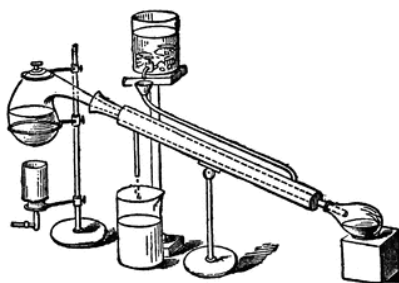




SOUTHWEST RETORT



SIXTY-SEVENTH YEAR

MARCH 2015

*Published for the advancement of
Chemists, Chemical Engineers
and Chemistry in this area*

published by

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EMPLOYMENT CLEARING HOUSE

Job applicants should send name, email, and phone, along with type of position and geographical area desired; employers may contact job applicants directly. If you have an opening, send your listing, including contact info for your company, to retort@acsdw.org. Deadlines are the 7th of each month.

JENKEM TECHNOLOGY

The PEG and PEGylation Technology People

Job Title: Sales/Marketing Assistant

Name of Company: JenKem Technology USA Inc.

Nature of Business: Polyethylene Glycol (PEG) Polymers for Pharmaceutical and Biotech Applications

Job ID: JKUSA-20140801

Job Type: Full-time

Salary Range: Base salary \$25,000.00 to \$35,000.00; plus Sales Commission

Location: United States - Texas – Plano

Additional notes: Must be legally authorized to work in the United States. Local candidates preferred, no relocation benefits are provided for the position.

Job Functions: Sales and marketing for PEGylation products and services: provides quotations and information on product availability, and provides answers to technical questions to customers, by phone or email; processes orders, shipping, and payments; develops and maintains customer relationships; identifies and develops

new customers and new markets for PEGylation products and services; and performs other tasks as assigned by the manager.

Job Requirements: Bachelor's degree or higher (Chemistry/Biology/Biochemistry or similar background REQUIRED); Excellent interpersonal and communication skills; Excellent reading, speaking, and writing skills in business English; Good arithmetic skills and attention to details required; Proficiency in the use of Microsoft Word, Excel, PowerPoint, and Outlook required; English/Chinese bilingual preferred; Ability to work independently required.

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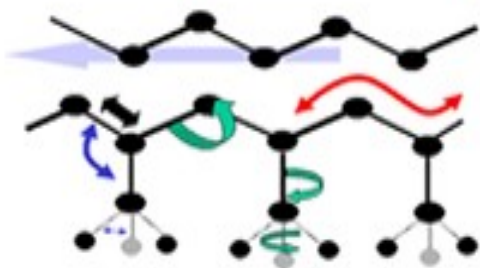
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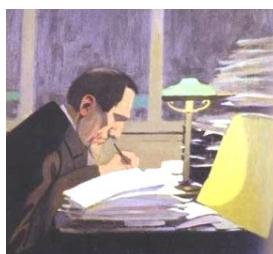
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| 22 Ti 47.867 | 23 V 50.942 |  | | | | | | | | | | | 34 Se 78.96 | 35 Br 79.904 |
| 40 Zr 91.224 | 41 Nb 92.906 | | | | | | | | | | | | 52 Te 127.60 | 53 I 126.90 |
| 72 Hf 178.49 | 73 Ta 180.95 | | | | | | | | | | | | 84 Po (209) | 85 At (210) |
| 104 Rf (261) | 105 Db (262) | | | | | | | | | | | | | |
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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The ACS tour speakers for March are Professor Sean P. McGlynn of LSU and Professor Joseph Simons of the University of Florida. Dr. McGlynn's talks will come from the group "Eximer Energy and Luminescence," "Photoconductivity of Organic Molecular Crystals" and "The Triplet State." Dr. Simons' topics will come from the group "The Tidy Universe," "Innovation and Creation", "The Size of an Atom," and "A Structure of Science."

At Texas Woman's University, Dr. Robert W. Higgins is recuperating from his surgery in late January. The Welch Foundation has announced a \$12,000 grant to Dr. Higgins to study "Synthesis of Cyclic Sulfides and Some of Their Deuterated Derivatives." Lyman R. Caswell and Patsy C. Atkinson recently had an article published in *J. Org. Chem.* It was announced that TWU has recently received a grant of \$131,625 from NSF for support of an \$800,000 building for graduate study and research in chemistry and biology. The Texas Commission on Higher Education recently granted TWU permission to offer the Ph.D. degree in Radiation Chemistry and Radiation Biology. At present the chemistry department has five students working toward the Ph.D. and 18 on the M.S. degree.

At North Texas State University (now UNT), Dr. William Glaze received a Welch grant of \$30,000 to study "Properties of Organometallic Compounds." At TCU Drs. W. B. Smith and R. K. McLeod recently had their Welch grants renewed. The TCU Research Foundation recently announced the establishment of a Chair of Biochemistry. The Chair will be financed by the Brown-Lupton Foundation. Dr. William H. Watson,

Jr. was recently elected Chairman of the Science Division at TCU.

At Trinity University in San Antonio, Drs. John A. Burke and William C. McGavock have recently received three-year Welch grants. At Rice University in Houston, President Kenneth Pitzer announced that DuPont had given Rice a \$5,000 grant for the advancement of undergraduate teaching in science and engineering. At Sam Houston State, Dr. Ray E. Humphrey has received a \$20,000 Welch grant renewal to continue studying the sulfur-sulfur bond.

At Texas Tech Dr. Joe A. Adamcik was elected Vice President of the Physical Sciences Section of the Texas Academy of Science. Drs. Harry G. Hecht and Wesley W. Wendlandt have recently completed a book manuscript on "Reflectance Spectroscopy" to be published by Wiley-Interscience.

