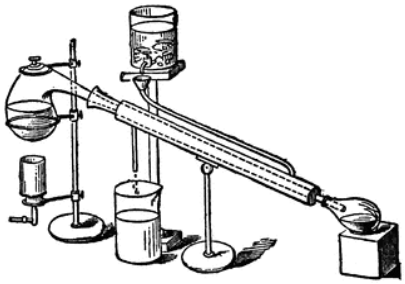
# SOUTHWEST RETORT



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***Chemists, Chemical Engineers***
***and Chemistry in this area***

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*Contact the DFW Section*

General: info@acsdfw.org

Education: ncw@acsdfw.org

Elections: candidates@acsdfw.org

Twitter: acsdfw

# 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@acsdfw.org. Deadlines are the 7th of each month.**

## Position Available:

***Dr Pepper Snapple Group* -**

**Ingredient Technology Scientist (1400680) The role of the Ingredient Scientist supports the business application necessary to drive our sweetener based beverage innovation efforts. The Ingredient Scientist will work within a cross functional project team environment helping to evaluate new sweetener systems based on their experience and direction from Sweetener Subject Matter Expert (SME). The Ingredient Scientist will collaborate predominantly with Research and Development, in our Product Development and Ingredient Science groups, as well as with Procurement & Dr Pepper Snapple Group business teams to deliver winning taste innovation to the market place. Apply online at DrPepperSnapple Careers**

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# JENKEM TECHNOLOGY

## The PEG and PEGylation Technology People

**Manager of Sales and Marketing**
**Job ID:** JKUSA-20131203
**Job Type:** Full-time **Location:** Plano

**Job Description:**
This sales and marketing manager position is intended to combine both sales and marketing strategy with the involvement in ongoing day-to-day sales to extract useful market intelligence and take a dynamic leadership role in implementing revenue-generating plans coordinated with our sales efforts. The responsibilities include (1) managing daily sales activities, such as quotations, order confirmations, communication with our production team, coordination of product shipment, and sales personnel training; and (2) operation of the marketing office, whose duties include proposing annual marketing and sales strategies, maintaining customer relationships, supporting the Business Development department, analyzing current sales figures and assisting in the forecasting of future business to implement effective marketing and sales strategies.

**Job Requirements:**
Bachelor's degree or above in chemistry or a chemistry-related field with 5+ years of sales and/or marketing experience. Very good interpersonal communication skills are critical, including excellent proficiency in both written and spoken English. Familiarity with international trading terms and regulations (Incoterms) a plus.

**Compensation:**
$60k+ annual salary with potential for commissions or bonus; medical insurance, paid vacation and holidays

**Sale/Marketing Assistant**
**Job ID:** JKUSA-20131202

**Job Type:** Full-time **Location:** Plano

**Job Description**:
Products sales and customer services; provides quotations/products availability and replies about technical questions to customers by phone or emails; process orders, shipping, and payments; develops and maintains customer relationships; develops new customers and performs other tasks as assigned by the manager, etc.

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

**Compensation:**
Up to $30,000 annual salary, medical insurance, paid vacation, and holidays

**To Apply:**
Interested candidates should submit a letter of application including salary expectations to

**hr@jenkemusa.com.**

Please do not call; we will contact you.

# *FIFTY YEARS AGO IN THE SOUTHWEST RETORT*

The Session Chairmen for the 20th ACS Southwest Regional Meeting to be held Dec. 3-5, 1964, in Shreveport, LA, have been announced by the General Chairman **Dr. Edward C. Greco** and the Technical Program Chairman **Dr. Alan H. Crosby**. The Chairman of the Analytical Sessions is **Dr. Lester Howick** of the University of Arkansas. **Dr. William Shive** of the University of Texas is Chairman of the Biochemistry Sessions. The Chairman of the Chemical Education Sessions is **Professor Maud Purdy** of LSU. **Dr. James R. Oliver** of the University of Southwestern Louisiana is the Chairman of the Computers in Industrial Chemistry Sessions. The Chairman of the Corrosion Chemistry Sessions is **Dr. John D. Sudbury** of Continental Oil Co. **Dr. Marvin B. Edwards** of Texas Eastman is Chairman of the Industrial & Engineering Sessions. **Dr. Ralph A. Zingaro** of Texas A&M is the Chairman of the Inorganic Chemistry Sessions. The Chairman of the Organic Sessions is **Dr. Eby Nell McElrath** of the University of Houston. The Chairman of the Physical Chemistry Sessions is **Dr. Bernard O. Heston** of the University of Oklahoma. The Chairman for the Student Affiliate Session is **Dr. Harold E. Abbott** of Stephen F. Austin State College.

The tour speakers for April are **Dr. M. C. Day** of LSU and **Dr. Lewis F. Hatch** of the University of Texas. Dr. Day's topic is "Conductance of Sodium Aluminum Alkyls in Non-Polar Solvents." Dr. Hatch's two topics are "Petrochemicals of the Future" and "Professors, Pyramids, and Petrochemicals." His second talk is based on his experiences spending a year as a consultant in petrochemicals at the National Research Center in Cairo, Egypt.

University of Texas reporter **Dr. C. G. Skinner** reports that **Dr. L. O. Morgan** served as an NSF panelist in Ponca City, OK, and Denver, CO. **Dr. W. A. Noyes** spent some time at Argonne Laboratories. **Dr. M. J. S. Dewar** gave a seminar at the University of Florida, while **Dr. A. J. Bard** gave a seminar at Texas Western University. **Drs. William Shive, Lewis Hatch,** and **C. G. Skinner** embarked on lecture tours.

