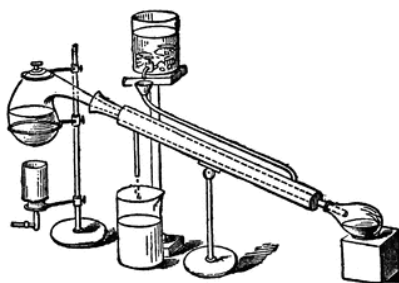




SOUTHWEST RETORT



SEVENTIETH YEAR

MARCH 2018

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

published by

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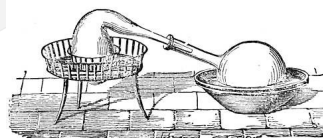
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EMPLOYMENT CLEARING HOUSE

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

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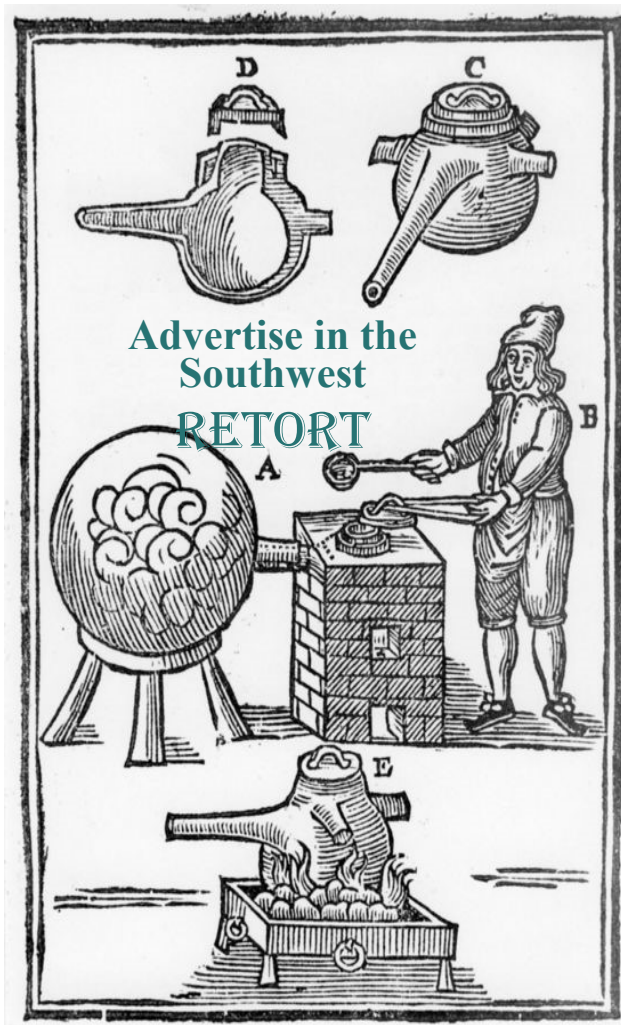


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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The ACS tour speakers for March are Dr. E. R. Van Artsdalen of the University of Virginia and Dr. Louis Meites of Brooklyn Polytechnic Institute. Dr. Van Artsdalen's topic will be on "Chemistry of Fused Salts," while Dr. Meites will speak on either "Some Recently Developed Sensitive Techniques of Electrochemical Analysis" or "The Status and Prospects of Thermo Analytical Chemistry."

At North Texas State University (now UNT), Dr. Paul Jones has joined the faculty. Dr. Jones received his Ph.D. from Purdue and did a post doc at Wisconsin. He plans to do research in electron spin resonance, dealing particularly with silyl ketones and silyl ethylenes. Dr. James Marshall presented a seminar at TCU. Dr. R. B. Escue received a \$42,000 NSF grant to be used for an institute for junior high school teachers to be held this summer at North Texas State.

