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# CHEM NEWS

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A Quarterly Newsletter:  
March 2002 issue

Department  
of Chemistry  
UIC

## WEATHER FORECAST



By Donald Wink, Head

As many of you know, we have been in the process of planning a new building for our Department for several years. This has become concrete in the form of a project called the Advanced Chemical Technologies Building, with 60% of the building for Department members. As we have known for some time, this will be space vital to the growth of the Department, but we also expect that our current space in SES and SEL will continue to be part of our future, too. The general idea is that the building will be about two thirds the size of the Molecular Biology Research Building on Ashland Avenue. We will probably see the building go up on the baseball field with connections to the SES building at more than one level.

Last Fall, a selection committee that included myself, Tim Keiderling, and Wonhwa Cho selected an architectural team, VOA / Flad Associates for the project. Bringing them on board has been delayed, because the money for them was redirected to other state needs this year. I am pleased to report that the latest state budget messages include the right moves to get us on track. This includes getting the funding for the architect and for the actual construction from the general bonding authority of the State.

## MAIN MAN

A very big welcome to Mr. Tizoc Tobias who is the "person to know" in the main office of Chemistry Department. Tizoc comes to us with substantial university experience and is working on undergraduate and graduate affairs in the capacity of Customer Service Representative II.

## THESIS DEFENSES



Resounding applause for Kwang Pyo Kim, Layne Morsch, Krzysztof Ochwat, Dan Stanford, and Simona Stelea who have successfully defended their doctoral theses and will officially graduate this Spring.

Kwang Pyo has accepted a post-doctoral position with Prof. Gigy at Harvard University, in the Department of Cell Biology. Layne is currently a Visiting Assistant Professor at Barat College/ DePaul University. Dan is an Assistant Professor at William Rainey Harper College. And Simona, who has gone to sunnier climes, is working as a Research Scientist at Sutter Instrument Company in Novato, California. Abstracts of their theses can be found at the end of this issue. Next, we are looking forward to the thesis defense of Yihui Xu (Prof. Teo's group) on March 5, 2002.

## STUDENT SEMINARS

We are very pleased to announce that the Student Seminars for the Spring semester began on Thursday, February 28<sup>th</sup> with a thought-provoking presentation by **Michelle Digman** who spoke on the "Differential Modes of Activation in Membrane Binding via the Regulatory Domain of Novel Protein Kinase C's". Who will be the next in line?

## PARTNERS IN PRACTICUM

These graduate students have recently completed routing and are looking forward to research accomplishment. They have joined the following research groups:

Crich Group:

**Susantha Chandrasekera**  
**Praneeth Edirisinghe**

Ghosh Group:

**Xiaoming Xu**

Ishii Group:

**Sandra Chimon,**  
**Aarti Sawant,**  
**Nalinda Wickramasinghe**

Standaert Group:

**Sarwat Chowdhury,**  
**Mahua Datta,**  
**Sagar Shukla**

## OPEN INVITATION

*From Richard Kassner, DGS*

**March 7:** Madison-Chicago-Milwaukee Mass Spec Discussion Group Meeting. "Mass Spectral Analysis of Peptide Combinatorial Libraries," by Dr. Douglas J.

Beussman, director, Purdue Cancer Center Mass Spectrometry Shared Resource. Reception begins at 5:30 p.m., dinner at 6:30 p.m., and talk at 7:30 p.m. at Mings Grand Palace, 5572 Grand Ave., Gurnee. Cost is \$25. To register contact Qin Ji at 847-937-5786, Qin.Ji@abbott.com, or register online at <http://www.chem.uic.edu/mcm/02mar.html>.

"Green Chemistry to Address Global Environmental Issues" is the topic of the American Chemical Society Chicago Section's **March 22** meeting at the Chicago Marriott O'Hare, 8535 W. Higgins Road, Chicago. Dr. Dennis Hjeresen, director of the Green Chemistry Institute, is the featured speaker. A reception begins at 6 p.m., dinner at 7 p.m., and presentation at 8 p.m. A pre-meeting Topical Group Session at 5:30 p.m. will feature William M. Nelson of the Illinois Dept. of Natural Resources Waste Management & Research Center, discussing Catalyzed Organic Reactions in Ionic Liquids. Cost is \$34 for members, \$36 for nonmembers, and \$17 for students and unemployed members. To register contact the ACS Chicago Reservation Hotline at 847-588-3322, or [evalopez@teianalytical.com](mailto:evalopez@teianalytical.com), or online at <http://membership.acs.org:80/C/Chicago/02mar.html>.

