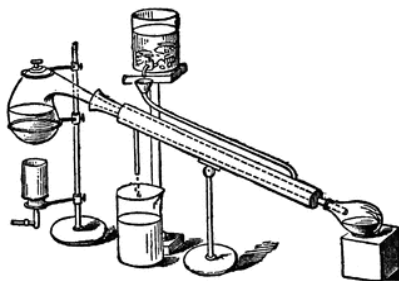




SOUTHWEST RETORT



SIXTY-SIXTH YEAR

FEBRUARY 2014

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

published by

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Editorial and Business Offices:

**Editor: Connie Hendrickson, 802 South Jefferson, Irving, TX 75060;
972-786-4249; retort@acsdfw.org**

Copy Editor: Mike Vance, vance2276@gmail.com

**Business Manager: Danny Dunn, 6717 Lahontan, Fort Worth, TX 76132;
817-361-0943; dannyldunn@sbcglobal.net**

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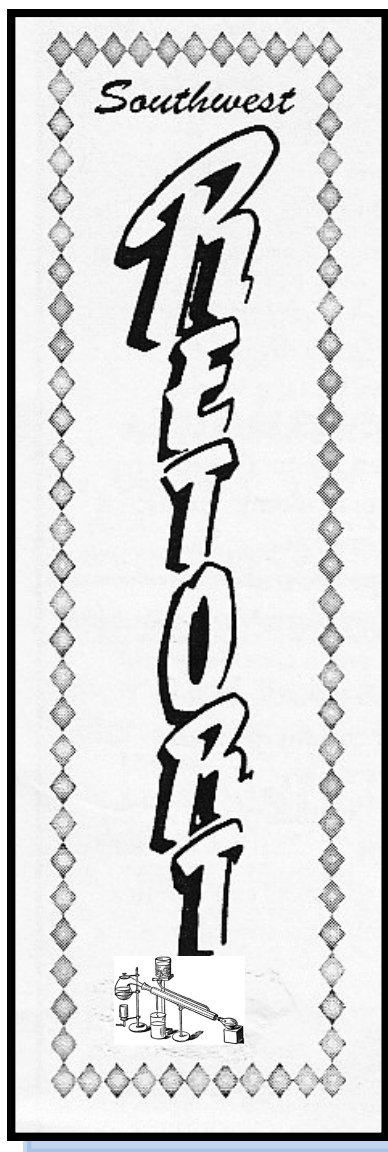


TABLE OF CONTENTS

Fifty Years Ago.....5

Employment Listings.....3-4

ARTICLES and COLUMNS

Changing Sun, Changing Climate?7

And Another Thing.....9

Five Questions.....25

From the Editor.....26

NEWS SHORTS

Preserving bones.....12

Fixing damaged hearts18

Solar powered fabric battery.....24

AROUND-THE-AREA.....21-23

DFW SECTION NEWS

National Chemistry Olympiad.....16

Call for Nominations.....17

Volunteers needed ACS National.....20

Volunteers needed SWRM 2014.....20

Letters from the Officers.....19

MEETINGS and EVENTS

DFW February Meeting.....15

CTA events at National ACS.....13-14

ACS Webinar.....11

ASMD@D March 1-4.....10

INDEX OF ADVERTISERS

ANA-LAB.....6

Huffman Laboratories.....3

Contact the DFW Section

General: info@acsdfw.org

Education: ncw@acsdfw.org

Elections:
candidates@acsdfw.org

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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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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.

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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.

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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

This year's ACS Southwest Regional Meeting will be Dec. 3-5 at Shreveport, LA, with headquarters at the Captain Shreve Hotel. The General Chairman will be **Dr. Edward C. Greco** of the United Gas Corp. in Shreveport, and the Technical Program Chairman will be **Dr. Alan H. Crosby** of Northwestern State College in Natchitoches, LA.

The February ACS tour speakers will be **Dr. W. W. Wendlandt** of Texas Tech University and **Dr. Pete D. Gardner** of the University of Texas. Dr. Wendlandt's talk will be on "Thermal Methods for the Investigation of Chemical Reactions," while Dr. Gardner will speak on one of two topics: "Some Aspects of Quinone Methide and Xylylene Chemistry" or "Medium Ring Allenes and Polyenes."

University of Texas chemistry faculty have recently received important research grants. **Dr. M. Van Winkle** has received a \$32,000 NSF grant to study "Frothing in Fractionating Columns." **Dr. D. J. Cox** was awarded a \$14,260 NIH grant for "Preferential Hydration of Proteins." The Welch Foundation gave a \$45,000 grant to **Dr. Alan H. Cowley** to study "Chemistry of the Phosphorus-Phosphorus Bond." **Welch Professor. M. J. S. Dewar** has several grants. They are \$29,076, "Pi-Electron Distribution and Substituent Effects in Aromatic Systems," Army Office of Scientific Research; \$11,636, "Heteroaromatic Boron Compounds as Therapeutic Agents," NIH; \$34,233, "MO Calculations of Biological Interest," NIH; \$50,000, "The Relationship between Chemical Behavior and Molecular Structure,"

Welch Foundation; and \$52,347, "Oxidation of Aromatic Compounds by Electron Transfer," Air Force Office of Scientific Research.


