

CHEM NEWS

A Quarterly Newsletter:
December 2002 issue

Department
of Chemistry
UIC

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We are proud to announce that **Prof. Robert Gordon** is among the select group of scientists who have received the distinguished honor of being named a Fellow of the American Association for the Advancement of Science by a vote of peers. This award is in recognition of his work regarding "the application of coherent phase control to modify the branching ratios of molecular processes and to probe the continuum properties of molecules." In an interview with *UIC News*, Prof. Donald Wink noted that Prof. Gordon's research is "about much more than simple chemical reaction control. His mastery of the physical basis of molecules means that he can use quantum mechanics as a tool for manipulation of systems, not just their analysis. Along the way he has discovered new phenomena that, in turn, lead to other advances in theory."

Joined by 291 other scientists who were selected for membership this year, Prof. Gordon will receive a certificate and an AAAS Fellow membership pin on Feb. 15 at the 2003 AAAS Annual Meeting in Denver.

The American Association for the Advancement of Science is the world's largest general scientific society. With a worldwide membership of 10 million, the mission of AAAS is to advance science and innovation throughout the world for the benefit of all people. This is done through their many programs and publication of the prestigious *Science* magazine.

The AAAS Fellows program boasts 134,000 members in 130 countries since its inception in 1874. Including those scientists who were chosen this year, the number of UIC faculty who are AAAS Fellows is twenty-four.

TIMELY TRAVELERS

Alexandra Abraham from Univ. of Potsdam (Germany), **Hung Anthony Pham** from Concordia College (Minnesota) and Miami University (Ohio), **Yuxia Ren** from China Univ. of Mining & Technology, and **Jialong Yuan** from Nankai University (China) have been admitted to our graduate program for the Spring semester and will be arriving December 18, 2002 to participate in orientation. Please join us in extending a hearty welcome.



HOLIDAY PARTY!

The Chemistry Graduate Forum, has confirmed that the annual **Chemistry Holiday Party** will be held the afternoon of **December 18th** outside of 201B SES. Look for more announcements which will be posted as the day approaches. Although some food will be provided, they are counting on all of us to bring our favorite culinary creations -- holiday roasts, vegetarian fare, pastries, and especially those exotic mouth-watering ethnic dishes. With your help it promises to be the biggest and best holiday party ever!

the Magic of Mr. Marek

Lee Marek, formerly a chemistry teacher at Naperville North High School for 33 years, is best known as the catalyst behind the Weird Science demonstration team, a small group of inspired teachers that tours the country and presents to approximately 15,000 teachers and students annually. His quick wit, collaborative spirit, leadership, and ease in relating to audiences of all ages have won Lee national acclaim. He has appeared on the CBS news special *Education: Our Nation's Toughest Assignment*, numerous regional and national television programs, and the *Late Show with David Letterman* on 20 occasions.

In addition to dozens of local, state, and regional awards, Lee has received the Presidential Award for Excellence in Science Teaching, the Christa McAuliffe Fellowship, James Bryant Conant Award from the American Chemical Society and National Catalyst Award for Excellence in Chemistry Teaching – Chemical

Manufactures Association. Many of you have currently seen Lee working in the chemical demonstration program and GK-12 program for the Department of Chemistry.

Lee is also a planner and coordinator for the Science History Tour 2003. These tours are evolving into a much anticipated annual event. According to Lee:

Science History Tour 2003

"The 2003 tour is your opportunity to visit Holland and Belgium in the company of a group of most congenial people. Dates are not yet set, but it will probably be from about June 26 to about July 10. We shall end the tour in London, where we will attend a conference at the Royal Society on (Yvonne's hero!) Robert Hooke. Hooke died in 1703 and this conference will be held jointly by Gresham College and the Royal Society to honor Hooke, an under appreciated genius.

Details of itinerary, dates and cost will be available later, but if you are interested in this trip, e-mail either Yvonne Twomey <ytwomey@mindspring.com> or Lee Marek <LMarek@aol.com> or call Yvonne at 630-961-9811, or even send mail to her at 841 Kinston Court, Naperville, IL 60540. People are signing up for this trip already, so an early inquiry is advised – numbers are limited.

The broad plans are to begin the tour in Amsterdam, where there are a number of sites of interest in the history of science. The Boerhaave Museum, the Teyler Museum, porcelain manufacturers and brewing interests will all be included. Many aspects of Holland's history as a maritime and trading nation will be studied. Then we will move on to Belgium, with visits in Brussels and the lovely town of Bruges. We will make our way to the coast and travel to England by cross-channel ferry, then pay a visit or two in the south of England - Hooke was born in the Isle of Wight. Our

last stay will be in London, in a very nice hotel near Hyde Park. In addition to the RS Conference we will visit other notable science venues in London.