Humble Oil in Baytown reports that there are five high school science seminar groups in Baytown, each with an advisor from Humble. The advisors are **Dr. Thomas Aczel, Mr. Nugent F. Chamberlain, Dr. R. H. Perry, Dr. B. H. Johnson** and **Dr. D. E. Bown**. Each group is limited to 15 students selected by their teachers on the basis of scholastic records and interest in science, and each has a teacher-sponsor. Each group holds a seminar once a month with programs planned to introduce the students to ideas and information beyond the high school curriculum and to maintain their interest in science. **Dr. R. Pettit** of the University of Texas recently gave a seminar at the Baytown Research Center.

Contributed by

E. Thomas Strom

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# Water, Water Everywhere and Not a Drop to Drink? (Apologies to Samuel Taylor Coleridge)

## by John E. Spessard, PhD, PE

In this period of drought, Texans have endured water shortages with there being prospects of the situation becoming even worse. I am examining the technology and costs of providing water in a much abbreviated fashion as well as the prospects of desalination sea water. To be consistent, I am expressing costs in dollars per thousand gallons.

Our municipal water systems produce only potable water that is water fit for human consumption. The raw water comes into settling ponds. This allows solids to sink to the bottom. These are removed by filtration. Disinfectants are used to remove harmful bacteria. Chlorine is the most commonly used disinfectant. Ozone and ultraviolet light are also used. Ozone and UV light are more expensive but chlorination can produce potentially harmful chlorinated compounds. Additional treatments can be necessary depending on the nature of the raw water. Possible options are prefiltration and prechlorination. Coagulants such as ferric chloride or polyelectrolytes may be necessary to promote satisfactory settling of suspended solids.

EPA cites an average water cost of two dollars per 1,000 gallons with the cost being more for small plants and less for large plants. The City of Irving, Texas charges residential customers three dollars per thousand gallons for the first 3,000 gallons. After that, the rates per 1,000 gallons increase. These costs include the cost of raw water, water delivery to the plant, treatment and distribution. Based upon Lower Colorado River Authority (Austin) prices, the cost of raw water received at the plant is about 55.4 cents per thousand cubic feet (firm commitment) and 15.4 cents per 1000 cubic feet for interruptible service such as for agriculture.

Losses by system leaks consume a significant portion of the potable water produced. About 10% of Texas's 3,500 utilities are required to submit to the state the amounts of water lost to leaks in the system. In 2013, for Houston it was 15.2% of the total water produced. For other Texas cities it was Dallas 17.6%, Lubbock 12.1% and Laredo 10.7%. Other cities faced with declining supplies have cut their losses to single digits. This includes Austin 8.45%, Corpus Christi 7.33%, Waco 6.32% and San Angelo 4.75%.

Some water pipes are over 100 years old. The expected life is about 50 years. It is cheaper to accept the losses than to fix it. Imagine digging up Central Expressway to

fix a water leak. If water gets both scarcer and more expensive, fixing some of the leaks may be necessary.

Sewage treatment is part of the water supply issue. I have toured Dallas city and North Texas Water Authority sewage treatment plants. The people at both plants boasted that their effluent was better quality water than the water at the water plant intake. Singapore now uses sewage plant effluent as the intake water for a potable plant. This is technically feasible but psychologically unacceptable. Dallas is required to deliver the sewage plant effluent to the Trinity River for downstream use.

In the sewage treatment plant, the gross solids are filtered out. [Random information: the people at the Dallas plant told me that they occasionally saw paper money, probably drug money evidence being flushed down toilets. They also told me that they would not go after anything less than a twenty-dollar bill!] The filtered sewage is then held in a lagoon. Solids are allowed to settle out and grease and oils are skimmed off. The filtered sewage is passed over bacteria absorbed on a base material such as charcoal. The liquid suspension has air blown into it to promote oxidation of organic matter. An industrial waste that kills the bacteria or overwhelms them such as the effluent from an animal slaughterhouse can upset the system. It is usually required that the source of such materials provide pretreatment before sending them to the city waste water treatment plant.

Since 97% of the earth's water is salt water, desalination is an option. The two proven methods are distillation and reverse osmosis. Distillation is usually with multi-stage units operating at reduced pressure. The heat from the first unit is used to boil the water in the second unit, etc. More units mean lower energy costs but higher capital costs. Using the waste heat from a conventional or nuclear power plant is an option. Anuclear-powered aircraft carrier will have a 400,000 gallon per day water distillation plant.

Reverse osmosis involves forcing water through the fine pores of a membrane. The pores are small enough that water molecules can get through but dissolved salts can't, at least to the extent that the water can become potable. The sea water usually requires pretreatment to remove solids that can foul the distillation unit or plug a membrane.

In 2013, the cost of untreated fresh water at the desalination facility ranged from two to four dollars per 1,000 gallons. This water has yet to be treated in a conventional water treatment plant and distributed to the users. Additionally, the desalinated water is produced at sea level and the sea shore, which means that the water will need to be pumped uphill for some distance, which can cost as much as the desalination process.

There are also environmental concerns. A brine more saline than sea water is a byproduct. This brine can be harmful to life in the ocean. Possible remedies include a dispersed flow into the ocean or dilution with cooling water from a power plant or a waste water treatment plant. (Why not process THAT water?) There are also environmental concerns on the effect on marine life at the intake pipes of a desalination plant.

Desalination is economically feasible in areas where there are no or limited fresh water supplies: Saudi Arabia, the Middle East and Japan, for example. Saudi Arabia uses desalinated water for agriculture. This is for security, not economics. Saudi Arabia would be very vulnerable to a blockade.

# And Another Thing…

## By Denise L. Merkle, PhD

Perception

I imagine it's happened to everyone at some point: The heart rate-bumping realization that you must leave the office immediately, but the file required for the impending meeting is *not* where you put it. Frantically you search. The meeting occurs (successfully, one hopes), and it turns out that the file, whether in hand when you left the office or discovered later, was on display in the most obvious spot possible. It was right in front of you, but it wasn't visible —why?

