams '06. "Rapid, Acid-mediated Deprotection of Silyl Ethers Using Microwave Heating" *Synthetic Communications*, **2006**, *36,* 959 - 964.

R. David Crouch. "Trisisopropylsilyl Chloride" In *The Electronic Encyclopedia of Reagents for Organic Synthesis*; L.A. Paquette, ed.; John Wiley: New York, 2005.

Michael S. Holden, R. David Crouch, Kathryn H. Barker. "Formation of α-Tetralone by Intramolecular Friedel-Crafts Acylation" *J. Chem. Educ.* **2005**, *82*, 934 – 935.

R. David Crouch, Anna C. Kreshock '03, Michael S. Holden. "Bismuth(III)-Mediated Allylation of Benzaldehyde Dimethyl Acetal: Analysis of First Order Coupling in the NMR Spectrum" *The Chemical Educator* **2005***, 10,* 133 – 135.

Presentations

R. David Crouch. "Nanoscience for Non-Science Majors" presented at the 231st meeting of the American Chemical Society, Atlanta Georgia, March 26 and 27, 2006.

Anna B. Williams '06, R. David Crouch. "Microwave-accelerated selective deprotection of silyl ethers" presented at the 231st meeting of the American Chemical Society, Atlanta Georgia, March 26 27, 2006.

Rebecca L. Harker '07, R. David Crouch. "Microwave-accelerated Suzuki-Miyaura reactions of potassium phenyltrifluoroborate" presented at the 231st meeting of the American Chemical Society, Atlanta Georgia, March 27, 2006.

R. David Crouch, Alexander Tucker-Schwartz '05, Kathryn H. Barker. "Iodolactonization of 4-Pentenoic Acid: An organic laboratory exercise" presented at the 229th Meeting of the American Chemical Society, San Diego, California, March 13, 2005. Abstract CHED 84.

Amie M. Richardson '05, R. David Crouch. "Synthesis of silver nanoparticles: An undergraduate laboratory using a biological approach" presented at the 229th Meeting of the American Chemical Society, San Diego, California, March 13, 2005. Abstract CHED 123.

R. David Crouch. "Nanoscience for Non-science majors" presented at the 229th Meeting of the American Chemical Society, San Diego, California, March 17, 2005. Abstract CHED 1412.

Pam Higgins

Pamela J. Higgins. *In vitro* synthesis and activity of reporter proteins in an *E. coli* S30 extract system: An undergraduate experiment. *Biochemistry and Molecular Biology Education* **33** (2005): 426-430

Cindy Samet and Pamela J. Higgins. Napoleon's Buttons: Teaching the Role of Chemistry in History. *Journal of Chemical Education* **82** (2005): 1496-1500

Micheal Freitag ('02), Chad Talarek ('02) and Pamela J. Higgins. *Cleavage of DNA by a lysine-ferrocene conjugate*. Presented at the 229th American Chemical Society National Meeting (San Diego, CA), March 2005

Mike Holden

Crouch, R.D., Holden, M.S., Romany, C.A. "The Darzens Condensation: Structure Determination through Spectral Analysis and Understanding Substrate Reactivity," *J. Chem. Educ.* **2005***, 82,* 711.

Holden, M.S., Crouch, R.D., Barker, K. "Formation of a-Tetralone by Intramolecular Friedel-Crafts Acylation," *J. Chem Educ.* **2005**, *82*, 934.

Crouch, R.D., Kreshock, A.C., Holden, M.S. "Bismuth(III)-mediated Allylation of Benzaldehyde Dimethyl Acetal: Anallysis of First-Order Coupling in the NMR Spectrum," *Chem. Educ.* **2005**, *10*, 133.

Cindy Samet

Pentachlorocyclopropane/Base Complexes: Matrix Isolation Infrared Spectroscopic and Density Functional Study of C-H---N Hydrogen Bonds, C. Samet, A.B. Baker (04), J.T. Lyon, and L. Andrews, *J. Phys. Chem. A.,* Vol. 109, No. 37, **2005,** 8280-8289.

