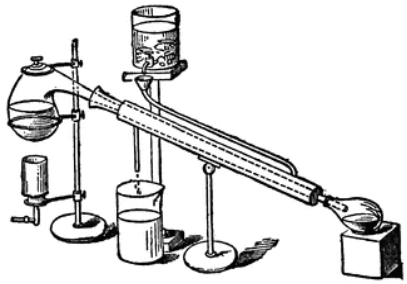
SOUTHWEST RETORT



SIXTY-NINTH YEAR **JANUARY 2017**

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

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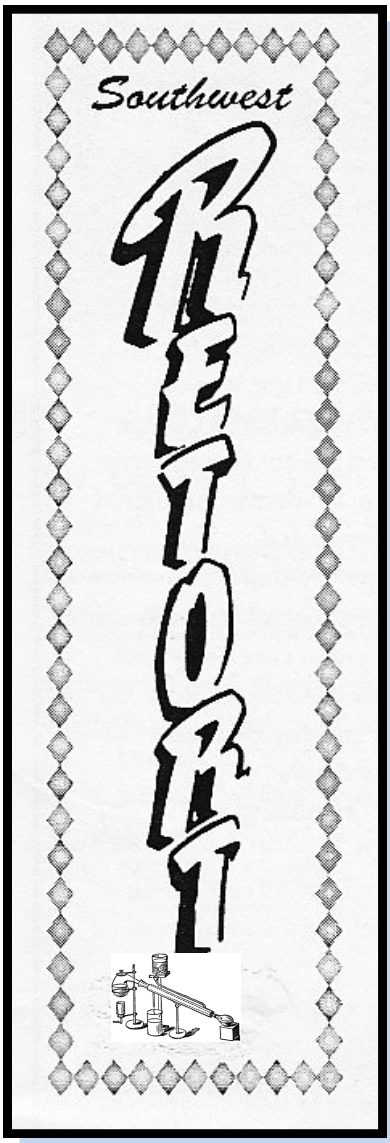

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EMPLOYMENT CLEARING HOUSE

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

JENKEM TECHNOLOGY

The PEG and PEGylation Technology People

POSITIONS AVAILABLE

Quality Manager, GMP Manufacturing
Location: Tianjin, China.
JenKem Technology Co. Ltd. has a current opening for a Quality Manager position for GMP manufacturing of polyethylene glycol polymers in Tianjin, China. The ideal candidate must have:
Excellent communication skills in English and Mandarin (Chinese)
Working knowledge of US GMP ICH Q7A Quality Management systems, preferably acquired in the pharmaceutical industry
Proven leadership skills in a quality management position
Advanced degree in Analytical Chemistry or related field.
Interested candidates should submit a cover letter including salary expectations; and an updated resume at email: hr@jenkemusa.com.

Project Manager, GMP Manufacturing
Location: Beijing or Tianjin
General Manager, GMP Manufacturing Plant
Location: Tianjin
Central point of contact internally and for customers. Maintains positive relationships with customers.
Daily responsibilities including leading customer conference calls, providing project updates, coordination of information flow, coordination of resources, resolution of issues between customer and JenKem Technology, writing project reports, and tracking project deliverables, scope, costs and schedules.
Provide leadership to facilitate problem solving and decision making. Recommend solutions for addressing project related problems.
Maintain direct involvement with other departments within JenKem Technology to help develop specifications, provide information required for analytical methods, contribute information for GMP related documentation such as investigations, batch records and reports and translate contract requirements for JenKem Technology departments.
Advanced degree in Chemistry, Chemical Engineering, or a scientific related field of study. Knowledge of organic, polymer and analytical chemistry.
Previous working knowledge of cGMP manufacturing in the US or Europe, preferably polymer-related or pharmaceutical manufacturing.
Outstanding demonstrated interpersonal skills in English and Mandarin (Chinese) a must (both written and oral)
Proven aptitude for project management tools. Proficiency using project management tools to oversee all elements of project lifecycle including scheduling/planning, meeting coordination, tracking of costs and deliverables, reporting to stakeholders, and risk mitigation. Project Management Certification a plus.
Computer and software skills including MS Office Suite programs, Internet, email systems required.
Proven multi-tasking skills able to handle multiple projects simultaneously within a GMP environment; ability to motivate teams, work within aggressive timelines collaboratively with cross-functional departments
Demonstrated ability to work as a strong contributor in a team environment on complex projects.
Required skills include strong communication, leadership, decision-making, organizational and analytical skills. A candidate must be able to maintain customer focus, handle difficult discussions, build consensus, work independently and prioritize multiple tasks and adjust quickly, as needed. The ideal candidate must be willing to pursue tasks that may be required for projects but are not clearly defined within this job description.
Detail-oriented, dependable, motivated, ability to work with minimal supervision.

