

# **Chemical Bond**

**Volume 54  
Number 4  
April 2003**

**St. Louis Section, American Chemical Society**



**Mary E. Harris  
Presidential Awardee for Excellence in  
Mathematics and Science Teaching from  
Missouri**

*The Department of Chemistry at Washington University  
is pleased to announce this special presentation*

# **The 2003 Bayer Distinguished Lectures**

*April 10 & 11, 2003*

***Professor Christopher M. Dobson***

*University of Cambridge*

*United Kingdom*

**April 10, 2003**

“Protein Misfolding and its Links  
with Human Disease and  
Biological Evolution”

**4:00 p.m.**

Laboratory Sciences  
Building, Room 300  
Reception Following

**April 11, 2003**

“The Structural Basis of the Process  
and Mechanism of Protein Folding”

**11:00 a.m.**

McMillen Chemistry Laboratory,  
Room 311



For reservations, please call by April 4, 2003

(314) 935-4108

or e-mail [christa@wuchem.wustl.edu](mailto:christa@wuchem.wustl.edu)



**Washington**  
University in St. Louis

# Chemical Bond

Volume 54

No. 4

April 2003

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# Career workshops working for you . . .

Getting ready to look for your first “real” job?

Afraid your position may be eliminated in the future?

Stuck in a job you hate, and looking for a way to change?

St Louis Section of the American Chemical Society and the Washington University Department of Chemistry are jointly producing a series of workshops aimed at helping chemists develop their careers, not just find another job.

**April 17 - Power Networking**  
(Billie Bright, Dale Carnegie Training)

**April 24 - How to work with Recruiters**  
(Jeff Kammermeyer, kForce Recruiting);  
The Difference between Large and Small Companies  
(Kevin Tibbs, Chemia)

All talks are free and open to the public, and will take place from 6 to 7:30pm on Washington University’s hilltop campus. The first 3 lectures will be in the Laboratory Sciences building #250, the final session will meet in McDonnell #162. See campus map at [visitor.wustl.edu/map/hilltop.html](http://visitor.wustl.edu/map/hilltop.html) - Lab Sciences is #5, McDonnell is #54, and parking is #67.

For more information, contact Lisa Balbes at 314-966-5298 or [lisa@balbes.com](mailto:lisa@balbes.com) or browse [umsl.edu/~acs/special.html#career](http://umsl.edu/~acs/special.html#career).

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# Chemical Progress Week, April 7-13

## Preliminary Schedule of Events

### Monday, April 7 **Awards Night**

Honors winners of HS Chemistry Contest, Leopold Marcus Award, HS Teaching Award, Chemical Technician of the Year, and Outstanding Junior Chemistry Students at area colleges and universities.

Speaker: Angela Knickmeyer from Buckeye International

Time: 5:30 pm social hour, 6:30 pm dinner, 7:15 pm program

Location: Kemoll's Restaurant (first floor), 211 N. Broadway

Cost: \$22.50

Contact: Bijan Khazai (314) 497-8629 / khazai@sentortech.com

### Thursday, April 10 **ACS Board Meeting**

Time: Social Hour 5:30 pm, Dinner 6:30, Business Meeting 7:15

Location: UM—St. Louis Alumni House

Cost: Dinner is \$15

Contact: Leah O'Brien (618) 650-3562 or lobrien@siue.com

### Friday, April 11 **Chemistry Career Day**

15 minute talks by speakers representing different areas of chemical employment and education. Tours of the UM—St. Louis chemistry facilities, Chemistry Club demonstrations, glass blowing, and a pizza lunch.

Time: 9:00 am – 12:00 pm

Location: Benton Hall

Contact: Jim O'Brien or Keith Stine (314) 516-5311 before March 28<sup>th</sup>

### Friday, April 11 **St. Louis Award Symposium**

Awardee: George W. Gokel of the Dept. of Molecular Biology and Pharmacology at Washington University Medical School.

Location and Contact: TBA

### Saturday, April 12 **St. Louis Award Banquet**

Time: Cocktails 6 pm, Banquet 7 pm, Program 8 pm

Location: Kemoll's Restaurant, 1 Metropolitan Square, St. Louis

Cost: \$30

Contact: Samir El-Antably (314) 664-5522

### Sunday, April 13 **Women Chemists Luncheon**

Speaker: Madeleine Jacobs, Editor-in-Chief, Chemical & Engineering News

Time: 12 pm

Location: St. Louis Science Center Lower-Level Meeting Rooms

Cost: \$10

Contact: Leah O'Brien (618) 656-3739 or lobrien@siue.edu

### Tuesday, April 15 **ADACIOM Luncheon**

Speaker: David Julien, Pres. of Sigma Chemical's Bio-Tech div.

