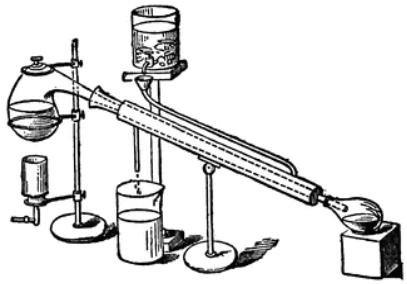
SOUTHWEST RETORT



SEVENTY-FIRST YEAR **DECEMBER 2018**

Published for the advancement of
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and Chemistry in this area

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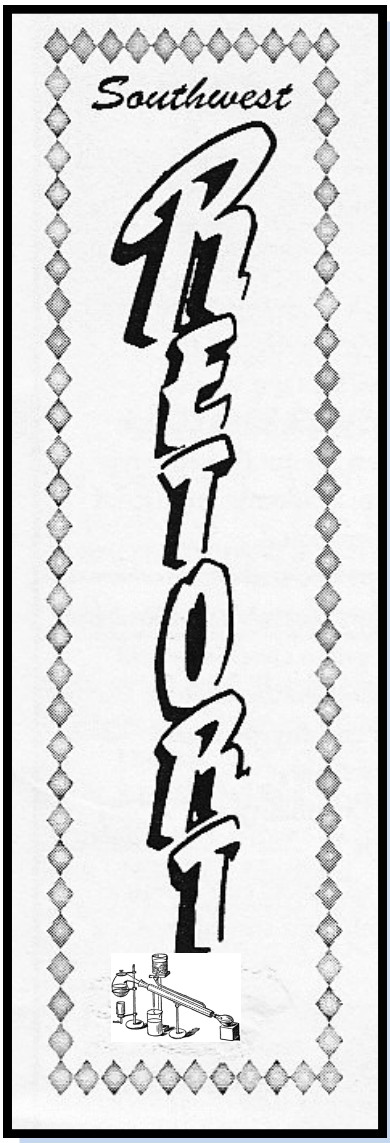

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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

An outstanding program is being put together for the ACS Southwest Regional Meeting to be held Dec. 4-6 in Austin. More than 300 papers will be presented in technical sessions plus symposia in eleven separate areas. The banquet speaker will be Sir Gilbert Peake, world famous science journalist.

New ACS Local Section! A new section to be called the Heart O' Texas section was authorized at the Atlantic City ACS meeting. The new section is being formed from the present Texas A&M-Baylor section and will be headquartered in Waco. The territory will comprise McLennan and Falls counties. The original section name will revert to Texas A&M Section, its original title.

The Chemistry Section of the American Association for the Advancement of Science will meet in Dallas Dec. 26-31. The program will consist of ten lectures on selected topics of special interest. Chairs of the various symposia are William B. Smith from TCU, Jack K. Jeans from the University of Dallas, and Peter R. Girardot from UT-Arlington.

Tour speakers for November are Professor Keith E. Chave, Department of Oceanography at the University of Hawaii and Dr. L. B. Rogers of Purdue University. Their respective lecture titles are "Chemical Reactions and the Composition of Seawater" and "Computers in the Laboratory."

In the Dallas-Ft. Worth ACS Section, from TCU Dr. William H. Watson, while on sabbatical leave last summer, presented seminars at Cambridge, Oxford, Sheffield, East Anglia, Essex, Southampton, Imperial College, and Copenhagen. Dr. M. G. Reinecke presented a talk last summer at the Gordon Research Conference on "Chemistry of Heterocyclic Compound." Dr. William B. Smith was named a fellow in the American Institute of Chemists.

Norman E. Foster, recent chair of the DFW ACS section, has just retired from his 32 years with the Food and Drug Administration. He starts a new career teaching at the Southwestern State College of Pharmacy in Weatherford, OK.

At Mobil Field Research Lab, Drs.Peggy M. Dunlap, James C. Melrose, Herman C. Custard and E. Thomas Strom attended the fall meeting of ACS in Atlantic City, NJ. Dr. Strom also gave a recent seminar at Trinity University.

At the University of Arkansas, Dr. Arthur Fry recently attended the Carbanion Symposium at the University of Kentucky. At Texas A&M Drs. Karl A. Gingerich, Bernard L Shapiro, Thor L. Smith, and Minoru Tsutsui have recently joined the faculty as professors of chemistry.

contributed by
E. Thomas Strom

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Dallas-Fort Worth

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And Another Thing...