Physiological reactions to stress, that's why. The dry-mouthed, panicked search for inexplicably invisible objects is a direct result of the body's response to stressful stimuli, not that knowing this makes anyone feel any better. Awareness that the strain of locating a missing item adds to its cloaking ability certainly doesn't improve the chance of finding it. In addition to adding annoyances, extreme stress can completely invert previously pleasant relationships, often souring interactions that are only incidental to the cause of the distress —and that's not all. It's not just significant situations that cause stress. Repetitive minor irritants can and do initiate the same physiological cascade and induce the same damaging responses, even psychosomatic illness, as major life events. Think the balance that's never properly cleaned, or the phone calls that are easily overheard. We suffer acute stress, chronic stress and eu stress (actually a positive force, even though it may not seem so). Are we doomed, then, to lose items, friendships, and sleep? To stomp on brakes, hit 'send' on flaming e-mails, and rue the days we met certain people? Possibly, we will always rue the days certain people entered our lives, but in general, it is possible to identify and avoid many stressors (Yes, it is. No need to roll your eyes and sigh like that). Is it easy? No, probably not. Is abating unnecessary stress guaranteed to improve your life and even increase the years you have left of it? Almost certainly.

There are many available resources (Google, you know) for those who are tired of the futile search for the self-cleaning balance, or for the employees whose colleagues' gum-popping and squeaky chair wheels have altered their aversion to violence, but one must initially acknowledge the issues and recognize the need to act.

It's April, the fourth month of 2014's stresses! If you're not already figuring out how to improve your life in this not-so-new year, start soon. Items sought in a desperate rush will always achieve stealth mode, but quite a lot of life's strain really can be removed and not just hidden. Trust me on this.

# 47th ACS DFW

## Meeting in Miniature
## Texas Wesleyan University
## McFadden Science Center

## Fort Worth, Texas
## Saturday, April 26, 2014

**Tentative Schedule:**

| | |
|---|---|
| 7:45 - 8:30 | Check In |
| 8:30 - 9:45 | Oral Presentations |
| 9:45 - 10:00 | Break |
| 10:00 - 11:30 | Oral Presentations |
| 11:30 - 1:00 | Lunch on your own |
| 1:00 - 4:00 | Oral Presentations |
| 4:00 - 4:30 | Break |
| 4:30 - 5:00 | Awards |

# Judges needed! Email Phillip Pelphrey at ppelphrey@txwes.edu to volunteer.

**M-i-M 2013**

## *From the ACS Press Room*

# Hop leaves — discarded in beer brewing — have substances that could fight dental diseases

**Comprehensive Separation and Structural Analyses of Polyphenols and Related Compounds from Bracts of Hops (*Humulus lupulus* L.)**
***Journal of Agricultural and Food Chemistry***

Beer drinkers know that hops are what gives the drink its bitterness and aroma. Recently, scientists reported that the part of hops that isn't used for making beer contains healthful antioxidants and could be used to battle cavities and gum disease. In a new study in ACS' *Journal of Agricultural and Food Chemistry*, they say that they've identified some of the substances that could be responsible for these healthful effects.

Yoshihisa Tanaka and colleagues note that their earlier research found that antioxidant polyphenols, contained in the hop leaves (called bracts), could help fight cavities and gum disease. Extracts from bracts stopped the bacteria responsible for these dental conditions from being able to stick to surfaces and prevented the release of some bacterial toxins. Every year, farmers harvest about 30,000 tons of hops in the United States, but the bracts are not used for making beer and are discarded. Thus, there is potentially a large amount of bracts that could be repurposed for dental applications. But very few of the potentially hundreds of compounds in the bracts have been reported. Tanaka's group decided to investigate what substances in these leaves might cause those healthful effects.

Using chromatography, they found three new compounds, one already-known compound that was identified for the first time in plants and 20 already-known compounds that were found for the first time in hops. The bracts also contained substantial amounts of proanthocyanidins, which are healthful antioxidants.

***FROM THE ACS MEETING:*** Color-changing tags indicate food spoilage

**SEE THE VIDEO!**
www.youtube.com/watch?v=y-Fpj9bdht4

A color-coded smart tag could tell consumers whether a carton of milk has turned sour or a can of green beans has spoiled without opening the containers, according to researchers. The tag, which would appear on the packaging, also could be used to determine if medications and other perishable products were still active or fresh. The researchers developed and tested the tags using *E. coli* in milk as a reference model.

# *DFW SECTION OF THE ACS*
## *Call for Nominations*
## *Doherty and Schulz Awards*

Nominations are invited for the 2014 Wilfred T. Doherty and Werner Schulz awards. Nomination forms are available online at acsdfw.org. This year's chair is Dr. Mihaela C. Stefan at UTD (972-883-6581; send nomination files to **mci071000@utdallas.edu**). Nominations are due by April 15. Each nomination should contain a cover letter highlighting the nominee's accomplishments; seconding letters may accompany nominations. Nominations remain active for five years but should be updated annually.

**2013 DOHERTY AWARD**
**THOMAS CUNDARI**

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, etc. 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.

**2013 SCHULZ AWARD**
**ROBYN FORD**

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

## *From the ACS Press Room*

# Rough surface could keep small electronic parts from sticking together

**Reducing Adhesion Force by Means of Atomic Layer Deposition of ZnO Films with Nanoscale Roughness**
***ACS Applied Materials & Interfaces***

When a piece of gift-wrapping tape sticks to itself, it's frustrating, but when small parts in a microgear or micromotor stick together, an electronic device may not work well, if at all. Scientists now report in the journal *ACS Applied Materials & Interfaces* that rough zinc oxide coatings

can prevent tiny silicon parts from adhering to each other. The study could accelerate the development of even more advanced, high-performance electronics and small sensors.

