



## From the Desk of the Chair

### Another busy fall quarter has come and gone in the department.

This year promises to be an interesting one as many new projects and opportunities are underway. I hope to be able to report on some of this activity in the next issue of *The Catalyst*. In the meantime, I can tell you that our new curriculum will be put in place starting with our summer general chemistry and organic chemistry courses in June 2011.

The curriculum was recently approved by Faculty Council and is now heading to the provost for his signature. If you are interested in what the new curriculum will look like, I invite you to go to our website, [chemistry.depaul.edu](http://chemistry.depaul.edu), after the beginning of the new year. We wanted to start the new set of courses this fall, but the university's internal curriculum review process ran a little longer than anticipated.

The department also conducted a search for a medicinal/synthetic organic chemist this fall. We were able to hire our new colleague, Caitlin Karver, Ph.D., who will begin teaching next fall. The department has also been authorized to look for a bioanalytical chemist. The search for this position started this winter. As you can see, the department has been building up expertise in the area of biochemistry, an area that many students express interest in these days.

Before I close, I would like to mention that the department is actively seeking alumni to participate in an advisory board. Such a board was recommended by external reviewers that visited us last February during the department's internal academic program review process. The advisory board would meet with the faculty a few times each year to provide feedback on curricular offerings, the establishment or dissolution of programs, and departmental events. We would like to tap into the expertise of our alumni in order to help current and future students who will soon be out working in the real world as medical doctors, practicing industrial chemists and teachers. If you think you can help us in this effort, please drop me a note at [rniedzie@condor.depaul.edu](mailto:rniedzie@condor.depaul.edu).

As usual, we are always happy to hear what our alumni are up to. Be sure to visit our website once in a while. The best way to contact us is to send a note to our general mailbox [chemistry@che.depaul.edu](mailto:chemistry@che.depaul.edu). ●

Best regards,

RICHARD F. NIEDZIELA  
ASSOCIATE PROFESSOR AND CHAIR  
CLASS OF 1988

# A Student's Perspective of the B.S./M.S. Option in Chemistry

By: Natalie Rizzo

**When I reflect on my undergraduate career, one thought immediately comes to mind: Wow...that was fast.** Graduation has a tendency to sneak up on busy undergraduates, especially when you have spent the majority of the past four years buried in a lab or textbook. When junior year came, I didn't have much direction for my post-graduate career. I knew I wanted to continue with school, but I wasn't yet ready to choose potential schools or programs. To give myself a cushion of time I decided to enroll in DePaul's chemistry M.S. program as a five-year B.S./M.S. student.

Perhaps more valuable than the additional time scored by the fifth year of study was the experience gained by both advanced coursework and teaching opportunities within the department. Chemistry is big—there are many topics within the field, making it very difficult to experience the full offering of courses while simultaneously graduating in a realistic time frame. The B.S./M.S. program allows you to fill in any gaps in your experience. If you think you are interested in health sciences but were unable to fit biochemistry into your first four years, you would be able to study it in your fifth before moving on to a professional degree program. Interested in a graduate elective in biology or physics? There is time for that as well, and the department is happy to help you build a curriculum that suits your needs and interests. Taking graduate classes is also a great way to demonstrate that you can succeed at an advanced level in preparation for a professional degree. If you are interested in entering industry, starting with a M.S. degree will certainly give you a head start and qualify you for more opportunities.

Experience as a teaching assistant is invaluable in an academic career, as most Ph.D. students serve as teaching assistants early in their careers. Competitive assistantships are available to help you finance your education while providing academic work experience in the same location as your classes—no commuting or scrambling to find a daytime job necessary. In addition to teaching, the B.S./M.S. has a thesis option that allows you to work in a research laboratory that fits your interests. This option culminates in a defense of your project before a thesis committee and is another great way to test out research and thesis development before committing to a four- or five-year Ph.D. program.

Would I choose this degree track again? Absolutely. I feel significantly more prepared for Ph.D. work, more confident in my knowledge of chemistry, and now certain in the direction of my post-graduate education. Rather than taking a year off to explore post-graduate options, undergraduates should consider the five-year B.S./M.S. to keep moving forward and gaining relevant academic and work experience. ●

# Alumni Feature

By: Sandra Chimon-Peszek

**Marion E. Becker, a DePaul University (DPU) alumni, obtained her master's degree (M.S.) in physical inorganic chemistry in 1998 while under the supervision of Sanat Dhar, Ph.D.** In her opinion, he was an “absolutely brilliant inorganic chemist.” Becker enjoyed working with Dhar and it was through Dhar's advising and the co-advising of F. Albert Cotton, Ph.D., that her thesis earned “highest distinction.” While working on ligand group orbitals, Dhar introduced Becker to Cotton, the author of many chemistry books and also the author of over 1,700 scientific articles.

