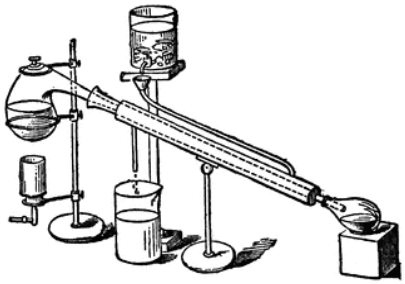
SOUTHWEST RETORT



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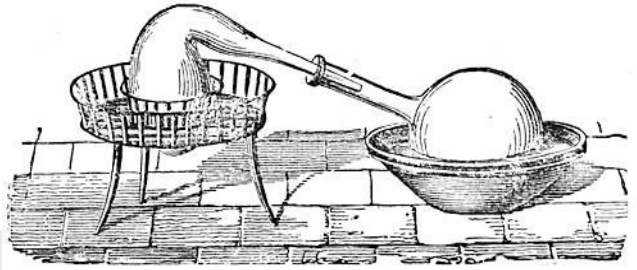

EMPLOYMENT CLEARING HOUSE

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

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The PEG and PEGylation Technology People

Job Title: Sales/Marketing Assistant

Name of Company: JenKem Technology USA Inc.

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

Job ID: JKUSA-20150501

Job Type: Full-time

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

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

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

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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The winner of this year's ACS Southwest Regional Award is **Dr. Norman H. Hackerman**, Vice Chancellor for Academic Affairs of the University of Texas. He presented his award address on "Molecular Structure and the Inhibition of Metal Solution Reaction" at the Southwest-Southeast Regional ACS Meeting in Memphis on Dec. 3. The award consists of a bronze plaque and $600. The award area includes the states of New Mexico, Colorado, Texas, Arkansas, Lousiana, and Oklahoma. Dr. Hackerman helped organize the Southwest Regional Conference in Austin in 1945, from which the Southwest Regional Meetings have sprung. The registration back then was about 400, and some 50 technical papers were presented. Dr. Hackerman presented a paper at that meeting, and he also presented one at this meeting.

Some 40 Ph.D. students and 15 M.A. students have completed their work under Dr. Hackerman's direction. He is the author of 118 technical papers. The Palladium Medal, awarded every other year by the Electrochemical Society, was awarded to him Oct. 7 of this year.

Dr. Hackerman was born in Baltimore, MD, in 1912. He did both his undergraduate and graduate work at Johns Hopkins University. After a brief time teaching at Loyola College in Baltimore, he worked as a research chemist at Colloidal Corp. in Baltimore and Kellex Corp. in New York, with a faculty position at VPI in between. He joined the University of Texas as an Assistant Professor in 1945. He became Full Professor in 1950. He became Department Chair in 1952 and Vice President and Provost in 1962. He was appointed to his present position in 1963,

Dr. Emmett B. Carmichael of the Medical College and School of Dentistry of the University of Alabama has been awarded the 1965 Southern Chemist Award.

In the Dallas-Ft. Worth ACS Section, at Texas Woman's University **Dr. Helen B. Ludeman** attended the Midwestern Regional Conference of the National Science Teachers Association. **Dr. Robert W. Higgins** attended the Southeast-Southwest Regional ACS Meeting in Memphis. A recent Welch speaker at TCU was **Dr. Isadore Perlman** of UC-Berkeley, whose topic was "Chemical Information from Nuclear Processes."

The Chemistry Department of the University of Houston has received a $10,000 grant from Humble Oil and Refining Co. The university is scheduling a course on "Chemistry of High Polymers" to be taught by **Dr. Raymond B. Seymour** and **Dr. Juan A. Subirana**.

Contributed by E. Thomas Strom

...And Another Thing…

by Denise L. Merkle, PhD

My grad school years coincided with the integration of personal computers into general laboratory use. What joy it was to compose a thesis on a Mac, unhindered by correction ribbon, uneven margins, or - horror or horrors- noncompliant References layouts. Yes, it was distressing that the Mac, inconstant being, took on the settings of each user, so that after a break, the data of one's heart (and titration) often reappeared arrayed to suit the preferences of the scientist who used the Mac while one was guzzling coffee, but the agonized screams of the unexpectedly re-formatted were nothing compared to those of the poor souls who Missed A Line While Typing. And what a thrill it was to draw the figures on a computer. Early drawing programs were so crude, a kindergartner with a crayon was more artistic, but this, THIS was modern science.