**March 23:** American Chemical Society Chicago Section Continuing Education Program. "Recent Developments in Nuclear Magnetic Resonance Spectroscopy," by Dr. Robert Botto of Argonne National Laboratories. 9 a.m. to noon in Room 202, Cudahy Science Building, Loyola University, 6525 N. Sheridan Road, Chicago. Cost is \$10, or free to unemployed chemists. To register contact 847-647-8405. <http://membership.acs.org:80/C/Chicago/continuing.ed.01.html>

## POWER TO THE PEOPLE

*By David Yuen*

The Electronics Shop is staffed by Stan Blaszczyk, Clint Briscoe, Don Rippon, Leo Wazlo and David Yuen, with a cumulative electronics experience of more than a century. Stan's expertise covers PC hardware, software and networking. Clint specializes in keeping the Department's instrumentation up and running. Don can, and does, fix anything else that is brought to our attention. Don also has experience with UNIX systems. Leo does electromechanical and electronic repairs and fabrication. Dave has experience in a wide variety of electronics and physics, from analog, digital and RF electronics to particle accelerator beam optics.

Over the last year and a half, the Electronics Shop has acquired some new equipment: a 2G Sample/sec oscilloscope; a 21 MHz function/arbitrary waveform generator; a voltage calibration standard; a surface-mount component repair/rework soldering station and replacements for aging tools. Also, the OrCAD software suite for electronic design, circuit simulation and printed circuit board layout augments the shop's capabilities. AutoCAD and Matlab packages round out the software tool lineup.

In summary, the Electronic Shop has the experience and the tools to handle any electronic problem that might occur. For service, just call Dave at ext. 6-6737

## **MARCH NOTABLES:**

Born March 1, 1910, Archer J. P. Martin, for discovery of partition chromatography, Nobel Prize in 1952 with R. L. M. Synge.

Born March 3, 1918, Arthur Kornberg researched the synthetic pathways by which nucleic acids are produced. He was awarded the Nobel Prize in 1959 with S. Ochoa.

March 4 in 1947, Willard Libby and coworkers developed radiocarbon dating.

Born March 5, 1893, Emmett J. Culligan, founded the world's largest water treatment organization as well as concept of water softening.

Born March 7, 1792, John F. W. Hershel was the inventor of photography on sensitized paper, introduced the terms "positive" & "negative" for photography.

Born March 7, 1788, Antoine-Ce'sar Becquerel was the first to use electrolysis to recover metals from ores, 1836.

Born March 8, 1879, Otto Hahn discovered protactinium (Pa,91), 1917, with L. Meitner. He also researched nuclear fission with O. Strassmann for which Hahn was awarded a Nobel Prize in 1944.

Born March 8, 1886, Edward C. Kendall isolated thyroxine in 1915. He won a Nobel Prize in 1950 with P. Hench & T. Reichstein for work on adrenal hormones.

# The Glass Column

*By Brian Schwandt*

For those of you who don't know me, my name is Brian Schwandt. I operate and manage the UIC Chemistry Department Glass Shop, 1331 SES. In this scientific glassblowing shop, no glass making furnaces like you've seen on TV will be found. Instead glass tubing is shaped, altered and combined with other pre-formed components such as ground joints, flasks and valves. Laboratory glassware can be as simple as pipettes and test tubes or it can be very complex with several stages and many inlet and outlet side arms.

The UIC glass shop provides custom glassblowing services. Simple test tubes and pipettes are mass-produced on machines and meant to be disposable. The cost of such items is comparable to disposable pop bottles. Contributing to the lower cost is the fact that this glass is easily recyclable unlike higher temperature laboratory glass. Laboratory grade glassware is repairable only if the cost of the item exceeds the time and labor expenditures.

The glass shop services are currently under reconstruction. A set of glass shop policies will be outlined to streamline the glass line.

In the future, the "Glass Column" will concentrate on revealing the mysteries of glass, related knowledge and advice.