Accommodation will be in comfortable welcoming hotels where all rooms have private bathrooms. Room-sharing arrangements can be coordinated for those persons who are traveling alone, but would like to share a room to save single room supplements. We will have a luxury coach for our use during the time we are on the Continent, and another one in England. Inexperienced international travelers will be given as much help as they need. Those traveling alone will find this to be a friendly and

interesting group where it is easy to make friends.

During the tour all land transportation, hotels and breakfasts, at least (on average) one other meal per day - often with a glass of wine, all admissions to museums, lecture fees, and taxes are included. Your additional expenditure will be for meals when the group does not eat together, incidentals such as theater tickets and personal expenditures.

TRANSATLANTIC AIRFARE IS NOT INCLUDED. The cost of the 2003 tour is not yet calculated, but for your guidance, the 2002 tour cost was \$2475

Graduate credit is available. CPDUs are also available for teachers.

For further information and/or to be put on the mailing list about the 2003 tour, contact: Yvonne Twomey, 841 Kinston Court, Naperville, IL 60540 Tel:630-961-9811

e-mail : ytwomey@mindspring.com Or Lee Marek, Tel: 630-420-7516 e-mail: LMarek@aol.com. See the following pages for a web presentation on our past trips." <http://www.ncusd203.org/north/depts/science/chem/marek/>

THIS WEEK IN CHEMICAL HISTORY:

First atomic pile produced self-sustained nuclear chain reaction under Stagg Field, University of Chicago, December 2, 1942.

Born December 3 in 1886, Karl M. G. Siegbahn, researcher on X-ray spectroscopy and winner of the Nobel Prize in 1924.

Born December 3 in 1900, Richard Kuhn, researcher on structures & syntheses of vitamins and carotenoids; refused the Nobel Prize in 1938 on instruction of Nazi government in Germany but received it in 1949.

Born December 4, 1908, Alfred D. Hershey, researcher in microbial genetics; and received the Nobel Prize in 1969 with M. Delbruck and S. E. Luria.

Born December 4, 1896, Carl F. Cori, researcher in carbohydrate metabolism; discovered how glycogen is catalytically converted. In 1947, he won the Nobel Prize with G. T. Cori and B. Houssay.

Born December 5, 1901, Werner Heisenberg researcher in quantum mechanics; developed the

ABSTRACT ART



In vivo CH₃ (CH₂)₁₁ SAu SAM electrodes in the beating heart: In situ analytical studies relevant to pacemakers and interstitial biosensors

Howard A. Chou, Daniel H. Zavitz, Marc Ovadia

Biosensors and Bioelectronics 18 (2003) 11.../ 21

Abstract:

To study in vivo modification of the SAM equivalent circuit when a highly ordered SAM is used as a bioelectrode, dodecanethiolate SAM.../ Au intramuscular electrodes were studied in living rat heart in a challenging in situ perfused rat model by impedance spectroscopy, cyclic voltammetry, and neutron activation analysis (NAA). The SAM layer experienced disintegration in vivo biological system, as NAA detected the presence of Au atoms that had leached into the surrounding living tissue. Therefore, the underlying Au surface became exposed during biological implant. Study by impedance spectroscopy, however, revealed perfect capacitive behavior for the SAM, similar to in vitro behavior. Electrodes showed a pure capacitive Nyquist plot with 86.1.../ 89.48 near-vertical line segments as the equivalent circuit locus, as for a parallel plate capacitor. Impedance magnitude varied linearly with $1/\nu$ excluding diffusionally limited ionic charge transport. There was no diffusional conductive element ZW...or spatially confined Warburg impedance ZD . The effect of in vivo exposure of a highly ordered SAM is a 'sealing over' effect of new defects by the binding of proteinaceous or lipid species in the biological milieu, a fact of significance for SAM electrodes used either as pacemaker electrodes or as a platform for in vivo biosensors.

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Many thanks to Dan Zavitz who has submitted this abstract of his current work. We look forward to receiving more news about current graduate student research for the next issue of *CHEM NEWS*.

THESIS DEFENSES



Heartly congratulations to **Ani Khachatryan, Chongwoo Yu, Alexander Bischoff, Kanchana Mudalige, Santhosh Neelamkavil, and Keunpoong Lim** who have successfully defended their Ph.D. theses and completed all the requirements for the doctoral degree in chemistry. Abstracts of their theses can be found at the end of this issue.

Ani has accepted a post-doctoral position at Stanford Research International (SRI International) Molecular Physics Laboratory in Menlo Park, CA.