hr@jenkemusa.com.

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Need someone to proof or edit your next paper, grant, or presentation? Let an experienced proofreader and PhD chemist do it for you! I have a strong grasp of English grammar and scientific writing and can condense text without losing the underlying meaning. Competitive rates! Contact Mike Vance:

vance2276@gmail.com

408-786-7451

Save the Date!

American Institute of Chemical Engineers

February's AIChE-Dallas section meeting

Bill Carroll
former President of the ACS
will speak on
PVC Recycling
Date: Tuesday, February 28th, 2017

Location: Two Guys From Italy Restaurant
11637 Webb Chapel Rd.
Dallas, TX 75229

Schedule

6:30 PM Networking Time and Menu Browsing

7:00 PM Dinner

7:45 PM Section General Meeting

8:00 PM Professional Development Talk

9:00 PM Adjournment

There are no fees for attending the meeting. Your cost will only be the cost of your meal (~$15) and that of any guests that you may bring with you (the Section would pick up, within certain limits, the dinner cost of any Chemical Engineering Student that comes to the meeting).

Abstract link: http://www.billcarroll.org/acs-tour-speaker.html

A brief bio: http://www.billcarroll.org/about.html

FIFTY YEARS AGO IN THE SOUTHWEST RETORT

The January ACS tour speakers will be **Dr. W. A. Noyes, Jr.** of UT-Austin and **Dr. L. F. Dahl** of the University of Wisconsin. Noyes will be speaking on the topics "Photochemical Primary Processes" and "Photochemistry as a Tool for the Study of Radical Reactions." Dahl will talk on "Structural Chemistry of New Types of Transition Metal Sulfur Complexes" and "Highlights of Recent Structural Advances in Organometallic Chemistry."

In the Dallas-Ft. Worth ACS Section, Texas Woman's University faculty members **Dr. Robert W. Higgins**, **Dr. Lewis C. Sams, Jr.** and **Dr. L. R. Caswell** attended the Welch Conference on polymer research. At North Texas State **S. J. Norton** and **W. H. Glaze** attended the Welch Conference. At Arlington State College (now UT-Arlington) **Peter Girardot** has been appointed as the Dean of the School of Science. New Arlington faculty members are **Dr. Thomas J. Cogdell**, **Ms. M. Lynne Hardin**, and **Mr. Rex G. Dean**. **Dr. Robert Francis** has returned to the Arlington staff after completing his Ph.D. at TCU.

The new officers of the Dallas Society of Analytical Chemists are: Chief Analyst, **Herbert J. Belknap**, Texas Instruments; Assistant Chief Analyst, **Russell O. Bowman**, Baylor Medical Center; Recording Analyst**, K. Ray Burson**, Texas Instruments; and Statistical Analyst, **Lydell B. Hansen**, U.S. Food and Drug Administration. **Dr. Robert J. Speer** of Baylor University Medical Center and the Wadley Research Institute has been named "Analyst of the Year 1966."

In the Ark-La-Tex ACS Section, **Dr. Jacob A. Seaton** is the new Head of the Chemistry Department at Stephen F. Austin College. He came to Austin College from Sam Houston State College. He holds a Ph.D. in inorganic chemistry from the University of Illinois.

It is reported at the University of Houston that the holder of the new Welch Chair will be **Dr. Ernst Bayer**. At Rice, Professor **John L. Margrave** has been designated to receive the ACS Award in Inorganic Chemistry in April.