From the Central Texas ACS Section we learn that Dr. Earl S. Snively, Jr. of Tracor, Inc., addressed the Jan. 25 meeting of the American Society of Heating, Refrigerating, and Air-Conditioning Engineers in Chicago. A large turnout came to the Feb. Section meeting to hear Dr. N. B. Hannay of Bell Labs speak on "Solid State Chemistry." At UT, Dr. R. M. Roberts was appointed to a three-year term on editorial advisory board for *Chem and Engineering News*. He also received a \$60,000 grant from the Welch Foundation and a \$16,000 grant from PRF.

Contributed by

E. Thomas Strom



...And Another Thing...

by Denise L. Merkle, PhD

Space

On April 12, 1961, Yuri Gagarin became the first human in space.

The Russian Cosmonaut spent 108 minutes in orbit and then returned to earth (Aren't all cosmonauts Russian? I believe they may be.). In subsequent missions an international parade of adventurous, supremely trained and impossibly physically fit explorers were ensconced in bulky, life-protecting spacesuits, belted into small capsules, and exhibited every confidence that ignition of thousands of gallons of liquid fuel would propel them toward their dream. Space.

The Dream of Space evolved from earthbound creatures' stories explaining the firmament that spread above them, to the translation into earthly applications of scientific discoveries made aboard the International Space Station, all the way to mere mortals' tickets on Commuter Spacecraft (if billionaires are mere mortals).

The Dream of Space gave us innovative cladding materials, chiller suits, safer passenger compartments, microgravity's uses in medical applications, self-contained breathing apparatuses, multi-spectral imaging, advanced robotics, great TV clips, and mind boggling photographs of the world as we know it—and galaxies we never could have known. The Dream of Space gave us multi-national scientific collaborations and collective horror when things went wrong.

Space gives us Dreamers: explorers, inventors, chemists, astronomers, engi-

neers, writers, biologists, theologians, mathematicians, poets...

Model rockets, superorbital craft, live-aboard stations with docking ports for visiting craft—and more. The Dream of Space. May we always try to understand those things we cannot actually know—and may there always be stars we can see but cannot actually reach.

Lots of Space references

First Human in Space

http://www.nasa.gov/mission_pages/shuttle/sts1/gagarin_anniversary.html

ISS R&D Conference

<http://www.nasa.gov/press/2014/may/nasa-announces-space-station-research-and-development-conference/#.VP4WK0vxXAc>

ISS Utilization

http://www.nasa.gov/pdf/393789main_iss_utilization_brochure.pdf

Spacesuits

http://www.nasa.gov/mission_pages/shuttle/behindscenes/spacesuitdemo.html

Spacesuits & Spacewalking facts

<http://www.nasa.gov/audience/foreducators/spacesuits/facts/index.html#.VP4aQEvvXAc>

N2(l) Fuel

<http://history.nasa.gov/SP-4230.pdf>

<http://history.nasa.gov/SP-4404/ch8-1.htm>

Shuttle Facts

http://www.nasa.gov/centers/kennedy/about/information/shuttle_faq.html#12

NASA on the Moon

http://www.nasa.gov/multimedia/hd/apollo11_hdpag.html#.VP4t-kvxXAc

ISS Articles and Photos

<http://www.nasa.gov/content/international-space-station-latest-news-archives/#.VP4vDEvvXAc>

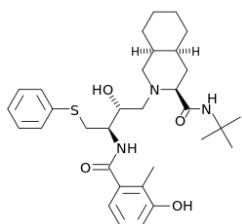
Could an HIV drug beat strep throat, flesh-eating bacteria?

HIV Protease Inhibitors Block Streptolysin S Production

ACS Chemical Biology

With antibiotic resistance on the rise, scientists are looking for innovative ways to combat bacterial infections. The pathogen that causes conditions from strep throat to flesh-eating disease is among them, but scientists have now found a tool that could help them fight it: a drug approved to treat HIV. Their work, appearing in the journal *ACS Chemical Biology*, could someday lead to new treatments.

Douglas A. Mitchell and colleagues point out that *Streptococcus pyogenes* is responsible for more than 600 million illnesses and 500,000 deaths globally every year. A major factor in the pathogen's ability to cause disease is its production of a toxin called streptolysin S, or SLS. If scientists could figure out a way to jam the bacterial machinery that makes the compound, they could develop new therapies to fight the pathogen and to slow the spread of antibiotic resistance. But not much is known about how *S. pyogenes* makes SLS.



The researchers turned to an HIV drug called nelfinavir. Although the drug's target is an HIV protein, it is also known to incidentally block a key enzyme in patients.

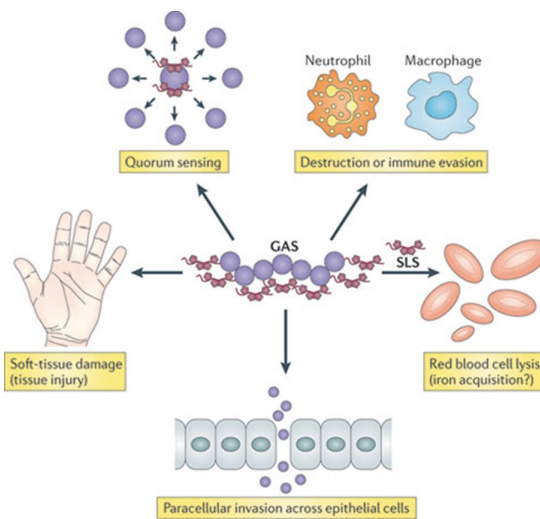
That enzyme is related to one in *S. pyogenes* that is critical for producing SLS. The scientists made several nelfinavir-like compounds that stopped the bacteria from

making the toxin in lab tests. They conclude that the drug and its variants could help future efforts to understand how the deadly bacteria works and how to stop it.