WAR

By Denise L. Merkle, PhD

In case you haven't noticed, the USA is wallowing in hostility these days. Whether the cause is the immediacy of social media, screenwriter-inspired examples of behavior, frustration, anger, inability to tolerate alternative opinions, fear of the unknown, or some other cause, the interactions of our nation are fraught with unpleasantness. Why? Perhaps the reason is the focus on War. According to Merriam-Webster, among the definitions of War are "a state of usually open and declared armed hostile conflict between states or nations", "a state of hostility, conflict, or antagonism", and "a struggle or competition between opposing forces or for a particular end"1. While a few of the wars with other countries are considered to be inevitable or necessary (WWs I & II, for example), there are other Wars, the naming of which we accept without consideration for what this actually means: Wars on Poverty, Drugs, Terrorism...

Why use War?

Perhaps, because War is very easy to understand. The mechanisms of war are complex, the nature of War is not. War's goal is precisely defined: Identify the enemy - and destroy it. Us against Them. We will prevail, annihilate, Win! But who, or what, are these opponents? War is so casually bandied about. War on a sports opponent, war with Cupcakes, War with unknown malefactors... How are we choosing our enemies and whom to battle?

War is simplistic enough to allow almost immediate action without consideration and complex thought. Why determine what is actually happening, when one can leap to fight against what we see and perceive, or what others, who may not even be knowledgeable, are telling us to hate. War is easy. Research, investigation, analysis, drawing conclusions, and initiation of effective action require a challenging degree of self-restraint and thoughtfulness, which are not generally valued these days, either. Modern communication has the potential to be increased many-fold over historical methods that involved foot travel or signals visible from afar, but the need for patience in interpretation of and response to communication is no different than it ever was. The importance of this level of patience is frequently overlooked.

So, at this time of year in which many tout joy and peace, we should also ponder what it actually means to be at War. To consider what it means to fight, to defend, to forcibly insist that what we think and what we want is more important than pretty much anything else; to assess why the statements of others can incite us to hatred; to determine the source of the need to counter every single statement made by others, regardless of knowledge of the topic; or to make decisions and discussions into battles.

War, with its unsophisticated goals and intrinsic adversarial focus, cannot address complex problems that affect us all. Whether in uncivil discourse or physical response, Us -Against-Them is an archaic, ineffective pathway that cannot lead to anything but damage and grief. We all know this, and we should not complacently accept the easy route to solutions.

Peace.

1) https://www.merriam-webster.com/dictionary/war

From the ACS Press Room

Write with heat, cool and then repeat with rewritable paper

Long-Lasting and Easy-to-Use Rewritable Paper Fabricated by Printing Technology

ACS Applied Materials & Interfaces

Even in this digital age, paper is still everywhere. Often, printed materials get used once and are then discarded, creating waste and potentially pollution. Now, scientists report in ACS Applied Materials & Interfaces the development of an easy-to-make "rewritable" paper that can be drawn or printed on over and over again. The messages can last more than half a year, compared to other rewritable papers whose messages fade after a few days or a few months.

The idea for rewritable paper isn't new, with several research groups pursuing different development strategies over the past few decades. But many of these approaches have drawbacks, such as complex fabrication, chemistry that relies on ultraviolet light to erase the writing or a constant need for energy to maintain the document. To overcome these limitations, Luzhuo Chen and colleagues wanted to develop a simple method for making long-lasting rewritable paper that can be wiped clean simply by changing the temperature.

The new material consisted of three layers in a sandwich-like structure. The researchers painted one side of a piece of paper with a blue dye that becomes colorless upon heating, just like the t-shirts popular in the 1990s that changed color when they were touched with a warm hand. Then, the other side of the paper was coated with a black toner layer that produces heat upon excitation with light. Using a "pen" that applies heat, a thermal printer or a source of near-infrared light, the team created images and words that remained legible for more than six months. They also produced a rewritable cell phone case. To reset the paper, the researchers cooled it down to 14 F. This process could be repeated more than 100 times.

The authors acknowledge funding from the National Natural Science Foundation of China, Natural Science Foundation of Fujian Province for Distinguished Young Scientists and Projects for Young Scientists in University funded by the Education Department of Fujian Province.