At the Mobil Field Research Laboratory in Dallas, Dr. Donald E. Woessner presented two lectures on pulsed NMR and nuclear relaxation at the Advanced NMR Workshop held in January at the University of Florida. Research Associate Dr. James Whalen has resigned from Mobil to take the position as Chair of the Chemistry Department at the University of Texas at El Paso. Recent visitors to the UT-Arlington campus were Dr. Pill-Soon Song of Texas Tech, who presented a seminar on "The Photochemistry of Flavins" and UT-Austin President Dr. Norman Hackerman, who presented an ACS tour lecture on "Molecular Structure and Corrosion Inhibition." A symposium on "Progress Through Chemistry" will be held Mar. 22-23 at the Southwest Center for Ad-

vanced Studies (now UT-Dallas). The keynote talk will be given by ACS President Dr. Charles G. Overberger of the University of Michigan on the topic "The Role of the University for Education in the Macromolecular Area." Dr. Philip F. Kane of TI was recently given the Analyst of the Year Award, by the Dallas Society of Analytical Chemists.

At Texas Tech Dr. Kenneth C. Lin is a new post doc with Dr. R. Redington. Dr. Henry Shine gave a seminar at Baylor University on "Cation Radicals," while Dr. W. C. Herndon gave a talk at TCU on "Hückel MO Theory for Saturated Hydrocarbons."

The new officers for the Texas A&M-Baylor ACS Section are: Chair, Dr. Robert B. Alexander; Chair-Elect, Dr. Thomas E. Franklin; Secretary-Treasurer, Dr. Leone Cockerell; Councilor, Dr. Bruno J. Zwolinski. From the A&M Thermodynamics Research Center, Dr. Zwolinski has been reappointed to a three year term of the National Academy of Science-National Research Council Office of Critical Tables. The chemistry department at A&M recently hosted and co-sponsored the conference on "New Methods and Experiments for the Advanced Undergraduate Laboratory.

*contributed by
E. Thomas Strom*



And Another Thing...

ACSish

By Denise L. Merkle, PhD

As Chair-Elect 2018 of the Dallas-Fort Worth Local Section of the American Chemical Society (ACSDFW), I spent a weekend in January attending the Local Section track of the Leadership Institute. The Institute is offered to all incoming section Chairs-elect, at no cost to the Chairs-elect. Local sections can choose to pay for other Executive Committee members or local section members to attend, too. Division volunteers, New Committee Chairs, Regional Meeting Chairs/Planners, and Younger Chemists and Student Leaders attend the Institute to receive training designed to improve their effectiveness as ACS leaders. So, if fear of the unknown has caused you to avoid more intense participation in ACS, you may like to know that ACS does not throw new reagents into the flask without giving them the reaction diagram.

The nerd in me (admittedly a significant fraction of my being) suffered through the group activities at the Leadership Institute - and there were many, since there were many educational tracks- but meeting ACS volunteers from local sections all over the country was worth the pain, as was learning a lot more about the educational opportunities available through ACS: <https://www.acs.org/content/acs/en/education.html>

Don't forget ACS publications, either. There are numerous journals and open-access

documents to enhance careers and knowledge, regardless of impact on the volunteer capabilities: <https://pubs.acs.org/>

Online courses, on-site courses, webinars - you name it- ACS probably has it. This is a good thing, since the organization relies very heavily on its members and their aforementioned volunteer capabilities. Without the participation of its members, ACS would not be the force for chemistry that it is.

It is worth repeating that ACS enjoys a complex structure. It is defined by geography (Regions) and interests (Divisions). Regions are divided into Local Sections, which are, in general, non-profit entities governed by ACS members who volunteer to serve and are elected by the members of the LS. Divisions are also governed by volunteers, but those volunteers join Divisions based on scientific interest or career. Division Officers are elected from within the Division, whereas officers of Local Sections are members of a particular local section, and aren't necessarily related by anything other than location, location, location. Committees, which are appointed by the Committee on Committees focus on specific ACS functions or areas and provide information and guidance to **the Council (Councilors) and the Board of Directors**, *some of whom are elected - or were.*

There are many ways ACS members can use

their skills to promote chemistry, and myriad levels of commitment of time, energy and talent. I know as fact that, while ACS volunteerism can promote serious thoughts of retreating to a yurt and living off grid, participation is predominately a rewarding and necessary feature of ACS. And really, the yurt will not help - solar power and satellite uplinks took care of that escape option.

Chem happy, everyone —and don't forget to volunteer.