The Dallas Society of Analytical Chemists has elected their board for 1964. The officers are: Chief Analyst, **Graydon B. Larrabee**; Assistant Chief Analyst, **James Patton**; Recording Analyst, **Robert Graham**; and Statistical Analyst, **Ernest Dean Evans**.

At the University of Houston **Drs. John Oro** and **Albert Zlatkis** were ACS tour speakers during the month of November. New faculty members at the university are **Dr. John Bear** and **Dr. Richard Fuchs**. Completion of a \$3.5 million chemistry building is expected by the end of next year.

At Baylor the formal dedication of the new Marrs McLean Physical Science Building took place on Feb. 1. The principal speaker at the dedication was **Professor W. O. Milligan**, Vice-Chancellor for Research at TCU and Director of Research for the Welch Foundation.

Contributed by
E. Thomas Strom



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Changing Sun, Changing Climate?

By
John E. Spessard, PhD, PE



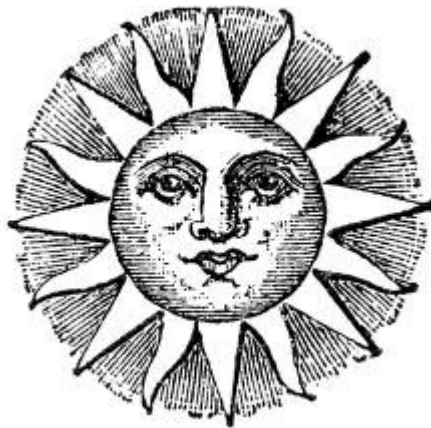
Solar energy drives the Earth's weather. Therefore, can solar variations cause major climate changes? Man has studied the sun for centuries. That is long before the Industrial Revolution and the reliance on fossil fuels. Yet during this time the Earth's climate has undergone wide variations.

Climate study has been a life or death concern for humans through thousands of years. It is crucial to know when crops can be safely planted and harvested. Plant too early: A late freeze gets you and you starve. Plant too late: An early freeze gets you and you starve.

Recent satellites have been able to directly measure the energy output of the sun. The measurements have shown that the sun's energy output varies by about 0.1% over each of the three observed 11-year cycles. Sun spots appear to determine the sun's energy output. The output is higher with increased sun spot activity and lower when there are fewer sunspots. Sunspots are relatively dark areas on the sun's surface where intense magnetic activity inhibits convection and cools (relatively!) the sunspot area. However, since faculae form around the sunspot areas and are slightly brighter, the overall effect is higher solar radiation when sun spots are active. Ultraviolet radiation varies by about 1.5% over an 11-year solar cycle. However, since UV radiation does not reach the earth's surface (the ozone lay-

er) it is believed not to have much impact upon earth's weather. Increased UV radiation does increase ozone levels.

Astronomers started observing sunspots through telescopes at about 1610 and records have been continuously kept about the number and size of sunspots. An 11-year maxima to minima cycle has been recognized and accepted. There is also a 22-year cycle when the sun's magnetic field reverses. So a full cycle is about 44 years and this is also accepted. Observers have postulated longer period cycles and correlations between sunspot activity and climate, but acceptances of these conclusions are definitely not unanimous. There is some belief that solar activity is responsible for part but not all of the 20th century global warming.



The "solar wind" is an outflow of ionized particles from the sun. These are mainly protons and electrons. An increase in solar activity (more sunspots) is accompanied by an increase in the "solar wind." Galactic cosmic rays are very high energy radiation that penetrates the earth's atmosphere. The solar wind, the solar magnetic field and the Earth's geomagnetic field partially deflect galactic cosmic rays. Therefore, periods of high sunspot activity have less galactic cosmic ray bombardment.

Cosmic ray activity over past periods can be measured by carbon -14 (tree rings) and beryllium-10 levels. These isotopes are formed by cosmic ray interaction with nitrogen -14. In the C-14 case, the initial product is N-15 which emits a positron. In the Be-10 case, N-14 emits an alpha particle. Therefore high C-14 and Be-10 levels correlate with high cosmic rays and low sun spots. This makes it possible to try and correlate climate with sun spot activity. As measured by C-14 in tree rings, sunspot activity has been high over the last 70 years. The last period of such activity was about 9000 years in the past and the present level of activity has taken place about 10% of the time.

Cosmic radiation is lower during periods of high solar activity because of the solar wind sweeping the rays out. Cosmic radiation can cause ionization which will cause condensation of aerosols (suspended solid particles and vapor). The ionization is the precursor to cloud formation. (Remember the Wilson Cloud Chamber?) The United Nations International Governmental Panel on Climate Change concedes that “Clouds and aerosols continue to contribute the largest uncertainty to estimates and interpretations of the Earth’s energy budget.”

This is an introduction to an introduction of a very complex and not well understood field.

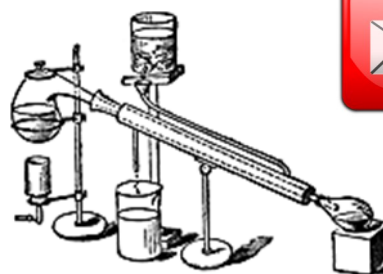
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...And another thing...