Napoleon's Buttons: Teaching the Role of Chemistry in History, C. Samet and P. J. Higgins, *J. Chem. Educ.,* Vol. 82, No. 10, **2005,** 1496-1500.

Amy Witter

Witter, A.E (2005). You are what you eat: the quantitative determination of butylated hydroxytoluene (BHT) in chewing gum by GC/MS. Journal of Chemical Education, 82(10), 1538 - 1541.

Scott, B.F., MacDonald, R.W., Kannan, K., Fisk, A., Witter, A.E., Yamashita, N., Durham, L., Spencer, C., and D.C.G. Muir. (2005) Trifluoracetate (TFA) Profiles in the Arctic, Atlantic, and Pacific Oceans. Environmental Science and Technology, 39: 6555-6560.

Department News

Gamma Sigma Epsilon

Gamma Sigma Epsilon is still a relatively new honor society here at Dickinson and is becoming more and more involved in areas surrounding Chemistry and BMB activities. Gamma Sigma Epsilon welcomed it's new members February 22nd and looks forward to an exciting new year under the new president, Rebecca Harker.

The organization has successfully invited it's first guest speaker, Dr. Terrence Collins. He is coming April 24th from Carnage Mellon to speak to the Dickinson College community about the importance of being earth friendly through the practice of green chemistry. This lecture was put together by GSE member, Jen Mytar. Other members have taken charge of welcoming the new Chemistry and BMB majors to the department as well as planning picnics and BBQs for all majors.

Gamma Sigma Epsilon is an honorary society but it also welcomes anyone interested in chemistry or BMB to come to our meetings and events. If you have any questions about joining or participating email our new president at harkerr@dickinson.edu.

Jennifer Abrams
President

Table 1. Gamma Sigma Epsilon Inductees 2005

	NAME	MAJOR(S)
Class of 2005	Laurel Blair	
	Emily Greenlee	
	Jeffrey Heath	
	Rebecca Huesman	
	Kira Krivy	BMB
	Carine Nadem	BMB
	Kirsten Stone	BMB
	Benjamin Tiede	
	Sarah Wallett	
Class of 2006	Lori Dorward	Chemistry
	Jennifer Mytar	BMB
Class of 2007	Laura Bahorich	Chemistry

	Rebecca Harker	Chemistry
	Jessica Howard	BMB
	Michele Kondracki	BMB and Chemistry
	Sarah Yarnall	BMB

*BMB = Biochemistry and Molecular Biology

Table 2. Gamma Sigma Epsilon Inductees 2006

	NAME	MAJOR(S)
Class of 2006	Sara Baszczewski	BMB
	Kelly Hoberg	BMB
	Amanda Gellett	BMB
	Louis Lazar	BMB
	Nimi Nirdosh	BMB
	Natalie Martin	BMB and Chemistry
	Theodore Scott Nowicki	BMB
Class of 2007	Eric Barth	BMB
	Amy Grunbeck	Chemistry

*BMB = Biochemistry and Molecular Biology

2005 Departmental Awards

ACS Outstanding Senior Chemistry Major Award	Alex Tucker-Schwartz
ACS Division of Polymer Chemistry Award	
AIC Outstanding Senior Major Award	
Chemistry	Missy Moidel
Biochemistry	Michael O'Malley
The Merck Index Award	Missy Moidel
ACS Undergraduate Award in Analytical Chemistry	Sara Baszczewski
John E. Benson Handbook Award	Missy Moidel
CRC Freshman Chemistry Achievement Award	Jennifer Kilpatrick
Horace E. Rogers Scholarship Award	Laura Bahorich Michele Kondracki
Richard Sheeley Memorial Scholarship	Natalie Martin
Vuilleumier Scholarship	Rebecca Harker
Hypercube Scholar 2005	Alex Tucker-Schwartz