Xinchun Lu and colleagues explain that adhesion is a big concern when designing very small silicon-based machines called microelectromechanical systems (MEMS). Today, MEMS are in many consumer products, such as cell phones, tablets, car airbags and inkjet printers. On this large scale, manufacturers can make sure that small parts have enough space and don't touch. However, when moving to smaller devices and parts for high-performance electronics, space is at a premium, and it's more likely that parts will touch. Silicon is widely used in MEMS devices, but it is sticky. The typical solution is to coat silicon with a water-repellent coating. Roughening up a surface can also help minimize contact between surfaces. Lu's group set out to see whether combining the two — using a water-repellent zinc oxide film with a rough surface — could work.

They investigated the stickiness of various zinc oxide films in the laboratory. They found that thicker films were rougher and had a lower adhesion force (were less sticky) than thin ones. Low humidity also helped, say the researchers.

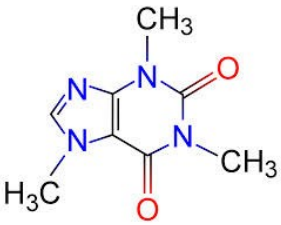
The authors acknowledge funding from the National Science Fund for Distinguished Young Scholars, the Science Fund for Creative Research Groups and the National Science and Technology Major Project.

## *From the ACS Press Room*

# Caffeine-based gold compounds are potential tools in the fight against cancer

**Caffeine-Based Gold (I) *N*-Heterocyclic Carbenes as Possible Anticancer Agents: Synthesis and Biological Properties** ***Inorganic Chemistry***

The side effects of ingesting too much caffeine — restlessness, increased heart rate, having trouble sleeping — are well known, but recent research has shown that the stimulant also has a good side. It can kill cancer cells. Now, researchers report in the ACS journal *Inorganic Chemistry* that combining a caffeine-based compound with a small amount of gold could someday be used as an anticancer agent.




Angela Casini, Michel Picquet and colleagues note that caffeine and certain caffeine-based compounds have recently been in the spotlight as possible anticancer treatments. But drinking gallons of coffee, sodas and energy drinks isn't the solution. And the regular caffeine in these drinks would start to have negative effects on healthy cells, too, at the levels necessary to kill cancerous ones. Gold also can wipe out cancer cells, but, like caffeine, it can harm healthy cells. So, the research team put the two together into certain configurations to see whether the new caffeine-based gold compounds could selectively stop cancer cells from growing without hurting other cells.

They made a series of seven new compounds, called caffeine-based gold (I) *N*-heterocyclic carbenes, in the laboratory and studied them. The scientists found that, at certain concentrations, one of the compounds of the series selectively killed human ovarian cancer cells without harming healthy cells. In addition, the compound targeted a type of DNA architecture, called "G-quadruplex," that is associated with cancer.

The authors acknowledge funding from EU COST, the University of Groningen, the Conseil Régional de Bourgogne, the Ministère de l'Enseignement Supérieur et de la Recherche and the Centre National de la Recherche Scientifique.

# DFW Officers Page

**Letter from the Chair**

Dear colleagues,

At the National Meeting in March, our host local section booth was a hit! We gave away cowboy boot key chains, gift cards to local restaurants, and helped meeting attendees find their way around the convention center and downtown Dallas. Thanks to all of the local ACS members who staffed the booth! I'd like to extend a huge thanks to Daniela Hutanu, Shana Santos, and Seth Hogg for all of their efforts in organizing, setting up the booth, and training volunteers throughout the meeting. It was great to see so many DFW chemists at the national meeting!

I'm looking forward to seeing students presenting at the 47th Meeting in Miniature on Saturday, April 26, at Texas Wesleyan University in Fort Worth. Even if you aren't presenting, come out and support all of our excellent student researchers in the DFW area.

May will wrap up our spring with 2 events, a Social and a Strategy Cafe. (Note: These dates/locations are tentative and will be confirmed via email.) On Saturday, May 10, we will meet at UT Dallas from 9-11 am to have a Strategy Café to brainstorm about improvements to the local section and discuss potential bylaws revisions. If you are interested in helping shape the future of the local section, RSVP and attend! (**http://bit.ly/1jVgvrp**).

Join me for an end of semester celebration on Tuesday, May 20, from 6:30-8:00pm, at Angela's at the Crosswalk in Plano. There will be appetizers, drinks, and hanging out with your favorite ACS members! (RSVP **http://bit.ly/1kDctm3**)

See you in April and May!

E. Kate Walker
**erinkatewalker@utexas.edu**
(903) 288-0139

**MAY MEETING and EVENTS**

**Social and Strategy Cafe**

Saturday, May 10, we will meet at UT Dallas 9-11am **Strategy Café** to brainstorm about improvements to the local section and discuss potential bylaws revisions. If you are interested in helping shape the future of the local section, RSVP to **http://bit.ly/1jVgvrp**.

Join me for an **end of semester** celebration on Tuesday, May 20, from 6:30-8:00pm, at Angela's at the Crosswalk in Plano. There will be appetizers, drinks, and hanging out with your favorite ACS members! RSVP **http://bit.ly/1kDctm3**

# SOUTHWEST REGIONAL MEETING 2014

**Fort Worth, TX | November 19-22, 2014**

## CONTACTS

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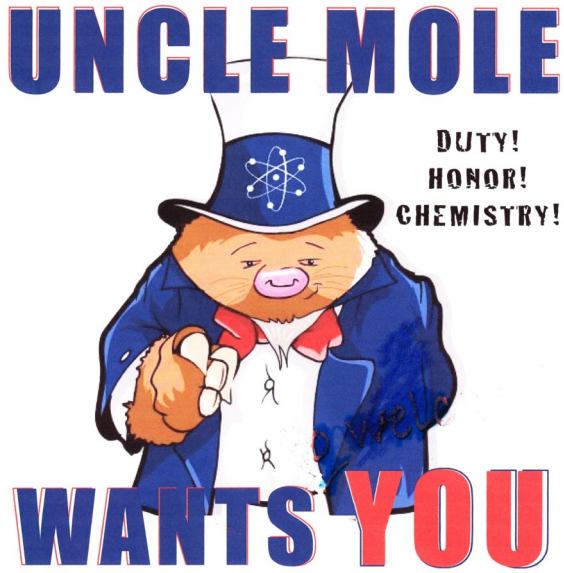
**Martha Gilchrist, Treasurer:** Martha.Gilchrist@tccd.edu
**Denise Merkle, Exhibits Chair:** dmerkle@sciconsult.com
**General SWRM mailbox:** swrm@acsdfw.org