The authors acknowledge funding from the National Institutes of Health.

From Nature Reviews/Microbiology

The mechanisms by which streptolysin S (SLS) is known to contribute to the virulence of group A Streptococcus (GAS; also known as *Streptococcus pyogenes*) include soft-tissue damage, an impact on host phagocytes and a contribution to the paracellular translocation of GAS. In addition, SLS-associated gene A (sagA) mRNA and the associated 'pleiotropic ef-



Nature Reviews | Microbiology

fects locus' (pel) mRNA affect virulence through their impact on the expression of other virulence genes. SLS also functions as a signaling molecule, and it has been proposed to contribute to iron acquisition from the host.

ACS DFW Local Section

Dear Colleagues,



I hope that this month's letter finds you all safe and warm after all of this winter weather that the DFW area has been experiencing. I hope that the Spring comes quickly so that we all can enjoy the area.

On Wednesday, February 25, members of the local section gathered at the University of Texas at Dallas to enjoy dinner and the screening of the award winning documentary, *Haber*. It was fantastic to interact with colleagues from many backgrounds and to have in-depth and thoughtful discussion about chemical weapons and the ethics of chemical research.

Unfortunately, due to unprecedented and record-breaking snow and ice accumulation, and for the safety of our meeting registrants, our local section March meeting at the University of Arlington was cancelled after the university decided to close the campus for the day. My apologies for all those that had registered, as we were all truly looking forward to attending Dr. Rabinovich's lecture. For those that had paid in advance through credit card and PayPal, do allow some time for the refunded credit to appear to your accounts. At this time, all re-

funds have been issued so if you have any questions, please reach out to me.

Our next meeting will take place on Monday, April 6, at 6:30pm at the Saltgrass Restaurant in Lewisville. There we will take time to honor our 50- and 60-year members, as well as our student award winners. Our award winners will be contacted in the next few days, and the RSVP link will be sent out to the entire local section by Monday, March 16.

Please don't forget that Saturday, April 25, is our 48th Annual Meeting in Miniature. This symposium will be held this year at the University of Texas at Arlington. Registration is free and the abstract deadline is March 27, 2015. Be sure to check it out. More information can be found at <http://www.uta.edu/chemistry/seminars/dfw-ac-s-mim-2015.php>.

Our last meeting of the semester will be held on Monday, May 11. Our speaker is Dr. Bill Carroll, who will be presenting a lecture entitled *Statistics and the Shirelles: How Physical Sciences Thinking Informs Popular Music Analytics*.

As always, if you have any questions or comments, please feel free to contact me.

All the best,

Shana Marie Santos

shana.marie.santos@gmail.com

Chair, DFW Section

Climate Change and the Parable of the Pothole

By Bob Landolt, Ph.D.



In the movie *War Games*, regarding Global Thermonuclear War, Joshua (the computer) states, “A strange game. The only winning move is not to play. How about a nice game of chess?”

I believe Climate Change/Global Warming is a game we must play to win.

One of the most useful approaches in teaching non-science majors was to have students in the class formally debate such issues as continued societal use of nuclear power. Without regard to student preferences, half of the class was assigned the affirmative and half the negative. After the debate, each student wrote a paper detailing which side they thought won the debate and why. I was routinely impressed that students frequently not only gave credit to the other side, but also stated that they had a preconceived opinion that changed as a result of the debate.

Since the debate mechanism encouraged critical thinking and intellectual growth, I tried assigning the reality of global warming as a topic, using the same affirmative/negative debate team approach. Once was enough; the global warming/climate change debate was suspended because it was unfair to the negative side. In my view, even then the evidence for human-related climate modification was overwhelming.

This issue mainly requires focus on predicting impacts and time-lines for climate

change and identification of plausible remediation strategies. Valuable re-

sources with references include the 2014 National Climate Assessment:

nca2014.globalchange.gov/, with interactive materials for regions (the one including Texas:

nca2014.globalchange.gov/report/regions/great-plains), climate

myths and facts: skepticalscience.com/about.shtml, and the ACS Climate Science Toolkit:

<http://www.acs.org/content/acs/en/climatescience.html>.

In teaching, I have used a more familiar phenomenon to illustrate key concepts in environmental science generally and for climate change in particular. Usually the most convenient route from my home in Arlington and the Texas Wesleyan Campus in Fort Worth is to take Route 303/Pioneer Parkway/Rosedale. Commuting this time of year (late winter/early spring) offers potential to illustrate the distinction between a hazard and a risk. A hazard, like a pothole, is a fact. The potential risk from an encounter with a pothole is a probability. The latter ranges from zero, if driving in the other lane, up to 100%, if one is inattentive and remains in the pothole lane.

I posit that climate change is a hazard, like the pothole. It is a fact, like bluebonnets are blue or that there are 12 eggs in a dozen. Consequences occur upon encounters with the hazard. Furthermore, like the pot-

hole, climate change is a predictable result of both natural and human activities. Unlike the pothole, changes in climate are not subject to quick or easy fixes. I'd like to spend the rest of this article addressing risk, the likelihood of experiencing damage from encounter with a hazard. The pothole parable may help. What might be done about real things, like potholes?

