



NEWSLETTER

Oklahoma Section American Chemical Society

Volume 17 Number 4

<http://oklahoma.sites.acs.org/>

October 2011

Section Meeting Tuesday 18 Oct 2011

ANTIOXIDANT PREVENTION OF DNA DAMAGE AND CELL DEATH

Dr. Julia Brumaghim

Department of Chemistry, Clemson University

Metal-mediated oxidative DNA damage is the primary cause of cell death under oxidative stress conditions and is an underlying cause of neurodegenerative and cardiovascular diseases, cancer, and aging. Antioxidants are widely studied for prevention of oxidative damage and disease, and studies of antioxidant activity typically focus on scavenging reactive oxygen species. In contrast, we have quantified and compared the abilities of widely-studied sulfur, selenium, and polyphenolic antioxidants to inhibit metal-mediated DNA damage and found that these three classes of antioxidants all prevent DNA damage at biologically-relevant concentrations by directly coordinating the iron and copper ions responsible for oxygen radical generation. Polyphenolic antioxidants are very effective at preventing iron-mediated damage but much less effective at preventing copper-mediated damage, whereas the opposite is true for sulfur and selenium antioxidants. From these studies, we have developed quantitative predic-



continued on page 2 with the speaker's biographical sketch. →

Oklahoma State University, Stillwater, OK

Murray Parlor, South Murray Hall
corner of University & Monroe
across from Theta Pond

map: <http://osu.okstate.edu/welcome/campusmap.pdf>

6:00–6:30 pm

Social Half Hour

6:30–7:30 pm

Dinner

7:30–8:30 pm

Presentation



OSU map

QR code

Dinner Reservation Information

Cost

BBQ Buffet Style

\$15 members

\$5 students

Sliced Brisket and Chicken

Bread, Buns, Pickles,

Pepper and Onions

Cowboy Beans & Potato Salad

Unsweetened Ice Tea

Cobbler for Dessert

RSVP Deadline

Friday 14 Sep 5 pm

Contact: Nick Materer

405-744-8671

materer@okstate.edu

RSVP is NOT required to attend the presentation.

NATIONAL CHEMISTRY WEEK

October
15–22

Chemistry
Our Health
Our Future!



We kick off early again this year to beat fall break.

When: Saturday 15 October 2011
(10:00 am to 3:00 pm)

Where: Macy's Court area
Quail Springs Mall.

hands-on activities

+
stuff to take home

+
chemistry shows!



contact for details or to volunteer

Michael Ferguson (405-974-5391) jferguson@uco.edu

OK ACS OFFICER NOMINATIONS

We are seeking nominations for 3 positions

Chair Elect .. (3 year term—chair elect/chair/past chair)

Secretary (2 year term)

Alternate Councilor (3 year term)

Please send nominations to

Amanda Nichols (Section Chair) amanda.nichols@oc.edu
or Allen Apblett (Nominations chair) allen.apblett@okstate.edu

get involved • make a difference

Election schedule

Nominations due 20 Oct • Ballot mailing 22 Oct

Cast Ballots due on or before 05 Nov



K. Darrell Berlin (right) receiving the ACS Fellow certificate from the Immediate Past President of the ACS Joseph S. Francisco (left).

K. Darrell Berlin Named ACS Fellow

Professor K. Darrell Berlin was named an ACS Fellow on August 29, 2011 at the American Chemical Society (ACS) National Meeting in Denver CO. These distinguished scientists were recognized and honored for their significant contributions to the science and for providing excellent service to the ACS. Dr. Berlin joined the ACS as a student affiliate in 1951 and Member in 1956.

Dr. Berlin joined Oklahoma State University in 1960 and rose to the ranks of Regents' Professor. (In fact, he was the first Regents' Professor named at OSU). He earned a B.S. degree from North Central College and a Ph.D. from the University of Illinois.

Professor Berlin's research interests are in the areas of organic chemistry, specifically the synthesis of anticancer agents, antiarrhythmic agents, organophosphorous compounds, and NMR spectroscopy. He has served his discipline through the Local Oklahoma Section and Southwest region for many years and in many roles including, most recently, as chair of the Oklahoma Chemist Award.

Dr. Berlin has been a recipient of numerous awards including the Oklahoma Chemist Award, Outstanding Alumni Award at North Central College, Regents' Distinguish Teaching Award, Regents' Distinguished Research Award, and the Oklahoma Medal for Excellence in University/College Teaching (2003) from the Oklahoma Foundation for Excellence. He and his coworkers have published over 325 papers and also supervised over 100 Ph.D., masters and post-doctoral students.

