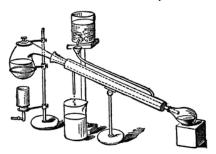


SOUTHWEST RETORT



SIXTY-NINTH YEAR

NOVEMBER 2016

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Editorial and Business Offices: Contact the Editor for subscription and

advertisement information.

Editor: Connie Hendrickson: retort@acsdfw.org

Copy Editor: Mike Vance, vance2276@gmail.com

Business Manager: Danny Dunn: dannyldunn@sbcglobal.net

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Contact the DFW Section

General: info@acsdfw.org

Education: ncw@acsdfw.org

Elections:

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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 list- ing, including contact info for your company, to retort@acsdfw.org. Deadlines are the 7th of each month.

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Location: Tianjin

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Proven multi-tasking skills able to handle multiple projects simultaneously within a GMP environment; ability to motivate teams, work within aggressive timelines collaboratively with cross-functional departments

Demonstrated ability to work as a strong contributor in a team environment on complex projects.

Required skills include strong communication, leadership, decision-making, organizational and analytical skills. A candidate must be able to maintain customer focus, handle difficult discussions, build consensus, work independently and prioritize multiple tasks and adjust quickly, as needed. The ideal candidate must be willing to pursue tasks that may be required for projects but are not clearly defined within this job description.

Detail-oriented, dependable, motivated, ability to work with minimal supervision.

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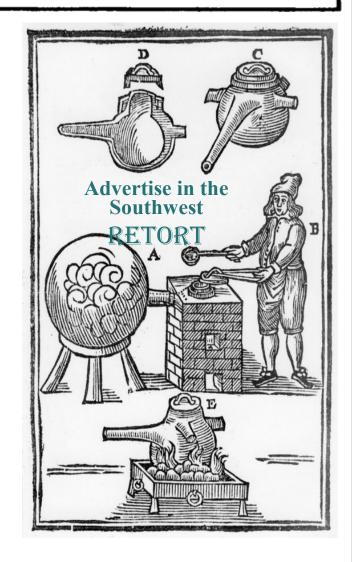


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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The ACS tour speakers for November are **Dr. David E. Metzler** of Iowa State University and **Dr. Wesley W. Wendlandt** of the University of Houston. Dr. Metzler's three possible talks are: "Pyridoxyl Phosphate: Nature's Versatile Catalyst," "The Mystery of the Fading Vitamin or The Photochemistry of Riboflavin," and "Family Living in Moscow, U.S.S.R.---1965." Dr. Wendlandt's topic is "Reflective Spectroscopy: A Neglected Spectroscopic Technique."

The new *Retort* reporter for the Dallas-Ft. Worth area is **Dr. Norman G. Foster** of Texas Woman's University. A new faculty member at TWU is **Dr. Walter** S. Hamilton. He was awarded a Ph.D. in physical chemistry from Tulane and worked at Rocketdyne before joining TWU. His research interests are in kinetics and electrochemistry. Retired TWU faculty member **Dr.** W. H. Clark has returned to Denton from Gloversville, NY. Dr. Clark was on the committee for the founding of the Dallas-Ft. Worth ACS Section in 1935 and served as chair of the section during this early period.

At North Texas State University a new faculty member is **Dr. Robert Desiderato**. He received his Ph.D. from Rice University. Supplemental Welch Grants were recently received by **W. H. Glaze** (\$21,380) and **S. J. Norton** (\$12,000). At TCU a new faculty member is physical chemist **Dr. John Albright**. He comes to TCU from the Enzyme Institute at the University

of Wisconsin. Analytical chemist **Dr. Mark Shuman** is another new faculty member. He also comes from the University of Wisconsin. **Dr. Manfred Reinecke** recently presented a paper on "The Catalytic Methylation of Pyridines" at the New York Academy of Sciences Symposium on "Catalytic Hydrogenations and Other High Pressure Processes."