Remember, the Retort is on issuu.com. One good thing about issuu.com is that you can subscribe to your publication; if you put in your email (right next to the Retort on the site), you will automatically get the Retort when we post it. (In order to subscribe, download, or print, you need to register with issuu.com; it's free and you can opt out of extraneous emails.)



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- New York Times

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Dallas-Fort Worth

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7.30P - 10.30P
@ ARTS 5TH AVE in FW TX
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more info SOON
via fwlsc.org & dfw.sites.acs.org

From the ACS Press Room

With a TENG, solar cells could work come rain or shine

Integrating Silicon Solar Cell with Triboelectric Nanogenerator via a Mutual Electrode for Harvesting Energy from Sunlight and Raindrops

ACS Nano

Despite the numerous advances in solar cells, one thing remains constant: cloudy, rainy conditions put a damper on the amount of electricity created. Now researchers reporting in the journal *ACS Nano* have developed hybrid solar cells that can generate power from raindrops.

In areas where it frequently rains, solar cells might not seem like the best choice for energy production. The sky becomes cloudy, preventing the sun's rays from reaching the cell. Researchers have been developing devices that can generate energy in rainy conditions. Previous studies add a pseudocapacitor or triboelectric nanogenerator (TENG) to an existing solar cell, creating a device that can make energy from the motion of raindrops. But these devices are usually complicated to manufacture and are bulky. So Zhen Wen, Xuhui Sun, Baoquan Sun and colleagues wanted to develop a better hybrid energy harvesting system.

The researchers imprinted two polymers, PDMS and PEDOT:PSS, with grooves by placing them onto commercially available DVDs. PDMS is polydimethylsiloxane and PEDOT:PSS is poly(3,4-ethylenedioxythiophene):poly(styrenesulfonate). Adding texture to the PDMS increased the TENG performance of this material when water drops touched it and then fell off it. The textured PEDOT:PSS layer acted as a mutual electrode for both the TENG and the solar cell. It was placed between the two devices and conducted energy from the TENG to the cell. Be-

cause the polymers are transparent, the solar cell could still generate energy from sunlight, as well as from falling raindrops. The team notes this simple design demonstrates a new concept in energy harvesting during various weather conditions.



The authors acknowledge funding from the National Key Research and Development Program of China, the National Natural Science Foundation of China, the Priority Academic Program Development of Jiangsu Higher Education Institutions, the 111 Projects and the Collaborative Innovation Center of Suzhou Nano Science and Technology.

DFW Section Events

MARCH MEETING

Whiskey Distillery Tour and Tasting

Wednesday, March 28, 2018

6 pm

Firestone & Robertson Distillery, Whiskey Ranch

4250 Mitchell Blvd Ft Worth 76119

www.FRdistilling.com

\$10 for Tour and Snacks at Distillery

Sign Up by 6 pm on March 26, 2018

<https://www.eventbrite.com/e/acs-dfw-section-whiskey-tour-and-tasting-tickets-44100635187>

Join the DFW Local Section for a tour of the first craft bourbon and whiskey distillery in North Texas. A tasting will be available for attendees that are 21 and over. The head distiller will then join us for a Dutch treat dinner at Cane Rosso, 815 W. Magnolia Ave, Fort Worth, TX 76104, following the tour and tasting to continue the discussion.

Around the Area

UT-Arlington

Dasgupta Wins ACS, Texas Academy Awards.

Dr. Purnendu (Sandy) Dasgupta, holder of the Hamish Small Chair of Ion Analysis at UTA, recently was selected as the 2018 winner of the Texas Academy of Science's Distinguished Texas Scientist Award and as the 2018 winner of the ACS Division of Analytical Chemistry's Chemical Instrumentation Award. He will receive this latter award at a special symposium at this August's ACS National Meeting in Boston. In 2017 Sandy won the Talanta Medal in analytical chemistry, which will be presented this month. Among the Dasgupta lab's research projects are the development of a NASA-funded ion chromatograph for testing extraterrestrial soil, measurement of cyanide in saliva, blood, and breath to speed treatment of cyanide poisoning, and an environmentally-friendly analysis of arsenic in drinking water.