Becker's time as a master's student at DPU was different than most. Becker worked full time as a forensic chemist with the U.S. Customs Laboratory (Homeland Security and Border Protection Division) all through her M.S. program. She decided to choose the M.S. program at DPU because of its reputation of flexibility for working professionals. That was not the only reason Becker chose DPU; it was also DePaul's educational reputation. As a result of her education at DPU, she is often referred to as a “brilliant, determined, relentless” chemist and constantly thanks DePaul for that.

Even though Becker was recently downsized at Dionex Corporation, due to the economy, she remained positive and her advice is not allow this to affect your drive and determination. She states “remain positive and keep moving forward. You must continue to seek out that perfect fit for a position with a company that appreciates what you have to offer. Eventually you will secure a good position with a great company.” It is with this positive ambition that she currently acquired a position with Alberto Culver as a senior chemist in the Research and Development division working with her favorite instruments of choice—ICP, IC, AA, FTIR, TGA, DSC—running inorganic chemistry and physical characterization. Educationally and professionally, Becker is exactly where she expected to be today.

Our interview ends with a final question for Becker, “What advice would you give for the current students at DePaul who are anticipating graduating in the near future?” She responded as positively as one can in these economic and trying times. “The chemistry program at DePaul is excellent, and will provide you with all the ammo you require to succeed. Be aware that no position is permanent in today's economy. Be prepared for the politics you will encounter in industry. Know your strengths/limitations/capabilities. Be introspective. Be very aware that companies are far more interested in your behavior than your knowledge base.” ●

# The Annual Chemistry Research and Awards Symposium

By: Matthew R. Dintzner

**The 2009–2010 academic year came to a close on Friday, June 4, 2010, with the annual research and awards symposium.** The event celebrates the research and academic achievements of our students, as well as to acknowledge outstanding student service in the department. This year the department awarded more than \$14,000 in scholarships and five students gave presentations on the research projects they had worked on during the academic year.

## STUDENT PRESENTATIONS

**Irina Doncheva** (Lihua Jin, advisor)

“Binding of Copper (II) to Amino Acids”

**Stephanie Reeves** (Carey Southern, advisor)

“Construction of a Bivalent Antibody Fragment for Conducting Single Molecule Spectroscopy”

**Liz Rohn** (Sandra Chimon Peszek, advisor)

“Understanding (and Potentially Inhibiting) the Proliferation of Alzheimer’s and Other Neurodegenerative Diseases”

**Alex Spore and Zachary Wahrenburg** (Roger Sommer, advisor)

“Synthesis and Characterization of Coordination Polymers of Phosphorus-Nitrogen Ligands”

## DEPARTMENT OF CHEMISTRY AWARD RECIPIENTS

**CRC Press General Chemistry Achievement Award:** Robb Hawkinson, Lauren Hughes, Kelly Mueller, Brian O’Byrne, Samantha Sasnow and Kelsey Vargas

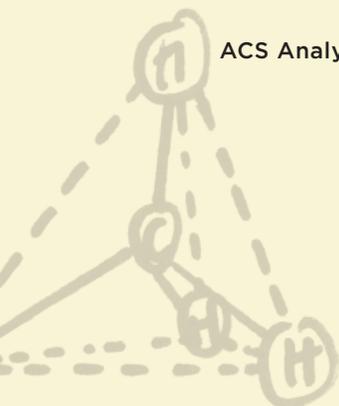
**POLYED Award for Outstanding Performance in Organic Chemistry:**

Sean Crowe

**Departmental Award for Outstanding Performance in Organic Chemistry:**

Kevin Dolezal and Cassandra Francis

**ACS Analytical Chemistry Award:** Michael Kelliher





**Departmental Award for Outstanding Performance in Biochemistry:**  
Mark Aparece

**ACS Undergraduate Award in Inorganic Chemistry:** Natalie Rizzo

**Senior Honors Convocation Award:** Natalie Rizzo

**AIC Chemist of the Year Award:** Irina Doncheva

**Merck Index Award:** Paula Hoffmann

**Outstanding Assistant Awardees:**

*Graduate Assistants:* Tom Speltz and Kristy Streu

*Undergraduate Teaching Assistants:* Irina Doncheva, Paula Hoffmann, Michael Kelliher, Steven Lance, Nora O'Byrne, Stephanie Reeve and Natalie Rizzo