By Denise L. Merkle

Quack

Ten years ago or so while attending SPIE's Photonics BIOS conference, I had the great good fortune to wander into the Symposium of Unclassifiable Topics. All meetings have these sessions, chock full of intriguing talks that don't really fit under a specific title.

My advice to meeting-goers: ***Don't miss them.*** There were two talks that really stuck with me. Measurement methods presented in 'The Energy of Chakras' are vague now, however the image of the presenter—a tall man, dressed in a shalwar kameez, and describing the results of detecting energy in the body—is not vague at all. In a subsequent talk, Prof A asked a pointed and not very polite question of a graduate student presenter (Grad B), whereupon the student's advisor (Prof B) leapt to his feet and began to answer—*not* calmly. Prof A then sprang to his feet, as did *his* student, and what was expected to be a brief post-talk Q&A rapidly developed into a passionate defense of the professors' respective conclusions, with a noticeable component involving denunciation of any other interpretations. The points of view held by the two groups were obviously strongly supported, quite different, and very, very incompatible. Other attendees suddenly realized that their next talks of interest were being held elsewhere, and my standard plan of sitting near the door wasn't its usual excellent idea. I didn't move as fast as some of the escapees and was nearly trampled. But it made me think: What is valid, what is not, and how do we know?

How many scientists are trained to be completely open-minded, especially when they

might have heard nothing about the research? Do we now embrace the ideas that the earth orbits the sun, hand washing prevents spread of disease, illnesses are caused by microbes and not demons, and light can both stimulate cell growth and initiate apoptosis?

Most scientists—laypeople, even—would now agree that the earth orbits the sun. We'd likely be horrified if a medical professional proposed to treat us while still covered in the blood of recent patients, and it's doubtful that that a paper attributing a bacterial infection to evil forces would be accepted into a journal. That's Now. How would scientists have reacted 100, 200, 500 years ago? Do we all accept that light can be used to stimulate cell growth—or, at different wavelengths and intensities, induce immunity to malignancies? For some of us, maybe, or maybe not. The Now for a lot of knowledge isn't quite here yet. The data may not yet exist, and many years can be required for procedures and conclusions to be fully defined.

What is the point of all this, you may ask? The point is that, in so many fields, *we still don't know.* Our Now isn't quite enough. What looks like quackery may in fact be real. Recognition of detection limits, the ability to think beyond dogma, the willingness to assess and not just accept, and to guard against complacency must be with us all the time. Our goals should be to consider without prejudice new ideas, and allow data, as we have it Now, to guide but not limit our responses. That being said, does anyone know which supplier carries eye-of-newt?

Welcome To ASMD@D

The Somewhat Different Conference

<http://smu.edu/austinsymposium/>

The **25th Austin Symposium on Molecular Structure and Dynamics at Dallas (ASMD@D)**, will take place at the Double Tree Hotel, Campbell Center, Dallas, from **March 1-4, 2014**. The conference will be held in memoriam of Professor James E. Boggs, who organized the first 23 Austin Symposia in the time from 1966 to 2010 before the conference moved to Dallas. The ASMD@D 2014 will be organized in the spirit of previous symposia:

Listen and discuss

Meet international experts

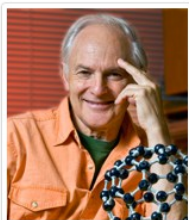
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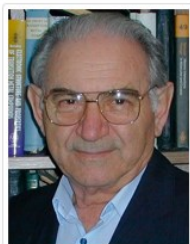
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Featured speakers

Sir Harold Kroto



Professor Issac Bersuker



Professor Louis Echegoyen



Professor Anne McCoy



Professor Martin Quack



Professor Martin Suhm



For the list of confirmed speakers, check the website.

We hope to see you in March.

Professor Dieter Cremer Professor Elfi Kraka
Chairs of the Organizing Committee of ASMD@D
Department of Chemistry, SMU, Dallas, Texas



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- 6:30 pm **Live Q&A**

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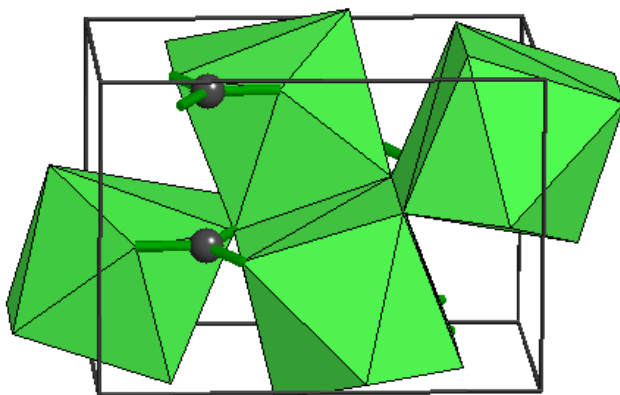
Seashells inspire new way to preserve bones for archeologists, paleontologists

Aragonite Crystals Grown on Bones by Reaction of CO₂ with Nanostructured Ca(OH)₂ in the Presence of Collagen. Implications in Archaeology and Paleontology
Langmuir

Recreating the story of humanity's past by studying ancient bones can hit a snag when they deteriorate, but scientists are now reporting an advance inspired by seashells that can better preserve valuable remains. Their findings, which appear in the ACS journal *Langmuir*, could have wide-ranging implications for both archeology and paleontology.