The Texas Academy of Science Award was first given in 1979, with the first winner heart surgeon **Dr. Michael DeBakey**. Nobel Laureate **Dr. Ilya Prigogine** is also a past winner. The only previous winner from UT-Arlington was herpetology professor **Dr. Jonathan Campbell**.

Sandy stated "The Distinguished Texas Scientist Award is particularly special, because I've spent all my professional career in Texas. I'm also touched that this is an award for a scientist, not a chemist, because we often like to compartmentalize things. I'm proud that the impact of my work is seen as going beyond the disciplines."

New UTA Faculty Member NSF Early Career Grant Holder.

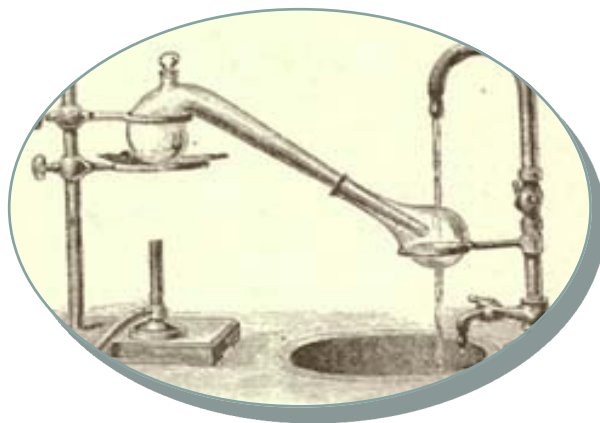
Dr. He Dong recently joined the UT-Arlington faculty as Associate Professor of Chemistry and Biochemistry and also as Associate Professor of Bioengineering. She comes to Arlington from Clarkson University in New York. Dr. Dong received her BS and MS degrees from Tsinghua University in China. She obtained her Ph.D. in organic chemistry from Rice in 2008, working with **Jeffrey D. Hartgerink**. There followed postdoctoral appointments in the Department of Surgery at Emory University with **Elliot Chaikof** and at Berkeley with **Ting Xu**.

She has recently received a five year, \$456,985 NSF Early Career Development Grant to seek new synthetic antimicrobial nanomaterials to treat antibiotic-resistant infections. Her research program lies at the interface of chemistry, material science, and biology with an emphasis on molecular self-assembly and supramolecular chemistry of soft matter nanomaterials. Another significant research area is the development of soft hydrogels for antibiotic delivery.

Dr. Dong started out as a biology major, but she became attracted to the experimental aspects of chemistry. She says you could see the reactions taking place in the test tubes. Therefore, she switched soon to chemistry. As to Dr. Dong's hobbies, she cites ballroom dancing. She met her husband through their joint interest in dancing. When the new Science and Engineering Innovation and Research (SEIR) Building opens in July, she will be moving her office and labs to that location.

Keynote Speaker

Associate Professor **Kayunta Johnson-Winters** was the keynote speaker in February at a symposium held in Sierra Vista, AZ, aiming at increasing the interest in STEM among middle and high school students. The event was titled "Black History Month: Next Generation of STEM Professionals." Johnson-Winters noted that women and minorities are under represented in STEM careers. She told the students, "See yourselves working in STEM careers and be happy about it, because the hard work will come soon enough. When the hard work comes, don't shy away from it, but continue to dream."



DFW Section: Save the dates!

51st ACS DFW Meeting in Miniature

Saturday, April 28, 2018

Southern Methodist University

Undergraduate and graduate oral sessions

Volunteer judges will be needed

Watch your email and the Retort for more details.

**Contact Organizers Dr. Isaac Garcia-Bosch
(igarciabosch@mail.smu.edu) or Dr. Alex Lippert
(alippert@smu.edu) for more information.**

Presentation and Tour

US Patent and Trademark Office (USPTO)

Regional Office

6 pm, Tuesday, May 22, 2018

USPTO - Texas Regional Office

Terminal Annex Federal Building

207 S. Houston St., Ste. 159

Dallas, Texas 75202

**Watch your email and the Retort
for more details.**



Nominations are invited for 2018 Wilfred T. Doherty and Werner Schulz awards

Nomination forms and additional information are available online at [http://dfw.sites.acs.org/](http://dfw.sites.acs.org/localsectionawards.htm)

[localsectionawards.htm](http://dfw.sites.acs.org/localsectionawards.htm). Nominations are due by May 15, 2018. Each nomination should contain completed nomination form, cover letter highlighting the nominee's accomplishments, and a copy of the CV. One seconding letter may accompany nominations. The nomination package should be sent by email as a single pdf file to Stephen Starnes (Stephen.Starnes@tamuc.edu). Nominations remain active for five years but should be updated annually.

