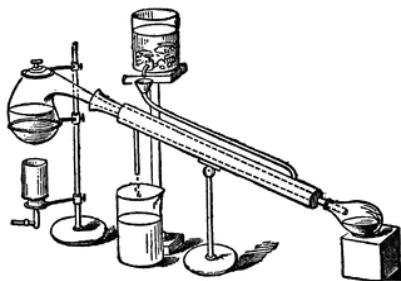




SOUTHWEST RETORT



SIXTY-SIXTH YEAR

OCTOBER 2013

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

published by

The Dallas-Fort Worth Section, with the cooperation of five other local sections of the American Chemical Society in the Southwest Region.

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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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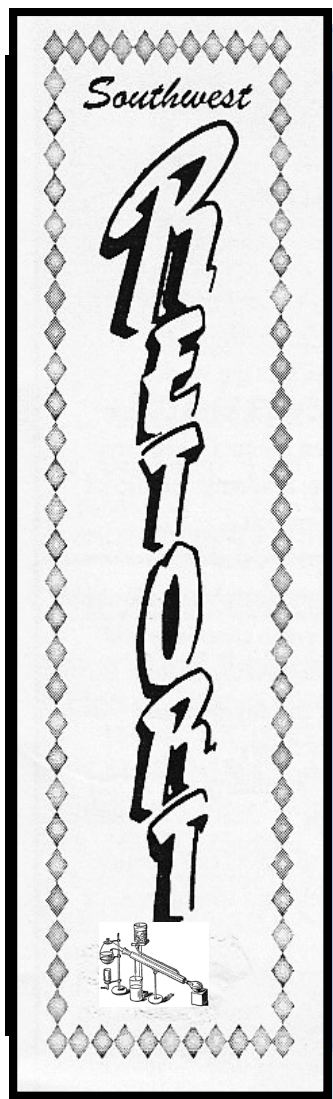


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Contact the DFW Section

General: info@acsdfw.org

Education: ncw@acsdfw.org

Elections:
candidates@acsdfw.org

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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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FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The October tour speaker is **Dr. Lockhart B. Rogers** of Purdue University. From Oct. 15 until Oct. 25 he would be giving lectures at eight different locations in the Southwest. His topics are: "Principles of Analytical Separations"; "Fluorometric Studies"; and "The Analytical Chemist, Specialist and/or Generalist."

There will be a joint meeting of the Analytical and Polymer Groups of the Southeastern Texas and Brazosport ACS Sections on Nov. 7 at the Ben Milam Hotel in Houston. This meeting will feature an address by **Dr. Fred Billmeyer** of DuPont on the topic "Recent Advances in Determining Polymer Molecular Weights."

Dr. Raymond Sangster, Director of the Semiconductor Exploration Laboratory at TI in Dallas attended the "Third Russian National Conference on Semiconductor Compounds" at the Moldavian Academy of Sciences in Kishinev Sept. 16-21. Speaking in Russian, Ray presented a paper titled "Review of Texas Instruments Work on Compound Semiconductors and Current Problems on Gallium Arsenide Transistors." Ray had recently completed a lengthy study assessing the state of the art in semiconductor science and technology in Russia, during which he studied the language in order to survey Russian technical literature.

Recent seminar speakers at Humble Oil and Refining Co. in Baytown were **Professor J. A. Christiansen** of the University of Copenhagen, **Professor C. E. H. Bawn** of the University of Liverpool,

Professor F. W. Lampe of Penn State, **Professor A. J. Stamm** of North Carolina State, **Professor B. D. Smith** of Purdue, **Professor L. A. Riehl** of the University of California, and **Professor D. K. Carpenter** of Florida State. **N. F. Chamberlain** presented a paper at the World Petroleum Congress in Frankfurt, Germany. **Dr. F. H. Field** has been granted an academic leave by Humble to study under a Guggenheim Fellowship at the University of Leeds. **Dr. Joe Franklin** has been appointed Welch Professor of Chemistry at Rice University. Dr. Franklin was the winner of last year's ACS Southwest Regional Award.

Dr. Carlton Guidry has joined the faculty of Sam Houston State College as an assistant professor of chemistry. **Dr. Ray Humphrey** remained at Sam Houston over the summer to work on research of the sulfur-sulfur bond assisted by graduate student **Lloyd McCrary**. This work was supported by a Welch Foundation grant. **Dr. J. C. Stallings**, director of the chemistry department, had two weeks active navy duty at Texas A&M right before school started. **Dr. Inez McFall** spent nine weeks at the University of Oklahoma on an NSF program on Research Participation for College Teachers. This academic year **Dr. Winfred Harding** and **Dr. J. A. Seaton** are on one third time research sponsored by the State of Texas.