ANY QUESTIONS ??? E-mail me at [briglass@uic.edu](mailto:briglass@uic.edu)

## RECENT PUBLICATIONS FROM THE DEPARTMENT

October 1, 2001 – January 31, 2002

*Prepared by M. Krumpolc*

Sequence Context and Thermodynamic Stability of a Single Base Pair Mismatch in Short Deoxyoligonucleotide Duplexes. Hall, Timothy S.; Pancoska, Petr; Riccelli, Peter V.; Mandell, Kathleen; **Benight, Albert S.** *Journal of the American Chemical Society* (2001), 123(47), 11811-11812

A semiflexible polymer model applied to loop formation in DNA hairpins. Kuznetsov, Serguei V.; Shen, Yiqing; **Benight, Albert S.**; Ansari, Anjum. *Biophysical Journal* (2001), 81(5), 2864-2875

Synthesis and *in vitro* antitumor activity of oligonucleotide-tethered and related platinum complexes. **Cai, Lisheng**; Lim, Keunpoong; Ren, Sumei; Cadena, Rhonda S.; Beck, William T. *Journal of Medicinal Chemistry* (2001), 44(18), 2959-2965

Roles of calcium ions in the membrane binding of C2 domains. Stahelin, Robert V.; **Cho, Wonhwa.** *Biochemical Journal* (2001), 359(3), 679-685

Membrane targeting by C1 and C2 domains. **Cho, Wonhwa.** *Journal of Biological Chemistry* (2001), 276(35), 32407-32410

Membrane binding assays for peripheral proteins. **Cho, Wonhwa**; Bittova, Lenka; Stahelin, Robert V. *Anal. Biochem.* (2001), 296(2), 153-161

1-Benzenesulfinyl Piperidine/Trifluoromethanesulfonic Anhydride: A Potent Combination of Shelf-Stable Reagents for the Low-Temperature Conversion of Thioglycosides to Glycosyl Triflates and for the Formation of Diverse Glycosidic Linkages. **Crich, David**; Smith, Mark. *Journal of the American Chemical Society* (2001), 123(37), 9015-9020

Dynamics of Alkene Radical Cation/Phosphate Anion Pair Formation from Nucleotide C4' Radicals. The DNA/RNA Paradox Revisited. **Crich, David**; Huang, Wenhua. *Journal of the American Chemical Society* (2001), 123(38), 9239-9245

Can Agostic Interaction Affect Regiochemistry of Carbopalladation? Reverse Regioselectivity in the Palladium-Catalyzed Dimerization of Aryl Acetylenes. Rubina, Marina; **Gevorgyan, Vladimir.** *Journal of the American Chemical Society* (2001), 123(44), 11107-11108

B(C<sub>6</sub>F<sub>5</sub>)<sub>3</sub>-Catalyzed Allylation of Secondary Benzyl Acetates with Allylsilanes. Rubin, Michael; **Gevorgyan, Vladimir.** *Organic Letters* (2001), 3(17), 2705-2707

Asymmetric hetero Diels-Alder route to quaternary carbon centers: synthesis of (-)-malyngolide. **Ghosh, A. K.**; Shirai, M. *Tetrahedron Letters* (2001), 42(36), 6231-6233

Structure-based design of non-peptide HIV protease inhibitors. **Ghosh, Arun K.**; Shin, Dongwoo; Swanson, Lisa; Krishnan, K.; Cho, Hanna; Hussain, Khaja Azhar; Walters, D. Eric; Holland, Louis; Buthod, Jim. *Farmaco* (2001), 56(1-2), 29-32

Stereoselective Synthesis of Pseudopeptide Microbial Agent AI-77-B. **Ghosh, Arun K.**; Bischoff, Alexander; Cappiello, John. *Organic Letters* (2001), 3(17), 2677-2680

Structure-based design: potent inhibitors of human brain memapsin 2 (? -secretase). **Ghosh, Arun K.**; Bilcer, Geoffrey; **Harwood, Cynthia**; Kawahama, Reiko; Shin, Dongwoo; Hussain, Khaja Azhar; Hong, Lin; Loy, Jeffrey A.; Nguyen, Chan; Koelsch, Gerald; Ermolieff, Jacques; Tang, Jordan. *Journal of Medicinal Chemistry* (2001), 44(18), 2865-2868

Tartaric acid and tartrates in the synthesis of bioactive molecules. **Ghosh, Arun K.**; Koltun, Elena S.; Bilcer, Geoffrey. *Synthesis* (2001), (9), 1281-1301

Preparation of Chemical Gradient Surfaces by Hyperthermal Polyatomic Ion Deposition: A New Method for Combinatorial Materials Science. Wijesundara, Muthu B. J.; Fuoco, Erick; **Hanley, Luke**. *Langmuir* (2001), 17(19), 5721-5726

Stretching and fibroblast growth on GRGDSP-peptide modified silicone membranes. Lateef, Syed S.; Boateng, Samuel; Hartman, Thomas J.; Crot, Carrie A.; Russell, Brenda; **Hanley, Luke**. *Polymeric Materials Science and Engineering* (2001), 85, 403-404