The Doherty Award is given for excellence in chemical research or chemistry teaching, meritorious service to ACS, establishment of a new chemical industry, solution of pollution problems, and advances in curative or preventive chemotherapy. Nominees may come

from industry, academia, government, or small business. The nominee should be a resident member in the area served by the DFW Section, and the work should have been done here. The award is \$1500 and an engraved plaque. A photo of the Doherty Award winner will be displayed permanently in the Gallery of Doherty Award winners, Berkner Hall, UT-Dallas.

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

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

More realistic and accurate organs-on-chips

A Novel Microfluidic Colon With An Extracellular Matrix Membrane

ACS Biomaterials Science & Engineering

In a step toward better diagnosis and treatment of digestive conditions, such as inflammatory bowel disease, scientists report in *ACS Biomaterials & Engineering* that they have developed a first-of-its-kind collagen-based membrane for use in microchips. The membrane is more natural than others that are available, and it could allow organs-on-chips to more accurately replicate how healthy intestinal cells become diseased and how they react to drug treatments.

Traditionally, scientists have cultured cells on laboratory dishes and have used animal models to study disease and its potential treatments. But neither of these approaches fully mimic what occurs in the human body. Recently, researchers developed a way to grow living cells in microfluidic chips. Commonly called an organ-on-a-chip, each device is typically composed of a pair of flexible, translucent polymers or plastics that surround a porous membrane. Human cells extracted from an organ can be grown on the polymer or on the membrane. However, because the membrane itself is often made of plastic, it can disrupt cell interactions and skew the results. So, Abhinav Bhushan and colleagues at Illinois Institute of Technology sought to create a more natural

membrane that would encourage the normal growth and development of human cells.

The researchers produced three types of microfluidic devices. One had no membrane, and the second had a plastic-derived membrane. For the third device, the research team used collagen to form the membrane. Collagen is one of the most common proteins in the body, and it helps form connective tissues. Then, they placed human colon cells in each device. After 5 days, microscopic evaluation revealed that colon cells on the collagen membrane were far more viable compared to those grown in the other devices. In addition, the cells grown on the collagen membrane were more differentiated. They also appeared to be integrating with the collagen fibers to remodel the microenvironment. The researchers concluded that using collagen-based membranes in organ-on-a-chip devices enhance the growth, viability and barrier function of human colon cells and that the method likely could be extended to cells from other organs.

The authors acknowledge funding from the Nayar Prize II and student scholarships from the Armour College of Engineering.

From the ACS Press Room

How cats and dogs are consuming and processing parabens

Parabens and Their Metabolites in Pet Food and Urine from New York State, United States

Environmental Science & Technology

Many households can claim at least one four-legged friend as part of the family. But pets that primarily stay indoors can have increased rates of diseases, such as diabetes, kidney diseases and hypothyroidism compared with those that stay exclusively outside. Some scientists propose that chemical substances in the home could contribute to these illnesses. One group has examined how pets could be exposed to parabens, as reported in ACS' journal *Environmental Science & Technology*.

Parabens are preservatives commonly found in cosmetic and pharmaceutical products, and their use in human food products and dog and cat food is regulated by the U.S. Food & Drug Administration. The substances also have been shown to be endocrine-disrupting compounds (EDCs). Research has shown EDCs potentially interfere with hormones and have harmful effects on developmental, reproductive and neurological systems. Previous studies have examined the

presence of other EDCs, such as heavy metals and bisphenol A, in pet food, but very little is known about parabens in this context. So, Kurunthachalam Kannan and colleagues wanted to examine the exposure of dogs and cats to parabens in commercially available pet food and analyze the substances in the animals' urine.