*Contributed by
E. Thomas Strom*



22 Ti 47.867	23 V 50.942	24	25	26	27	28	29	30	31	32	33	34 Se 78.96	35 Br 79.904	
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72 Hf 178.49	73 Ta 180.95												84 Po (209)	85 At (210)
104 Rf (261)	105 Db (262)													

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2600 Dudley Road • P. O. Box 9000
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Shreveport, LA
Phone / Fax 318-219-9300
Email: arkla@ana-lab.com



ELECTRIC POWER PLANTS

by

John E. Spessard, PhD, PE



Capital Costs, Environmental Considerations and the Price of Electricity: Coal-fired and Natural Gas-Fired Power Plants

A new electric power plant is an investment that will tie up the owner's capital for years. First, let us start with a consideration of capital costs.

When I worked in industry, we would have a list of potential capital investment opportunities and a determination of the available capital. There was never enough capital to finance every opportunity, so the list would be cut. (This did not prevent some clunkers getting financing but that is a story for another day.) I can remember the days when there was no EPA or OSHA, and I believe that we very much need both. However, environmental and safety compliance consume capital. This restricts the number of projects that can be financed.

Federal tax laws encourage capital investment by allowing the investment to be depreciated before the end of its useful life. The revenue generated by depreciation is not taxed and is available for future investments. An example is a car used for business can be depreciated over three years; at the end of three years, the book value is zero. Yet a three old car has significant value. (This is unless it has been used by police or as a taxi.) Accelerated depreciation enhances the return of capital. For the car, you can use the sum of years depreciation. For the three year life, the sum of the years

is 6. ($3+2+1=6$). In the first year you can depreciate $3/6$ of the investment, the second year $2/6$ of the investment and in the third year the remaining $1/6$ of the investment. An increased capital cost due to regulations ties up capital for a longer period and deters future investments.

Let us consider a conventional coal-powered power plant. The arriving coal must be unloaded, stored and ground to a fine powder. The powdered coal is blown into the furnace. There needs to be a scrubber to remove a part of the SO_2 from the stack gas and an electrostatic precipitator (ESP) to remove fine ash from the stack gas. The residual ash must be collected and sold or disposed of. These environmental controls add to the capital cost of the power plant. The coal handling operation, scrubber and ESP need electricity to run them. This electricity comes from the generator. This reduces the electric product output of the plant and increases the cost of the electricity.

A combined cycle plant provides greater thermal efficiency at a higher capital cost. The coal is first gasified to hydrogen by the water gas reaction ($2C + 2 H_2O = 2H_2 + CO_2$). The generated gas is burned and is used to generate electricity. The hot gas then goes through a heat exchanger to generate steam. The steam generates electricity through a turbine. This is a two-stage

electricity generator and is more efficient

than a conventional coal-fired plant. A measure of efficiency is the energy to generate a kilowatt-hour of electricity. A conventional coal-fired plant needs about 10,000 British Thermal Units (BTU). A combined cycle plant needs about 8800 BTU. (Yes, I know that we should go metric, but this is the language of the electric industry.) A kilowatt-hour is 3414 BTU. (The Second Law still holds.) Part of the produced hydrogen is used to convert the sulfur in coal to H₂S. This in turn can be converted to sulfur through a Claus unit. Like the conventional plant, there are still the costs and energy consumption caused by coal handling and ash recovery and disposal.

Estimates are that the combined cycle plant is about 10% more expensive than the conventional plant. The initial combined cycle plants have had difficult start up issues. These issues should become less significant as operating experience is gained.

A natural gas-fired power plant has significant advantages over a coal-fired plant. You do not have the costs of coal storage and handling, sulfur removal and ash handling and removal. The furnace is simpler and cheaper. This both reduces capital costs and also the amount of electricity consumed by environmental controls. The capital cost is about a third of that for a coal plant. A conventional natural gas plant will need about 8,000 BTU to generate a kilowatt hour. A combined cycle plant will need about 7,000 BTU.

The attraction of coal as an electric power fuel is its low cost. A typical coal will have about 13,000 BTU per pound or 26 million BTU per ton. At a mine head cost of \$24 per ton and \$40 per ton delivered to the power plant (rail freight has its cost), that

is about \$1.50 per million BTU. Today, natural gas sells for about \$3.38 per million BTU (Wall Street Journal, August 5, 2013). The delivered-to-the-power-plant cost is closer to \$4. This reduced price is making natural gas competitive with coal.

Then there is the issue of CO₂ capture and storage. This increases the capital cost by about a half and the energy consumed in CO₂ capture and storage is about 30% of the plant output. This increases the energy to provide a kilowatt hour of electricity to about 12,000 BTU for coal and about 7500 for natural gas. You also need additional power plants with their emissions to generate the same amount of electricity. (Emission controls are not 100% efficient.)