## Now seeking potential SWRM '14 exhibitors and sponsors: Contact Exhibits Chair




**To volunteer for the 2014 Southwest Regional ACS Meeting! SWRM 2014 will be held at the Fort Worth Renaissance Worthington Hotel, November 19-22, 2014.**

# National Chemistry Olympiad

On Saturday, March 22, 2014, 48 high school chemistry students took the local exam for the National Chemistry Olympiad (NCO) competition at either UTA or UNT. Below are the top 12 students who will be taking the NCO National Exam on Saturday, April 26, 2014, at UTA. Congratulations to these students and their teachers!

| *Student* | *School* | *Teacher* |
|---|---|---|
| **Marin Young** | **Richardson High School** | **Ms. Amy Hammer** |
| **Shashank Kambhampati** | **Plano East Senior High School** | **Ms. Karen Compton** |
| **Catherine Jiang** | **The Hockaday School** | **Dr. Beverly Lawson** |
| **Nathan Richbourg** | **Martin High School** | **Mrs. Lydia Berry** |
| **Heather Xiao** | **The Hockaday School** | **Dr. Beverly Lawson** |
| **Osman Moneer** | **Martin High School** | **Mrs. Lydia Berry** |
| **Quaan Ashqeen** | **Grapevine High School** | **Mr. John Modica** |
| **Lucas Chen** | **Talented and Gifted Magnet (Dallas)** | **Mr. Xavier Almaguer** |
| **Prachi Shah** | **Plano West Senior High School** | **Ms. Nicole Lyssy** |
| **Animesh Paul** | **Plano West Senior High School** | **Mr. Neil Milburn** |
| **Dylan Winkler** | **Richardson High School** | **Ms. Amy Hammer** |
| **Murali Subramaian** | **Science and Engineering Magnet (Dallas)** | **Dr. Charles Tuttle** |

Join the

## Fort Worth Life Sciences Coalition
## at Arts 5th Avenue

**7.30pm - 10.30pm**
**Wednesday, April 23, 2014**

**as we honor the memory of**
**Nancy A. Williams**
**FWLSC Founder, Board Member,**
**and Extraordinary Connector of People and Organizations.**

**Nancy's rare gift of eliciting cooperation among diverse groups cannot be replicated. This event is intended to help start the communication as we go forward.**

**A formal program will not be presented, so that attendees can meet, reinvigorate associations and collaborations, and discuss how best to support the future of life sciences (including healthcare) in the Metroplex.**

**All door donations will benefit Gatehouse Grapevine, an organization that assists women and children in crisis, in Nancy's honor. Click Attend Event, below, to make a donation or to reserve your spot (bring a receipt for a direct donation to Gatehouse Grapevine). www.gatehousegrapevine.org**

**To submit a comment in memory of Nancy for inclusion on Scroll-A-Rama, send .ppt slides or text to info@fwlsc.org. Remember to include your name and affiliation. All Deadlines are April 21, 2014.**

**for more information contact info@fwlsc.org, or Denise Merkle, PhD**
**dmerkle@sciconsult.com, (817) 921-0029**

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**and confirmed Supporting Organizations:**
**TFW, THIC, BioNewsTX, HealthWildcatters, The Briasana Group LLC, and the ACS DFW local section**

# www.fwlsc.org

# Around the Area

## East Texas Section

### *Attention*

### *High School Chemistry Teachers*

The East Texas Section of the ACS is offering a limited number of grants to High School Chemistry teachers in our area. We have two different grant programs:

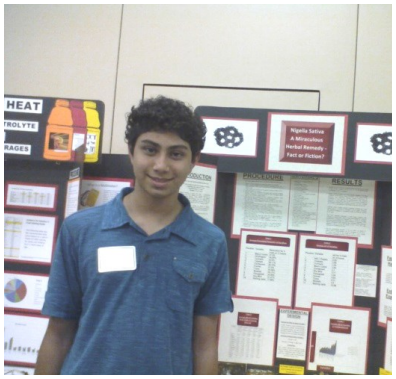
1. High School Chemistry Program that will fund up to $500 for materials, chemicals or other resources for a chemistry-related project.

2. Chemistry Professional Meeting Support Program that will fund up to $500 for meeting registration or housing at a professional meeting sponsored by a chemical society, or by a science-related society.

To receive the support applications (electronic format only) please contact the grants program committee chair Dr. Bruce Hathaway (brucehathaway@letu.edu).

**2014 East Texas Regional Science Fair Winners (awards sponsored by the East Texas Section)**

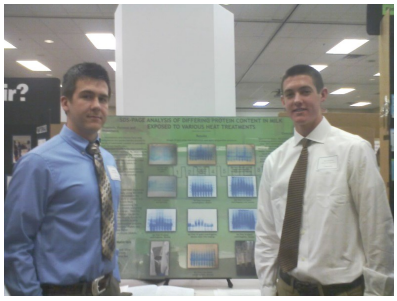
**Junior Division**



***Nigella sativa***: A Miraculous Herbal Remedy – Fact or Fiction?
**Zain Syed**
Paris Jr High, Paris

Effects of Littoral Zone Vegetation Removal on the Biodiversity of a Lentic Habitat
**Cameron Gipson**
Bruce Jr High, Gilmer

**Senior Division**



SDS-PAGE Analysis of Differing Protein Content in Milk Exposed to Various Heat Treatments