To deny hazards exist carries moral responsibilities, but in the case of the pothole, the risk can be assigned to others by taking a different route until the problem bothers someone else enough to fix it. For Climate Change, there is no 'other lane.' Because the hazard exists for everyone and the encounter will be global, denial adds to the risk, especially for future generations. Furthermore, earlier remediation not only would reduce undeniably harmful impacts but also could increase a quality of life resulting from sustainability, especially in terms of energy resource utilization. Even a little humor may be helpful: <http://www.kentucky.com/2012/03/18/2115988/joel-pett-the-cartoon-seen-round.html>.

Science, which may be defined as the search for objective knowledge, leaves little doubt for the cause of potholes: cycles of freezing and thawing of water in surface cracks plus jarring encounters with vehicles. You are going to see potholes occur 'naturally,' even on a seldom driven road. We now are learning that climate change is planting pothole-like hazards all over the paths we travel. The question is how we address the risks, raising or lowering the probability of undesirable results.

It may be useful to assess possible bad results from encounters with climate change

in terms of magnitude, compared to threats of damage from other hazards. Robert Breche, who teaches the Chautauqua course, "Climate Change: What Every Faculty Member Should Know" (<http://campus.udayton.edu/~physics/gkm/chau/DAY15-20.htm>), suggests one comparable hazard, the 'Cold War.' If the Cuban Missile Crisis had been resolved in the wrong way, the current discussion of climate change would be moot. Compared to nuclear war, which posed perhaps a 98% risk of disaster, how would /should you rate societal risks, including drought, famine, poverty, as consequences of encountering climate change?

It's easier when the impacts are short term. With problems presenting immediate threats, such as Ebola or flu, earthquakes or hurricanes, decisions about what actions to take are more straight-forward. Longer term risk-taking is trickier, especially when there are financial considerations. But, there is precedent for hope. As an ACS Congressional Fellow in 1987, I attended the congressional hearings on the ozone hole, its cause and long-term risks. Scientists spoke up, society got the message, and steps have been taken to reduce, if not eliminate, the long-term risk.

For plausible approaches to address Climate Change, I recommend Climate Interactive's vision for game-changing, www.youtube.com/watch?v=id4DZ0NiKk4&feature=player_detail_page. For a more individualized approach, see: etflex.et-model.com/?locale=en, but only if you are not easily addicted to games.

DFW SECTION OF THE ACS

Call for Nominations

Doherty and Schulz Awards

Nominations are invited for 2015 Wilfred T. Doherty and Werner Schulz awards. Nomination forms and additional information are available online at <http://dfw.sites.acs.org/localsectionawards.htm>. This year's chair is Dr. Rasika Dias at UT Arlington (817-272-3171). Nominations are due by April 15, 2015. Each nomination should contain completed nomination form, cover letter highlighting the nominee's accomplishments, and a copy of the CV. One seconding letter may accompany nominations. The nomination package should be sent by email as a single pdf file to Rasika Dias at utachem2015@yahoo.com. Nominations remain active for five years but should be updated annually.

The Doherty Award is given for excellence in chemical research or chemistry teaching, meritorious service to ACS, establishment of a new chemical industry, solution of pollution problems, and advances in curative or preventive chemotherapy. Nominees may come from industry, academia, government, or small business. The nominee should be a resident member in the area served by the DFW Section, and the work should have been done here. The award is \$1500 and an engraved plaque. A photo of the Doherty Award winner will be displayed permanently in the Gallery of Doherty Award winners, Berkner Hall, UT-Dallas.

The Schulz Award is given to high school chemistry teachers, who, like the late Dr. Werner Schulz, bring that something extra to the teaching of chemistry. The nominee and/or nominator need not be ACS members. Nominees should show excellence in chemistry teaching as demonstrated by testimonials from students and fellow teachers, results in student competitions, and diligence in updating and expanding scientific/teaching credentials. A photo of the Schulz Award winner will be displayed for one year at the Perot Museum of Nature and Science in Dallas, and then displayed permanently in the Gallery of Schulz Award winners, Science Bldg., Tarleton State University. A traveling plaque stays at the winner's high school for the year of the award. Winners will normally receive their awards and give their lectures at a fall meeting of the section.

Remember, a continuous flow of nominations is needed to maintain the quality of awards.





48th Annual Meeting-in-Miniature Saturday, April 25, 2015

April 2015 Meeting
Dallas-Fort Worth Section of
the American Chemical Society



THE UNIVERSITY OF TEXAS AT ARLINGTON
University Center, Arlington, Texas

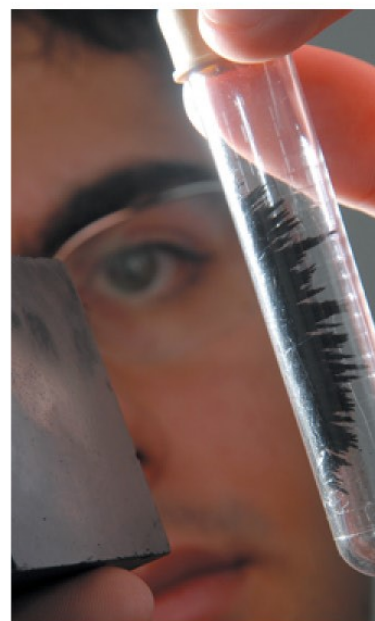
Call for Abstracts: All **Graduate** and **Undergraduate Students** are invited to submit abstracts for a 10–12 minute oral presentation, allowing 3–5 minutes for questions.

Abstract Deadline: Friday, March 27th, 2015

Submission: Email a word document containing your ACS-style abstract to chemistry@uta.edu with the subject line, "Meeting in Miniature Abstract Submission" (details below).

Awards: Multiple Awards given to top presentations from each session.