If one assumes that CO₂ capture and storage are necessary, it bothers me very much that there is NO data that has demonstrated that the CO₂ pumped into the ground stays in the ground for many years. If I knew of underground high pressure CO₂ deposits that were stable, this would be reassuring. People are assuming that if you pump CO₂ into the ground under pressure and then take away the pressure, it stays there forever. CO₂ injection has been used to improve the productivity of mature oil fields. But I have seen no effort to trace the eventual path of the CO₂ for many years.

Cost and performance data comes from Energy Information Administration (EIA) reports. EIA is a federal agency that hires outside contractors to provide cost information about power plant costs.

In a future article, I will address costs of nuclear, solar, and wind powered electric plants.

November 17-20, 2013
Waco Convention Center



American Chemical Society

W ★ A ★ C ★ O



www.swrm.org



You are cordially invited to submit an **abstract** and/or **register** for the 69th Southwest Regional Meeting of the American Chemical Society being held at the Waco Convention Center November 16-19, 2013.

The meeting will feature an exceptional **technical program** including symposia covering a wide range of interests, posters, workshops, a vendor exhibition, a grad school fair, a high school program (Saturday 11/16), and an exciting and diverse undergraduate program. Plenary talks will be given by Professor Donald Blake (UC Irvine), and Stephen Fesik (Vanderbilt). Other highlights will include Dr. Pepper floats, a recreational run/walk/ride (your choice), and tours of the award-winning **Balcones Distillery** and the **Armstrong-Browning Library**. Information on the meeting location, the program, and our special events can be found at the meeting website www.swrm.org.

Click anywhere on the graphic above
to access the website!

Waco is a great town, centrally located in the region and easily accessible by car, bus, train (Amtrak stops in near-by McGregor), and by plane (ACT is the code for the Waco Regional Airport). The Waco Convention Center and the host hotel (the Waco Hilton) are steps from 15+ restaurants and pubs and close to a number of Waco attractions.

DEADLINES

~~MISSED IT!~~
~~ABSTRACT SUBMISSION OCTOBER 7~~

BUT YOU CAN STILL REGISTER EARLY!
EARLY REGISTRATION NOVEMBER 1

LINK to
SWRM.ORG

The Baylor University ACS Student Affiliates Chemistry Demo Video Competition



Flashy? Loud? Messy? Funny? Send us your video!

ACS student affiliate chapters or chemistry students in the Southwest Region are invited to submit a video of your best chemistry demonstration. You think you can explain something better than your professor? You can submit a video or animation of a chemistry concept explained by you!

For rules and instructions on how to submit a video, please go to SWRM.org or email undergrad@swrm.org.

DEADLINE NOVEMBER 1

...And another thing...

By Denise L. Merkle

Once

Recently I was reminded of a chemistry-related conversation that occurred a number of years ago—at Thanksgiving dinner, no less. Family were gathered around the table, eating and chatting, enjoying the holiday, when somehow cleaning the bathroom appeared in the conversation. The convoluted route by which cleaning the bathroom rose to prominence in the mealtime chatter is lost in memory (perhaps I blocked it out). However the topic arose, the banker, executive secretary, police officer, salesman, mechanic, etc., enthusiastically discussed mixing bleach and ammonia:

"You can't do it."

"Are you sure?"

"Yes, of course I'm sure!"

"You can't do it."

"You shouldn't do it."

"Are you sure?"

"You will die/pass out and hit your head on the faucet/melt your lungs..."

"You'd wind up on the evening news!"

The discourse lasted for quite a while. I listened. And listened. I listened not only because it can be very, um, *amusing* to hear people who have no training whatsoever in the field assert truths about chemistry, but because I was fascinated by the idea that an entire tableful of people could dissect the results of a chemical reaction - and not once acknowledge that the chemist at the table could tell them the answer to the question.

As with many issues, the person who *knew* was not consulted. The idea that real information was actually available was not considered (nor was there any indication that introducing data into the conversation would have any effect whatsoever on the views of the participants).

So, finally, as I devoured the stuffing, and sweet potato casserole, and green beans, the banker addressed me, "Oh! You're a chemist! Can you do this or not?"

"Sure."

"Noooooo!" "You're kidding!" "You can't!"

"Sure you can mix them...*once*."

Links and YouTube videos on the topic:

[http://wiki.answers.com/Q/What happens when you combine bleach and ammonia.](http://wiki.answers.com/Q/What_happens_when_you_combine_bleach_and_ammonia)

<http://www.youtube.com/watch?v=5LJg42K5Nyc>

<http://www.youtube.com/watch?v=kRi4iMpfg1s>





Children of the American Republic Celebrate
**Balloons Bursting in Air and
More Fun with Chemistry**

**Mean Green
Chemistry Demo Team Kicks Off
National Chemistry Week**

October 20, 2013, 2:30-4:00 PM

*Are you ready for some demos of
the magic of chemistry?*

The Mean Green Chemistry Demo team presents fun and exciting chemical demonstrations guaranteed to knock your socks off! Attend this exciting and engaging presentation of how matter produces energy that can be seen, felt, smelled, and heard. Be amazed by Color is a Many Splendid Thing, Fire in the Jug, the Mason Dot Burn, Mean Green Foam Machine, Fire and Ice, Exploding Balloons, and more!