Time: 11:30 am

Location: Sheraton Clayton Plaza, 7730 Bonhomme, Clayton, 63105

Cost: \$40 at door, \$35 in advance

Contact: Cathy Murphy cmurphy@berlinpackaging.com

## Radiation: Science Project or Military Casualties?

by Jack Bornmann

In one of those interesting coincidences that happens occasionally, I was listening to the book *The Plutonium Files* by Eileen Welsome and I saw the movie *The Boys From Brazil* for the first time. In *The Boys From Brazil*, Gregory Peck plays Dr. Josef Mengele, the “Doctor Death” of German concentration camps. He stood on the railroad platform as the freight train unloaded its cargo of human beings and signaled with a flip of his wrist which inmates would go immediately to the gas chamber and which would be placed in work detail. He also performed human experiments such as injecting dye into the eyes of live subjects in a futile attempt to change the color of the eyes to an “Aryan blue”. The *Plutonium Files* reported on human experiments done by American doctors during World War II in an attempt to determine the threshold of tolerable radiation exposure. But, before I go deeper into these experiments, let me set the stage.

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## Letters & Words More

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In the 1930s and 1940s, at the back of a shoe store in my hometown, was a fascinating machine. I could step up to the machine, place my feet in an opening, push a button, and see the bones in my feet. Anyone could do this; it was free and it was fun. I loved to wiggle my toes and watch those bones move back and forth, up and down. Of course, the machine was an x-ray machine. During the same time,

there was a dermatologist in town who used x-rays to cure adolescent acne. Some teenagers were fortunate enough to have parents with enough money to pay the treatment which might extend over a year or two. Those unfortunate teenagers whose parents did not have the money simply waited a year or two until this phase of their development had passed. Obviously, people did not know about the danger of x-rays.

In a more scientific sense, there was a scientist during World War II who liked to “tickle the dragon’s tail.” This scientist had pieces of fissionable material (uranium or plutonium) and in his “game” he would stack the pieces and watch the Geiger counter as it began to click. When he decided that he had gotten too close to the critical mass, he would scatter the pieces. The next time he played the “game” he tried to get closer to the critical mass where the nuclear reaction would be self-sustaining. Finally one day he reached the critical mass. The Geiger counter went wild and there was a blue glow. He quickly reached in and scattered the pieces, but it was too late. A fellow worker at the other end of the room received a huge dose of radiation and the scientist himself received a lethal dose. He was taken immediately to the hospital, but the physicians there had never treated anyone with such a heavy dose of radiation. He was a scientist to the end, keeping a journal of what was happening to him. This was the first “scientific” study of radiation sickness.

At that time many scientists believed that the human body could tolerate a low level of radiation. But no one knew what that limit was. Physicians, scientists, administrators and, yes, lawyers at the Manhattan

*Continued on page 9*

The Department of Chemistry and the Chemistry Club  
Announce the Twenty-Seventh Annual  
William J. Probst Memorial Lecture

**Dr. George B. Richter-Addo**

Presidential Professor of Chemistry, Oklahoma University

Monday, March 31st, 2003

“Small, Versatile, and Potent: NO and You”

7:00 pm Meridian Ballroom, Morris University Center

Additional Probst Lecture Events Include:

**Student Research Symposium**

Monday, March 31st, 2003

2 p.m. Meridian Ballroom,

Morris University Center

**“The Bioinorganic Chemistry of  
Heme-NO Interactions,”**

George Richter-Addo

Tuesday, April 1st, 2003

10 a.m. Science Building

Funded in Part By:

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For further information contact the SIUE Department of Chemistry at  
(618) 650-2042



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# Bond Briefs

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## *ACS WCC EIEIO*

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Plan to attend the 7th Annual Women Chemists Luncheon, on Sunday, April 13, 12 pm at the St Louis Science Center.

The speaker will be Madeleine Jacobs, editor-in-chief of Chemical & Engineering News. Her talk will be entitled Lessons Learned from a Lifetime of Communicating Chemistry. The cost is \$10. Reservations requested by April 10 to:

Leah O'Brien  
phone: 618-650-3562  
email: lobrien@siue.edu

All are welcome!