Modern Science, of course, really doesn't exist. Not so very long ago Calculators were Modern Science. What an amazing contribution they were -except to those- including scientists- who Did Not Trust Them. One of the Professors on my Grad Board Committee was an *ab initio* kind of guy. No fancy gizmos for him! In one Comprehensive Exam, Dr. NoGizmo asked the poor Masters candidate to calculate a logarithm. The startled student, who had perhaps witnessed logarithmic derivation in some long-ago history class ('Look what we used to have to do! Can you imagine?') replied as best he could, "If I need to know logs, I look them up". Undeterred, and incensed by the lack of knowledge in Modern Students, Dr. NoGizmo countered with, "You need to know *now*". No one heard if the Modern Student passed his Comps and continued on to complete a doctorate, but the anecdote epitomizes something we all fight. What is real, what will last, what do we need to know? How to we apply it? And When?

Is this just a Time Will Tell situation? Or do we, as scientists, focus on and develop those advances that work for us, thereby creating our own personal evolution, our scientific Survival of the Fittest? How and When do we share or even commercialize what we've done- and learned- and when do we decide that it's back to the slide rules for us? Just today, I was chatting with a friend who is battling a malignancy of a particularly recurrent kind. She asked me why Modern Medicine waited until the patient had no hope before pulling out the Modern treatments that, in all likelihood, would permanently rid patients' bodies of rogue cells. I know the standard answers to this question. FDA. Un-

known Outcome. Risks. Clinical Trials. All Modern, and all lame. 'What is the point of all this?', you ask. Modern Science, like calculators, computers, 747s, microwave ovens, Mass Specs, UHPLCs and personal espresso machines, marches on. Modern Medicine does, too. It's never truly Modern- there's always something Newer. Bigger. Faster. Better. And one day, maybe, instead of running up against the lame limits of Modern Anything, scientists and healers will easily, naturally and successfully employ the tools that were in their cumbersome, risky, not to be trusted infancy, back when they really weren't Modern at all. (Keyboarded on a Mac. With Track Changes off).

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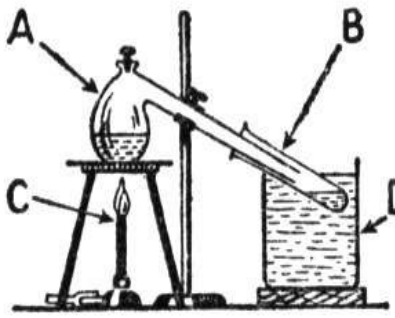


A, retort; B, receiver; C, flame to heat retort; D, water to keep receiver cool.

From the ACS Press Room

A simple, rapid test to help ensure safer meat

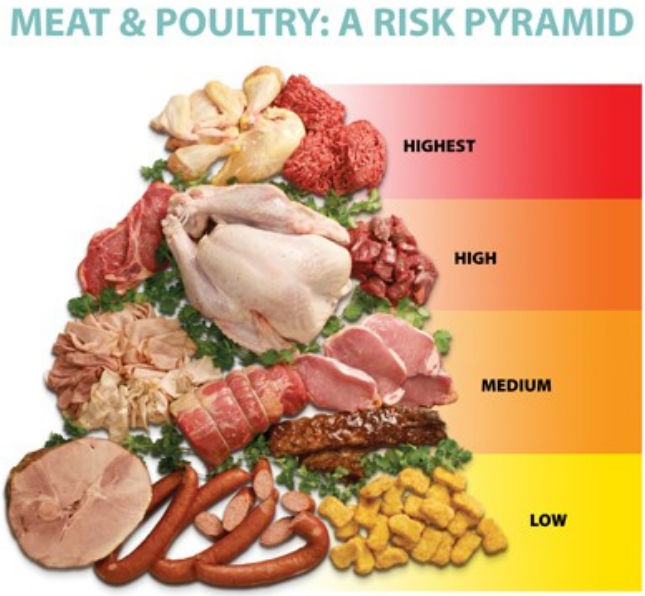
Detection of Amines with Fluorescent Nanotubes: Applications in the Assessment of Meat Spoilage