Registration: **Free!**



Abstract Details:

Title of Presentation
Authors (Underline presenting author and put an * next to advisor)
Affiliation (Department and University)
Division: (Analytical, Biochemistry, Inorganic, Organic, Physical, etc. There is no limit to division participants.)
Email Address of presenting author
Category: Undergraduate or Graduate
Abstract Paragraph, which should include "Motivation, Methods, Results, Conclusions" – C. Elliot; and be limited to 200 words

Tentative Schedule:

| | |
|-------------|----------------------------|
| 8:00–8:30 | Check-In |
| 8:30–10:00 | Oral Presentations |
| 10:00–10:15 | Morning Break |
| 10:15–11:45 | Oral Presentations |
| 11:45–1:15 | Lunch Break (not provided) |
| 1:15–3:30 | Oral Presentations |
| 3:30–4:30 | Tours and Planetarium Show |
| 4:30 | Awards Ceremony |

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38th International Symposium on Capillary Chromatography & 12th GCxGC Symposium

May 16 - 21, 2015 Ft. Worth, Texas

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ISCC is the premier meeting for pressure and electrodriven microcolumn separations and related techniques. GC x GC brings together world leaders in the application of comprehensive multidimensional gas chromatography. The combination of these meetings provides a rich forum for fundamentals and applications of widely used analytical techniques. Information about student travel grants and a complete list of awards are available on the website. These conferences, held bi-annually in Riva del Garda, Italy, move to Ft. Worth, Texas for 2015. Plenary lecturers include George Whitesides from Harvard University and Sandy Dasgupta from The University of Texas at Arlington. Some general themes include:

Petroleum, Energy, and Resource Development
Pharmaceutical, Forensic, and Process Analysis
Ionic Liquids in Chemical Analysis
Contaminants in Food and the Environment
Biomarker Discovery and Protein Analysis
Novel Stationary Phase Chemistry
Atmospheric and Air Analysis

Software and Data Analysis
Integrated Sample Preparation
Lab-On-A-Chip and Microfluidics
Fundamentals and Theory
Novel Detection Techniques
Multidimensional Separations
Miniaturized and Portable Systems

Abstract submission and registration now welcome!

Invited Presenters Include:

| | |
|------------------|----------------|
| Jared Anderson | Harold McNair |
| Sandy Dasgupta | Luigi Mondello |
| John Dimandja | Milos Novotny |
| Frank Dorman | Michael Ramsey |
| Tadeusz Gorecki | Eric Reiner |
| James Harynuk | Kevin Schug |
| Emily Hilder | John Seeley |
| Steven Jacobson | Nick Snow |
| Robert Kennedy | Frantisek Svec |
| Milton Lee | Rob Synovec |
| Phillip Marriott | Ralf Zimmerman |

Symposium Chair
Daniel W. Armstrong
www.isccgcxgc2015.com



From the ACS Press Room

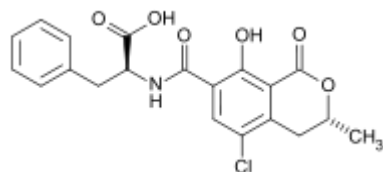
Oat breakfast cereals may contain a common mold-related toxin *and* Sweet smell of roses

Significance of Ochratoxin A in Breakfast Cereals from the United States

Journal of Agricultural and Food Chemistry

Oats are often touted for boosting heart health, but scientists warn that the grain and its products might need closer monitoring for potential mold contamination. They report in ACS' *Journal of Agricultural and Food Chemistry* that some oat-based breakfast cereals in the U.S. contain a mold-related toxin called ochratoxin A (OTA) that's been linked to kidney cancer in animal studies. The findings could have implications for consumer health.

Dojin Ryu and Hyun Jung Lee note that OTA is one of the most common toxic



products released by molds in the world. Previous studies have found the toxin in

samples of pork, dried fruits, wine, coffee and other products. Scientists don't yet know how the toxin affects human health, but the International Agency for Research on Cancer, which is part of the World Health Organization, classifies it as a possible human carcinogen. Animals exposed to OTA in experiments developed kidney tumors. Although the U.S. doesn't currently regulate the contaminant, the European Union has set maximum limits for OTA in food. Ryu and Lee wanted to see how U.S. breakfast cereals — a staple in many

Americans' diets — measured up to that standard.

The researchers tested close to 500 samples of corn-, rice-, wheat- and oat-based breakfast cereals purchased from U.S. stores over two years. They found that in most samples, OTA levels were lower than the European threshold. But concentrations exceeded the EU standard in 8 percent of oat-based breakfast cereal samples. The researchers conclude that oat production, storage and processing need careful review to better protect consumer health.

The authors acknowledge funding from the U.S. Department of Agriculture National Institute of Food and Agriculture.

Why Do Roses Smell So Sweet? (video)

Valentine's Day was last month, and people spent billions on their sweethearts. Much of that cash will be dropped on sweet-smelling roses. But did you know that one minor chemical change would make that rose not smell as sweet? Chemist Raychelle Burks explains why in the debut episode of the series *Get to Know a Molecule (GTKAM)*. Every two weeks, GTKAM will focus on one of the more than 91 million molecules science has discovered. Check it out here:

<http://youtu.be/dQyQns4i5hI>.

JChemEd article on rose scents: <http://pubs.acs.org/doi/abs/10.1021/ed100629v>

Around the Area

UT Dallas

UT Dallas' Office of Technology Commercialization has licensed to Lintec of America a process developed over several years by Dr. **Ray Baughman**, the Robert A.