October 20, 2013 at 2:30-4:00 PM

**University of North Texas, CHEM 106
Park in the D lot, on Hickory at Ave C,
but not in a numbered space!**



ALMOST 20 PERCENT OF GRAIN IN CHINA LOST OR WASTED FROM FIELD TO FORK

Food Losses and Waste in China and Their Implication for Water and Land *Environmental Science & Technology*

A comprehensive new review of food waste in the People's Republic of China has concluded that about 19 of every 100 pounds of grain produced in the country go to waste, with related losses of water for irrigation and farmland productivity. The report appears in ACS' journal *Environmental Science & Technology*.

Junguo Liu and colleagues point out that food waste is a global problem with an estimated one-third to one-half of food produced worldwide being lost or wasted from farm to fork. Estimates suggest that the United States wastes about 40 percent of food crops. The problem is especially acute in China. With only 6 percent of the world's total water resources and barely 9 percent of the arable land, China nevertheless must feed 21 percent of the world's population. Liu's team set out to document loss and waste of food as a basis for developing policies that could help sustain the food supply in the future.

They found that about 19 percent of rice, wheat and other grain in China is lost or wasted, with consumer waste accounting for the largest portion, 7 percent. The overall loss meant the waste of an estimated 177 billion cubic yards of water used to produce food grown but never eaten — a volume

equal to the amount of water Canadian farmers use to grow all their crops. And it meant the waste of 64 million acres of cropland sown and harvested in vain. Liu and colleagues recommended several strategies, including raising public awareness, improving storage systems, mechanizing the harvest of grains and putting in place monitoring programs to track food waste with more precision.

The authors acknowledge funding from the Ministry of Science and Technology of the People's Republic of China, the National Natural Science Foundation of China, the Special Fund for Forestry Scientific Research in the Public Interest, the Organization Department of the Central Committee, the Fundamental Research Funds for the Central Universities and Nestlé.

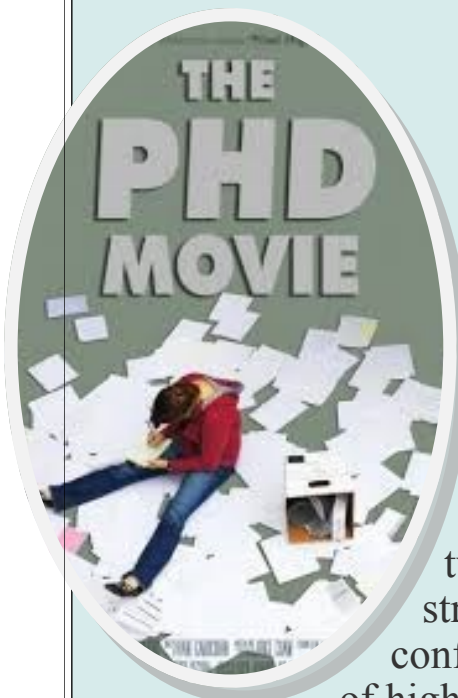


DFW Section Meeting and Mole Day Celebration

October 23, 2013

The PhD Movie

Or *Piled Higher and Deeper* (Link to IMDB)



Life (or the lack thereof) in Academia, *Piled Higher and Deeper (PHD)* is a live-action adaptation of the popular web comic strip by Jorge Cham. With humor and heart, the film follows the personal journeys of two graduate students as they struggle to find their place in the confusing (and often hilarious) world of high-stakes academic research. Along



the way, they learn that the academic journey is as much about finding truth in books and experiments as it is about finding truth in yourself...*IMDB.com*

Location: Alamo Drafthouse Richardson
100 S Central Expy, Richardson, TX 75080

Time: Social 6:30pm, Dinner 7pm, Movie 7:30pm

Event is sponsored by an ACS LSAC Science Café Nanogrant.

Food: Ordered individually (minimum of \$12 per person.)

Payment: \$5 per person

Payment by credit card will be available online in advance, but only cash or check will be accepted at the door. After you RSVP, an invoice will be emailed to you to allow you to pay online with your credit card.

RSVP Online (<http://bit.ly/1fK8mpX>) by Friday, October 11 at 5pm.

Only 66 seats available, so RSVP early (first come, first served)!

Questions? Contact Chair-Elect Katie Walker at kawalker@austincollege.edu

DFW Section

Letter from the Chair-Elect



Dear colleagues,

October is going to be a busy month with all of the great National Chemistry Week events!