At the University of Arkansas **Dr. James E. Stice**, associate professor of chemical engineering, has been recipient of the 1966 Scientific Apparatus Makers Association record-controller section award. The award includes a plaque, certificate, and \$500 honorarium. He won the award for his series of nine articles in the *Journal of the Instrument Society of America* on experiments on automatic process control. He traveled to New York on Oct. 23 to receive the award. The department's new HA-100 NMR, purchased with an NSF grant, is now in operation.

The new chair of the chemistry department at Texas A&M University is **Dr. Arthur E. Martell**, who comes to Texas from the Illinois Institute of Technology. Six new assistant professors have joined the department. They

are Drs. Farley Fisher, Choo-Seng Giam, K. Gerald Hampton, Kurt J. Irgolic, Jack H Lundsford.

Compiled by E. Thomas Strom



2016 Schulz Award Winner Gale Hunt of Hebron High School Award Banquet Photos



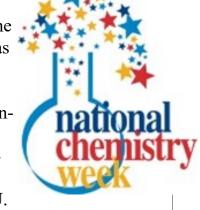
National Chemistry Week at the Fort Worth Science and History Museum

The schools and organizations that participated were Texas Christian University, Southern Methodist University, Texas Wesleyan University, Texas Woman's University, University of Texas at Dallas, University of Dallas, University of North Texas, University of North Texas-Health Science Center, University of Texas at Arlington, East-field College and Tarrant County College, Birdville High School, Fort Worth Country Day, Lamar High School, Southwest Christian School, Trinity Valley School, STEAM Middle School and the Fort Worth Police.

Attendees

Number of volunteers: 254
Exhibits attendance: 1653
School group attendance: 2044
Homeschool Afternoon: ~200
Total Attendance: 3697

Program Support: The Alcon Foundation was the local sponsors of Chemistry Connections 2016. Additionally, ZS Pharma and the American Chemical Society provided funding through TCU.



All photos courtesy of Stephen Stipe of Mira Vista Photography.



National Chemistry Week continued



National Chemistry Week continued



The buzz about edible bugs: Can they replace beef?

In Vitro Iron Availability from Insects and Sirloin Beef

Journal of Agricultural and Food Chemistry

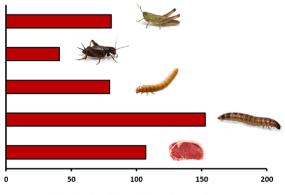
The idea of eating bugs has created a buzz lately in both foodie and international development circles as a more sustainable alternative to consuming meat and fish. Now a report appearing in ACS' *Journal of Agricultural and Food Chemistry* examines how the nutrients — particularly iron — provided by grasshoppers, crickets and other insects really measure up to beef. It finds that insects could indeed fill that dietary need.

Edible bugs might sound unappetizing to many Westerners, but they've long been included in traditional diets in other regions of the world, which are now home to more than 2 billion people, according to a report by the U.N. Food and Agriculture Organization. The report also notes that about 1,900 insect species have been documented as a food source globally. That they're a source of protein is well established, but if the world is to turn to bugs to replace meat, the critters will need to offer more than protein. Iron is a particularly important nutrient that is often missing in non-meat diets, causing iron -deficiency anemia, which can lead to lower cognition, immunity, poor pregnancy outcomes and other problems. In light of these concerns, Yemisi

Latunde-Dada and colleagues wanted to find out whether commonly eaten insects could contribute to a wellrounded meal.

The researchers analyzed grasshoppers, crickets, mealworms and buffalo worms for their mineral contents and estimated how much of each nutrient would likely get absorbed if eaten, using a lab model of human digestion. The insects had varying levels of iron, calcium, copper, magnesium, manganese and zinc. Crickets, for example, had higher levels of iron than the other insects did. And minerals including calcium, copper and zinc from grasshoppers, crickets and mealworms are more readily available for absorption than the same minerals from beef. The results therefore support the idea that eating bugs could potentially help meet the nutritional needs of the world's growing population, the researchers say.