Dr. Berlin was joined by 213 new members of the ACS Fellows program. The list of Fellows may be found at <http://cenm.ag/fellows>. The ACS Fellows Program was created by the ACS Board of Directors in December 2008 "to recognize members of ACS for outstanding achievements in and contributions to Science, the Profession, and the Society." There have been 568 Fellows named out of about 160,000 ACS members. He joins four other Oklahomans with the ACS Fellow designation.

For more information on the ACS Fellows Program:
<http://www.acs.org/fellows>



(continued from front page)

tive models for polyphenolic prevention of DNA damage and cell death based on their metal binding properties. In addition, we are synthesizing and characterizing coordination complexes of these antioxidants to elucidate chemical mechanisms for their antioxidant activity. This metal-binding mechanism represents an important shift in thinking about antioxidant activity and has significant implications for future directions in development of antioxidant supplements and therapies.

Dr. Brumaghim Biographical Sketch

Dr. Brumaghim first became interested in research chemistry as an undergraduate after conducting undergraduate research in the laboratories of Professors George Whitesides and Andrew Barron at Harvard, and Richard Eisenberg at the University of Rochester, primarily in synthetic inorganic chemistry. During graduate school at the University of Illinois, she worked with Professor Greg Girolami to synthesize and characterize air- and moisture-sensitive osmium complexes containing the pentamethylcyclopentadienyl ligand.

Seeking to focus on biological applications of inorganic chemistry, Dr. Brumaghim was an NIH postdoctoral fellow with Professor Ken Raymond in the Chemistry Department at the University of California at Berkeley. Having assiduously avoided water and oxygen during most of her graduate work, she now performed much of her research in water, synthesizing and resolving chiral Ga(III) hydroxamate complexes. Dr. Brumaghim also studied the incorporation of chiral phosphonium cations and ruthenium catalysts into the Raymond supramolecular assemblies. To gain more experience working with DNA, Dr. Brumaghim accepted a second postdoctoral research position with Professor Stuart Linn in the Molecular and Cellular Biology department at Berkeley. There she studied the effects of iron coordination on oxidative DNA damage and determined sites for iron localization and reduction rates for the biological reductants NAD(P)H.

As a chemistry professor at Clemson University since 2003, Dr. Brumaghim's work focuses on the biological applications of inorganic chemistry, using a wide range of techniques to determine mechanisms of antioxidant activity and prevention of metal-mediated DNA damage. For this work she received the ACS PROGRESS/Dreyfus Lectureship Award from the American Chemical Society and Camille and Henry Dreyfus Foundation in 2004 and an NSF CAREER Award in 2006. In 2008, Dr. Brumaghim won the Award for the Best Paper from A Young Investigator from the Journal of Inorganic Biochemistry and Elsevier Publishers. During her time at Clemson, she has also been active as treasurer of the Western Carolinas local ACS section. More information about Dr. Brumaghim's research activities can be found on her website at:

<http://chemistry.clemson.edu/brumaghimgroup/>.



UNIVERSITY OF CENTRAL OKLAHOMA'S INTERNATIONAL YEAR OF CHEMISTRY AND PASSPORT TO FRANCE EVENTS Celebrating the Centennial of Marie Curie's Nobel Prize in Chemistry

Madame Curie Screening at OKC MOA

Wednesday 02 Nov 2011

OKC Museum of Art, 415 Couch Dr., Oklahoma City

screening of the film 19:30

with introduction by Prof. Cheryl Frech

Madame Curie, 1943 MGM. Greer Garson & Walter Pidgeon. Despite himself, accomplished physicist and avowed bachelor Pierre Curie falls for brilliant student Marie, and together they embark on the discovery of radium. Nominated for 7 Oscars in 1944.

Admission: \$8 Adults
\$6 Seniors & Students
\$5 Museum Members



Lauren Redniss to Speak at UCO

Thursday 03 Nov 2011

University of Central Oklahoma, Edmond

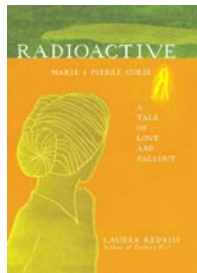
reception 15:00 Howell Atrium

presentation 16:00 Forensic Science Institute Auditorium

A book signing will follow the presentation.