ACS Sensors

Deciding whether to cook or toss a steak that's been in the fridge for a few days calls for a sniff test. This generally works well for home cooks. But food manufacturers that supply tons of meats to consumers require more reliable measures. In a new journal called ACS Sensors, scientists report a simple method that uses nanotubes to quickly detect spoilage. It could help make sure meats are safe when they hit store shelves.

Transporting meats and seafood from the farm or sea to the market while they're still fresh is a high priority. But telling whether a product has gone bad isn't a simple process. Current strategies for measuring freshness can be highly sensitive to spoilage but require bulky, slow equipment, which prevents real-time analysis. Some newer methods designed to speed up the testing process have fallen short in sensitivity. Yanke Che and colleagues wanted to develop one simple test that could deliver both rapid and sensitive results.

The researchers turned to highly fluorescent, hollow nanotubes that grow dim when they react with compounds given off by meat as it decomposes. To test the nanotubes, the team sealed commercial samples — 1 gram each



— of pork, beef, chicken, fish and shrimp in containers for up to four days. When they exposed the portable system to a teaspoon of vapor emitted by the samples, it reacted in under an hour, fast enough to serve as a real-time measure of freshness. The researchers also found that if the tubes' glow dulled by more than 10 percent, this meant a sample was spoiled. The authors acknowledge funding from the Chinese Academy of Sciences.

From the ACS Press Room

Coffee compounds that could help prevent type 2 diabetes identified

Cafestol, a Bioactive Substance in Coffee, Stimulates Insulin Secretion and Increases Glucose Uptake in Muscle Cells: Studies in Vitro

Journal of Natural Products

Much to coffee lovers' delight, drinking three to four cups of coffee per day has been shown to decrease the risk of developing type 2 diabetes. Now, scientists report in *ACS' Journal of Natural Products* that they have identified two compounds that contribute to this health benefit. Researchers say that this knowledge could someday help them develop new medications to better prevent and treat the disease.

Patients with type 2 diabetes become resistant to insulin, a hormone that helps turn glucose from food into energy. To overcome this resistance, the pancreas makes more insulin, but eventually, it just can't make enough. High blood glucose levels can cause health problems, such as blindness and nerve damage. Several genetic and life style risk factors have been linked to the development of type 2 diabetes, but drinking coffee has been shown to help prevent its onset. Caffeine was thought to be responsible, but studies have shown it has only a short-term effect on glucose and insulin, and decaffeinated coffee has the same effect as the regular version of the drink. To investigate which of coffee's many bioactive components are responsible for diabetes prevention, Søren Gregersen and colleagues tested the effects of different coffee substances in rat cell lines.

The researchers investigated different coffee compounds' effects on cells in the lab. Cafestol and caffeic acid both increased insulin secretion when glucose was added. The team also found that cafestol increased glucose uptake in muscle cells, matching the levels of a currently prescribed antidiabetic drug. They say cafestol's dual benefits make it a good candidate for the prevention and treatment of type 2 diabetes. However, because coffee filters eliminate much of the cafestol in drip coffee, it is likely that other compounds also contribute to these health benefits. The authors acknowledge funding from Aarhus University.

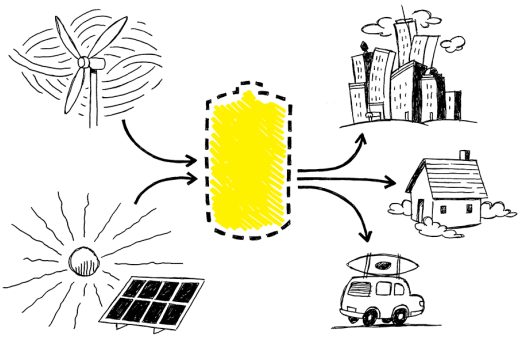
From the ACS Press Room

New low-cost battery could help store renewable energy

Efficient and Inexpensive Sodium-Magnesium Hybrid Battery

Chemistry of Materials

Wind and solar energy projects are growing at a respectable clip. But storing electric power for days when the air is still or when the sun goes down remains a challenge, largely due to cost. Now researchers are developing a new battery that could bring the price of storage to more affordable levels. They report their new battery that uses low-cost materials — sodium and magnesium — in ACS' journal *Chemistry of Materials*.