The authors acknowledge funding from the King's College London.



Iron Uptake (ng Ferritin/mg Protein)

And Another Thing...

By Denise Merkle, PhD

Wow! What a November we're having. Makes you think, doesn't it? The past couple years have made a lot of people consider many aspects of their lives. People's relationships to each other and the world in general are garnering a lot of scrutiny, too. If we're lucky, data and information play a part in conclusions drawn by those who are deep in contemplation; if we're really fortunate, the data and information are actually factual. It's dogmatic that, if something is said often enough, people will believe it. Fables are built around the willingness to believe - and the need to conform. Have you seen the Emperor's New Clothes? Do you want to?

Unlike the ability to easily identity surfaces visible to the naked eye, the skills required to ascertain the reliability of sources are on the nano-scale. How do you know? Perhaps Peer Review is the answer. It's possible, though, that peer review of every submitted paper is not perfect, but in fact harbors real error. Forget catching inaccuracies and outright fibs, until later. Much later. Vaccine-autism spectrum disorder (Vax-ASD) links, anyone? If CDC is a reliable source (and really, how would we really know unless we traced potential conflicts of interest and scientific backgrounds of all the

researchers at CDC), there is no link.¹ The original paper demonstrating the Vax-ASD link has been discredited. Yet the vaccine-autism link machine chugs onward, unstoppable even with new and reliable data. Scientists often take a while to figure out something is not quite right. The general public doesn't stand a chance.

Dictators reach power because those they wish to control accept what they're told - and repeat it. The false-hoods iterate and any who attempt to interject data are berated for being negative. Then there's the, 'It could happen' stance. Anti-vaxxers are certain the big vaccine companies prize financial gains over the safety of vaccine recipients. Since we all know that companies would never do that kind of thing, the group must be very misguided. Right. Suuuure. How do you know?

What is the point of all this, you ask? The point is, consulting multiple independent sources is key. Blind acceptance of statements or conclusions does not lead to enlightenment. On the contrary, it can quickly and devastatingly lead to parroting of significant inaccuracies. Time consuming? Boring? Painful? Yep. The other option? The pain of being trapped in Lies, All Lies.

Unbiased assessment and reporting of the facts without interpretation is key. Data. Analysis. Results. Conclusions. Repeat. Read. Listen. Compare. Contrast. Confirm. Repeat. Humans hear what they want to hear, when they want to hear it. If we're lucky, what we hear will be accurate, factual and not so painful after all.

http://www.cdc.gov/vaccinesafety/concerns/autism.html

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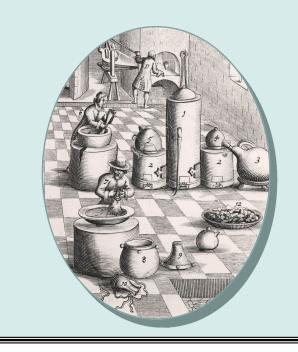
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Rewritable material could help reduce paper waste

Electrospun Photochromic Hybrid Membranes for Flexible Rewritable Media

ACS Applied Materials & Interfaces

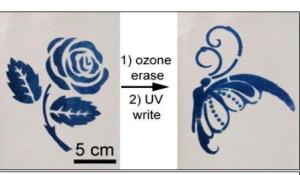
Even in today's digital age, the world still relies on paper and ink, most of

which ends up in landfills or recycling centers. To reduce this waste, scientists have now developed a low-cost, environmentally friendly way to create printed materials with rewritable paper. Their report on the material, which is made out

of tungsten oxide and a common polymer used in medicines and food, appears in the journal ACS Applied Materials & Interfaces.

The U.S. has been working to reduce paper waste by increasing recycling efforts for years. According to the Environmental Protection Agency, more paper is now recovered for recycling than almost all other materials combined. This saves energy, water, landfill space and greenhouse gas emissions. But even more waste could be avoided if consumers could reuse paper many times before recycling or

trashing it. So far, however, such products under development often are made with toxic, expensive organic dyes. Ting Wang, Dairong Chen and colleagues wanted to come up with a better solution.