**Carson Rast and Sam Erickson**
North Lamas High School, Paris

**March Seminar**

On March 24, **Wilma Subra** of Subra Chemical, New Iberia, LA, gave a seminar at **AnaLab** entitled *Chemicals and Toxic Impacts of Canadian Tar Sands Diluted Bitumen Transported Through the Southern Leg of the Keystone XL Pipeline from Cushing, OK, to the Gulf Coast of Texas.*

**April Seminar**

Thursday, April 10
Roy Monk Science Bldg., Room 106
Panola College, Carthage, TX

**Rediscovery of the Elements**
**Background and Scope**

James L. and Virginia R. Marshall
Department of Chemistry
University of North Texas, Denton, TX

"Rediscovery of the Elements" has been a team project of Jim and Jenny Marshall for the past 14 years. Because modern science evolved in Europe and the vast majority of the elements were discovered here, this project involved many summer-long trips to two dozen European countries. The timing of this work — starting at the end of the twentieth century — was fortunate. There were four reasons why this project could now be completed in a reasonable duration of time. First, the Iron Curtain had lifted; with the fall of the Berlin Wall in 1989 and the following opening of eastern Europe, easy access and travel was now possible to a major portion of Eastern Europe, including Russia. Second, internet communication now made possible facile communication; previously ordinary mail had necessitated weeks, months, and even years for queries and replies, but now efficient schedules and appointments could be set up for a profitable and full summer's study at many sites in Europe. Third, digital cameras had just arrived on the market; the first camera used by the authors was a Sony Mavica, with beautiful optics (but with 1-MByte floppy disks!) that allowed hundreds of photographs to be taken at reasonable cost. Fourth, GPS navigation allowed accurate measurement of geographic locations and map-making, and later Google Earth (appearing in 2005) could confirm earlier recordings made on the ground by rail, car, ship, or foot.

## University of Texas at Dallas

Well over 60 works were presented from the chemistry department at the Dallas National ACS Meeting.

**Paul Pantano** and **Rockford K. Draper** were awarded their second consecutive NIH R15 AREA grant entitled *The Effects of Multi-Walled Carbon Nanotube Length, Dispersal State, and Agglomeration on Phagolysosome Integrity and the Release of Proinflammatory Cytokines*.

## University of Arkansas

**Phil Baran** was the guest lecturer for the annual **Fry Lecture Series** on March 14, 2014. The topic of his talk was *Studies in Natural Product Synthesis.* Dr. Baran is currently a Professor in the Department of Chemistry at The Scripps Research Institute and member of the Skaggs Institute for Chemical Biology. His laboratory is focused on the invention of new reactions of broad

utility and synthesizing complex natural products in a scalable, economic fashion. The Arthur Fry Lecture series began in 1997 through a generous donation from alumni, the late Ves Childs, M.S. '60, Ph.D. '63, and his wife Holly, B.S. '62, to honor the late University Professor Emeritus Art Fry's accomplishments and years of unselfish devotion to the department.

**Faculty Activities at UA:**

**David Paul**, along with graduate student **Marlena Patrick** and undergraduate student **Julianna Grillott**, attended the 34th annual Undergraduate Research Conference at the University of Memphis. Julianna presented her oral presentation: *Analysis of polypyrrole and o-phenylenediamine as electropolymerized electrode coatings* on Feb. 22. The conference organizers select about 50 undergraduates each year to present.

Dr. **Paul Adams** and 3 students also attended the University of Memphis Undergraduate Research Symposium:

**Padmavathy Manavazhahan** presented *Site-Specific Incorporation of an Extrinsic Fluorescence Reporter Groups to Characterize Protein Interactions of the Ras Protein Rheb*.

**Akash Patel** presented *Incorporation of an Extrinsic Fluorescent Probe on the Ras-Related Protein Rheb to Monitor Protein Interactions.*

**Craig McClean** presented *Optimization of the Thrombin Cleavage for the Rho GDI Protein.*

**Charles Wilkins** attended the 26th Sanibel *Conference on Mass Spectrometry on Ion Activation*, January 30-February 2, 2014, Clearwater Beach, Florida. He will also be chairing a session entitled *Mass Spectrometry: Omics Environmental and High Throughput Analytical* at the Pittcon Conference and Expos 2014 in Chicago, IL. He will also present a paper *High Resolution Matrix-Assisted in Vacuum (MAIV) by Fourier Transform Mass Spectrometry* in that session. Coauthors for the paper are **Beixi Wang, Evgenia Akhmetova, and Sarah Trimpin**.

Dr. **Wilkins** will also be attending the Executive Committee meeting of the Analytical Chemistry Division at Pittcon and representing the Division at a meeting of the Governing Board of the Federation for Analytical Chemistry and Spectroscopy Societies (FACSS), also being held at Pittcon.

**Publications**

**Jingyi Chen**, Chapter 18, *Noble Metal Nanoparticle Platform*, in *Cancer Theranostics*, Stephen Wong, Shawn Chen, Ed., Elsevier, in press.

**58th Annual Biophysical Society**

The Biophysical Society Annual Meeting is the largest gathering of biophysicists in the world, bringing together more than 7,000 researchers from over 45 countries. The meeting took place this year in San Francisco, California, February 15-19. Presentations made at the meeting by UA faculty and students are listed below (presenter in bold).

**Megan K. Wood**, Roger E. Koeppe II, Denise V. Greathouse. *Characterizing Moderately Short Antimicrobial Tryptophan/ Arginine-Rich Peptides.*

**Sushanth Kumar**, T.K.S. Kumar. *Is Refolding of Lysozyme Template-Driven?*

Vasupradha Suresh Kumar, Bethany P. Doss, Denise V. Greathouse, **Roger E. Keoppe II**. *Influence of a Central Tryptophan and of Cholesterol on the Properties of Defined Transmembrane Helical Peptides*.