Recent seminars at Baylor were given by **Dr. Alan G. MacDiarmid** of the University of Pennsylvania and **Dr. Glenn T. Seaborg**, Chair of the Atomic Energy Commission.

Dr. Adrian H. Daane, Chair of the Chemistry Department of Kansas State, recently gave a seminar to the University of Arkansas ACS Section on "A Footnote to the Periodic Table." Arkansas faculty members attending the recent ACS Southwest Regional Meeting in Albuquerque were **Drs. Arthur Fry**, **Edward S. Amis**, **John A. Thoma**, **James F. Hinton** and **Mr. Joe Spradlin**.

Compiled by E. Thomas Strom

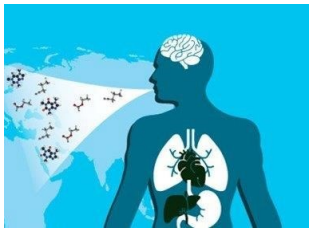
From the ACS Press Room

Nanoarray sniffs out and distinguishes multiple diseases

Diagnosis and Classification of 17 Diseases from 1404 Subjects via Pattern Analysis of Exhaled Molecules
ACS Nano

Before modern medical lab techniques became available, doctors diagnosed some diseases by smelling a patient's breath. Scientists have been working for years to develop analytical instruments that can mimic this sniff-and-diagnose ability. Now, researchers report in the journal *ACS Nano* that they have identified a unique "breathprint" for each disease. Using this information, they have designed a device that screens breath samples to classify and diagnose several types of diseases.

Exhaled breath contains nitrogen, carbon dioxide and oxygen, as well as a small amount of more than 100 other volatile chemical components. The relative amounts of these substances vary depending on the state of a person's health. As far back as around 400 B.C., Hippocrates told his students to "smell your patients' breath" to search for clues of diseases such as diabetes (which creates a sweet smell). In more recent times, several teams of scientists have developed experimental breath analyzers, but most of these instruments focus on a single type of disease, such as cancer. In their own work, Hossam Haick and a team of collaborators in 14 clinical departments worldwide wanted to create a breathalyzer that could distinguish among multiple diseases.



The researchers developed an array of nanoscale sensors to detect the individual components in thousands of breath samples from patients who were either healthy or had one of 17 different diseases, such as kidney cancer or Parkinson's disease. By analyzing the results with artificial intelligence techniques, the team could use the array to classify and diagnose the conditions. The team used mass spectrometry to identify the breath components associated with the diseases. They found that each disease produces a unique volatile chemical breathprint, based on differing amounts of 13 components. They also showed that the presence of one disease would not prevent the detection of others – a prerequisite for developing a practical device to screen and diagnose various diseases in a noninvasive, inexpensive and portable manner.

The authors acknowledge funding from the ERC and LCAOS of the European Union's Seventh Framework Programme for Research and Technological Development, the EuroNanoMed Program under VOLGACORE and the Latvian Council of Science.

Dallas-Fort Worth Section of the American Chemical Society

50th Annual Meeting-in-Miniature

Saturday, April 29

All graduate and undergraduate students are invited to submit abstracts for a 10-12 minute oral presentation, allowing 3-5 minutes for questions. Email your ACS-style abstract to b.janesko@tcu.edu with the subject line "Meeting in Miniature Abstract Submission" by Friday, March 31.

REQUIRED ABSTRACT DETAILS:

- Title of presentation
- Underline presenting author and put * next to advisor
- List department and university
- Division (analytical, biochemistry, inorganic, organic, physical etc.)
- Email address of presenting author
- Category (undergraduate or graduate)
- Paragraph to include motivation, methods, results, conclusions (no more than 200 words)

Program Details

Department of Chemistry & Biochemistry
Texas Christian University

8 - 8:30	Check-in
8:30 - 10	1st Session presentations
10 - 10:15	Morning break
10:15 - 11:45	2nd Session Presenations
11: 45 - 1: 15	Lunch
1:15 - 3:30	3rd Session presentations
3:30 - 4:30	Tours and Reception
4:30	Awards Ceremony

Multiple awards will be given to top presentations for each session.
Registration is free. Register here: http://ow.ly/opp430863rx

TCU COLLEGE OF SCIENCE & ENGINEERING

And Another Thing...