This rewritable paper can be "printed" on with a stencil and UV light; it erases when exposed to oxygen in air or ozone. Credit: American Chemical Society

The researchers created a film by mixing low-toxicity tungsten oxide with polyvinyl pyrrolidone. To "print" on it, they exposed the material to ultraviolet light for 30 seconds or more, and it changed from white to a deep blue. To make pictures or words, a stencil can

be used so that only the exposed parts turn blue. To erase them, the material can simply sit in ambient conditions for a day or two. To speed up the erasing, the researchers added heat to make the color disappear in 30 minutes. Alternatively, adding a small amount of polyacrylonitrile to the material can make designs last for up to 10 days. Testing showed the material could be printed on and erased 40 times before the quality started to decline.

The authors acknowledge funding from Shandong University and Shandong Province.

Around the Area

DFW Section

Congratulations to the newly-elected officers of the Dallas-Fort Worth Section for 2017:

Chair Elect: Kirby Drake

Councilor: Linda Schultz

Alternate Councilor: Daniela Hutanu

Treasurer: Martin Pomerantz

UT-Arlington

Dr. Peter Kroll has been promoted to full professor. Peter joined the UTA faculty in 2007. He received his undergraduate and graduate training in Germany and did a post-doc at Cornell with Roald Hoffmann. He carries out research in materials chemistry using computational methods and tools. Among his specific areas of research are high pressure chemistry and quantum dots.

Department of Chemistry and Biochemistry Texas Woman's University Seminar Schedule Fall 2016

Sept 16

Dr. Keith Miller, University of Denver

Sept 30

Dr. Jason Slinker, UTD

Oct 21

Dr. John Beatty

Texas Woman's University

Oct 28

Dr. Andrew Fischer Abbott Laboratories

Nov 4

Dr. Ronald J. Rahaim Oklahoma State

Dec 2

Dr. Enrique Dilone Amicus Therapeutics



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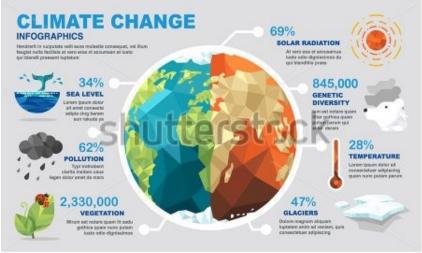
TCC Climate Change Summit



From left to right: Dr. Jeremy Byrd, Dr. John McCuin (Dallas Baptist U.), Dr. Charles Overstreet, Ms. Martha Gilchrist, Dr. Tatyana Kisin, Dr. John Lundberg, Dr. Bob Landolt, Ms. Nicole Vallee

In October, the Social Sciences department of the Tarrant County Community College South Campus hosted a Climate Change Summit for faculty, staff, students and community members. On successive Tuesdays, presentations were given addressing the gravity of the issue of climate change in the world. The first focused on the science behind climate change, and Dr. Bob Landolt, Texas Wesleyan, followed a week later discussing policy issues including the Paris Accord dealing with climate change. The Summit conclud-

ed with a round-table discussion on the topic featuring South Campus faculty members including the DFW ACS Section's Martha Gilchrist who presented a list of positive things that people can do to help alleviate climate change. Martha was on the steering committee for the project. A survey prepared by Bob revealed that the participants in the events have a growing awareness of the serious nature of climate change, and this Summit went far to expand that awareness.



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Want to know more about climate change? For more articles go to http://climate.nasa.gov/



Smallest-reported artificial virus could help advance gene therapy

A De Novo Virus-Like Topology for Synthetic Virions

Journal of the American Chemical Society

Gene therapy is a kind of experimental treatment that is designed to fix faulty genetic material and help a patient fight off or recover from a disease. Now scientists have engineered the smallest-reported virus-like shell that can self-assemble. It could someday carry potentially therapeutic DNA or RNA and transfer it to human cells. The report appears in the *Journal of the American Chemical Society*.