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## *Flinn Again, Begin Again . . .*

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The Flinn Workshop for science teachers is about to begin again. It will take place from June 16 to the 20th. There is no deadline for applications, but availability is limited and fills quickly. This year will feature Lee Merek as a presenter (as seen on Late Night with Dave Letterman).

For more information and an application visit the Flinn website: [www.FlinnSci.com](http://www.FlinnSci.com) and click on: Flinn Foundation.

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## *Undergraduate Research Symposium*

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The Undergraduate Research Symposium will be held on Saturday, April 26th, 1:00-4:00 pm, in McDonnell Douglas Hall, Saint Louis University campus. Parking will be available at the Olive-Compton garage. For more details or directions, contact:

Alexa Serfis  
314-977-2842  
[barnoski@slu.edu](mailto:barnoski@slu.edu)

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## *Technology Transfer Teleconference*

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The 2003 Technology Transfer Symposium will be held on Monday, April 21 from 2:00 to 5:00 pm at the Danforth Plant Science Center and Western Illinois University.

The speakers for the St. Louis site will be Dr. Roger Beachy, President of the Danforth Plant Science Center and Mr. Dick Fleming, President of the St. Louis Regional Chamber & Growth Association. The speakers for the WIU site will be Dr. Al Goldfarb, President, Western Illinois University and Dr. Gary Rabold, Vice President, MidAmerical Commercialization Corp. The moderator for the St. Louis site is Dr. Robert Webster, Associate Provost for Research at SLU. The moderator for the WIU site will be Dr. Sadiq Shah. Each speaker will give a 20 minute presentation and then open the floor for discussion to encourage questions from the audience. A reception will follow at both locations.

For questions contact: Sadiq Shah at [S-Shah@wiu.edu](mailto:S-Shah@wiu.edu).



*Continued from page 6 (Radiation)*  
 Project wanted some facts. It was decided to begin a careful study of injecting plutonium solutions into the blood stream of people. Needless to say, if “informed consent” was required at that time, it could not have been done. Even the existence of large quantities of plutonium was a highly guarded military secret. No one was permitted to use the word plutonium in the presence of persons without a very high security clearance. The medical records indicated that people were being treated with “49” which was the code for element 94 with mass 239 (look at the last digits). Who received these treatments? They were poor, uneducated persons, orphan children, terminally ill patients, and prison inmates. None of them knew what was being injected into their bodies.

Taking a look back at these experiments we can say they were not only illegal but also poorly planned and conducted. Did the terminally ill patient die as a result of the plutonium injection or as an expected consequence of the lethal illness? Some died a few years after the injection, but others lived decades, into their sixties or seventies. At the time of death the coroners had no knowledge of the injections and probably no knowledge of radiation sickness. Thus, subsequent examination of coroners’ records shed no light on radiation sickness.

During World War II admirals, generals and lesser officers were ordering vast numbers of men into harms way. The death statistics were but part of the chess game being played by the top brass. We may think of the Manhattan Project as a scientific project but Gen.

Leslie Groves made it clear that it was primarily a military project. Were the victims of the plutonium experiment just more military casualties? or were the persons performing these plutonium injections an American version of Dr. Josef Mengele?

## Special Thanks to...

- **Ted Gast** for participation in the TIE workshops
- **Myron Reese** for running the High School Chemistry Contest
- **Mike Hauser** for coordinating the College Student Awards
- **Bruce Kowert** for coordinating the Marcus Award
- **David Haselbauer, Greg Wall and Masangu Shabangi** for staffing the ACS booth at the “Minority Scientists Showcase” at the St Louis Science Center
- **Ken Manley and Kerry Gamber** for speaking at the Career Development Workshops
- **Anna Scarim, Lynda McDowell, and Bijan Khazai** for the Kids and Chemistry activities at the Science Center
- **David Haselbauer** for coordinating awards and judges at the many Science Fairs
- **Pat Burrell-Standley, Marlena Jones, Bob Devino, David Haselbauer, Barb,** and **All of You** who helped with the Science Fairs
- **Amy Mabrus, Emanuel Dake, Ebony Delaney, Leah O’Brien, David Haselbauer and Greg Wall** for staffing the Chemistry Booth at the St Louis Public Schools “Career Awareness Fair.”