**Venkatesan Rajagopalan**, Denise V. Greathouse, Roger E. Koeppe II. *Influence on Glutamic Acid Residues on the Properties of Model Membrane-Spanning Helices.*

**Rachael A. Pellegrino**, Rebecca Kerr, T.K.S. Kumar. *Understanding the Structural Determinants for the Stability of Human Fibroblast Growth Factor*.

**Ashley N. Martfeld**, Denise V. Greathouse, Roger E. Koeppe II. *Influence of Ph and Histidine Residues on Membrane-Spanning Helical Peptides*.

**Gayatri Suresh Kumar**, David McNabb. *The Abundance of Ergosterol in Candida Species Does Not Influence Fluconazole Sensitivity.*

**Rory Henderson**, Mercede Furr, Srinivas Jayanthi, Alicia Brown, Robyn Goforth, Ralph Henry, T.K.S. Kumar. *Three-Dimensional Structure of the 54-KDA Subunit of the Chloroplast Signal Recognition Particle using Molecular Modeling.*

**Karina Sanders**, Srinivas Jayanthi, T.K.S. Kumar. *Understanding the Structural Determinants of the Extreme Thermal Stability of Rubredoxin*.

**Taylor Ghahremani**, T.K.S. Kumar. *Characterization of FGF-1 Mutant, K126D.*

**Francis Millett**, Jeremy Durchman, Pascal Lanciano, Fevzi Daldal, Bill Durham. *Photoinduced Electron Transfer in the RB. Capsulatus Cytochrome BC1 Complex: Rotational Dynamics of the Iron-Sulfur Protein.*

**Mathias M. J. Bellaiche**, Gregory Salamo, Ralph Henry, Daniel Fologea, Eric Krueger, Radwan Al Faouri. *Photoactivity of the Lysenin Protein.*

## South Plains Section

The South Plains Section of the ACS will hold its annual award ceremony at the Lubbock Women's Club on May 1, 2014. The banquet will recognize outstanding students from the region. **William Carroll** will also present a seminar entitled *Statistics and the Shirelles: How Physical Science Thinking Informs Popular Music Analytics*.

## University of Texas Arlington

Welch Professor **Daniel W. Armstrong** received the ACS Award in Separations Science and Technology, sponsored by Waters Corp., at the ACS awards dinner held on Mar. 18. Dr. Armstrong gave his award address on the topic *Evolution of Three Decades of Separations Research* on Mar. 17 in the ACS Division of Industrial and Engineering Chemistry sessions at a special symposium organized by his UT-Arlington colleague Dr. **Sandy Dasgupta.** Dr. Dasgupta and Dr. **Kevin Schug** also gave talks at the symposium. **Philip Shelor** gave a talk in the Analytical sessions in the symposium on *Advances in Analytical Spectroscopy*. His coauthors were Dr. Dasgupta and **R. P. Bhawai.**

Dr. **Martin Pomerantz** gave an invited talk at the Dallas ACS meeting at the symposium on ***Synthesis and Applications of Conjugated Materials: Contributions from Texas and Beyond***. His talk was titled *Studies of Bi- and Terthiophenes as Models for Some Conjugated Polymers: Intra- and Intermolecular Interactions and Their Structural Implications*.

Dr. **Fred Macdonnell** also gave a talk at the Dallas ACS meeting on *Photoreduction of Carbon Dioxide to Methanol and Formate Using a Homogeneous Pyridinium Catalyst Coupled with a Ruthenium Polypyridyl Chromophore*. His coauthors were **David**

**Boston** and Dr. **Norma de Tacconi**.

Dr**. Krishnan Rajeshwar** presented an invited talk in Dallas at the symposium on ***Molecular Processes for Selective Deposition, Modification, Placement, and Assembly of Nanostructures***. His talk was titled *Bioinspired Conversion of Carbon Dioxide to Methanol*.

Dr. **E. Thomas Strom** was the co-organizer of two symposia in the History Division at the Dallas ACS meeting. The symposium topics were ***Fifty Years of the James Flack Norris Award*** and ***The Foundations of Physical Organic Chemistry and History of Chemistry in North Texas***. Dr. Strom gave a talk in the latter symposium on *The Mobil Field Research Laboratory in Dallas. An Unexpected World Class Center in Magnetic Resonance.*

Two of Dr. **Alejandro Bugarin's** undergraduate students gave posters at the Dallas ACS meeting. They were **Christian Chaheine** and **Kana White**.

In the recent ACES competition at UT-Arlington, Kevin Schug's graduate students **Evelyn Wang** and **Hui Fan** won awards for ther oral presentations. The undergraduate duo of **Yu-Shen Sung** and **Yashawini Nagarajan** also won an ACES award.

## Heart o' Texas

Two Baylor faculty have been awarded grants from the Robert A. Welch Foundation: biochemist Dr. **Bryan Shaw**, *Asparagine deamidation in motor neurons: a molecular clock or a ticking time bomb*?, and inorganic chemist Dr. **Caleb Martin**, *New Powerful Lewis Acids as Metal-free Catalysts.* In addition, Bryan Shaw has been awarded an NSF CAREER grant: *Quantifying the Net Charge of Metalloproteins: a Fundamental but Elusive Property.*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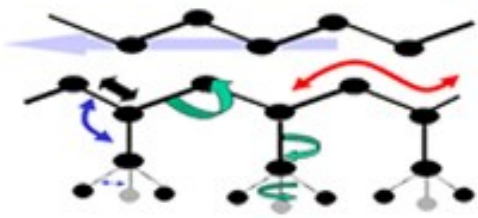

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***continued from page 25***

She provided someone for women who wanted to be scientists to look up to. When I was in school, women were not supposed to be smart or, in some cases, even work. We were supposed to get married and raise a family, but it was not as bad for me as it was when Madame Curie was working. Women like Madame Curie showed me that did not have to be my future if I wanted something else.