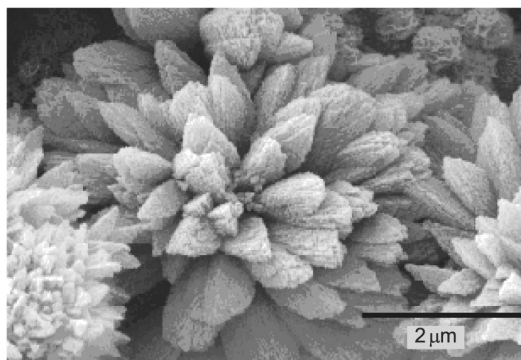
Luigi Dei and colleagues explain that a process similar to osteoporosis causes bones discovered at historically significant sites to become brittle and fragile — and in the process, lose clues to the culture they were once part of. Preserving them has proved challenging. Current techniques to harden and strengthen bones use vinyl and acrylic polymers. They act as a sort of glue, filling in cracks and holding fragments together, but they are not ideal. In an effort to stanch the loss of information due to damage, Dei's team set out to find a better way to preserve old bones.

The researchers turned to seashells for inspiration. Using skeletal fragments from the Late Middle Ages, they grew aragonite, a kind of lime that some sea animals produce to shore up their shells, on the bones in a controlled way. The treatment hardened the surfaces of the bones, as well as the pores inside them, making the ancient remains 50 to 70 percent sturdier. "These results could have immediate impact for preserving archeological and paleontological bone remains," the scientists conclude.



The authors acknowledge funding from Consorzio Interuniversitario per lo Sviluppo dei Sistemi a Grande Interfase (CSGI), Florence, Italy; the University of Florence; the TEMART Project funded by the European Fund for

Regional Development; the Tuscany region; and the S.I.C.A.M.O.R. PAR-FAS Project Tuscany Region.





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Coaching and Feedback* (Saturday, March 15, 1:00pm - 5:00pm)

Leading Without Authority (Sunday, March 16, 1:00pm - 5:00pm)

Engaging Colleagues in Dialogue (Monday, March 17, 8:00am - Noon)

Fostering Innovation (Monday, March 17, 1:00pm - 5:00pm)

Strategic Planning (Tuesday, March 18, 8:00am - noon)

A limited number of scholarships are available for ACS members on a first come-first-served basis. Contact leaders@acs.org to reserve your slot today. For more information about the ACS Leadership Development System[™] and detailed course descriptions, visit www.acs.org/leaderdevelopment.

*Sponsored by the Committee on Technician Affairs. If you're employed as a chemical technician and wish to attend this course, please mention code CTA to receive your scholarship.



** Courses are offered in conjunction with the ACS National Meeting. Meeting registration is not required to attend these courses. Scholarships cover course fee and materials.

FEBRUARY 26, 2014

The DFW Local Section presents:

Why are Women Underrepresented in Science? Evidence For and Against 5 Common Hypotheses

by Dr. Karla McCain

Associate Professor of Chemistry & Director of Accreditation
Austin College



This talk will explore the evidence for and against five common explanations for women's underrepresentation in science. The issues raised in these hypotheses range from the epistemology of the scientific method to possible differences in mathematical abilities between the genders to the difficulty in combining careers in science with family. Evidence from a variety of disciplinary perspectives will be presented to explain facts that seem contradictory on the surface. For example, women publish fewer papers in scientific journals, but are more cited by other authors. Women scientists report consistently that they have observed sexism and discrimination during their career, but never been the target of it themselves. One study has shown that a woman's resume needs to show twice the productivity as that of a man to be rated as having equal competence. Maria Goeppert Mayer did not receive tenure until after she won the Nobel Prize in physics. This material is taken from a course Dr. McCain developed and has taught in a variety of formats.

Karla McCain earned her BA in chemistry from Ohio Wesleyan University in 1998 and her Ph.D. in physical/analytical chemistry from the University of Utah in 2003. She has been a member of the faculty at Austin College in Sherman, TX, since then and is currently an Associate Professor of Chemistry and Director for Accreditation and Assessment. Her research interests are in the area of applying spectroscopy to solve problems and understand structure in interfacial systems, including dye-sensitized solar cells and organogels.

Meeting Date: Wednesday, February 26

Meeting Schedule: 6:30pm Social, 7pm Dinner & Announcements, 8pm Lecture

Location: Abuelo's (East Plano), 3420 North Central Exp., Plano, TX 75074

RSVP Deadline: Friday, February 21 RSVP Link: <http://bit.ly/1iDyX5R>

Ticket Price: \$20 per person (online price), \$22 per person (at the door price)

Menu: Buffet with Chile con Queso, Guacamole salad, Beef & Chicken Fajitas, beverage

Payment by credit card will be available online in advance, but only cash or check will be accepted at the door. For questions or concerns, please contact Chair Katie Walker at kawalker@austincollege.edu or (903) 813-3159.

NOTE: THERE WILL BE NO SECTION MEETING IN MARCH.