Polyatomic ion-deposition of gradient thin films on polymer surfaces: a new method for combinatorial materials science. Wijesundara, Muthu B. J.; Fuoco, Erick; **Hanley, Luke**. *Polym. Mater. Sci. Eng.* (2001), 85, 102

Chemistry and aging of organosiloxane and fluorocarbon films grown from hyperthermal polyatomic ions. **Hanley, Luke**; Fuoco, Erick; Wijesundara, Muthu B. J.; Beck, Alison J.; Brookes, Pat N.; Short, Robert D. *J. Vac. Sci. Technol., A* (2001), 19(4, Pt. 1), 1531-1536

Aging of fluorocarbon thin films deposited on polystyrene from hyperthermal C3F5+ and CF3+ ion beams. Wijesundara, Muthu B. J.; Zajac, Gerry; Fuoco, Erick; Hanley, Luke. *J. Adhes. Sci. Technol.* (2001), 15(5), 599-612

Unprecedented directing effect of bromine on the regioselectivity of addition of stannylated oxazolines to substituted 2-bromo-1,4-naphthoquinones. Synthesis of 4-oxazoliny-1,2-naphthoquinones. Stagliano, Kenneth W.; Malinakova, Helena C.; **Harwood, John S.** *Journal of Organic Chemistry* (2001), 66(22), 7530-7534

Controlling residual dipolar couplings in high-resolution NMR of proteins by strain induced alignment in a gel. **Ishii, Yoshitaka**; Markus, Michelle A.; Tycko, Robert. *Journal of Biomolecular NMR* (2001), 21(2), 141-151

Polarization modulation Fourier transform infrared spectroscopy with digital signal processing: comparison of vibrational circular dichroism methods. Hilario, Jovencio; Drapcho, David; Curbelo, Raul; **Keiderling, Timothy A.** *Applied Spectroscopy* (2001), 55(11), 1435-1447

*Ab Initio* Calculation of Amide Carbonyl Stretch Vibrational Frequencies in Solution with Modified Basis Sets. 1. N-Methyl Acetamide. Kubelka, Jan; **Keiderling, Timothy A.** *Journal of Physical Chemistry A* (2001), 105(48), 10922-10928

Differentiation of  $\beta$ -Sheet-Forming Structures: *Ab Initio*-Based Simulations of IR Absorption and Vibrational CD for Model Peptide and Protein  $\beta$ -Sheets. Kubelka, Jan; **Keiderling, Timothy A.** *Journal of the American Chemical Society* (2001), 123(48), 12048-12058

Evidence of temperature dependent activation barriers for near-threshold aqueous photoionization of 2'-deoxyguanosine and tryptophan. Papadantonakis, G. A.; Stevenson, K. L.; **LeBreton, P. R.** *Chemical Physics Letters* (2001), 346(1,2), 97-102

Pharmacokinetics of deguelin, a cancer chemopreventive agent in rats. Udeani, George O.; Zhao, Guo-Min; Shin, Young Geun; Kosmeder, Jerome W., II; Beecher, Christopher W. W.; Kinghorn, A. Douglas; **Moriarty, Robert M.**; Moon, Richard C.; Pezzuto, John M. *Cancer Chemother. Pharmacol.* (2001), 47(3), 263-268

Synthesis and structure of a neutral trimetallic biicosahedral cluster, (Ph<sub>3</sub>P)<sub>10</sub>Au<sub>11</sub>Ag<sub>12</sub>Pt<sub>2</sub>Cl<sub>7</sub>. A comparative study of molecular and crystal structures of vertex-sharing biicosahedral mixed-metal nanoclusters. **Teo, Boon K.**; Zhang, Hong. *J. Cluster Sci.* (2001), 12(1), 349-382

Methylaminomethylidyne: A Stable Intermediate Formed on the Pt(111) Surface from the N-Protonation of Methyl Isocyanide. Kang, Dae-Hyuk; **Trenary, Michael.** *J. Am. Chem. Soc.* (2001), 123(34), 8432-8433

Identification of pressure-induced phase transformations using nanoindentation. Domnich, Vladislav; Gogotsi, Yury; **Trenary, Michael.** *Mater. Res. Soc. Symp. Proc.* (2001), 649 (Fundamentals of Nanoindentation and Nanotribology II), Q8.9.1-Q8.9.6

Characterization of hafnium diboride, HfB<sub>2</sub> (0001), by XPS. Perkins, C. L.; Singh, R.; Tanaka, T.; **Trenary, M.** *Surf. Sci. Spectra* (2001), Volume Date 2000, 7(4), 316-321

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