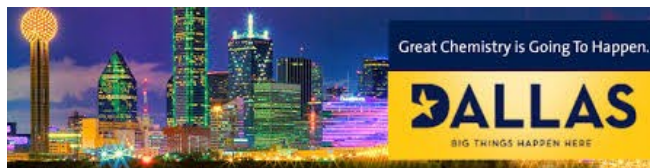
Come join the local section to celebrate Mole Day on

October 23. We'll be screening the PhD Comics Movie (page 13) at the recently opened Alamo Drafthouse in Richardson. Make sure you RSVP early as we have limited seating! (<http://bit.ly/1fK8mpX>)

The local section is sponsoring our 3rd annual National Chemistry Week volunteer event at the Fort Worth Science Museum on Oct. 22-26. If you are interested in participating in outreach activities at the museum, contact Sandi Dang

(sandi.dang@tcu.edu). UNT is also kicking off National Chemistry Week with an outreach event on Oct. 20 (page 11).

The 247th National Meeting will be here in Dallas on March 16-20, 2014. Stay tuned



for more info on a local section sponsored event coordinated with the national meeting! Keep an eye out for a call for volunteers to help man the hospitality booth during the meeting. There is also an opportunity for a few paid positions for students to help out national ACS with the operations

booth. If you are interested in either of these opportunities, please send me an e-mail (kawalker@austincollege.edu).



Remember, the 69th Southwest Regional Meeting will be held just down the road in Waco on November 16-19.

Our own Kirby Drake is working on 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. I encourage you to take advantage of these opportunities to get involved at the regional and national level!

I extend my appreciation and thanks to Steven Twaddle (Awards Chair) and Shawn Adams (UNT) for all their hard work in organizing and preparing for our fall awards presentations. Thanks for a great September meeting!

Make sure you save the dates for our fall local section events below so you can get involved and network with the awesome folks that make up our local section!

See you all on October 23!

Katie Walker

.....more on next page



DFW Section cont.

Letter from the Chair-Elect cont.

Fall Local Section Meetings

Oct. 23: The PhD Movie, DFW Alamo Drafthouse (Richardson) (page 13)

Nov. 13: Schulz Award Lecture, Robyn Ford, Denton HS Advanced Technology Center (Denton)

Our local section is undergoing some exciting changes!

Keep an eye out for these current and upcoming developments:

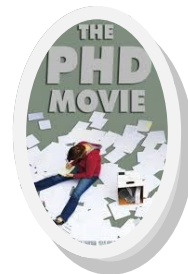
Paying for local section meetings in advance with a credit card (you no longer have to remember to get cash while you are running late to the meeting!)

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.)



Younger Chemist Committee (YCC) Programming—webinar event on October 8 on managing your resumes at UTA

Non-traditional meetings (PhD Comics movie on Mole Day, heck yeah!)



Leadership Development Course Programming—stay tuned!

Planning for Success meeting to revise local section bylaws & funding mechanisms—Nov/Dec



Yep, that's a Retort all right!

DFW Section News

VOLUNTEERS NEEDED!

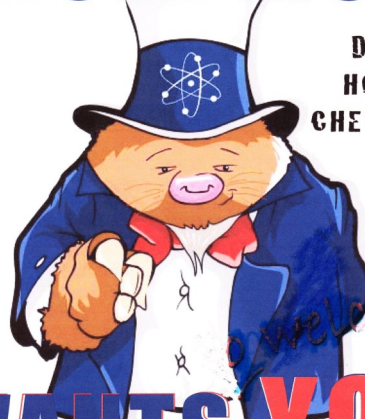
The DFW section is sponsoring our 3rd annual **National Chemistry Week volunteer event** at the Fort Worth Science Museum on Oct. 22-26. If you are interested in participating, please contact Sandi Dang (sandi.dang@tcu.edu).

The 247th **National ACS Meeting** will be here in Dallas on March 16-20, 2014. We need a **local section coordinator** to work with national ACS to help identify a venue for the Saturday outreach activity prior to the meeting. We also need a **coordinator to organize volunteers for the hospitality booth** for the duration of the meeting. If you are interested in either of these positions, please send me an e-mail (kawalker@austincollege.edu).

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!

WANTS YOU

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
dannyldunn@sbcglobal.net**

Advice from a Formerly Unemployed Chemist and a Resume Writer for Navigating the Local Job Search

By: Christin Morrow, PhD and Dorothy Daly, CPRW.

Earlier this year, Christin Morrow's post-doctoral contract ended, and as a result, she began to pursue local employment. She spent one year searching for a full-time, permanent position. She applied for opportunities in academic, industrial, government, and non-profit organizations and was fortunate enough to be hired for two part-time positions in her field, neither of which were advertised.

She will be working full-time at one of those positions at the start of 2014. She would like to share with you her experience as well as the advice of a local resume writer, whose help she found very valuable.

When searching for local employment, Morrow found the most important tool is to develop one's professional network. Two strategies for doing so include becoming active in the local section of ACS and contacting professionals via LinkedIn.