National Chemistry Olympiad



The DFW section of the American Chemical Society will be conducting its local qualifying exam for the 2014 National Chemistry Olympiad on Saturday, March 22, 2014, at 8:30 am, at the following locations:

The University of North Texas: Chemistry Building, Room 109

The University of Texas at Arlington: Baker Hall, Room 114

GENERAL INFORMATION

Parking information and maps are available at

<http://www.unt.edu/transit/pdf/parkingmap.pdf>

<http://www.uta.edu/maps/>

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PLEASE NOTE: There is no cost to students or teachers for this or the national exams. Copies of previous years' exams are available for practice: <http://www.acs.org/content/acs/en/education/students/highschool/olympiad/pastexams.html>

PRACTICE EXAMS

While 'walk-ins' are welcome, to help the coordinators anticipate how many exams to have available at each testing facility it is encouraged to pre-register for the local qualifying exam. Please Email or FAX the completed pre-registration form to Brad Pierce (bspierce@uta.edu) or FAX to 817.272.3808.

PREREGISTRATION

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 acsdw.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.

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 month at the Science Place in Dallas, and then be 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 fall meetings of the section.

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

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

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

Toward fixing damaged hearts through tissue engineering

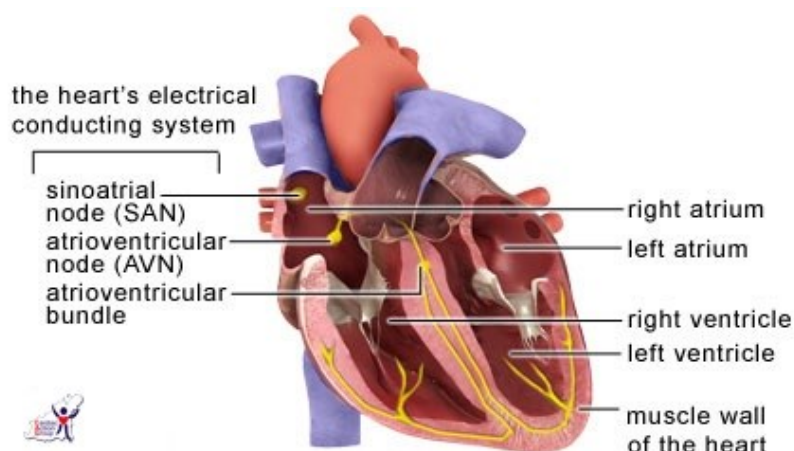
Electrically Conductive Chitosan/Carbon Scaffolds for Cardiac Tissue Engineering *Biomacromolecules*

In the U.S., someone suffers a heart attack every 34 seconds — their heart is starved of oxygen and suffers irreparable damage. Engineering new heart tissue in the laboratory that could eventually be implanted into patients could help, and scientists are reporting a promising approach tested with rat cells. They published their results on growing cardiac muscle using a scaffold containing carbon nanofibers in the ACS journal *Biomacromolecules*.

Gordana Vunjak-Novakovic, Rui L. Reis, Ana Martins and colleagues point out that when damaged, adult heart tissue can't heal itself very well. The only way to fix an injured heart is with a transplant. But within the past decade, interest in regenerating just the lost tissue has surged. The trick is to find materials that, among other things, are nontoxic, won't get attacked by the body's immune system and allow for muscle cells to pass the electrical signals necessary for the heart to beat. Previous research has

found that chitosan, which is obtained from shrimp and other crustacean shells, nearly fits the bill. In lab tests, scientists have used it as a scaffold for growing heart cells. But

it doesn't transmit electrical signals well. Vunjak-Novakovic's team decided to build on the chitosan development and coax it to function more like a real heart.



To the chitosan, they added carbon nanofibers, which can conduct electricity, and grew neonatal rat heart cells on the resulting scaffold. After two weeks, cells had filled all the pores and showed far better metabolic and electrical activity than with a chitosan scaffold alone. The cells on the chitosan/carbon scaffold also expressed cardiac genes at higher levels.

The authors acknowledge funding from Fundação para a Ciência e Tecnologia, POPH-QREN—Advanced Formation, the European Social Fund, the National Fund and the National Institutes of Health. The work was a collaboration between Columbia University and 3B's - University of Minho, Portugal.

DFW Officers Page

From the Chair...

When I ran for DFW Chair-Elect, I had three main goals for the local section:

1. Increase communication within and between the Executive Committee, committee chairs, and local section members.
2. Make local section meetings more welcoming to new and younger members.
3. Increase the number of non-traditional meetings & speakers to encourage diversity among our local section members that attend our monthly meetings. I think we've made some great strides towards all of these goals in 2013, and I plan to continue with these efforts into 2014 and beyond. Please read below for updates on some of our exciting upcoming events!

This month will introduce our second local section younger chemist webinar event at UTA on February 11 on "The Chemistry of Scent and Fragrance". Our last event in October had over 30 attendees from multiple universities and industry!