By Denise Merkle, PhD

Happy New Year! Thank goodness 2016 is in the books and 2017 has emerged from the circuit around the sun, fresh with promise (for what, who knows), and full of potential (see comment about promise).

2016 gave us some true food for thought, though, in addition to a heightened sense of mortality and fear of the unknown: fossils and auroras[1], the origins of multicellular life, wall-climbing finny fish, and SpaceX rockets that leave home and then return.[2] The terrors of Zika, and heavy-duty, precise genetic manipulation roared to the forefront of our existence last year —are you CRISPR yet?[3] Molecular Machines didn't win anything, but the scientists who designed and developed them did. Jean-Pierre Sauvage, Sir J. Fraser Stoddart, and Bernard L. Feringa shared the 2016 Nobel Prize in Chemistry[4] for research that brought Richard Feynman's 1950s-era vision to reality. Constrained catenanes and rotaxanes, and electrically and light-driven motors now exist in the real world—and there were invitations to Stockholm to demonstrate the importance of their molecular control.[5]

Discoveries in autophagy were again award-worthy in 2016, garnering for Yoshinori Ohsumi the Nobel Prize in Medicine.[6] Removal of unwanted biomaterials from the cell and the recycling of their components have fascinated scientists for decades—and rightly so. Proper balance of cells' limited resources with biowaste buildup results in cellular and organismic health. Failure in the system leads to illness and death. Do the gene products involved in autophagy qualify as naturally occurring molecular machines? If so, 2016 was decidedly the year of the molecular machine.

What is the point of a random collection of scientific advancements and discoveries, you may ask? The point is that Science is there for you. No matter how bleak times seem, what fine mess has followed its entropic nature and roiled up in one's personal life, what fanciful stories humans disseminate to plague one's sensibilities, or what fresh torture one's banking establishment concocts to bemuse one's sense of logic, Science will Rule. And it's a really good thing, because so far we are unable to escape to Mars to avoid a science-free world, although millions of years ago, we might possibly have been able to live (probably very briefly) on Venus.

Goodbye, 2016. Hello, 2017. Welcome. Stay a While. And Give Us Some Awesome Science.

1) http://news.nationalgeographic.com/2016/12/best-science-discoveries-year-2016-worth-celebrating/

2) http://listverse.com/2016/07/26/10-amazing-scientific-discoveries-of-2016/

3) http://gizmodo.com/the-biggest-scientific-discoveries-of-2016-1789989596

4) "The Nobel Prize in Chemistry 2016". Nobelprize.org. Nobel Media AB 2014. Web. 17 Jan 2017. <http://www.nobelprize.org/nobel_prizes/chemistry/laureates/2016/>

5) "The Nobel Prize in Chemistry 2016". Nobelprize.org. Nobel Media AB 2014. Web. 17 Jan 2017. <http://www.nobelprize.org/nobel_prizes/chemistry/laureates/2016/>

6) "The 2016 Nobel Prize in Physiology or Medicine - Advanced Information". Nobelprize.org. Nobel Media AB 2014. Web. 17 Jan 2017. <http://www.nobelprize.org/nobel_prizes/

to send your articles, news items, and opinion pieces to the Southwest **RETORT!**

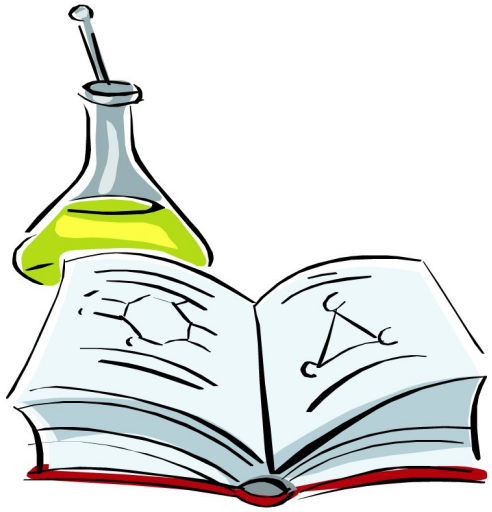
Around the Area

Tarleton State University

The Tarleton State University Student Affiliate Chapter was recognized as a Commendable Chapter and also a Green Chemistry Chapter for last year's activities. See you in San Francisco!