In terms of ACS, she chose to contact an officer whose position interested her. This officer connected her with the chair of the Department of Chemistry at the University of Dallas, where a temporary adjunct professor position was becoming available but was not yet advertised. Morrow eventually met the members of the Department and was hired for the job.

To develop her network through LinkedIn, Morrow searched for professionals in the Dallas-Fort Worth area who either held positions or had experiences that were similar to her desired career path. She met a number of professionals this way. Some of these contacts knew employees at organizations where she applied, and one even held the position for which she was applying!

One common piece of advice from career columns on websites such as CNNMoney and Forbes is to apply for positions for which one is not qualified because 'you never know.' Rumor has it that

Tom Hanks's character in *A League of Their Own* was intended for a 60- or 70-year-old man. Hanks argued that a younger, disgruntled man would bring a new dimension of intrigue to the role, and he was chosen for it. Does one have to have the acclaim of Tom Hanks for this to happen? In Morrow's experience, she did not find any payoff from applying to positions for which she was not qualified. Quite the contrary, she found that applying for such positions was a drain of time and energy. Instead, she would suggest focusing one's energy on applying for positions or identifying po-



tential opportunities for which one is qualified. In her case, she contacted professors within the Metroplex whose research matched her interests or would benefit from her skill set.

As such, she learned of a post at the University of Texas at Arlington. Because of this networking, Morrow has now secured full-time employment for 2014.

In addition to building a network of contacts and searching for jobs that match your skills, it is important to have an atten-



tion-getting resume. Dorothy Daly, owner of Resumes by Dorothy, has a few suggestions for crafting an industry resume that gets noticed. An initial resume scan by a recruiter is complete in less than 20 seconds. Consider roughly the top 1/3 of the first page of the resume as a chance to really sell what you have to offer a potential employer. This is accomplished through creation of a visually interesting Profile paragraph to grab the reader's attention, complete with descriptive words that speak to the essence of who you are and what professional experience you bring. Below this Profile paragraph, consider adding a list of common-phrase key skills/core competencies. Take care and time to make the

top 1/3 of your resume valuable.

In the Work Experience section, try to answer the following questions: What did you do? What were the results of this work? Who benefitted from it? When applying for industry roles, be sure to make your past experience easily understandable and transferable by using general and holistic terms. The first person to review your resume is usually a recruiter looking for specific proficiencies to fill a role and is often not familiar with the technical details of your research and work. A job applicant might find it helpful to meet with a friend outside of their profession to practice explaining what they do. If the friend can't understand it, chances are the recruiter won't either!

If you feel your resume needs a tune-up, seek advice from a certified professional resume writer. Look for individuals with CPRW or NCRW credentials.

Christin Morrow, PhD, is an adjunct professor of chemistry at the University of Dallas and a post-doctoral fellow in the Department of Chemistry at the University of Texas at Arlington. Dorothy Daly, owner of Resumes by Dorothy, is a certified professional resumé writer who specializes in resume and cover letter writing as well as interview preparation for job applicants.

Contact info:

morrow@uta.edu

resumesbydorothy@yahoo.com

Around the Area

Tarleton State University

The Tarleton State University **Student Affiliate Chapter** has been selected as a Commendable Chapter for their 2012 activities. The chapter was also selected as a Green Chapter.

University of Texas-Dallas

The Department of Chemistry welcomes **Jeremiah J. Gassensmith** as an Assistant Professor of Chemistry. Jeremiah completed a Postdoctoral Fellow with Professor Sir J. Fraser Stoddart at Northwestern University and was awarded his Ph.D. with Bradley D. Smith at the University of Notre Dame. His research aims are to bring together the self-assembling properties of micron-scale biological polymers to template the synthesis of nano-scale architectures.



Gassensmith



Chan

The Department also welcomes Professor **Julia Chan** who received her B.S. from Baylor University and her Ph.D. in Chemistry from the University of California at Davis. She began her faculty appointment at Louisiana State University in 2000 after spending two years as a National Research Council Postdoctoral Associate at the National Institute of Standards and Technology. Her research focuses on

the single crystal growth of novel intermetallics and oxides.

The Department congratulates Dr. **Mihaela Stefan**, who has been promoted to Associate Professor and been awarded Tenure.



Stefan



Goux

Dr. **Warren Goux** received funding through UT Dallas and the Advanced Imaging Research Center at UT Southwestern to support a 9 mo. SFDA (sabbatical) doing MRS/energy metabolism research.

Dr. **Dean Sherry**, professor of chemistry and holder of the Cecil H. and Ida Green Distinguished Chair in Systems Biology at UT Dallas, will receive a Gold Medal Award for his research achievements from the World Molecular Imaging Society.



Sherry



Baughman

Dr. **Ray Baughman**, professor of chemistry and holder of the Robert A. Welch Chair in Chemistry at UTD, will receive the American Carbon Society Skekel Award.

