



ISOTOPICS

The Cleveland Section of the American Chemical Society

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On Deck:

4/20/2016

Education Night

Ohio Aerospace Institute

March Meeting Notice

Monday, March 7, 2016

Hovorka Atrium, Agnar Pytte Science Center,
Case Western Reserve University

2:30 PM	Registration
3:00-5:15	Technical Sessions
5:30	Plenary Address (Clapp Hall Room 108)
6:30	Dinner followed by Awards Ceremony

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Plenary address:

"Everybody learns Russian organic chemistry!"

David E. Lewis, B.Sc., Ph.D., D.Sc. (Adel.), FRACI, FRSC

Abstract: It is a long-held belief that organic chemistry owes much to the Germans for its development, but this is far from the complete story. If you check any introductory organic chemistry textbook, you will find many reactions discovered by Russians (even if their names are not appended to them). Thus, we have the Zaitsev and Markovnikov rules for elimination and addition, respectively, the reactions of olefins with potassium permanganate and osmium tetroxide, Wagner-Meerwein carbocation rearrangements (Wagner was Russian), the Wolff-Kishner reduction, and the aldol addition reaction all have their origins in work done by Russian organic chemists. This talk will be a trip through a part of the universe of Russian contributions to the development of organic chemistry. Watch out for composers and actors!

DINNER RESERVATIONS REQUIRED:

Please RSVP via email to clevelandacs@gmail.com by noon on Friday, March 4. An Italian buffet will be offered. We take credit card payments, checks made out to "Cleveland ACS," or cash. \$20 for members and guests, \$10 for retirees or unemployed, \$5 for students.

For directions to the Hovorka Atrium, please visit the CWRU chemistry department's web site: <http://chemistry.case.edu/department/find/>

Speaker's Biographical Sketch:

avid E. Lewis was born in South Australia and educated at the University of Adelaide, where he received his B.Sc. and Ph.D. degrees in natural products structure determination before moving to the United States for post-doctoral work. He worked as a post-doctoral research associate in physical organic/computational chemistry at the University of Arkansas, writing code for the program BEBOVIB, which is still used today by biochemists for obtaining a first estimate of transition state structure. After 18 months as a Lecturer, he moved to Illinois for one year as Visiting Assistant Professor. In 1981, he moved to Baylor University as Assistant Professor of Chemistry; here he met a young David W. Ball, who was a student in his first organic chemistry class at Baylor. In 1989, he moved to South Dakota State University as Associate Professor of Chemistry, and in 1997 he moved to the University of Wisconsin-Eau Claire as Professor and Chair of Chemistry. He became a naturalized U.S. citizen in 2004.

Lewis' research interests are wide-ranging from physical organic chemistry (e.g., *Org. Biomol. Chem.*, 2013, 11, 4390) to medicinal chemistry, with a particular emphasis on the development of new, safer oral anticoagulants (e.g., *Biorg. Med. Chem. Lett.* 2010, 20, 1928), organic synthesis, with emphasis on the development of new chiral organocatalysts, and the history of chemistry, with emphasis on the development of organic chemistry in pre-revolutionary Russia (e.g., *Angew. Chem Int. Ed.* 2011, 50, 6452; 2013, 52, 11704). In the past 30 months, he has visited Russia four times for research, and to deliver plenary lectures.

February meeting with ACS Peru

Last month, we had our first meeting with the new ACS chapter in our sister city Peru. It was an interesting and successful meeting. Curious? You can watch that meeting on YouTube at: <https://www.youtube.com/watch?v=gva-csjFLtE&feature=youtu.be>

Announcement: 60th May Conference (SAS/MSNO/AVS) and MSNO's 50th Anniversary

This year's conference will be May 18, 2016 at John Carroll University, Dolan Science Center.

Keynote Address:

"Aim High, then Aim Higher--Basic Research for the US Air Force" by Colonel Robert J. Kraus, PhD, Chief, Science and Engineering Division, Air Force Office of Scientific Research

Conference Topics:

- * Microscopy/Spectroscopy
- * Materials science
- * Biology
- * Renewable energy/sustainability
- * Additive manufacture (3D printing)
- * Analytical Chemistry
- * Vacuum/surface techniques
- * Nanomaterials/nanodevices

It is not too late to submit your paper. The submission deadlines are 3/18/2016 for talks and 4/18/2016 for posters. There will also be student awards. For more information, please visit the web site:

<http://www.msneo.org/2016-may-meeting.html>

Sponsored by: Cleveland Section of the Society for Applied Spectroscopy (SAS), Microscopy Society of Northeastern Ohio (MSNO), American Vacuum Society (AVS) and Cleveland Section of the American Chemical Society (ACS).

From ACS Discoveries: Pairing pain medicine with metal ions to battle cancer

Inorganic Chemistry

Fighting chemoresistant cancer remains a huge challenge that scientists are tackling from as

many angles as they can. One alternative approach involves pairing two groups of compounds — pain medicine and metal ions — that have individually shown promise as anti-cancer agents. Scientists report in the ACS journal *Inorganic Chemistry* that combining the two led to new compounds that could destroy drug-resistant cancer cells and leave most normal cells alone in lab tests.

Using metal ions in cancer drugs has a relatively long history. Cisplatin, for example, is a platinum-based therapy that has been used for years against lung, ovary and other cancers. But often, resistance against the drug develops. Recent advances, however, are pointing to new ways to destroy cancer cells. Metal complexes other than platinum-based ones have emerged as potential cancer fighters. And studies have found that nonsteroidal anti-inflammatory drugs (NSAIDs) work against certain cancers and boost the activity of other drugs. Paul J. Dyson and colleagues decided to link the NSAIDs indomethacin and diclofenac with ruthenium and osmium ions to see if they could come up with an effective combination.

The researchers created several different NSAID-metal ion complexes, characterized their structures and tested them in the lab for their cancer-fighting potential. Some compounds were even more effective against ovarian cancer cells than cisplatin. And a few were significantly more toxic to cisplatin-resistant cells than to healthy cells, an important factor that could potentially reduce side effects down the road.

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