Today, lithium-ion batteries are the storage technology of choice for many applications, from electric cars to smartphones. And, it appears, saving up power for homes is next. For example, Tesla, the maker of luxury electric cars, is ambitiously expanding its lithium-ion technology to fill that niche and has already started rolling out systems to homeowners in a pilot project. But the $3,000 price tag for the pack itself plus installation costs put it out of reach for most customers. To make larger-scale energy storage more accessible, Maksym V. Kovalenko and colleagues wanted to develop an affordable alternative to lithium-ion.

The researchers started with magnesium as the battery's safe, inexpensive and high-energy density anode material and paired it with pyrite, which is made of iron and sulfur, as the cathode. The electrolyte — the electrically conducting component — contains sodium and magnesium ions. Testing showed that the resulting device's energy density was close to that of lithium-ion batteries. It could get an additional two- to three-fold boost with further development of magnesium electrolytes. And because it's made with low-cost materials, it could one day help support grid-scale energy storage, the researchers say. The authors acknowledge funding from ETH Zurich, the Swiss Federal Commission for Technology and Innovation.

From the ACS Press Room

New stretchable, wearable sensor made with chewing gum

Gum Sensor: A Stretchable, Wearable, and Foldable Sensor Based on Carbon Nanotube/Chewing Gum Membrane

ACS Applied Materials & Interfaces

Body sensors, which were once restricted to doctors' offices, have come a long way. They now allow any wearer to easily track heart rate, steps and sleep cycles around the clock. Soon, they could become even more versatile — with the help of chewing gum. Scientists report in the journal ACS Applied Materials & Interfaces a unique sensing device made of gum and carbon nanotubes that can move with your most bendable parts and track your breathing.

Most conventional sensors today are very sensitive and detect the slightest movement, but many are made out of metal. That means when they're twisted or pulled too much, they stop working. But for sensors to monitor the full range of a body's bending and stretching, they need a lot more give. To meet that need, some researchers have tried developing sensors using stretchy plastics and silicones. But what they gained in flexibility, they lost in sensitivity. Malcolm Xing and colleagues found a better solution right under their noses — and in their mouths.

To make their supple sensor, a team member chewed a typical piece of gum for 30 minutes, washed it with ethanol and let it sit overnight. The researchers then added a solution of carbon nanotubes, the sensing material. Simple pulling and folding coaxed the tubes to align properly. Human finger-bending and head-turning tests showed the material could keep working with high sensitivity even when strained 530 percent. The sensor also could detect humidity changes, a feature that could be used to track breathing, which releases water vapor with every exhale.

Around the Area

UT Arlington

Dr. Sandy Dasgupta has received the following four grants: "Detection of Amino Organics on an Open-Tubular Ion/Liquid Chromatograph," NASA, $983,311, Three Years; "GOALI: A Miniature Ion Chromatograph and Chromatography Imaging," NSF, $450,000, Three Years; "An Implantable In-line Shunt Flow Monitor for Hydrocephalus Treatment," TexasMRC, $100,000, One Year; "Sensitive Optical Detection in Small Capillaries," Agilent Technologies, $59,952, One Year. Sandy recently was elected an honorary member of the Japan Society for Analytical Chemistry, an honor given to less than 20 foreign scientists. He also won the ACS Calvin Giddings Award in Chemical Education and was elected a Fellow of the Institute of Electrical and Electronics Engineers.