Ray Baughman (left) and Kanzan Inoue

Welch Distinguished Chair in Chemistry, and his colleagues at the University's Alan G. MacDiarmid NanoTech Institute. The patented process transforms tiny tubes of carbon — 10,000 times thinner than the width of a human hair — into useful large-scale structures, such as sheets and yarns, that are super-strong and extremely light. Lintec recently opened the Nano-Science & Technology Center in Richardson, less than 5 miles from the UT Dallas campus, and is devoted specifically to the manufacture and commercialization of the carbon nanotube structures. More details at [http://www.utdallas.edu/news/2015/2/9-31409 Nanotech-Discoveries-Move-from-Lab-to-Marketplace-story-wide.html?](http://www.utdallas.edu/news/2015/2/9-31409-Nanotech-Discoveries-Move-from-Lab-to-Marketplace-story-wide.html?WT.mc_id=NewsHomepageFeature)

University of Arkansas

Fritsch and Bobbitt Named NAI Fellows

The National Academy of Inventors (NAI) has named 170 distinguished innovators to NAI Fellow status, increasing the total number of NAI Fellows to 414. The NAI Fellows will be inducted on March 20, 2015, as part of the 4th Annual Conference of the National Academy of Inventors at the California Institute of Technology in Pasadena, CA. U.S. Patent and Trademark Office (USPTO) Deputy Commissioner for Patent Operations Andrew Faile will be providing the keynote address for the induction ceremony. Fellows will be presented with a special trophy and rosette pin in honor of their outstanding accomplishments.

The department is proud of the fact that



one of its own, Dr. **Ingrid Fritsch**, was named an NAI Fellow. Dr. Fritsch is a Professor in the Department of Chemistry and Biochemistry. She received a B.S. degree from the University of Utah and a Ph.D. from the

University of Illinois at Urbana-Champaign and was a postdoctoral associate at the Massachusetts Institute of Technology. Fritsch has pioneered the field of redox-magnetohydrodynamic microfluidics and developed multifunctional miniaturized analytical devices and sensors, including protein and DNA-hybridization microarrays interfaced to electrochemical detection. This work is important in devel-

oping portable devices for environmental and point-of-care chemical analysis. She holds ten issued U.S. patents (nine licensed), co-founded two startup companies, and currently serves as a Member of the Board of Directors of SFC Fluidics, Inc.



Formerly from the department, Dr. **Donald R. Bobbitt** was also named an NAI Fellow. He was awarded patents for discoveries he made in the 1990s as a faculty member. Dr. Bobbitt now serves as president of the University of Arkansas System.

To see the full article on the University of Arkansas Newswire, please go to <http://bit.ly/1Lhtl0k>

On the Go

Chen, J. spoke on *Site-Selective Seeded Growth of Bimetallic Nanostructures and their Catalytic Applications*, at the Department of Chemistry, Missouri State University (1/28), Brown University (2/5) and the University of Oklahoma (3/6).

Publications

G.D. Keeler, J.M. Durdik, J.A. Stenken: *Localized Delivery of Dexamethasone-21-Phosphate via Microdialysis Implants in Rat Induces M(GC) Macrophage Polarization and Alters CCL2 Concentrations*, *Acta Biomaterialia*, 2015, 12, 11-20. DOI: 10.1016/j.actbio.2014.10.022.

J.A. Stenken and A.J. Poschenrieder: *Bioanalytical Chemistry of Cytokines*

- *A Review, Analytica Chimica Acta*, 2015, 853, 95-115. doi:10.1016/j.aca.2014.10.009.

Marion G. Götz, Hiroko Takeuchi, Matthew J. Goldfogel, Julia M. Warren, Brandon D. Fennell and Colin D. Heyes: *Visible-Light Photocatalyzed Cross-Linking of Diacetylene Ligands by Quantum Dots to Improve Their Aqueous Colloidal Stability*. *J. Phys. Chem. B*, (2014), 118, 14103-14109.

Lisunova, M., Dunklin, J.R., Jenkins, S.V., Chen, J., and Roper, K.D. *The Unusual Visible Photothermal Response of Free Standing Multi-layered Films Based on Plasmonic Bimetallic Nanocages*. *RSC Advances*, 2015, DOI: 10.1039/C5RA00682A.

Jenkins, S.V., Qu, H., Mudalige, T., Ingle, T., Wang, R., Wang, R., Howard, P.C., Chen, J., and Zhang, Y.: *Rapid Determination of Plasmonic Nanoparticle Agglomeration Status in Blood*. *Biomaterials*, 2015, accepted.

Lisunova, M., Dunklin, J.R., Jenkins, S.V., Chen, J., and Roper, K.D. *The Unusual Visible Photothermal Response of Free Standing Multilayered Films Based on Plasmonic Bimetallic Nanocages*, *RSC Advances*, 2015, DOI: 10.1039/C5RA00682A.

UTA

The new Dean of Science at UT-Arlington will be Professor **Morteza Khaledi**, currently Chair of the Chemistry Department at North Carolina State University. Dr. Khaledi received his B.S. degree from the

University of Shiraz in 1978 and his Ph.D. degree from the University of Florida in 1984. He is a renowned expert in mechanistic studies and bioanalytical application of high performance capillary electrophoresis and high performance liquid chromatography. His research has been funded by NIH, NSF, and various corporate bodies. As Dean of Science, he will lead the departments of chemistry and biochemistry, biology, earth and environmental science, mathematics, physics, and psychology. He will join UT-Arlington on Aug. 1.