**SCHOLARSHIP RECIPIENTS**

**Uberbacher Scholarship:** Mark Aparece, Kara Brasovan, Lauren Hughes, Samantha Sasnow and Walter Young

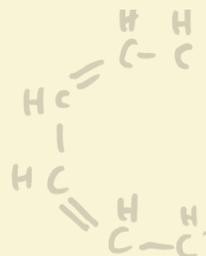
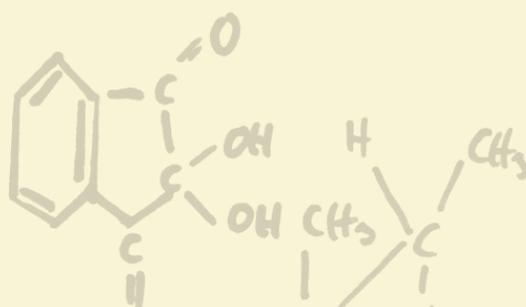
**Department of Chemistry Scholarship:** Michael Kelliher and Samantha Sasnow

**Sanat K. Dhar Endowed Scholarship:** Michael Kelliher and Toni Salvatore

**Jonaitis Endowed Scholarship:** Stefanie Reeve

**Soiya Endowed Scholarship:** Paulina Mlynarska

Finally, on behalf of the faculty and staff, master of ceremonies and department chair, Associate Professor Rick Niedziela, presented Mary Remington with a gift of appreciation for her outstanding work as the departmental assistant for the past three years. Remington completed her M.S. degree in human-computer interaction from DePaul's College of Computing and Digital Media in June and accepted a position as a user experience expert for the online development team at Wheels, Inc., a fleet management company in Des Plaines, Ill. ●



# Department of Chemistry

## Research Highlights

By: Gregory B. Kharas

### Gregory B. Kharas

- 1 Radical Copolymerization of Fluorine Ring-Substituted 2-Phenyl-1,1-dicyanoethylenes with 4-Fluorostyrene: Synthesis and Characterization. S. Atlas, M. Raihane, G.B. Kharas, E. Hanawa, B.L. Hill, J.D. Davis, and A. Mueller. *J. Macromol. Sci. A47(6)* 491-495 (2010).
- 2 Novel Copolymers of 4-Fluorostyrene. 1. Alkyl Ring-Substituted 2-Phenyl-1,1-dicyanoethylenes. G.B. Kharas, E. Hanawa, B.L. Hill, K. Flynn, A.N. Addante, J.C. Argueta, G.A. Boylan, and E. Sisler, and J. Sbarboro. *J. Macromol. Sci., A47(3)* 197-201 (2010).
- 3 Novel Copolymers of Trisubstituted Ethylenes and Styrene. 9. Some Ring-substituted Ethyl 2-cyano-1-oxo-3-phenyl-2-propenylcarbamates. G.B. Kharas, B.L. Hill, Jerry J. Frangello, A. Orosquieta, A. Martin, C. Dittmann, S. Morris, J. Drandakis, E.L. Feitl. *J. Macromol. Sci. A47(3)* 192-196 (2010).
- 4 Novel Copolymers of Trisubstituted Ethylenes and Styrene. 8. Dihalogen Ring-substituted Ethyl 2-cyano-1-oxo-3-phenyl-2-propenylcarbamates. G.B. Kharas, B.L. Hill, N.Y. Du, A.S. Lorenz, N. Fliman, A.M. Reznick, V. Salcedo, B.M. Shepherd, S.M. Skucha, T.D. Taylor. *J. Macromol. Sci. A47(2)* 94-98 (2010).
- 5 Novel Copolymers of Trisubstituted Ethylenes and Styrene. 7. Dihalogen Ring-substituted Ethyl 2-cyano-1-oxo-3-phenyl-2-propenylcarbamates. G.B. Kharas, B.L. Hill, J. Crespo, A.I. Hsieh, J. Ippolito, J.L. Juares, S.E. Kennedy, E.D. Lesser, R. Tungekar. *J. Macromol. Sci., A47(2)* 89-93 (2010).
- 6 Novel Copolymers of Trisubstituted Ethylenes and Styrene. 6. Trialkoxy Ring-substituted Ethyl 2-cyano-1-oxo-3-phenyl-2-propenylcarbamates. G.B. Kharas, E. Hanawa, L. Hood, F. Villasenor, A.L. Walton, M.D. Huang, O.A. Hussein, E. Pandaraon, and C.R. Montemagni. *J. Macromol. Sci., A47(1)* 1-5 (2010).
- 7 Novel Copolymers of Some Ring-substituted 2-phenyl-1,1-dicyanoethylenes with 4-Fluorostyrene. G.B. Kharas, B.L. Hill, K.T. Flynn, N.H. Bajaj, Y. Bittar, M.R. Dow, S. Moloney, T. A. Nguyen, S. A. Pitts, C.A. Serret, J. Valadez, and A.C. Vallejo. Polymer Chemistry Division. 240th ACS National Meeting, August 22-26, 2010. Boston, MA. *Polymer Preprints* 2010, 51(2), 512.
- 8 Novel Copolymers of Some Trisubstituted Ethylenes With 4-Fluorostyrene. G.B. Kharas, B.L. Hill, and K.T. Flynn, American Coatings Conference, April 12-14, 2010, Charlotte, NC, USA