Dr. Krishnan "Raj" Rajeshwar was a guest of the Mexican Hydrogen Society and gave a plenary talk at their annual meeting in Mexico City in September. He was invited by the German Research Foundation to be a member of the review panel for their priority program in solar water splitting. The panel meeting was held in Cologne, Germany in October. He was also an invitee of the Korean Electrochemical Society and gave another plenary lecture at their annual meeting in Changwon City in November. Finally, as a member of the international organizing committee, he attended the workshop on Renewable Energy and Nanomaterials (WREN 2015) in Belen, Brazil, and presented an invited talk there.

University of North Texas

Angela Wilson will be heading the Chemistry Division of the National Science Foundation starting in March. She is leaving the DFW area, taking the NSF leadership rotation from a new university - Michigan State University, where she has accepted an endowed chair position.

Collin College

Professor of the Year Award goes to Amina El-Ashmawy of Collin College for her accomplishments both inside and outside the classroom, **Amina K. El-Ashmawy** has been named a 2015 U.S. Professor of the Year. El-Ashmawy, who is a member of the American Chemical Society (ACS), is one of just four professors to earn this year's national honor.

El-Ashmawy, a professor of chemistry at Collin College in McKinney, Texas, was selected as Outstanding Community Colleges Professor of the Year

through a program sponsored by the Council for Advancement and Support of Education and the Carnegie Foundation for the Advancement of Teaching.

"I teach to make a long-term, positive impact on students' lives by making science fun, interesting and relevant," El-Ashmawy says. "I use everyday examples and analogies to make each topic memorable and relevant. A bad hair day becomes a hydrogen-bonding phenomenon, and cooking spaghetti becomes an exercise in intermolecular forces and time management." She also helps students understand how the material they are learning relates to important societal challenges.

El-Ashmawy earned an A.S. in science from Kilgore College in Kilgore, Texas; a B.A. in chemistry from Texas A&M University in College Station; and a Ph.D. in chemistry from the University of North Texas in McKinney.

University of Arkansas

Arkansas INBRE Conference 2015 INBRE Conference: https://inbre.uark.edu

The 2015 Arkansas NIH INBRE Conference featuring undergraduate research was hosted Nov 6-7 in Fayetteville by the Departments of Chemistry/Biochemistry, Biological Sciences, and Physics. The conference participation was full to capacity, with 435 registrants and 170 abstracts.

Faculty talks at the Friday plenary session were presented by:
Dr. Hugh Churchill, Assistant Professor of Physics, UA-Fayetteville
Dr. Andrew Schurko, Assistant Professor of Biology, Hendrix College
Dr. Roger Koeppe II, Professor of Chemistry and Biochemistry, UA-Fayetteville

The Friday evening keynote speaker, Alex Badyaev, Professor, University of Arizona, spoke on "Islands in the sea of possibilities: Making sense of biological diversity in the era of genomics." Dr. Badyaev addressed an apparent paradox that the age of most genes exceeds the longevity of particular species by many orders of magnitude. He enlightened the audience concerning network mechanisms that may underlie complex adaptations such as the direct color diversification in birds and the aerial adjustments of flying squirrels.

From among 127 undergraduate presentations, the following awards were presented:

Biology

1st Place, Oral: Morgan Tripod, Arkansas State University

2nd Place, Oral: Quinton Anderson, Harding University

1st Place, Poster: Jami Schmidt, Lyon College

2nd Place, Poster: John Givler, Ouachita Baptist University

Chemistry and Biochemistry

1st Place, Oral: Katherine Demaree, University of Central Arkansas

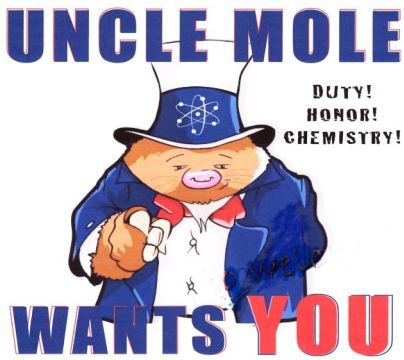
2nd Place, Oral: Sky Cochrane, Rhodes College

1st Place, Poster: Jordana Thibado, UA-Fayetteville

2nd Place, Poster: Gene Lamanilao, Rhodes College

Physics
1st Place, Oral: Gabrielle Abraham, UA-Fayetteville
2nd Place, Oral: Darryl Webb, Southern Arkansas University
1st Place, Poster: Ricardo Romo, Southern Arkansas University
2nd Place, Poster: Lawrence Benzmiller, University of Central Arkansas

The next Arkansas INBRE Conference is being planned for October 21-22, 2016.