Don't miss out on the fajitas and stimulating discussion on Wednesday, February 26, at Abuelo's in Plano. Our February meeting will be addressing "Why are Women Underrepresented in Science? Evidence For and Against 5 Common Hypotheses" with Dr. Karla McCain of Austin College. Make sure you RSVP online by Friday, February 21: <http://bit.ly/1iDyX5R>

In March, we will not have a regularly scheduled meeting due to the multitude of conferences occurring in the metroplex: the 25th Austin Symposium on Molecular Structure and Dynamics will be in Dallas on March 1-4, Collin College hosts the Two-Year College Chemistry Consortium on March 14-15, and the

247th National Meeting will be here in Dallas on March 16-20.

Thanks to all of the local section members who responded to the call for volunteers! You should be contacted within the next week or two for scheduling. If you are attending the National Meeting, make sure you stop by our Local Section hospitality booth to check out all the great things the local section has been up to and to win door prizes!

Save the date for **the Meeting in Miniature: Saturday, April 26** at Texas Wesleyan University in Fort Worth. Stay tuned for more details about schedule and abstract submissions in the March Retort!

See you soon!
Katie Walker

From the Chair-Elect....

I was fortunate to have attended the ACS Leadership Institute that was held January 24th -26th here in Dallas. While I was there, I was able to meet so many wonderful local ACS section leaders passionate about chemistry. Through attending this institute, I developed several ideas about future events that we could plan and host to benefit our local section. I am particularly excited to begin efforts collaborating with the local section YCC designing events that will engage younger chemists in the area. Additionally, I believe that we can begin some work alongside local businesses and industries among the DFW community to provide more outreach events that truly demonstrate not only the importance of chemistry, but the fun in learning and appreciating chemistry.

All the best,
Shana Santos

DFW Section

VOLUNTEERS NEEDED!

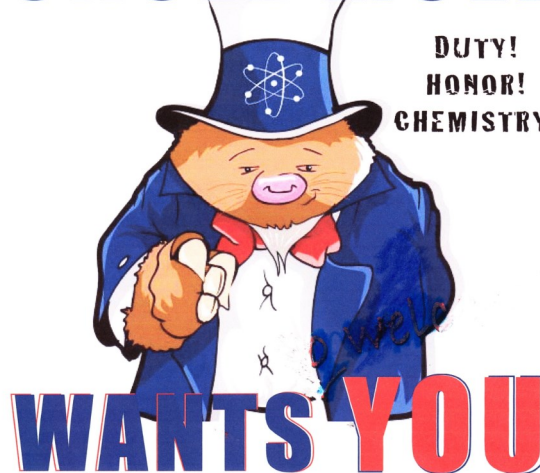
The 247th National ACS Meeting will be here in Dallas on March 16-20, 2014. Volunteers are needed for the Local Section Hospitality Booth, to help National with meeting logistics, and to help with the outreach event on Saturday, March 15. Help us show off our local section and DFW to chemists from across the nation! If you are interested, please fill out a **volunteer form** so we can contact you with further details:

<http://bit.ly/1m22B4F>

Kirby Drake is planning the 70th Southwest Regional Meeting to be held in Fort Worth in 2014. Please email Kirby (kirby.drake@kk-llp.com) if you are interested in serving as the **sponsorship/exhibitors chair**, **undergrad programming chair**, or a **symposium chair**.

UNCLE MOLE

DUTY!
HONOR!
CHEMISTRY!



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. If anyone would like to suggest a topic or organize a symposium, please contact Kirby Drake kirby.drake@kk-llp.com

or Danny Dunn
dannydunn@sbcglobal.net

Around the Area

UT Arlington

The January ACS meeting of the Dallas-Fort Worth Section was the DFW Young Investigator Symposium held Jan. 25 in the Baker Chemical Research Building at UTA. The symposium organizers were **Drs. Rasi-ka Dias** and **Frank Foss** of UTA and **Dr. Patty Wisian-Neilson** of SMU. About 60 people attended. Twelve assistant professors gave oral and poster presentations, and seven postdoctoral chemists also discussed their research findings.

UT-Arlington recently launched the Crandall Lectures in Chemistry and Biochemistry. These are sponsored by a generous endowment given by Keith Crandall. The initial speakers were **Dr. A. R. Ravishankara** of the NOAA Boulder Laboratory at the University of Colorado (Sept. 6) and **Dr. Richard Eisenberg** of the University of Rochester (Oct. 18).

Dr. E. Thomas Strom was the speaker at a recent monthly meeting of the Greater Houston ACS Section. His talk was on “*The*



Cyclohexadienyl Radical Problem and the Whiffen Effect. A Fore-shadowing of the Woodward-Hoffmann Rules?”

University of Arkansas

Stites Recognized for Service

In 2013, Professor Wesley Stites finished his term of service as one of 60 members of the Army Science Board. The ASB is a Federal Advisory Committee organized under the Federal Advisory Committee Act. It is the Department of the Army senior scientific advisory body that was char-



tered in 1977. The ASB advises and makes recommendations to the Secretary of the Army, the Chief of State of the Army, the Assistant Secretary of the Army for Acquisition, Logistics and Technology, the army staff, and major Army commanders on scientific and technological matters of concern to the Army.