The story of gene therapy is fraught with much hype and high-profile failures. But, hype and failures aside, it remains a promising route to treat a range of ailments, from rare genetic diseases to common conditions such as diabetes. Clinical trials to test various gene therapy treatments are underway. One possible approach is to copy the way viruses behave. When they infect people, viruses inject their genetic material into human cells. Artificial viruses have been engineered to mimic this step, but they tend to clump or are not uniform in size, which can hinder their effectiveness. Max Ryadnov and colleagues wanted to address these issues.



A virus-like shell can deliver therapeutic genetic material to human cells in lab testing. Credit: American Chemical Society

Rather than using full proteins, the researchers used short peptide sequences designed to assemble into tiny gene carriers, which are smaller than previously reported synthetic viruses and even naturally occurring viruses. Lab testing showed that their artificial viral shells were uniform in size and didn't clump. The particles could encase DNA or RNA and transfer the genetic material to human cells without harm. Depending on the introduced material, the recipient cells then either expressed a new protein or stopped expressing their own protein.

The authors acknowledge funding from the U.K. Department of Business, Innovation and Skills.

Detecting potentially harmful mycotoxins in beer

Analysis of Mycotoxins in Beer Using a Portable Nanostructured Imaging Surface Plasmon Resonance Biosensor

Journal of Agricultural and Food Chemistry



Beer is one of the world's most popular alcoholic beverages. But, made with barley, brews can contain low levels of mycotoxins, which are produced by fungi that can contaminate grains. Although not a major health threat, the industry needs to minimize the risk of contamination. Now scientists have developed a portable sensor that can help. Their report appears in ACS' *Journal of Agricultural and Food Chemistry*.

Because of its alcohol content and the high temperatures required to make beer, most consumers might assume that contamination by biologically derived compounds is not an issue. But mycotoxins can survive the brewing process and end up in the final product.

Some mycotoxins have been shown to cause genetic damage in cells and cancer in animals. Currently, methods to detect mycotoxin contamination in beer are costly and require inlaboratory analysis. Sweccha Joshi, Teris van Beek and colleagues wanted to come up with a less expensive, portable alternative.

Building on technology used to detect mycotoxins in grains, the researchers developed a biosensing chip that can bind these compounds when they are present in beer samples. The team also could reuse the chip 450 times before it started to fail. Testing on commercial beer and barley showed that the portable instrument detected levels as low as 0.2 nanograms/milliliter of ochratoxin A and 120 ng/mL of deoxynivalenol — respectively, the estimated safe limits for these mycotoxins.

The authors acknowledge funding from the Netherlands Organisation for Scientific Research.

How is beer made? Watch this video and you can even drive afterwards.

Cheers!

From the editor

National Chemistry Week at the Fort Worth Science and History Museum was spectacular, as usual. Attendance was almost 3700, including volunteers and school groups.

Hmmm, bugs or beer? Bugs or beer, that is the question. What? Okay, beer it is. After a little googling [is that in the OED yet?], I found a reference to Kykeon. Kykeon was a popular hallucinogenic drink in ancient Greece; it is thought that is was routinely made from ergot-infected barley. The authors of the article worked with two other mycotoxins, deoxynivalenol and ochratoxin A. I scrolled through all the papers in the last two years of *Journal of Agricultural and Food Chemistry*, and found studies of different mycotoxins in milk products, food supplements, herbal medicines, aquacultured fish, and more. Ergot is the most famous, probably...think Salem witches...but there have been a number of instances in which ergot was blamed for mass poisonings (Pont-Saint-Esprit, St. Anthony's Fire) from the Middle Ages onward. Although all mycotoxins do not have the extreme effects of ergot, there are other unpleasant effects; the common name of deoxynivalenol is vomitoxin.

Best regards,