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Send your seminar schedules for the semester or the year to the Southwest RETORT!

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FIVE QUESTIONS FOR…

In keeping with a theme of 2015 as a year of change, our December 5Q interviewee is **Angela K. Wilson**, Ph.D., Regents Professor of Chemistry and Associate Vice Provost for Faculty at the University of North Texas, soon to be a Spartan. The research pursued by Dr. Wilson's group "can be classified as computational and theoretical physical chemistry, and focuses upon the development and understanding of computational methodologies, and studies in heavy element chemistry, catalysis, protein modeling, drug design/ understanding of disease, metal organic frameworks, green chemistry, and many other areas." Since 2003, Dr. Wilson has served ACS as a Councilor for the Physical Chemistry Division, a position she must reluctantly vacate to fulfill her new responsibilities at NSF.

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

I was in high school. I really enjoyed my science classes - particularly the laboratory aspects. In one class period, my chemistry teacher decided to cut a small piece of sodium from a large piece while holding it over a beaker of water. Well, the large piece went in the water, and that made for a particularly inspirational day! Of course, I also really enjoy math. So, in college, I changed majors many times, switching between the sciences, math, and accounting/management. Ultimately, I chose chemistry with minors in math and physics, earned my Ph.D. in chemical physics, and then later took MBA coursework.

2. *What one aspect of your career do you most enjoy? Which component of a chemistry career do you most dislike?*

It is hard to select just one aspect. I enjoy seeing my students gain new knowledge and make new discoveries, I am delighted to see students or junior colleagues whom I have mentored excel in their careers, I like to gain new insight about a problem, I enjoy new projects and opportunities for collaboration.... We are very fortunate to be in a field with so many enjoyable aspects.

Perhaps ironic considering my upcoming role, the component that I most dislike is a necessary piece of academic life for many chemistry professors: Grant Proposals. While I thoroughly enjoy bringing together new ideas and new people for a collaboration, the experience of putting so much effort into these proposals- that sometimes go unfunded- is not an aspect that any of us like.... If only there was funding for all good scientific ideas!

3. *In the very near future UNT will be in your past, and the new phases of your career will include being both a Spartan, as the Hannah Professor of Computational Chemistry at Michigan State University, and being the Director of the Division of Chemistry of the*

National Science Foundation. Which aspects of these new opportunities are you most excited to experience? What will be your primary goals in these prestigious roles?

As a soon-to-be-Spartan, I would be remiss if I did not first mention that I am excited to experience this year's Cotton Bowl! In addition to this, I am very excited about the collaborative opportunities that MSU will provide. MSU is a first-rate university with very strong programs in chemistry, physics, a new computational sciences department, and more. There are a lot of very exciting research opportunities to explore, and being at MSU will be a terrific opportunity for me - and my research group.

For NSF, I am very excited to have the opportunity to get to know much more about the significant breadth of research that is occurring across the country. I look forward to working with the very dedicated NSF staff and rotators who try their best to fund as much science as they possibly can with the budgets that they have.

At MSU, one of my goals is to establish a computationally-based research center; the details for this center are in the planning stages, but a prime focus for the center will be to bring together faculty from diverse research areas for collaborative opportunities. More details will be forthcoming.

In regards to NSF, while I do have areas that I wish to focus upon, until I am in my new role, it is a bit preliminary for me to outline goals. Overall, I believe partnering with other agencies, directorates, or divisions in areas of increasing interdisciplinarity is important, and, indeed, many areas within chemistry could be greatly enhanced by strategic partnerships. I look forward to a deeper discussion about goals next fall, after I have been at NSF for a number of months and have a greater perspective about the scientific landscape on the national level, as well as at NSF.