*Thank you, Ms. Eckles, for participating in '5Q'!*

*To sign up to be interviewed for 5Q, contact: retort@acsdfw.org.*

## *From the ACS Press Room*

# Don't throw out old, sprouting garlic — it has heart-healthy antioxidants

**Garlic Sprouting Is Associated with Increased Antioxidant Activity and Concomitant Changes in the Metabolite Profile** ***Journal of Agricultural and Food Chemistry***

"Sprouted" garlic — old garlic bulbs with bright green shoots emerging from the cloves — is considered to be past its prime and usually ends up in the garbage can. But scientists are reporting in ACS' *Journal of Agricultural and Food Chemistry* that this type of garlic has even more heart-healthy antioxidant activity than its fresher counterparts.

Jong-Sang Kim and colleagues note that people have used garlic for medicinal purposes for thousands of years. Today, people still celebrate its healthful benefits. Eating garlic or taking garlic supplements is touted as a natural way to reduce cholesterol levels, blood pressure and heart disease risk. It even may boost the immune system and help fight cancer. But those benefits are for fresh, raw garlic. Sprouted garlic has received much less attention. When seedlings grow into green plants, they make many new compounds, including those that protect the young plant against pathogens. Kim's group reasoned that the same thing might be happening when green shoots grow from old heads of garlic. Other studies have shown that sprouted beans and grains have increased antioxidant activity, so the team set out to see if the same is true for garlic.

They found that garlic sprouted for five days had higher antioxidant activity than fresher, younger bulbs, and it had different metabolites, suggesting that it also makes different substances. Extracts from this garlic even protected cells in a laboratory dish from certain types of damage. "Therefore, sprouting may be a useful way to improve the antioxidant potential of garlic," they conclude.

The authors acknowledge funding from the IPET High Value-Added Food Technology Development Program.

# FIVE QUESTIONS FOR...

'5 Questions' April 2014

April's '5 Questions' participant is **Joyce Eckles**, who holds an B.S. in Chemistry from Texas Womans University, and is a chemist for the City of Dallas Water Treatment Division, at a purification plant in Carrollton. In addition to ACS membership, Ms. Eckles is a dedicated volunteer and was actively involved as a member of a committee trying to organize local labs' technical laboratory assistants as a subunit of the ACS DFW local section.

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

When I was in junior high (about age 12) one of my girlfriends and I wanted to be doctors. Of course, we did not know any women doctors. Then Sputnik was launched, and it fascinated me. My goal was to be a scientist from that time. I took biology, which was o.k., but I really liked chemistry. I used to get upset with the girls in the biology lab who kept acting like it was awful to dissect a starfish and the like. They got the boys to do it for them. In high school, my chemistry teacher taught a second, more advanced class which I took also. The school board, however, didn't see the value in advanced chemistry, and would not give us credits for the course toward graduation.

2) What aspects of your career do you enjoy the most?

The aspects of my career I enjoy most are several. I particularly like learning new things. I have worked in medical research, asbestos analysis, carbon-14 dating of samples and environmental testing. Each one of these fields has given me a look at the different ways I can use my chemical knowledge. I still enjoy doing bench chemistry. It can get boring to do everything instrumentally.

3) Would you change any of your education if you had a chance? If yes, what would you do differently?

If I could change anything about my education it would be to finish my master's degree. That just did not work out.

4) What advice would you give to chemists/scientists who are starting out in their careers?

I would advise chemists/scientists starting out to find a position (if possible) doing something you enjoy and learn from. Do not let things get boring for you. Always be willing to learn. And remember, you are not indispensable to your employer. Do not let your employment become your everything. Enjoy life outside the lab or office also.

5) The ubiquitous 5th of the 5 Questions must always be: Who is your Science Hero? and why?

My Science Hero is Madame Curie. She worked during a time when women were looked down on and not allowed to get much of an education. She was appreciated for her work which turned out to be very important, and became recognized for that work in the scientific community.

***continued on page 23***

# *From the editor*

Back around the late sixties and early seventies, a scientific phenomenon known as polywater was a hot topic. Polywater was formed by water forced through capillary tubes, which supposedly squeezed the molecules closer together, and therefore had a higher boiling point, lower freezing point, and higher viscosity than water. (Polywater actually made it into popular science and was the subject of a Star Trek plot. No, really.) It was subsequently shown to be the result of impurities.

In 1973, a scientific article appeared (*Biochem. Biophys. Acta* 305: 684-688, 1973) in which apparently active streaming occurred in actomyosin solutions in microcapillary tubes formed by holding a capillary tube in a flame and jerking it quickly outward. It was hypothesized that the restriction imposed by the diameter of the tube aligned the contractile proteins into the same conformation as in muscle, so that contractile motion—and thus, streaming—occurred. This was later shown (by me, actually, in *Arch. Biochem. Biophys*. 210: 537-539, 1981) to be a consequence, not of squeezing the two proteins together in the microcapillary tube, but of simple pressure gradients and fluctuations caused by the unequal diameters of the two ends of the tube.

Recently, at the end of January 2014, a paper came out (in *Nature*, no less) claiming that stem cells could be produced from adult cells by pressurization caused by forcing the cells through a capillary tube. The authors also claimed that acid washing would transform ordinary cells to stem cells. Now, I was willing to keep an open mind on the acid-washing business, but capillary tube treatment, no way. As you might imagine, refutations to this begin popping up within a month after the article's publication. What is this fascination with the capillary tubes, already—and when will it end?

Best regards,
Connie

Nature paper:
**http://www.nature.com/nature/journal/v505/n7485/full/nature12968.html**
Discussions:
**http://www.openbio.co.uk/why-doesnt-coke-induce-pluripotency/**
**http://www.boston.com/news/world/asia/2014/04/01/japan-lab-says-stem-cell-research-falsified/CzIbG1bECNsgqvzIkQ8R3L/story.html**
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