The image on this cell phone case can change because it was made with rewritable paper.

From the ACS Press Room

A newly discovered, naturally low-caffeine tea plant

Hongyacha, a Naturally Caffeine-Free Tea Plant from Fujian, China

Journal of Agricultural and Food Chemistry

Tea drinkers who seek the popular beverage's soothing flavor without its explosive caffeine jolt could soon have a new, naturally low-caffeine option. In a study appearing in ACS' Journal of Agricultural and Food Chemistry, scientists report that a recently discovered wild tea plant in China contains little or no caffeine and, unlike many industrially decaffeinated products, could potentially provide many of the health benefits of regular brewed teas.

In 2017, Americans drank nearly 4 billion gallons of tea, according to the Tea Association of the USA. The association estimates that up to 18 percent of those drinks were decaffeinated. To decaffeinate tea, manufacturers often use supercritical carbon dioxide or hot water treatments. However, these methods can affect the brew's flavor and destroy compounds in the tea associated with lowered cholesterol, reduced risk of heart attack or stroke, and other health benefits. Recently, scientists discovered hongyacha (HYC), a rare wild tea found in the mountains of southern China. Local residents believe it can it can cure colds, soothe stomach pain and relieve a host of other ailments. But little is known about its structural makeup or its chemical composition. Liang Chen and colleagues sought to close that gap.

The researchers used high-performance liquid chromatography to analyze HYC buds and leaves collected during the growing season. In addition to finding several potentially health-promoting compounds not found in regular tea, they determined that HYC contains virtually no caffeine. Digging deeper, they found this was because of a mutation in the gene encoding the enzyme tea caffeine synthase, which promotes caffeine production in most tea plants. The researchers conclude that naturally low-caffeine HYC could possibly become a popular drink because of its distinct composition and unique health benefits.

The authors acknowledge funding from the National Natural Science Foundation of China, the Earmarked Fund for China Agriculture Research System, and the Chinese Academy of Agricultural Sciences through its Agricultural Science and Technology Innovation Program.99

TEXAS WOMAN'S UNIVERSITY™

An Invitation

Values-Based Academic Leadership One-Day Institute at Texas Woman's University

February 2, 2019

As a faculty member, department chair, program coordinator, or dean, you may find yourself starting a new departmental program or campus initiative, you may be leading efforts to revise or assess your curriculum or program, or you may be interested in new opportunities to develop your leadership skills. We invite you to join colleagues in a one-day Values-Based Academic Leadership Institute lead and facilitated by Success 4 Higher Education (S4HE) and presented in partnership with the National Center for Science and Civic Engagement. The institute will explore topics including how values ground you and your leadership, leading vs. managing, leading change, and strategies for dealing with difficult colleagues. The S4HE approach is holistic in nature to foster your development as a grounded, authentic leader.

The Values-Based Academic Leadership One-Day Institute will be Saturday, February 2nd, at Texas Woman's University. The Institute is preceded by the February 1st regional meeting of the SENCER (Science Education for New Civic Engagements and Responsibilities) Center of Innovation Southwest at TWU. The full tentative agenda for the Academy is listed on the website www.s4he.com. For additional information and to register go to www.S4HE.com.

S4HE
Success 4 Higher Education

ACS Local Section
Dallas-Fort Worth

52nd Annual Meeting-in-Miniature

Saturday, April 27, 2019

We invite and encourage graduate and undergraduate students to submit abstracts for 10-12 minute oral presentations, with an additional 3-5 minutes for questions. Submit your abstract using the link below.
The submission deadline is **April 5, 2019**, although earlier is better.

All presenters and attendees must register no later than **April 5, 2019**, although earlier is better.
Please note that there is NO fee to attend the meeting. Registration is required because lunch will be provided by the Department of Chemistry (at no cost to the attendees), so we need an accurate head-count.

Visit our website to submit your abstract and register for the DFW-ACS Meeting-in-Miniature
https://chemistry.unt.edu/meeting-in-miniature

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9:00-9:30AM	Check-in
9:30-11AM	Session 1
11:00-11:15AM	Morning break
11:15-12:45PM	Session 2
12:45-1:45PM	Lunch
1:45-3:15PM	Session 3
3:15-4:00PM	Entertainment (TBA)
4:00PM	Awards Ceremony

SENCER

APPLYING THE SCIENCE OF LEARNING TO THE LEARNING OF SCIENCE

TEXAS WOMAN'S UNIVERSITY™

Save the Date!