Lauren Redniss is the author of *Radioactive: Marie and Pierre Curie - A Tale of Love and Fallout*, a graphic biography of the Curies. *Radioactive* is the visual journey into the life of Marie Curie, as told through the dazzling collage style of acclaimed author and artist Lauren Redniss. A brilliant visual storyteller, Redniss has hand-designed more than 100 color collages to tell Curie's story, fascinating in its scientific significance and its sometimes whimsical, sometimes haunting mix of romance and intrigue. Bringing together archival photos, images, and clippings with dazzling line drawings and a compelling narrative, *Radioactive* is far more than just an art book or a graphic novel: It is a stunning visual biography and a true work of art.



This event is sponsored in part by the Oklahoma Section of the ACS.

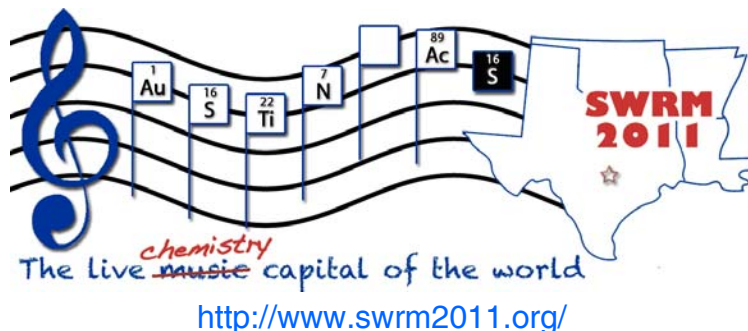
CHEMISTRY OLYMPIAD

information coming in November

SWRM 2011

67th Southwest Regional Meeting 9–12 November 2011

Hosted by The Central Texas Section (Austin, TX)



57TH ANNUAL PENTASECTIONAL MEETING

Saturday 17 Mar 2012

Cameron University

Lawton, OK

Hosted by the Wichita-Falls Duncan Section

2011 Oklahoma ACS Section Officers and

Standing Committee Chairs

Amanda J. Nichols	Chair
Donna J. Nelson	Chair Elect + Alternate Councilor
Nicholas F. Materer	Immediate Past Chair
Lloyd A. Bumm	Secretary + interim Newsletter ed.
Jason Wickham	Treasurer
Allen Applebitt	Councilor + Nominations Com.
Charles V. Rice	Awards Com.
Nathan Malmberg	Chemistry Olympiad Com.
Valerie Ferguson	National Chemistry Week Com.
Cheryl Frech	Public Relations
Jim Dechter	Web Master



L. A. Bumm
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Homer L Dodge Dept of Physics & Astronomy
The University of Oklahoma
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Norman, OK 73019-2061

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Oklahoma ACS 2011 Calendar of Events.
Visit the Oklahoma ACS WWW site for the latest information.
<http://oklahoma.sites.acs.org/>



OK ACS web
QR code

Oct 15-22 NATIONAL CHEMISTRY WEEK

Saturday 15 Oct Event at Quall Springs Mall, Oklahoma City

Oct 18 (Tue) local section meeting

South Murray Hall, Stillwater, OK

speaker: Julia Brumaghim, *Clemson University*

Antioxidant Prevention of DNA Damage and Cell Death

Nov 02 (Wed) Madame Curie screening at OKC MOA

Nov 03 (Thu) Lauren Redniss, UCO

Nov 08 (Tue) local section meeting

East Central University, Ada, OK

speaker: Wayne Jones, *State University of New York at Binghamton*
Nanotechnology

Nov (9-12) SWRM 2011

Austin, TX

2012 Tentative Dates & Speakers

Mar 17 (Sat) 57th Pentasectional Meeting, Cameron University.

Apr 12 (Thu) OCU, Richard Philip, *Department of Geology, Univ. Oklahoma*

Environmental Forensics, or Who Was Responsible for the Spill?

May 03 (Thu) OSU-OKC, Dale Teeters, *Department of Chemistry, Univ. Tulsa*

Nanoscale Chemistry for Enhanced Power Systems

Sep 14 (Fri) OBU, Kacey Cilburn, *Sr Criminologist, Toxicology Div, OSBI*

Forensic Toxicology: The Good, the Bad, the Ugly

Victor H Hutchison, *Department of Zoology, University of Oklahoma*

Clyde Snow, *Forensic Anthropology*

2019 Oklahoma Section Centennial

**National
Chemistry
Week**