UT-Arlington

The 2016 Eastern Analytical Symposium Award for outstanding contributions to analytical chemistry was given to Purnendu "Sandy" Dasgupta, the holder of the Hamish Small Chair of Ion Analysis at UT-Arlington. This is the Eastern Analytical Symposium's highest award. Sandy received this award at the organization's annual meeting in Somerset, NJ. This award is given for broad contributions across the fields of analytical chemistry. Sandy joined UT-Arlington in 2007. He has published more than 400 papers, and he holds 27 patents.



In Memorium Thomas J. Cogdell

UT-Arlington mourns the death of long-time organic chemistry professor Thomas J. Cogdell. He died last fall at age 82. He had been a faculty member for 33 years. Tom was born in Quanah, TX. He received his BA-Chem degree from Midwestern University in 1955. He then worked from 1955-1958 for Dow Chemical in Freeport. During this time he also served six months in the US Army Reserve. He entered graduate school at UT-Austin, receiving an MA in chemistry in 1962. He then attended Harvard, where he received his Ph.D. in organic chemistry in 1965, working with renowned physical organic chemist Paul Bartlett. After a post-doc at Bell Labs, he joined the UT-Arlington faculty in 1966.

Tom retired in 1999, but he remained active on the campus. In 2011 he published a book on *A Century of Chemistry Instruction at the College in Arlington*. This was a history of the chemistry department from 1895-1995. He was a long-time member of the ACS, and he served the ACS Dallas-Ft. Worth Section as Chair in 1989. He is survived by his wife Elena, four children, and three grandchildren.

From the ACS Press Room

Contrary to decades of hype, curcumin alone is unlikely to boost health

The Essential Medicinal Chemistry of Curcumin
Journal of Medicinal Chemistry

Curcumin, a compound in turmeric, continues to be hailed as a natural treatment for a wide range of health conditions, including cancer and Alzheimer's disease. But a new review of the scientific literature on curcumin has found it's probably not all it's ground up to be. The report in *ACS' Journal of Medicinal Chemistry* instead cites evidence that, contrary to numerous reports, the compound has limited — if any — therapeutic benefit.

Turmeric, a spice often added to curries and mustards because of its distinct flavor and color, has been used for centuries in traditional medicine. Since the early 1990s, scientists have zeroed in on curcumin, which makes up about 3 to 5 percent of turmeric, as the potential constituent that might give turmeric its health-boosting properties. More than 120 clinical trials to test these claims have been or are in the process of being run by clinical investigators. To get to the root of curcumin's essential medicinal chemistry, the research groups of Michael A. Walters and Guido F. Pauli teamed up to extract key findings from thousands of scientific articles on the topic.
The researchers' review of the vast curcumin literature provides evidence that curcumin is unstable under physiological conditions and not readily absorbed by the body, properties that make it a poor therapeutic candidate. Additionally, they could find no evidence of a double-blind, placebo-controlled clinical trial on curcumin to support its status as a potential cure-all. But, the authors say, this doesn't necessarily mean research on turmeric should halt. Turmeric extracts and preparations could have health benefits, although probably not for the number of conditions currently touted. The researchers suggest that future studies should take a more holistic approach to account for the spice's chemically diverse constituents that may synergistically contribute to its potential benefits.

The authors acknowledge funding from the National Center for Complementary and Integrative Health and the Office of Dietary Supplements at the National Institutes of Health.

DFW ACS Local Qualifying Exam for 2017 National Chemistry Olympiad

When: Saturday, March 4, 2017 (8:30 a.m).