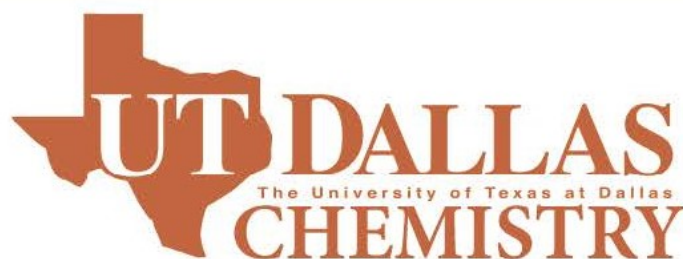
Send your seminar
schedules for the
semester or the year to
the RETORT.

retort@acsdfw.org



NMR INSTRUMENT TIME NEEDED

The University of North Texas Health Science Center in Fort Worth is looking to purchase instrument time on mid-to-higher field NMR spectrometers (300-600 MHz) in the Dallas-Fort Worth area. With the new UNT System College of Pharmacy coming online and the recent arrival of faculty in pharmaceutical sciences and medicinal chemistry, we have a sudden need for NMR capabilities. In addition, we are developing new diagnostics based on low-field benchtop NMR relaxometry and spectroscopy, and are seeking to validate those approaches at higher field. If your institution has excess NMR capacity and is looking for customers, please contact David P. Cistola, M.D., Ph.D., Vice President for Research & Innovation, UNT Health Science Center, Fort Worth. Email at david.cistola@unthsc.edu or call 817-735-2055.



| Date | Speaker | School |
|-------------|----------------------------|----------------------------------|
| January 23 | Dr Eduard Chekmenev | Vanderbilt University |
| January 30 | Dr Donovan Haines | Sam Houston State University |
| February 6 | Dr Wei Zhang | University of Colorado |
| February 13 | Dr Ivan Aprahamian | Dartmouth |
| February 20 | Dr Susan Kauzlarich | University of California Davis |
| February 27 | Dr Wei Chen | University of Central Oklahoma |
| March 6 | Dr Jose Gutierrez-Gonzales | University of Texas Pan American |
| March 13 | Dr Richard Willson | University of Houston |
| March 27 | Dr Saiful Chowdhury | University of Texas Arlington |
| April 6 | Dr Ali Trabolsi | New York University Abu Dhabi |
| April 10 | Dr. Warren Chan | University of Toronto |
| April 17 | Dr Gang-Yu | University of California Davis |
| April 24 | Dr Nathaniel Rosi | University of Pittsburgh |
| May 1 | Dr Jennifer Irvin | Texas State University |

800 West Campbell Rd. Richardson, TX Contact: gassensmith@utdallas.edu

FIVE QUESTIONS FOR...

Each e-Retort issue, 5Q introduces a local scientist or event to Readers. This month's



interviewee is Susan W. Carson, Ph.D., ACS member, motivational speaker and author. Dr. Carson is CEO of Smart Leadership Coaching, a company that assists scientific and technical professionals

who are plateaued in their careers, by offering them coaching to build and polish their communication skills. Clients who work with Smart Leadership coaching gain peer recognition, respect - and find their ideal job.

1. *How old were you when you realized you wanted to be a scientist?*

I was in grade school. I was always asking why to the point of my parents' dismay. I was enamored with understanding why things were – including how my dolls were put together! So I would take them all apart and get hysterical when I could not put them back together.

2. *What aspects of your career do you most enjoy?*

I enjoy being able to use all the lessons I have learned—and all the skills I have been taught—to assist other 'knowledge peddlers' like myself to shorten their journeys to reach the careers they want. There is nothing like the effect someone's 'Aha, I got it' has on me!

3. *If you had a chance for a do-over, what*

would you change about your scientific education?

I would include teaching the skills that one needs to be able to use one's knowledge in the betterment of oneself; eg., finding the right job, and in the betterment of the world. My clients, albeit brilliant in their scientific knowledge, are remiss in their knowledge of how to communicate this to others who need it, such as business managers.

4. *Currently, you apply your many accomplishments toward guiding scientists—and others—to greater success, especially in the established stages of their careers. Was there a specific event that caused you to focus on helping others bolster their achievements and career goals? If yes, what was it? And if not, what motivated you to follow this path?*

One event that stands out in my mind was an unpleasant meeting I had with a senior VP at the global company where I was employed. That meeting was like a summation of all the events that I translated as my being a failure: That even though my knowledge was great, I still never received the recognition nor the promotions that I felt I deserved. This began my journey to discover what was either wrong, or as I determined, was missing from my personal toolbox.

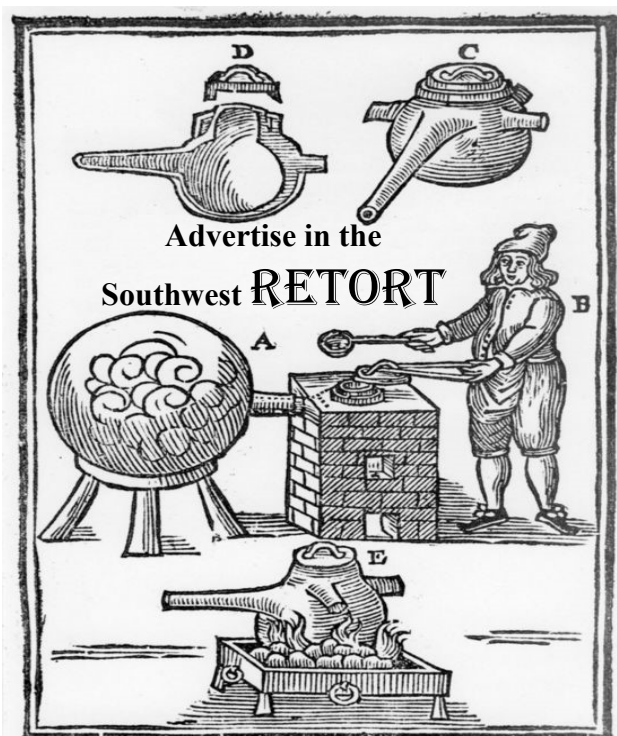
5. *The ubiquitous 5th Question must be: Who is your Science Hero? And why?*