### Ruben D. Parra

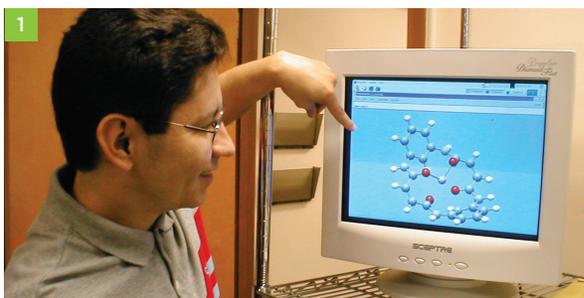
- 1 R. D. Parra, Folding oligomers of difluorinated thienylfurans: a DFT study *Phys. Chem. Chem. Phys.*, 2010, 12, 523.
- 2 R.D. Parra, B. Hill, Conformational analysis of n-fluorine, 2,2'-X (n = 3 or 3'; X = bifuran, bithiophene, or thienylfuran): Ab initio, density functional, and multi-coefficient correlation results, *J. Mol. Struct. (THEOCHEM)*, 2010, 940, 61.

### Roger Sommer

- 1 Synthesis and crystal structures of coordination polymers, networks and complexes of an adamantane shaped phosphorus-nitrogen cage ligand and cuprous chloride. Leser, E.D., Noll, B.C., Sommer, R.D. *Polyhedron*, 29 (9), 2053–2060 (2010).
- 2 A growing family: New structures of coordination polymers containing adamantane-shaped phosphorus–nitrogen cage ligands Alex B. Spore a, Natalie M. Rizzo a, Bruce C. Noll b,1, Roger D. Sommer *Inorganica Chimica Acta* 364 (2010) 261–265.

### Wendy Wolbach

- 1 Discovery of Nanodiamond-rich Layer in Polar Ice Sheet (Greenland). A.V. Kurbatov, P.A. Mayewski, J.P. Steffensen, A. West, D.J. Kennett, J.P. Kennett, T.E. Bunch, M. Handley, D.S. Introne, S.S. Que Hee, C. Mercer, M. Sellers, F. Shen, S.B. Sneed, J.C. Weaver, J.H. Wittke, T.W. Stafford, Jr., J.J. Donovan, S. Xie, J.J. Razink, A. Stich, and W.S. Wolbach. *Journal of Glaciology* 56, 749–759 (2010).
- 2 Geochemical data reported by Paquay et al. do not refute Younger Dryas impact event. T. E. Bunch, Allen West, Richard B. Firestone, James P. Kennett, James H. Wittke, Charles R. Kinzie, and Wendy S. Wolbach. *Proceedings of the National Academy of Sciences* 107, E58 (2010).
- 3 Consistency of Younger Dryas Climatic, Biotic and Oceanic Changes with YDB Cosmic Impact Hypothesis. Kennett, J.P., Kennett, D.J., West, A., Stafford, T.W., Weaver, J.C., Wolbach, W., Kinzie, C. *American Quaternary Association Biennial Meeting: Exploring the Pleistocene-Holocene Boundary in the Americas*, 12–15 August (2010).



- 1 Ruben D. Parra
- 2 Roger Sommer
- 3 Wendy Wolbach

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## Su-chem-du GASES

By: Wendy S. Wolbach

**A Su-chem-du puzzle is a Sudoku puzzle that uses chemical symbols instead of the numerals 1 to 9.**

Arrange the nine chemical symbols in the 9x9 grid so that each one appears once, and once only, in each horizontal row, in each vertical column, and in each 3x3 square. The nine symbols for the puzzle are: H<sub>2</sub>, N<sub>2</sub>, O<sub>2</sub>, F<sub>2</sub>, Cl<sub>2</sub>, Ar, Kr, Xe, Rn

	Cl <sub>2</sub>		Xe		Ar		O <sub>2</sub>	
		Rn	N <sub>2</sub>		O <sub>2</sub>	Cl <sub>2</sub>		H <sub>2</sub>
Kr								Xe
Rn			Ar		F <sub>2</sub>			Cl <sub>2</sub>
		Cl <sub>2</sub>				N <sub>2</sub>		
F <sub>2</sub>			H <sub>2</sub>		Xe			Ar
O <sub>2</sub>								Kr
		F <sub>2</sub>	Kr		Cl <sub>2</sub>	H <sub>2</sub>		
	Ar		O <sub>2</sub>		Rn		F <sub>2</sub>	