Class of 2005 Graduates

Biochemistry & Molecular Biology	Chemistry
Aboluwade Ayodele	Laurel Blair
Casey DelConte	Robert Fehnel
Christopher Fried	Melissa Moidel
Emily Greenlee	Cody Peer
Jeffrey Heath	Amie Richardson
Rebecca Huesman	Alexander Tucker-Schwartz
Tasha Kouvatsos	Matthew Stachowiak
Shannon Lilly	
Justin Lowe	
Kristin Mioski	
Melissa Moidel	
Carine Nadem	
Michael O'Malley	
Michelle Reina	
Kirsten Stone	
Benjamin Tiede	
Sarah Wallett	
Isaac Zentner	

Alumni Spotlight

Phil McGillivary, Chemistry Major, '74

What: Science Liaison, US Coast Guard Icebreakers
Where: CG West Coast HQ, Alameda, Ca. (Ships in Seattle), Support of Science and Logistics expeditions to Arctic, Antarctica
Why: Icebreaker Support of Arctic Research, and Channel Break-in, Logistics and Science Support for US McMurdo Station, Ross Sea, Antarctica (map see: http://en.wikipedia.org/wiki/Image:Antarctica_Map.png and http://www.niwascience.co.nz/pubs/wa/11-3/map)
How: Combination of shipboard seawater sampling, remotely operated robotic floats, and remote sensing studies in support of satellite calibration and global models, including global carbon model

For more than 100 years, the US Coast Guard (formerly the Revenue Cutter Service) have run the icebreakers for the federal government, originally in support of rescue efforts for the New Bedford whaling fleet off Alaska, and in support of Smithsonian Institution expeditions. In 1957-58, the CG icebreakers supported the most recent International Polar Year (IPY), during what was largely still an exploratory period of polar research, which documented the basic temperature, salinity and oxygen

characteristics of waters in the Ross Sea, and underneath the 1000km wide floating Ross Ice Shelf, the largest on the planet. This work lead to the conclusion that the upwelling spring bloom in the McMurdo gyre is the most productive place in the worlds' ocean. Stated from another perspective, it was determined that nowhere else is more CO2 removed from the atmosphere into the ocean.

Each November, one or two CG icebreakers (depending on ice conditions) leave Seattle to head for McMurdo Station to break a channel to the US base there, and escort supply ships for fuel and food to the station during the warmer months of the austral summer, returning north in mid-February before the freeze-up of the Southern Ocean. Because ice conditions vary greatly from year to year, a period of up to two weeks can sometimes be used for science while in the Antarctic, and the regular transit from Seattle to Antarctica provides a valuable long-distance trackline for calibration of satellites, and collection of long-term data for geophysical and geochemical models of the planet.

Studies for the past two years have used a continuous underway seawater sampling system from Seakeepers (see: http://www.seakeepers.org/) which is maintained on a number of ships of opportunity for data collection. In addition to temperature, salinity and chlorophyll fluorescence, a CO2 measuring system has also been incorporated, along with systems which can record CO2 in the atmosphere which with other data can be used to estimate air-sea CO2 fluxes. Data collected from CG icebreakers in the Southern Ocean, the largest, most productive and coldest ocean on the planet, contribute to a better understanding of global elemental budgets and changes associated with climate dynamics on a planetary scale.

Alumni News

Class of 1967

Dan Reger

He is serving his second term as Chair of the Department of Chemistry and Biochemistry at the University of South Carolina. His research program in inorganic chemistry is funded by the NSF and his group just published its 170th refereed paper. He is also the coauthor of the introductory chemistry text "Chemistry: Principles and Practice."

Class of 1982

Kathryn Moffett-Bradford

Is an Associate Professor of Pediatrics at West Virginia University. She doesn't get back to Carlisle very often, but looks back fondly to those days. She has two young boys and they all enjoy ice skating, skiing, baseball, and right now, Mountaineers basketball! Her best to all!

Class of 1987

Chris Kase

Currently employed as Manager - Toxicology for Quest Diagnostics Nichols Institute in Chantilly, Virginia

Class of 1989

Jim Brian

He has taken a temporary retirement from medicine to be a stay at home father. It is quite a challenging job, but he recommends it to any who have the opportunity.