Around the Area cont.

University of Texas- Arlington



Dasgupta

Recently, **Purnendu (Sandy) Dasgupta** and **Kevin Schug** at U.T. Arlington joined

prior author Gary Christian to published the 7th Edition of the popular textbook *Analytical Chemistry* ([Wiley](#)).



Schug



Armstrong

Welch Professor **Daniel W. Armstrong** has been awarded the ACS National Award in Separations Science & Technology sponsored by Waters Corp. Dan will receive his award at the ACS National Meeting next spring in Dallas.

Professor **Rasika Dias** has received a three year NSF grant for \$450,000 to study “Organometallic Complexes of Late d-Block Elements and Pi-Acid Ligands.” He also received a 3-year Welch grant to study “Metal Complexes of Highly Fluorinated Ligands.”



Dias



MacDonnell

Professor **Frederick M. MacDonnell** has received a three year, \$180,000 Welch grant to study “Proton-Coupled Electron Transfer Mechanisms of DNA Cleavage by Photoexcited and Ground-State Ruthenium Complexes.”

Texas Woman’s University

Department of
Chemistry and Biochemistry
Texas Woman’s University
Fall 2013 Seminar Series

October 18

Dr. Guido F. Verbeck
University of North Texas
*New Biochemical Instrumentation from
Single Cell Analysis to Isolation of Natural
Products using Mass Spectrometry*

October 25

Dr. Steve Kelty
Seton Hall University
*Chemistry and Physics of Modified
Phthalocyanines: An in silico
Investigation*

November 1

Dr. Bob Compton
University of Tennessee
Chirality: One of the Facts of Life

November 15

Dr. Steve Winkle
Florida International University
*Structural Effects in Small Molecule
Binding to Different DNA Sequences
and Topologies*

November 22

Dr. Ann Nalley
Cameron University
*Research/Experience as a
Woman Scientist*

**All seminars will be presented in
251 ASSC at 12:00 PM.**

A NEW FORM OF ASPIRIN TO OVERCOME 'ASPIRIN RESISTANCE'

Nano-Sized Aspirin-Arg-Gly-Asp-Val: Delivery of Aspirin to Thrombus by the Target Carrier Arg-Gly-Asp-Val Tetrapeptide *ACS Nano*

Scientists are reporting development of a new form of aspirin — taken daily by about 60 million people in the United States alone to reduce the risk of heart attack and stroke — that could extend aspirin's benefits to people who may not respond to the drug. Their advance toward coping with "aspirin resistance" appears in the journal *ACS Nano*.

Shiqi Peng, Ming Zhao and colleagues note that aspirin lowers cardiovascular disease risk by keeping blood cells called platelets from clumping and forming clots. But some experts believe that aspirin doesn't work for millions of people, who may switch to more costly, potent prescription drugs with more serious side effects. Scientists have tried to address aspirin resistance by combining it with other drugs. But Peng and Zhao say that the problem remains. Their research group decided to modify aspirin in an effort to make it work for more people.

They linked aspirin to a carrier consisting of a fragment of protein that can transport aspirin directly to damaged parts of blood vessels where clots form. Experiments with laboratory rats, stand-ins for humans in such early tests, showed that the carrier delivered aspirin to areas of blood vessels where clots were forming. It released aspirin inside the developing clot and stopped the clot-formation process.



The authors acknowledge funding from the Engineering Research Center of Endogenous Prophylactic of the Ministry of Education of the People's Republic of China, PHR (IHLB), the National Natural Science Foundation and the Beijing Natural Science Foundation and Special Project of China.

A GREENER, MORE SUSTAINABLE SOURCE OF INGREDIENTS FOR WIDELY USED PLASTICS

A Green Route to Petroleum Feedstocks: Photochemistry of Fats and Oils *ACS Sustainable Chemistry & Engineering*



A new process can convert a wide variety of vegetable and animal fats and oils — ranging from lard to waste cooking oil — into a key ingredient for making plastics that currently

comes from petroleum, scientists say. Their report on the first-of-its-kind process appears in the journal *ACS Sustainable Chemistry & Engineering*.

Douglas Neckers and Maria Muro-Small explain that many of the plastics found in

hundreds of everyday products begin with a group of chemical raw materials termed olefins that come from petroleum. They include ethylene, propylene and butadiene, which are building blocks for familiar plastics like polyethylene, polyester, polyvinyl chloride and polystyrene. The scientists sought a more sustainable alternative source of olefins.

Their report describes use of “UV-C” light — used in sanitizing wands to kill bacteria and viruses around the house — to change lard, tallow, olive oil, canola oil and waste canola cooking oil into olefins. Neckers and Muro-Small say that this is the first report on use of this photochemical process to make olefins.

The authors acknowledge funding from Principle Business Enterprises.



FIVE QUESTIONS FOR...