Over the past two years, Dr. Stites worked on a study to evaluate all Army science and technology programs, taking him all over the United States visiting Army installations. As Vice-chair of the study, Stites was charged in particular with evaluation of research and development of Soldier Systems and Chemical and Biological Defense; tackling research programs on everything from uniforms, body armor, small arms, and

Around the Area cont.

food to stand-off biological agent detection and chemical agent neutralization. The effort culminated in a two week report-writing session at Fort Carson last summer alongside the other twenty ASB members from academe, industry, and retired military. The product of the panel's effort was briefed to Secretary of the Army, the Army Chief of Staff, and other Army civilian and military leadership this fall, and will be used in efforts to revamp the Army's research and development work as budgets drop and new challenges to national security unfold.

As his service ended, Dr. Stites was presented the Commander's Award for Civilian Service, the fourth highest award given by the Army to civilians and equivalent to an Army Commendation Medal. This is the second time he has received a Commander's Award; the previous award was for his seven years of service as a member of the federally established Citizens Advisory Commission supporting the Army's destruction of chemical weapons at the Pine Bluff arsenal.

Faculty Publications

Stratford R Jr, Vu C, Sakon J, Kati-kaneni R, Gensure R, Ponnappakkam T. *Pharmacokinetics in Rats of a Long-Acting Human Parathyroid Hormone-Collagen Binding Domain Peptide Construct.* *J Pharm Sci* 2014 Jan 7. doi: 10.1002/jps.23843. [Epub ahead of print]

Milana L, Justin N, Wei X, Jenkins SV, Chen J, Roper KD. *Aqueous Dispersion of Plasmonic Hollow Metal Nanoparticles.* **Materials Letters**, accepted.

East Texas Section

The February East Texas Section meeting will be Thursday, February 20, at Miller Science Building 137 on Stephen F. Austin University campus at 7 p.m. The speaker will be Dr. **Kefa Onchoke** of the SFA Chemistry Department.

Leroy Biggers (right) and **Ross Morgan**, both representing TCEQ (Texas Commission on Environmental Quality) were speakers at the January Northeast Texas Section meeting of Water Environment Association



of Texas (WEAT). At left is **Nancy Pasel**, president of the Northeast chapter. The meeting was sponsored by **Ana-Lab Corporation** and held at the Kilgore offices of Ana-Lab. The speakers provided updates on rules and regulations from TCEQ.

Texas Tech University

Bill Poirier, Professor in the Department of Chemistry & Biochemistry at Texas Tech University, was an invited speaker and participant at the recent Foundational Questions Institute 4th International

Around the Area cont.

Conference, on the Physics of Information, from January 5-10, 2014. Featuring luminaries from cosmology (Alan Guth, cosmic inflation), quantum gravity (David Finkelstein, black holes), particle physics (Gerard 't Hooft, Nobel Laureate), quantum computing (Seth Lloyd & Raymond Laflamme), and other areas, the meeting sought to stimulate creative interdisciplinary discourse on the most profound scientific questions of our time. This event was widely reported in the press; participants were interviewed by editors from Scientific American and New Scientist, as well as a film crew from the PBS series "Closer to the Truth."

Bill Poirier, Professor in the Department of Chemistry & Biochemistry, has published



the number one most read article in the *Journal of Chemical Physics*, for the last three consecutive months and one previous month--

approaching an unprecedented 10,000 downloads. The *Journal of Chemical Physics* has an impact factor of 3.33, and is the most highly cited journal in the field of molecular and chemical physics. The article, JCP 136 031102 (2012) (featured at <http://scitation.aip.org/content/aip/journal/jcp> under "Most Read This Month") summarizes recent developments within the Poirier research group pertaining to a new formulation of quantum mechanics for which the wavefunction is mathematically unnecessary.

Five Questions continued from page 24

I believe that I am most excited about the opportunities to interact and network with other chemists. For example, during one evening of SWRM 2014, we are offering attendees an opportunity to sign up for dinner with 6-8 other attendees, and the dinners will be held in different parts of Fort Worth. This will be a great chance to get to know others and also experience all that Fort Worth has to offer.

Thank you, Ms. Drake, for participating in '5Q'! To sign up to be interviewed for 5Q, contact: retort@acsdfw.org. Volunteer to participate in SWRM 2014, everyone!

SWRM 2014 Contacts

Kirby Drake, General Chair:
kirby.drake@kk-llp.com

Danny Dunn, Program Chair:
dannyldunn@sbcglobal.net

Martha Gilchrist, Treasurer:
Martha.Gilchrist@tccd.edu

Denise Merkle, Exhibits Chair:
dmerkle@sciconsult.com

General SWRM mailbox:
swrm@acsdfw.org



Solar-powered battery woven into fabric overcomes hurdle for ‘wearable electronics’

Wearable Textile Battery Rechargeable by Solar Energy *Nano Letters*

Though some people already seem inseparable from their smartphones, even more convenient, wearable, solar-powered electronics could be on the way soon, woven into clothing fibers or incorporated into watchbands. This novel battery development, which could usher in a new era of “wearable electronics,” is the topic of a paper in the ACS journal *Nano Letters*.