Where: The exam will be given simultaneously at the following locations:
1. The University of North Texas; Chemistry Building, Room 109
2. The University of Texas at Arlington; W. A. Baker Chemistry Research Building, Room 114

Parking information and maps for the above sites are available at:
http://www.unt.edu/transit/pdf/parkingmap.pdf
http://www.uta.edu/maps/

PLEASE NOTE: There is no cost to students or teachers for this or the national exams. Copies of previous years' exams are available at www.acs.org for practice

While 'walk-ins' are welcome as long as testing documents are available, students are strongly encouraged to pre-register for the local qualifying exam. Pre-registration assures that students will have test documents at the selected location.

US National Chemistry Olympiad

CLICK HERE FOR PRE-REGISTRATION FORM

(NCO) Testing Requirements:
1. Students must be US citizens or legal, permanent residents of the United States (green card holders) to take the US National examination.
2. Students must be younger than 20 years old.
3. Only regularly enrolled high school students, graduating no earlier than Spring semester 2017, are eligible.
4. No more than two students per teacher or per high school may be selected to take the national exam. In the case of magnet programs or split enrollment, a student's school is defined as the high school where the student takes their science courses. For example, TAMS counts as a single high school for these purposes.
5. Students who have taken advanced placement courses in chemistry are eligible. Likewise, students who have received credit for college-level courses (limited to no more than two semesters or three quarters beyond general chemistry) are eligible.
6. Programmable calculators and cellular phones are NOT permitted during either the local or national exams.

Local Qualifying Exam, continued

This means that ABSOLUTELY NO GRAPHING CALCULATORS are permitted during the exam regardless of whether the memory is cleared. Students MUST bring nonprogrammable scientific calculators with them to the exam, as the testing locations have NO calculators to loan. Students may bring pencils and erasers for marking their answers.

7. Local selection will be based upon student scores on the local NCO qualifying exam to be administered simultaneously at multiple locations in the DFW section on Saturday, March 4, 2017. There is only one day and time for the local test. THERE ARE NO MAKE-UP EXAMS! In case of tie scores, the criterion for selection of a tie-breaker system will be announced prior to the beginning of the exam on March 4. (Historically, this has been based on correct answers to selected questions.) All exams will be collected for scoring as a single group, so there is no advantage to testing at a particular site. Participants are encouraged to take the exam at the testing site closest to them.

8. For those students selected for advancement, the National Exam will be held on Saturday, April 22, 2017, at the University of Texas at Arlington (location/time TBA). NOTE: Once all preliminary exams are scored, we will verify the availability and participation of qualifying students for the local NCO examination. When this is complete, we will notify the remaining students of their score. As a courtesy we also mail back each student's exam to their chemistry instructor so they can see how they did on the exam. Please keep in mind that administering the national NCO examination is our first priority. Therefore, it is not unusual that these exams are not mailed out until after the DFW NCO exam is complete in April. Please be patient!

CONTACT 2017 USNCO Coordinator: Kathleen Holley, Ph.D., Dallas/Fort Worth Section of the ACS
kkholley@yahoo.com

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.)

From the ACS Press Room

Watching Water Freeze

Time-Lapse, in Situ Imaging of Ice Crystal Growth Using Confocal Microscopy
ACS Omega

Every winter, snow and ice dust mountains and make roads slick in cold climates. This phenomenon is ages old, but a detailed explanation for how ice crystals form has eluded us. In a study appearing in the journal *ACS Omega*, scientists now report a method to visualize ice in three dimensions as it grows. This knowledge could have a range of potential uses in materials science, geophysics, biology and food engineering.

What scientists know for sure is that ice shape and size depend on a number of factors, such as pH, the speed at which the temperature drops and the composition of additives. They have tried controlling ice shape by adding a variety of compounds, including sugar, ethanol and naturally occurring antifreeze proteins from fishes, plants and insects. But to gain a deeper understanding of how ice forms — and potentially to have better control over the process — scientists have been working on new ways to watch crystals grow in real time. Several methods have been attempted, but none have provided reliable 3-D visualizations. A team of scientists from the Ceramics Synthesis and Functionalization Lab in France took a different approach.

The researchers demonstrated that confocal laser scanning microscopy and image analysis can rapidly capture a series of pictures showing the ice crystals growing. The images can then be used to measure how fast the crystals expand and lengthen. The approach has promise for further studying ice growth under varying conditions and with the addition of polymers, proteins or other compounds, the researchers say.