*Pick up*

*rotating*

*Mass-Vac ad*

*from p. 7 of January 2003*

## Mary Harris Receives Presidential Award for Excellence

Mary E. Harris is the 2002 Presidential Awardee for Excellence in Mathematics and Science Teaching from Missouri. Mary teaches high school and middle level chemistry at John Burroughs School. She will be honored in recognition events in Washington, D.C. March 18-23, 2003. These events include an award ceremony, a Presidential Citation, meetings with leaders in government and education, banquets, and a \$7,500 prize. Her husband, UMSL Professor Hal Harris, will accompany her to D.C. Last year's winner from Missouri was another St. Louis chemistry teacher, Kathleen Dombink of McCluer North High School.



## Marcus Award

The Department of Chemistry at Saint Louis University and the St. Louis Section of the American Chemical Society invite you to attend the Thirty-Third Annual Leopold Marcus Award Competition to be held in Lee Hall (Lecture Hall 1) at Saint Louis University on Wednesday, April 2, at 4:00 p.m. The late Jack and Gertrude Marcus established the Leopold Marcus Award in memory of his father. The competition consists of senior chemistry students at Saint Louis University giving talks describing their undergraduate research. The candidates, nominated by the Department of Chemistry faculty, will be making fifteen-minute presentations. The winner of the Marcus Award will be determined by the vote of the professional chemists in the audience. The winner will receive a cash prize of \$200 and a letter of citation. The other finalists will receive \$100 and a letter of citation. A reception hosted by the Saint Louis University Department of Chemistry will be held following the announcement of the winner.

We look forward to seeing you April 2nd.

Bruce A. Kowert  
Professor of Chemistry  
2003 Marcus Award Chair

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# That was then... by Eric Ressler

We found something in our archives that will help our St Louis Award winner, Dr George Gokel, tiptoe through memories of his early career. It seems Aldrich Chemical Company recognized his budding excellence and the importance of his work, and invited him to write a review for their customer newsletter.

The article, "Crown Ether Chemistry: Principles and Applications" [*Aldrichimica Acta*, 1976, 9(1), 3-12] covered the state of the crown ether art, with particular emphasis on their usefulness as phase transfer catalysts.

The utility of crown ethers stems from their ability to form hydrophobic complexes with metal cations, effectively solubilizing salts in non-polar solvents.

Though Dr Gokel's research has, as his St Louis Award citation notes, evolved toward biology, he has not strayed as far as that chasm makes it sound. Prior to his entry in the field, earlier work on ion channels in membranes made use of compounds very much like crown ethers to model how cations are able to permeate hydrophobic biological membranes.

We reprint here the photo of Dr Gokel that illustrated his 1976 *Acta* article. Anyone wishing a reprint of the article can request one from Aldrich technical services, 800-231-8327.

In another nod to the past, we fervently regret missing the opportunity to join in commemorating the 50<sup>th</sup> anniversary of the double helix, this past February 28. On that day in 1953, in a Cambridge pub, Francis Crick announced to his drinking buddies that he and James Watson had elucidated the structure of DNA.

That was arguably the most far-reaching scientific discovery of the century past, and another chemist-turned-to-bio was instrumental in making the leap. Watson was playing with models of the purine and pyrimidine bases, trying to fit them together to obey Chargaff's rules (the number of A's = T's, and G's = C's). But the jig just wouldn't saw until an organic chemist in the research group pointed out that he had the hydrogen atoms at the wrong positions. The new models fit together perfectly.



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# Chemical Progress Week - Banquet Reservations

Member name \_\_\_\_\_

E-mail or Phone #:

## Awards Night

**Monday, April 7, 2003** at Kemoll's Restaurant (1st floor)

5:30 pm social hour, 6:30 dinner, 7:15 program

Honors winners of the High School Chemistry Contest, College Awards, Leopold Marcus Award, High School Teaching Award, Technician of the Year Award, and outstanding students at area colleges and universities.

Number attending \_\_\_\_\_ x \$22.50 = Amount remitted \$ \_\_\_\_\_

## St. Louis Award Banquet

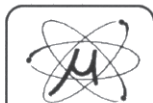
**Saturday, April 12, 2003** at Kemoll's Restaurant (14th floor)

6 pm cocktails (open bar), 7 pm banquet, 8 pm program

Honors St. Louis ACS Award Winner George Gokel

Number attending \_\_\_\_\_ x \$30.00 = Amount remitted \$ \_\_\_\_\_

Please mail reservation form with check (payable to St. Louis Section - ACS) to: Samir El-Altably c/o Camela Medical Equipment Co., PO Box 50168, Clayton, MO 63105. For questions call Samir at (314) 664-5522.