Dan Brown
Dan was promoted to Associate Professor of Radiology and Surgery at the Mallinckrodt Institute of Radiology, part of Washington University School of Medicine.

Class of 1990

Rich Pennock
Rich participated in the opening of the NASDAQ on March 17, 2006. He is currently the Northeast Director of Kelly Scientific Resources.
http://content.nasdaq.com/reference/hiresphotos/mo_031706_hires.jpg

Class of 1991

Thomas Burns
He has been the Assistant Dean for academic affairs in the Graduate School of Arts & Sciences at Yale University since December 2000. He oversee the master's and doctoral programs for departments in the sciences, engineering and social sciences. He lives with his family in West Haven, CT.

Class of 1998

Kevin Ryan
He married Nicole Harvey on November 11, 2005 in Boston, MA. Scotty Cole (Chem. '98) was there to help celebrate.

Class of 1999

Jodi Wiegand
Had a baby girl in June 2005 and still is employed as a GC/MS analyst at an environmental lab in the Pittsburgh area.

Tia Maiolatesi
Currently getting a Masters of Architecture at Pratt Institute in Brooklyn, NY...a switch from BMB, but you'd be surprised how it can be applied to the study of form!

Class of 2000

Dominick Cerminaro
He is still working with Johnson & Johnson selling cancer therapeutics but is now working with major institutions in the DC area. He moved from Charlottesville and now lives in Dupont Circle if anyone is in the area**.**

Class of 2001

Jess Frie
After four years of working at Merck & Co., he decided to go back to graduate school. Jess is currently a first year graduate student in the Sorensen laboratory at Princeton University.

Jason Yi
He worked at a biotech company for two years after Dickinson, but really missed being a student. He went back to school and now finds himself as a 3rd year Ph.D. student in the department of pharmacology at Duke University. He studies the cell biology of the neuron, and is doing this work with Michael Ehlers in the department of neurobiology and the Howard

Hughes Medical Institute. He is looking foward to seeing some familiar faces during the class reunion in the summer.

Class of 2002

Amanda Leicht
She will be graduating from Jefferson Medical College this June and beginning her residency in internal medicine in Richmond, VA.

Class of 2003

Matt Hart
I am halfway through a Master's program in Analytical Chemistry at Drexel University. I am currently employed as a Research Assistant at The Wistar Institute Proteomics Core Facility in Philadelphia, where I run a MALDI Mass Spec and N-terminal sequencer for protein and peptide research.

Candice Romany
Has been working for the Dana-Farber / Harvard Cancer Center, in Boston, at Massachusetts General Hospital for the past two years. In April, she will start working for a neuro-surgeon doing molecular neuro-oncology research in a molecular pathology lab.

Brian Wellington
Third year medical student at Philadelphia College of Osteopathic Medicine, will be graduating in 2008, leaning toward a career in Emergency Medicine

Class of 2004

Caroline Estabrook
Caroline will graduate from the University of Virginia's Second Degree Nursing Program in May. She hopes to pursue a job as a critical care nurse in the fall. She misses the Chemistry and Biochemistry Departments and is so grateful to have received a such a wonderful education from Dickinson!

Andrew Rosenthal
For the past 2 years he has been living in Baltimore, MD, with his girlfriend and puppy while studying synthetic organic chemistry at Johns Hopkins University. He is working on anti-malarial drug research in the former lab of Prof. Crouch, Dr. Gary Posner. Look for his first publication in Tetrahedron soon!

Class of 2005

Alex Tucker-Schwartz
I would love to see an update on the latest research being done by students and Proffesors at UCLA as well as any recent publication refrences. As for tidbits of information, out here at UCLA we currently just had Dr. Omar Yaghi join the chemistry department faculty which was a big deal. Dr. Yaghi is one of the leading scientist persuing the study of metal-organic frameworks that can store hydrogen and methane gas. He has recently been able to store up tp 7.5% at 77 degrees kelvin, which is more then what would be required for a car fueled by hydrogen. For more info on it see http://www.newsroom.ucla.edu/page.asp?RelNum=6873 Cheers!