The authors acknowledge funding from the European Research Council.

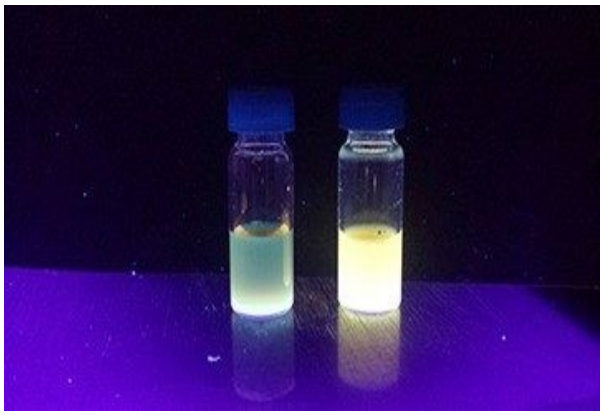
Watch ice crystals grow in real time and in three dimensions

From the ACS Press Room

Tattoos mark the spot — for surgery — then disappear

Cross-Linked Fluorescent Supramolecular Nanoparticles as Finite Tattoo Pigments with Controllable Intradermal Retention Times
ACS Nano

Tattoos aren't just for body art. They can have medical applications, too. Doctors are using them on patients to mark an area for future treatment — particularly for non-melanoma skin cancer such as basal cell carcinoma — but the inks can cause problems. Now scientists have developed a better solution. In the journal *ACS Nano*, they report a new ink that glows only under certain light conditions and can disappear altogether after a period of time.



Scientists made an "ink" for marking surgery targets on the skin by combining a polymer (left) with fluorescence supramolecular nanoparticles (right).

Credit: Jin-sil Choi/Hsian-Rong Tseng

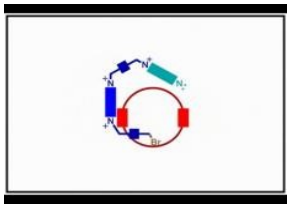
Patients diagnosed with skin cancer typically have to wait up to three months between a biopsy confirming their condition and treatment. Doctors can mark the spot for possible future treatment using carbon graphite, India ink or fluorescent dye. But these pigments permanently color the skin, and can require laser or surgical removal after a patient has undergone surgery. They can also cause inflammation and discomfort at the site of the tattoo. Kai Chen, Gary S. Chuang, Hsian-Rong Tseng and colleagues wanted to develop a safer, more patient-friendly option. The researchers created a time-limited pigment by cross-linking fluorescent supramolecular nanoparticles. Under ambient lighting, the nanoparticles are invisible, which would avoid unwanted markings in a patient's skin. But the pigment glows under light shining at a wavelength of 465 nanometers, so doctors would be able to use a special light to see the dye. Testing in mice showed that tattoos created with these nanoparticles didn't cause inflammation and lasted for three months. This would be long enough to mark a spot from biopsy through treatment for a non-melanoma patient.

The authors acknowledge funding from the National Institutes of Health and the Department of Radiology at the University of Southern California.

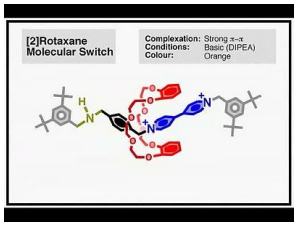
From the editor

The 50th Meeting-in-Miniature is coming up...there's nothing like getting your students up on their feet to give a talk in front of a strange audience (strange in that it's not in the department, nothing insinuated otherwise!). On March 4, the National Chemistry Olympiad qualifiers will be given at UNT and UTA in preparation for the NCO in April. Here's to a great turn-out for both events.

The neatest article for me this month was Denise Merkle's column, where she mentions molecular machines such as catenanes and rotaxanes. Wikipedia had several great write-ups on these topics and I want you to see these videos of reactions.



Look for this graphic on **https://en.wikipedia.org/wiki/Catenane**



Look for this graphic on

https://en.wikipedia.org/wiki/Rotaxane

Best regards,
Connie