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# Meeting & Seminars

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## Board of Directors

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St. Louis Section–ACS Board of Directors meets the second Thursday of each month, usually at the Alumni Center, University of Missouri–St. Louis. Meetings are open to all members, and all are encouraged to attend. Elected officers and chairs of major committees have the right to vote; others in attendance have voice but no vote. If you want to attend the dinner, please contact Leah O'Brien (lobrien@siue.edu or 618-650-3562) at least one week prior to the meeting date. The usual cost of dinner is \$15. Members wishing to become active in section activities are welcomed for their first dinner compliments of the section.

**Date:** April 10  
**Social hour:** 5:30 pm  
**Dinner:** 6:30 pm  
**Business meeting:** 7:15 pm  
**Future meetings:** May 8

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## St. Louis University

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Seminars start at 3:30 pm in Room 204 Macelwane Hall, except as noted. Refreshments follow. For more information, contact Paul Jelliss, jellissp@slu.edu.

Friday, March 21  
**John Stezowski**  
University of Nebraska  
*Chemistry on the Nanoscale*  
- from *Molecular Recognition*  
to *Green Chemistry*

Friday, March 28  
**Lori Vermuellen**  
Southern IL Univ. - Carbondale  
*Green with Envy - How Needy*  
*Molecules Present Themselves*  
in the Solid State

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## University of Missouri- St. Louis

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Refreshments at 3:45; seminars at 4 pm in B-451 Benton Hall. For further information, Contact Prof. Keith Stine, 314-516-5346, kstine@jinx.umsl.edu

Monday, April 7  
**Dr. Charles Sanders**  
Vanderbilt University  
Nashville, TN  
*Tackling Complex Integral*  
*Membrane Proteins by*  
*Solution NMR*

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Monday, April 14  
**Dr. Larry G. Sneddon**  
University of Pennsylvania  
*The Design, Synthesis and*  
*Applications of Chemical*  
*Precursors to Advanced*  
*Ceramic Materials*

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\* Friday, April 18  
\* 1:00 pm  
**Dr. Andrew Weller**  
University of Bath, UK  
*Transition Metal Fragments*  
*Partnered with Weakly*  
*Coordinating Monocarborane*  
*Anions: Synthesis, Structures,*  
*and Catalysis*

Monday, April 21

**Dr. Eric J. Toone**

Duke University, Durham, NC  
*From Cluster Glycosides to  
Metal Chelates: Is More  
Really Better*

\* Friday, April 25

\* 1:00 pm

**Dr. Roger N. Beachy**

Donald Danforth Plant Science  
Center, St. Louis, MO  
*Controlling Gene Expression in  
Transgenic Plants: Factors,  
Domains, and a cis Element  
That Work Together to Regulate  
Gene Expression in Vascular  
Tissue*

Monday, April 28

**Dr. Moon H. Nahm**

University of Alabama  
at Birmingham  
*Cross Reactivity of  
Pneumococcal Antibodies*

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## Washington University

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Seminars are in McMillen 311 at 4 pm unless otherwise noted. Coffee is available 20 minutes prior to the talk, and refreshments follow. For information, contact Thomas P. Vaid, [vaid@wuchem.wustl.edu](mailto:vaid@wuchem.wustl.edu)

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## Midwest Mass Spec Discussion Group

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Wednesday, April 9th, 5:30pm

**Dr. Jackson Lay**

University of Arkansas  
*Recent Developments in the  
Rapid Analysis of Whole-cell  
Bacteria by Mass Spectrometry  
using MALDI FTMS*  
Sigma-Aldrich Life Science and  
High Technology Center

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## Computational Chemistry Discussion Group

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Meetings are held at Tripos, Inc., 1699 South Hanley Road. Parking is available in the rear of the building. Refreshments at 4:30, seminar at 5 pm. For more information, or if you would like to make a presentation at a future meeting, contact Philippa Wolohan, 314-647-8837 x3201, [pwolohan@tripos.com](mailto:pwolohan@tripos.com) or Mitchell Polley x3358, [mpolley@tripos.com](mailto:mpolley@tripos.com)

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