My science hero is Dr. Henrietta Roome. She was my High School Science teacher. I had gone to an all-girls private school —

where we wore blue wool jumpers and saddle shoes and were always being confused with the girls from the Mother Cabrini parochial school down the street. This was a school where the length of your jumper was more important than teaching the girls the beauty of science. In fact, they did not even include the study of physics because it was not appropriate for girls to learn. Dr. Roome stood out and pushed science at us. One of the only good memories I have of the school is when she showed us the impact of dropping sodium metal in water. I will never forget that. So she is my hero. She stood her place – and was proud of it.

Thank you, Dr. Carson, for participating in '5 Questions'!

If you've read this article and would like to be interviewed, send an e-mail with 5Q in the title to retort@acsdw.org.



**FWLSC's Spring
Event in Support
of**

**SfN's Brain
Awareness Week**

Thursday, April 23rd 2015

7:30p – 10:30p

@ A5A 1628 5th Ave 76104

Interesting Talks by Local Scientists

Benjamin R. Miller, PhD

Assistant Professor of Biology

School of Natural and Social Sciences

Texas Wesleyan University

C. Munro Cullum, PhD, ABPP

**"Traumatic Brain Injury and Cognitive
Function Later in Life"**

UT Southwestern Medical Center

[http://profiles.utsouthwestern.edu/
profile/11587/c-munro-cullum.html](http://profiles.utsouthwestern.edu/profile/11587/c-munro-cullum.html)

Denise C. Park, PhD

Center for Vital Longevity, UT Dallas

[http://agingmind.utdallas.edu/people/
view/denise-park#sthash.eyJZglqFc.dpuf](http://agingmind.utdallas.edu/people/view/denise-park#sthash.eyJZglqFc.dpuf)

**To Register - & for more information
about the expert speakers, visit:**

[http://www.eventbrite.com/e/fwlscs-
spring-2015-event-thursday-april-23-
tickets-15565380472?aff=eac2](http://www.eventbrite.com/e/fwlscs-spring-2015-event-thursday-april-23-tickets-15565380472?aff=eac2)

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New insight into how rubber is made could improve tires, reduce air pollution *and* Science of movie explosions

Dinuclear Bridging Bidentate Zinc/Stearate Complex in Sulfur Cross-Linking of Rubber

Macromolecules

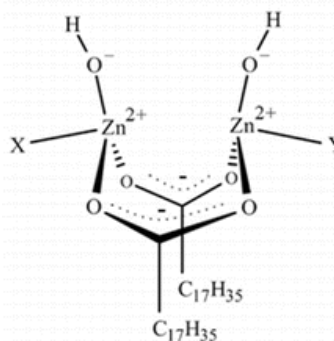
People have been making rubber products from elastic bands to tires for centuries, but a key step in this process has remained a mystery. In a report in the ACS journal *Macromolecules*, scientists have described this elusive part of rubber production that could have major implications for improving the material and its uses. Their findings, if used to improve tire performance, for example, could mean higher gas mileage for consumers and less air pollution.

Yuko Ikeda and colleagues note that a chemical process called vulcanization has been critical for the manufacturing of quality rubber since the second half of the 1800s. Chemists have improved the process, but progress has largely plateaued in recent years. If scientists could gain insight into the details of vulcanization, they could further tweak it to make even better rubber. Ikeda's team set out to uncover a key step in this process.

Using the latest analytical techniques, the researchers discovered a previously unknown structure that forms during vulcanization. The new observation could con-

Zinc oxide + Stearic acid

↓ in isoprene rubber
at 144 °C



X and Y : H₂O and/or
a rubber segment

tribute to making the ubiquitous material even better. For the auto industry, resulting improvements in tire performance could translate to fuel savings and lower emissions, the researchers say.

The authors acknowledge

funding from the Japan Society for the Promotion of Science and the Izumi Science and Technology Foundation.



The Science of Movie Explosions video

Blockbuster action movies probably didn't win any Oscars last month, but the science behind these films' awesome explosions is worthy of recognition. *Reactions* is going Hollywood in its latest episode, which highlights the chemistry of movie explosions. Watch it here:

<https://www.youtube.com/watch?v=3e839o4YGao&feature=youtu.be>

From the editor

A report released by the Energy Information Administration (EIA) back in October tells us that the US carbon dioxide emissions from energy consumption and production declined 3.8% in 2012, the lowest level since 1994. Concomitantly, the US economy *grew* by 2.8%. This is the largest emissions decline recorded in a year with economic growth *and* with positive population growth. That's good news, right?...more about it at

<http://www.eia.gov/todayinenergy/detail.cfm?id=7350>

I also looked over some of the other google hits on the topic; here's one from the EPA which gives a good overall view:

<http://www.epa.gov/climatechange/reducing-emissions.html>



However, as I was browsing through those hits on the topic, I found this from 2010: <http://www.energytribune.com/6258/the-utter-futility-of-reducing-carbon-emissions#sthash.vCDIxm9A.dpbs> .

Utter futility? Really? It does seem a bit harsh. However, I mentioned it to show the wide array of opinions on this topic (which you already knew, in all probability). But I thought the contrast here was interesting.

*Best regards,
Connie*