The Retort editor is *quite* persuasive, so I, Denise Lynn Merkle, PhD, am October's '5 Questions' participant. Usually I am just the interviewer, but Dr. CMH is *seriously* persuasive. I am President and Consultant at SciConsult, Inc. (est. 2007), Director at Badderloch Woad, Inc., Secretary and Treasurer of the Fort Worth Life Sciences Coalition, and am inventor/co-inventor of patents in diverse fields. I worked as a lab tech between receiving a B.A. in Biochem from UMBC and earning my grad degrees in Chemistry at JHU. I postdoc-ed in surface science at UF and in the structure of Alzheimers Disease peptides and fibrils at ND. I've served as DFW local section chair (2002-2004; 2009-2011), alternate councilor (2005-2007), councilor (2008-2009), and as General Chair for SWRM 2004. Currently I contribute to the Southwest Retort and work on special projects for our DFW local section.

1) At what age did I realize I was a scientist?

Scientists are born, I think. I don't remember a time when I was uninterested in the Whys of the World, but the first documented evidence was collected when I was 5, and in 1st grade. My parents still have the paper—a picture of an apple, colored completely black and with a giant chunk missing because I wanted to see if my new scissors worked.

2) What are the most enjoyable aspects of chemistry for me?

The best thing ever is starting from a hypothesis and progressing through the experiments to the data that substantiate or

refute it. Also, instrumentation is marvelous.

3) How would I change science?

If I could, I'd move science away from the current focus on profit, and remove not only the incentive for shareholders to sue if a company doesn't perform as anticipated, but the need for researchers to use what could be productive discovery time seeking money their institutions should provide. Funding is required, but greed doesn't have to be. Prioritizing results only for financial gain is short-sighted.

4) What is the most difficult part of being in business?

I dislike business development: *Nerds Should Not Sell*. Also, as a consultant, it can be challenging to convince clients—and other scientists—that I actually know chemistry.

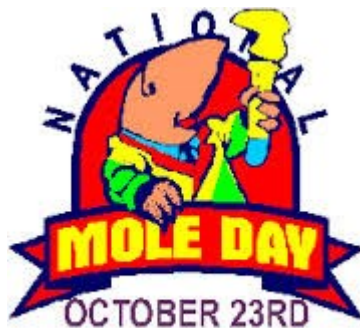
5) Who is my science hero? Why?

Barbara McClintock, PhD (1902 –1992), 1983 Nobel Laureate in Physiology or Medicine, who by meticulous research in maize, discovered transposons, and who trusted her data enough to resist mainstream scientists intent on discrediting her research.

Thank you, Dr. Hendrickson, for editing the Southwest e-Retort, and for your, um, encouragement!

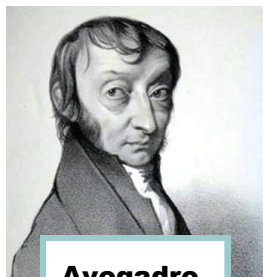
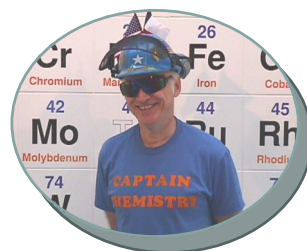
To volunteer to be interviewed for 5 Questions, send an email to the editor at retort@acsd fw.org.

From the editor



Mole Day and National Chemistry Week are coming up fast, with events scheduled at UNT and the Fort Worth Science Museum. A little walk down memory lane...in 1987, I orchestrated the first National Chemistry Day (not week) celebration for the DFW Section. Paul Ricca arranged for us to have it at Nolan High School in Fort Worth, and George Hague shook the building with his famous chem demo show. We were a little short on funds; we had enough for soft drinks but no food. At the time, my brother's wife was driving a

Pepperidge farm delivery truck, and she donated all the past-due-date cookies for the event. I sent out postcards to all the schools in this area and expected maybe 100 or so teachers and students...we had almost 500! The auditorium held only 300, so we had to think fast. George did two shows...but the cookies ran out. That taught me the value of an RSVP and the popularity of a nice chemistry show. Over the next three years, we had larger and larger events, with college recruitment tables, demo tables—and enough cookies—as well as the fabulous Captain Chemistry.



Avogadro

6 02 10 23...ah, those magic numbers...every October 23, the other Dr. Hendrickson gets up at 5 am, and goes over to the University of Dallas campus, where he and his students fill 22+ liter-size balloons with a total of one mole of hydrogen, and then proceed to blow them up, exactly at 6:02. So far, he has not talked me into attending.

Why is it called a mole? We know it's not *really* named for the “small cylindrical mammals adapted to a subterranean lifestyle” (Wikipedia).

No, the term *mole* is a translation of the German unit *Mol*, coined by the chemist Wilhelm Ostwald (no, not Avogadro) in 1894, and is assumed to be derived from the German word Molekül (molecule).

Best regards,
Connie