4. *How did your interactions with and volunteerism in the American Chemical Society help you advance your life as a scientist? Do you have advice for anyone who might be considering more involvement in ACS?*

ACS has been very important in my life as a scientist, as have IUPAC and APS. The opportunities and experiences that ACS has provided have resulted in an incredibly valuable source of contacts and collaborators through the years, from a scientific perspective, from a leadership perspective, and, from the perspective of opportunities. I have learned so much from the colleagues that I have gotten to know through my interactions with and volunteerism in ACS.

Get Involved! Do not wait until the perfect time comes along "when you

are not so busy" or the perfect committee. There is no perfect timing (as it is rare to find ourselves becoming less busy!) nor perfect committee. There are plenty of opportunities for involvement, from attending local section meetings and volunteering with the local section, to involvement at the regional and national levels. Scan the ACS websites to see what activities are offered, and then make some contacts. You do not have to run for a position to be involved. Opportunities abound, regardless of your experience level, from serving as a career consultant or being a part of the leader training team to being an active member of the Younger Chemists Committee or other committee. There really is so much more than what I have mentioned. Of course, my chemistry colleagues have also led me to other activities such as white-water rafting, playing soccer in a league (though I have retired now after the last injury!), and lots of advice about orthopedic surgeons.

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

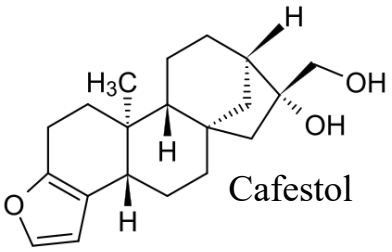
I do not have just a single science hero. I have many role models whom I find to be inspirational. These are people who make notable accomplishments in more than one area, while still being very much down-to-earth. A number of Nobel Laureates were always willing to have long conversations with me, even when I was a student; some of my colleagues who are at four-year and two-year universities work incredible hours but have lifelong impact on the career directions of so many students - they are often the initial spark that drives so much of the incredible energy that we see in our field; colleagues who are highly accomplished researchers or leaders, but also find time to dedicate to advancing science for the broader community, taking time out of their days to go beyond their own research, laboratory, or other responsibilities; colleagues in industry or government laboratories who solve real-world problems, yet find the time to mentor students or otherwise engage in outreach; colleagues who have successfully pursued other directions, in areas where there is a great need for more scientists, whether in politics or public policy, or leadership, including senior university administration.

Thank you, Dr. Wilson, for your interesting remarks and your years of dedication to the DFW local section of the ACS! Best wishes for continued success in your new endeavors.

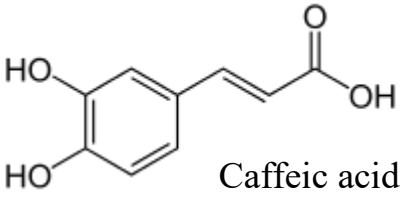
Interviewees for 2016 are needed. To participate, contact retort@acsdfw.org.

From the editor

We have some interesting news on the beneficial health effects of coffee. It has been known for a while that coffee drinking is good for your health. In April of this year, a study published in the journal Nature found that "habitual" coffee drinkers who consume more than 1.5 cups of coffee a day cut their risk of developing the disease by more than half. A 2014 study published in Diabetes Care found that one-cup-a-day coffee drinkers cut their relative diabetes risk by 92%. Those who drank 3 cups a day cut their risk by 79%, and the biggest coffee lovers (6 cups a day) reduced their risk by 67%. It's not caffeine, as drinking decaf has the same effect. Now Søren Gregersen and colleagues, of Aarhus University Hospital in Denmark, have isolated some of the compounds responsible for this effect. Using rat cell lines, they found that cafestol and caffeic acid both increased insulin secretion in the presence of glucose.



Cafestol



Caffeic acid

Interestingly, most cafestol is removed by coffee filters (get out the French press pots), so there are other molecules involved in this process. So...let's have another cup of coffee, let's have another piece of pie*—what? No pie?

Best regards,
Connie

*Let's Have Another Cup of Coffee is a song by Irving Berlin appearing in the musical comedy *Face the Music*.