SCI-Southwest Spring 2019 Regional Symposium
Texas Woman's University, Denton, TX
Feb 1, 2019

The SENCER Center for Innovation—Southwest Spring 2019 Regional Symposium will take place at Texas Woman's University, Denton, TX on February 1, 2019. This year's symposium theme will be: Democracy, Civic Engagement and Student Learning. There will be four plenaries followed by two concurrent tracks: Citizen Science, and Democratic Engagement. Presenters will be nationally known leaders in the SENCER (Science Education for New Civic Engagement and Responsibilities) network and Texas Woman's University. The meeting is free to all participants. Further details about speakers and registration will be forthcoming. For any questions, please contact Nasrin Kohan at nmirsalehkohan@twu.edu or Richard Sheardy rsheardy@twu.edu.

From the ACS Press Room

Authenticating the geographic origin of hazelnuts

1H NMR Spectroscopy for Determination of the Geographical Origin of Hazelnuts

Journal of Agricultural and Food Chemistry

Hazelnuts, like olive oil, cheese and other agricultural products, differ in flavor depending on their geographic origin. Because consumers and processors are willing to pay more for better nuts — especially in fine chocolates and other delicacies — testing methods are needed to reliably authenticate the nuts' country of origin. Researchers now report in ACS' Journal of Agricultural and Food Chemistry that NMR analysis could fill the bill.

People have eaten hazelnuts since at least the Mesolithic era. Today, they're the third most commonly grown nut, after almonds and walnuts. Italian hazelnuts fetch the highest price, followed by those from Turkey, the U.S., Georgia and Azerbaijan. A few previous studies evaluated analytical techniques for chemically profiling hazelnuts, but they focused either on a small region or on particular hazelnut varieties. Thomas Hackl and colleagues wanted to find a method that could pinpoint geographic origin regardless of variety.

The researchers ground up 262 nut samples from different regions around the world and extracted the metabolites, which they identified with proton NMR spectroscopy. The spectra showed that nuts from different regions had different metabolite profiles, with certain compounds proving distinctive for specific areas. For example, the amount of betaine, an amino acid derivative, varied significantly in nuts from different countries. Thus, betaine could potentially be a good biomarker in a future test to identify the source of a particular batch of nuts, the

researchers say. For an even more accurate determination, the team's new NMR method — which had an accuracy of 96 percent — could be used in combination with a previously devised test that assessed a different group of hazelnut metabolites using liquid chromatography and mass spectrometry.

The research was supported by the University of Hamburg.

Around-the-Area

University of Arkansas

Publications

Hassan Beyzavi et al. Green and Facile Synthesis of Highly Photoluminescent Multicolor Carbon Nanocrystals for Cancer Therapy and Imaging. ACS Applied Bio Materials, 2018, 1, 1458-1467.

Hassan Beyzavi et al. Metal- Organic Frameworks and Covalent Organic Frameworks as Platforms for Photodynamic Therapy. Comments on Inorganic Chemistry, 2018, ASAP. DOI:10.1080/02603594.2018.1542597

(Invited Review Article).

Hassan Beyzavi et al. Micro-flow Nanocatalysis: Synergic Effect of TfOH@SPIONs and Micro-flow Technology as an Efficient and Robust Catalytic System for the Synthesis of Plasticizers. RSC Advances, 2018, 8, 37835-37840.

Davis JE, Alghanmi A, Gundampati RK, Jayanthi S, Fields E, Armstrong M, Weidling V, Shah V, Agrawal S, Koppolu BP, Zaharoff DA, Kumar TKS. Probing the role of proline-135 on the structure, stability, and cell proliferation activity of human acidic fibroblast growth factor. Arch. Biochem. Biophys. 2018, 654:115-125.

Kang SW, Jayanthi S, Nagarajan G, Kumar TKS, Kuenzel WJ. Identification of avian vasotocin-receptor sybtype-specific antagonists involved in the stress-response of the chicken, Gallu gallus. J. Biomol. Struct. Dyn. 2018, 17:1- 15.