The team examined 58 variations of dog and cat food, as well as 60 urine samples from animals. The paraben called methyl paraben and

the metabolite called 4-hydroxybenzoic acid (4-HB) were the most abundant chemicals detected in pet food and urine. The researchers found that dry food contained higher levels of parabens and their metabolites than



wet food. In addition, the researchers report, cat food had higher paraben concentrations than dog food. After the urine analysis, the group calculated the cumulative exposure intake for the dogs and cats. By comparing the calculations, the team concluded that dogs are exposed to other sources of parabens, besides food, whereas cats' exposure is mainly from their diet. The group also notes that to their knowledge, this is the first time the occur-

Wine polyphenols could fend off bacteria that cause cavities and gum disease

Inhibition of Oral Pathogens Adhesion to Human Gingival Fibroblasts by Wine Polyphenols Alone and in Combination with an Oral Probiotic

Journal of Agricultural and Food Chemistry

Sipping wine is good for your colon and heart, possibly because of the beverage's abundant and structurally diverse polyphenols. Now researchers report in ACS' *Journal of Agricultural and Food Chemistry* that wine polyphenols might also be good for your oral health.

Traditionally, some health benefits of polyphenols have been attributed to the fact that these compounds are antioxidants, meaning they likely protect the body from harm caused by free radicals. However, recent work indicates polyphenols might also promote health by actively interacting with bacteria in the gut. That makes sense because plants and fruits produce polyphenols to ward off infection by harmful bacteria and other pathogens. M. Victoria Moreno-Arribas and colleagues

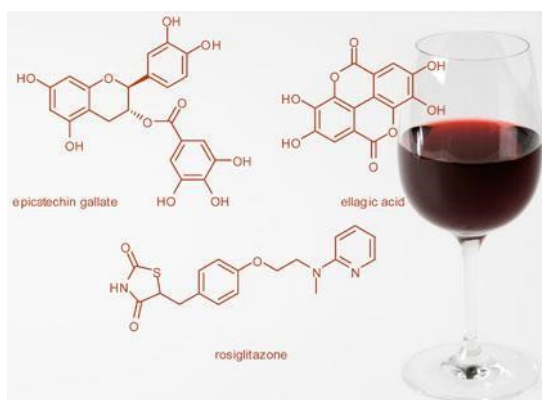
wanted to know whether wine and grape polyphenols would also protect teeth and gums, and how this could work on a molecular level.

The researchers checked out the effect of two red wine polyphenols, as well as commercially available grape seed and red wine extracts, on bacteria that stick to teeth and gums and cause dental plaque, cavities and periodontal disease. Working with cells that model gum tissue, they found that the two wine polyphenols in isolation — caffeic and p-coumaric acids — were generally better than the total wine extracts

at cutting back on the bacteria's ability to stick to the cells. When combined with the *Streptococcus dentisani*, which is believed to be an oral probiotic, the polyphenols were even better at fending off the pathogenic bacteria. The researchers also showed that metabolites formed when

digestion of the polyphenols begins in the mouth might be responsible for some of these effects.

The authors acknowledge funding from MINECO and Comunidad de Madrid.



From the editor

Get your calendar out and mark the dates; we have an incredible line-up for the next two months.

- ◆ The March meeting may be a first for the section. We've had lectures on wine-making or oenology, including wine-tasting. We toured a brewery. Now, on March 28, we have a tour of a bourbon and whiskey distillery.
- ◆ On April 19, the Fort Worth Life Sciences Coalition and the DFW Section are having a joint meeting.
- ◆ The 51st Meeting-in-Miniature, on April 28 at SMU, is a chance for your students (grads and undergrads) to have their first experience at an oral presentation. As always, judges are needed.
- ◆ Award nominations are due by May 15; details and forms are available on the DFW Section website (dfw.sites.acs.org/).
- ◆ On May 22, a presentation and tour are scheduled for the US Patent and Trademark regional office in Dallas.

Most interesting press room article this month...rain-drop powered solar cells. (Technically, I suppose they can't be called *solar* cells.) The researchers used commercial CDs on which to imprint the polymers, giving a grooved, textured surface that collects and slows down the drainage of drops from the cell.

*Best regards,
Connie*