Chongwoo has relocated to Ann Arbor, Michigan where he is working as a post-doctoral research fellow at PDM (Pharmacokinetics, Dynamics, and Metabolism) Bioanalytical Research, Pfizer Global Research & Development.

Alex has accepted a post-doctoral position with Prof. Yoshito Kishi in the Department of Chemistry at Harvard University.

Looking ahead, Santhosh will arrive in Philadelphia next week to begin his post-doctoral research appointment with Prof. Amos B. Smith III at the University of Pennsylvania.

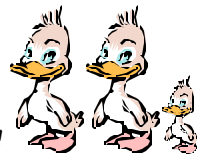
Keunpoong has accepted a post-doctoral position with Prof. Ronald Harvey of the Ben May Institute for Cancer Research at the University of Chicago.

We now look forward to the thesis defense of Martina Bertsch on December 11, 2002.

GROUP EFFORT

Many of our newest graduate students are anxious to begin their research and have enthusiastically completed routing. We are pleased to announce that they have joined the following groups and wish them a productive year ahead:

Cho Group:	Nikhil Gokhale Gihani Wijewickrama
Crich Group:	Abhisek Banerjee Daniel Grant Wenju Li Yekui Zou
Fenteany Group:	Alem Kahsai Brian Page
Gevorgyan Group:	Stepan Chuprakov
Ghosh Group:	Christopher DeZutter Sarang Kulkarni Jianfeng Li Debasis Manna Kai Xi Chun-Xiao Xu
Gordon Group:	Sima Singha
Hanley Group:	Praneeth Edirisinghe Chunping Wu Amanda Wroble
Ishii Group:	Junhui Fu Medhat Shaibat
Newcomb Group:	Loredana Huma Dharmika Lansakara P. Libin Xu
Shippy Group:	Leyi Gao Kongthong Thongkhao-
On	
Trenary Group:	Wijethunga Kumara
Wardrop Group:	Jose Ortiz Weerasekera Lakmali



FIRST FAMILY

Warm congratulations to **Syed Lateef** (Hanley Group) and his wife on the birth of their first child "Jawwad". (His beautiful name means "generous".) Jawwad was born on November

13, 2002 at 2:30 A.M and weighed in at 6 lbs.

1.3 oz.

RECENT PUBLICATIONS FROM THE DEPARTMENT

August 1, 2002 – October 31, 2002

Prepared by M. Krumpolc

Phosphatidylinositol 3-phosphate induces the membrane penetration of the FYVE domains of Vps27p and Hrs. Stahelin, Robert V.; Long, Fei; Diraviyam, Karthikeyan; Bruzik, Karol S.; Murray, Diana; **Cho, Wonhwa**. *Journal of Biological Chemistry* (2002), 277(29), 26379-26388

Group V Phospholipase A2 Induces Leukotriene Biosynthesis in Human Neutrophils through the Activation of Group IVA Phospholipase A2. Kim, Young Jun; Kim, Kwang Pyo; Han, Sang Kyou; Munoz, Nilda M.; Zhu, Xiangdong; Sano, Hiroyuki; Leff, Alan R.; **Cho, Wonhwa**. *Journal of Biological Chemistry* (2002), 277(39), 36479-36488

Quantitation of secretory group V phospholipase A2 in human tissues by sandwich enzyme-linked immunosorbent assay. Munoz, Nilda M.; Boetticher, Evan; Sperling, Anne I.; Kim, Kwang-Pyo; Meliton, Angelo Y.; Zhu, Xiangdong; Lambertino, Anissa; **Cho, Wonhwa**; Leff, Alan R. *Journal of Immunological Methods* (2002), 262(1-2), 41-51•

Rapid assembly of tetrahydrodibenzofurans and tetrahydrocarbazoles from benzene and o-iodophenols and o-iodoanilines: reductive radical arylation of benzene in action. **Crich, David**; Sannigrahi, Mousumi. *Tetrahedron* (2002), 58(17), 3319-3322

Solid-Phase Synthesis of .beta.-Mannosides. **Crich, David**; Smith, Mark. *Journal of the American Chemical Society* (2002), 124(30), 8867-8869

Generation and Trapping of Alkene Radical Cations under Nonoxidizing Conditions: Formation of Six-Membered Rings by Exo- and Endo-Mode Cyclizations. **Crich, David**; Neelamkavil, Santhosh. *Organic Letters* (2002), 4(15), 2573-2575