Lutishoor Salisbury, Abayomi Omotoal Omolewu, Jeremy J Smith. Technology Use for Non- Educational Purposes during Library Instruction: Effects on Students Learning and Retention of Information. Science and Technology Libraries 2018, 37(3), 274-289.

Honors and Awards

On Oct. 16th, Prof. Ingrid Fritsch and her Ph.D. student Mahsa Lotfi Marchoubeh competed for the University of Arkansas' Women's Giving Circle award and received $10,881 as the winning award. The project that was presented for this competition was: *MicroProbing the Chemistry of Depression, Drug Addiction and Other Diseases of the Brain – Phase Two*, which continues research to determine the measurable neurotransmitter levels of a microprobe device that was successfully built with prior funding from the Women's Giving Circle, enabling a deeper understanding of depression, drug addiction and neurodegenerative diseases, such as Parkinson's and ALS. The Women's Giving Circle sports remarkable projects on the campus and provides critical scholarship funding for the U of A's students.

Mahsa Lotfi Marchoubeh also took second place in the J. William Fulbright College of Arts and Sciences 3 minute thesis competition! This earned her another $100.

From the ACS Press Room

Uranium in mine dust could dissolve in human lungs

Mineralogy Controlled Dissolution of Uranium from Airborne Dust in Simulated Lung Fluids (SLFs) and Possible Health Implications

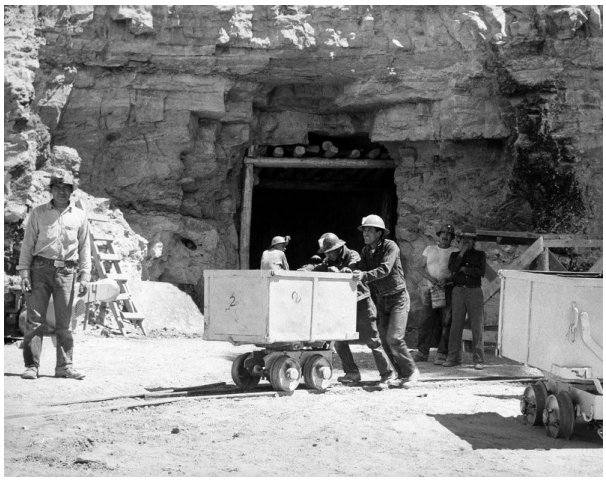
Environmental Science & Technology Letters

New Mexico contains hundreds of historic uranium mines. Although active uranium mining in the state has ceased, rates of cardiovascular and metabolic disease remain high in the population residing close to mines within the Navajo Nation. According to a new study in ACS' journal Environmental Science & Technology Letters, inhaled uranium in dusts from the mines could be a factor.

Uranium ore is weakly radioactive, which could damage DNA and cause disease. However, the chemical toxicity of uranium may be a greater risk than its radioactivity. In laboratory studies, uranium that was depleted of its most radioactive isotope still caused DNA damage and cell death. Small particles of uranium-containing dust could be inhaled by people and penetrate deep within their lungs. But scientists haven't studied whether uranium can leach from minerals in the dust into lung fluids and the bloodstream. So Gayan Rubasinghege and colleagues wanted to determine if uranium in dust samples from a mining region in New Mexico could dissolve in simulated lung fluids.

To find out, the researchers collected airborne dust samples from five sites near uranium mines close to communities. They identified minerals in the dust samples, which varied by location. All of the dust samples contained one or more uranium-containing minerals, such as uraninite or carnotite. Then, the researchers exposed two simulated lung fluids — one that mimics the fluid that surrounds lung cells, and another that simulates the acidic environment in lung immune cells that engulf dust particles — to the dust and measured the amounts of uranium dissolved in each fluid. The mineral composition of the dust influenced its solubility, with some minerals dissolving more readily in one fluid than the other. These results indicate that toxicological assessments of mining lands should focus on specific sites, instead of making broad generalizations, the researchers say.

The authors acknowledge funding from the National Institute of General Medical Sciences and the National Science Foundation.



From the editor

The 52nd Meeting-in-Miniature is scheduled for April 2019. It might seem a little early to announce it, but there's never too much time left in getting your students ready for their presentations. Standing in front of a group and talking about your research is one of the best training experiences for a future scientist.

In fact, it's hard to believe 2018 is almost over. Best wishes for the New Year to all of our readers.