Taek-Soo Kim, Jung-Yong Lee, Jang Wook Choi and colleagues explain that electronic textiles have the potential to integrate smartphone functions into clothes, eyeglasses, watches and materials worn on the skin. Possibilities range from the practical — for example, allowing athletes to monitor vital signs — to the aesthetic, such as lighting up patterns on clothing. The bottleneck slowing progress toward development of a wider range of flexible e-fabrics and materials is the battery technology required to power them. Current wearable electronics, such as smartwatches and Google Glass, still require a charger with a cord, and already-developed textile batteries are costly and impractical. To unlink smart technology from the wall socket, the team had to rethink what materials are best suited for use in a flexible, rechargeable battery that’s also inexpensive.

They tested unconventional materials and found that they could coat polyester yarn with nickel and then carbon, and use polyurethane as a binder and separator to produce a flexible battery that kept working, even after being folded and unfolded many times. They also integrated lightweight solar cells to recharge the battery without disassembling it from clothing or requiring the wearer to plug in.

The authors acknowledge funding from the National Research Foundation of Korea.



Convenient, wearable, solar-powered electronics could be on the way soon, incorporated into watchbands (as above) or woven into clothing fibers.

Credit: American Chemical Society

FIVE QUESTIONS FOR...

February's '5 Questions' participant is again Kirby Drake, General Chair of the 2014 Southwest Regional Meeting (and Partner in Klemchuck Klemchuk Kubasta, LLP). SWRM 2014, which is hosted by the DFW Local Section, will be held in Fort Worth's Renaissance Worthington Hotel from November 19-November 22.

Last month's 5 Questions provided interesting information about Ms. Drake's career in chemistry and dedication to science, so this month's column will focus on the upcoming SWRM. It takes years to plan a meeting, but the 10 or so months before SWRM involve a much higher activity level—and a lot of volunteer hours. Here's an update on SWRM progress.

1) Which details of the meeting have already been settled?

We have many technical session offerings covering a wide range of topics. We also will have a strong undergraduate program headed up by the Chemistry Student Association at UT Dallas, and the Younger Chemists Committee is setting some great programming as well. We are offering programming which will appeal to attendees regardless of whether they are in academia, industry, or a non-traditional chemical career.

2) How many symposia do you expect for SWRM 2014? Whom should an interested person contact to organize a symposium for SWRM?

While I don't know the exact number, symposia will be relevant and interesting to chemists in academia, industry, as well as in non-traditional chemical fields. There is

still time to organize symposia. Please contact Program Chair Danny Dunn (dannyloddunn@sbcglobal.net) if you are interested in featuring a topic.

3) Exhibitors and Sponsors are key assets of any Regional Meeting.? Why should companies, educational institutions and organizations participate in SWRM?

More than 750 registrants from across the Southwest Region are expected to attend. SWRM 2014 provides a great mechanism for companies, educational institutions and organizations to showcase their offerings to people who generally reside where they operate.

4) Regional Meetings can't happen without volunteers, but those who haven't yet offered to help may not know how to assist. What specific jobs still seek volunteers to do them? How much time is involved?

As previously mentioned, we can always use volunteers to organize symposia. We also can use volunteers to recruit - and be sponsors and exhibitors at all different levels. Finally, we need people to promote SWRM 2014 to their colleagues, classmates, and friends, as it cannot be successful without attendees. The volunteer commitment can be as small or as large as you can make it; I am happy to talk with anyone who is interested about ways to be involved.

5) What aspect of SWRM 2014 are you most eagerly anticipating (other than November 23rd)?

continued on page 21

From the editor

Many years ago—more than I want to think about—I was a graduate student at LSU, working on my dissertation under the direction of Dr. Joe Bowden. My area of research was looking at the effects of sub-lethal levels of polychlorinated pesticides (at that time an area of great controversy) on enzyme activity. After some initial work, we settled on the activity of muscle lactic dehydrogenase and set up some assays using classic kinetic plots. To our surprise, we found that DDT and its metabolites, chlordane, dieldrin derivatives, mirex, and kepone all caused competitive inhibition of the enzyme activity. Competitive inhibition means, of course, that the inhibitor binds at the active site of the enzyme, not on the protein in general, and competes with the substrate for the active site. Now, why should these polychlorinated compounds compete with lactic acid, at an active site designed to bind lactic acid? The pesticides do not have a common skeleton nor similar structure; they don't look like lactic acid. You can bet we took a LOT of flak when I presented this at an American Society for Biological Chemistry meeting (back in the day when it was held at the *old* Atlantic City) and even more when we published in *J. Ag. Food Chem.* We (I, that is!) repeated and repeated the assays, varying the parameters, and stuck to our guns. Joe Bowden went to DC and testified at hearings about the lethality of mirex, hearings that resulting in the ban of that compound.

Over the years, I have sometimes wondered about the whole thing, and wondered if I had received my PhD because of some anomalous effect of the system we used. However, more and more research has appeared over those years that show low levels of these persistent pesticides can cause long-term debilitating effects.

In a recent article in *JAMA Neurology*, the group of Dwight German at UT Southwestern has found a link between sub-lethal levels of a DDT byproduct, DDE, and an increased risk of Alzheimer's disease. Apparently the DDE binds to a site on the neuron and increases the production of amyloids.

How about that? Maybe that degree wasn't a fluke after all.

*Best regards,
Connie*