Stereoselective Formation of Glycosyl Sulfoxides and Their Subsequent Equilibration: Ring Inversion of an ? -Xylopyranosyl Sulfoxide Dependent on the Configuration at Sulfur. **Crich, David**; Mataka, Jan; Zakharov, Lev N.; Rheingold, Arnold L.; Wink, Donald J. *Journal of the American Chemical Society* (2002), 124(21), 6028-6036

Antiviral activity of UIC-PI, a novel inhibitor of the human immunodeficiency virus type 1 protease. **Ghosh, Arun K.**; Pretzer, Elizabeth; Cho, Hanna; Hussain, Khaja Azhar; Duzgunes, Nejat. *Antiviral Research* (2002), 54(1), 29-36

Study of isotope effects in the photoionization of HI and DI using phase lag spectroscopy. Khachatryan, Ani; Billotto, Richard; Zhu, Langchi; **Gordon, Robert J.**; Seideman, Tamar. *Journal of Chemical Physics* (2002), 116(21), 9326-9332

Large fluorocarbon ions can contribute to film growth during plasma etching of silicon. Fuoco, Erick R.; **Hanley, Luke**. *Journal of Applied Physics* (2002), 92(1), 37-44

The growth and modification of materials via ion-surface processing. **Hanley, Luke**; Sinnott, Susan B. *Surface Science* (2002), 500(1-3), 500-522

Calculations of Xe line shapes in model nanochannels: Grand canonical Monte Carlo averaging of the ^{129}Xe nuclear magnetic resonance chemical shift tensor. **Jameson, Cynthia J.** *Journal of Chemical Physics* (2002), 116(20), 8912-8929

Spectroscopic characterization of selected β -sheet hairpin models. Hilario, Jovencio; Kubelka, Jan; Syud, Faisal A.; Gellman, Samuel H.; **Keiderling, Timothy A.** *Biopolymers* (2002), Volume Date 2001-2002, 61(3), 233-236

Chirality in peptide vibrations: ab initio computational studies of length, solvation, hydrogen bond, dipole coupling, and isotope effects on vibrational CD. Kubelka, Jan; Bour, Petr; Silva, R. A. Gangani D.; Decatur, Sean M.; **Keiderling, Timothy A.** ACS Symposium Series (2002), 810 (*Chirality: Physical Chemistry*), 50-64

Low-Energy, Low-Yield Photoionization, and Production of 8-Oxo-2'-deoxyguanosine and Guanine from 2'-Deoxyguanosine. Papadantonakis, George A.; Tranter, Robert; Brezinsky, Kenneth; Yang, Yanan; van Breemen, Richard B.; **LeBreton, Pierre R.** *Journal of Physical Chemistry B* (2002), 106(31), 7704-7712

Evaluation of Norcarane as a Probe for Radicals in Cytochrome P450- and Soluble Methane Monooxygenase-Catalyzed Hydroxylation Reactions. **Newcomb, Martin**; Shen, Runnan; Lu, Yun; Coon, Minor J.; Hollenberg, Paul F.; Kopp, Daniel A.; Lippard, Stephen J. *Journal of the American Chemical Society* (2002), 124(24), 6879-6886

Conjugated oligomeric coordinated silver phenylacetylide derivatives with ultrafast optical kerr effect. Xu, Y. H.; **Teo, B. K.**; Wu, H. M.; Guo, S. L.; He, Y. K.; Chen, H. Y.; Qian, W.; Wu, S. J.; Zuo, Y. H. *Materials Research Society Symposium Proceedings* (2002), 665(*Electronic, Optical and Optoelectronic Polymers and Oligomers*), 295-300

Determination of Stereoisomers of Heteronuclear Clusters by a Symmetry-Based Algorithm. **Teo, Boon K.**; Strizhev, Alex. *Journal of Cluster Science* (2002), 13(2), 249-263

The nature of surface oxides on magnesium diboride. Meegoda, Chandana; Paderno, Yu.; **Trenary, Michael**. *Materials Research Society Symposium Proceedings* (2002), 689(*Materials For High-Temperature Superconductor Technologies*), 151-156

Formation of Methylaminocarbyne from Methyl Isocyanide on the Pt(111) Surface. Kang, Dae-Hyuk; **Trenary, Michael**. *Journal of Physical Chemistry B* (2002), 106(22), 5710-5718

Stereoselective Formation of Glycosyl Sulfoxides and Their Subsequent Equilibration: Ring Inversion of an α -Xylopyranosyl Sulfoxide Dependent on the Configuration at Sulfur. Crich, David; Mataka, Jan; Zakharov, Lev N.; Rheingold, Arnold L.; **Wink, Donald J.** *Journal of the American Chemical Society* (2002), 124(21), 6028-6036

