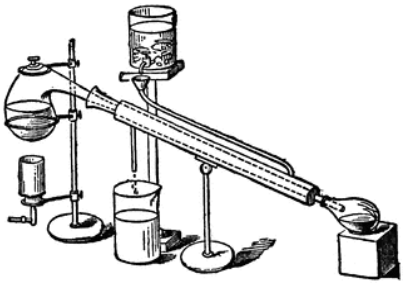
SOUTHWEST RETORT



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FIFTY YEARS AGO IN *THE SOUTHWEST RETORT*

Compiled by E. Thomas Strom

The November ACS tour speakers will be **Dr, David Hume** of MIT and **Dr. F. Newton Hayes** of the Los Alamos National Laboratory. Dr. Hume's topics will be "The Modern Teaching of Modern Chemistry" and "Problems in the Determination of Trace Level Constituents in Environmental Systems." Dr. Hayes will speak on "Chemistry of Biological Information Transfer."

This year's winner of the ACS Southwest Regional Award is **Mr. Nugent F. Chamberlain**, Research Associate with Esso Research and Engineering Co. in Baytown. He was recognized for his efforts in making NMR a valuable analytical procedure.

The ACS Southwest Regional Meeting will be held in Tulsa Dec. 4-6. The program will include over 250 technical presentations. The banquet speaker will be **Dr. Melvin Calvin** of the University of California at Berkeley.

In the Dallas-Ft. Worth ACS Section, the following individuals will be officers in 1970. **Dr. Morton D. Prager** will be Chair, while **Dr. William H. Watson** will be Chair-Elect. The Secretary will be **Dr. John A. Maguire**, and **Dr. James E. Cooper** will be Treasurer. The Directors will be **Dr. Robert J. Speer** and **Dr. Manfred G. Reinecke**.

At SMU **Dr. Edward R. Biehl** and his family are spending a sabbatical year at the University of Munich, where Dr. Biehl will work with **Prof. Rolf Huisgen**. **Dr. Ralph L. Shriner** attended the meeting of Organic Syntheses, Inc. and its Board of Directors in connection with the ACS Fall National Meeting in New York. At North Texas State **Dr. Gerry Dobson** has received a $28,400 NSF grant for "Studies of Bonding in Metal Carbonyls." At East Texas State Welch Grants were received by **Drs. Moses Attrep, Jr.** and **Denis J. Quane**. **Dr. Kenneth Ashley** received a Research Corporation grant. At Texas Woman's University **Dr. Helen Anna Ludeman** retired from the chemistry department. She joined TWU in 1923, She was honored at a tea given by the Uranium Chapter of Iota Sigma Pi. She was given a white gold diamond ring symbolizing the "strength, purity of conscience and the personal loyalty which she has evidenced through the years."

The second annual Baylor University Chemistry Alumni Seminar was scheduled for Oct. 31. This year's seminar will honor **Dr. W. T. Gooch** and **Dr. W. R. Stephens**, two former department chairs. **Dr. Thomas C. Franklin** attended the Electrochemical Society meeting in Detroit, while **Dr. James L McAtee. Jr.** attended the National Clay Minerals meeting in Arlington, TX. At Texas Tech **Dr. Henry J. Shine** has received a four year renewal of his AFPSR grant in ion-radical chemistry. At the University of Arkansas **Dr. Jacob Sacks** assumed the title of Emeritus Professor after 17 years with the University and the chemistry department. However, he will continue teaching and research.

From the ACS Press Room

Upcycling polyethylene plastic waste into lubricant oils

"Upcycling Single-Use Polyethylene into High-Quality Liquid Products"

ACS Central Science

Plastics pervade almost every aspect of modern life, but once they have served their purpose, it's tough to get rid of them. That's because the polymers degrade very slowly in landfills or the environment, and recycling is inefficient. Now researchers reporting in ACS *Central Science* have developed a catalyst that can transform polyethylene — the type of plastic used to make grocery bags and other packaging — into high-quality liquid products, such as motor oils and waxes.

Hundreds of millions of tons of plastic are produced worldwide each year, and the majority of these materials are discarded after a single use. Most end up in landfills or the environment. Because of technical challenges, even the plastic that does get recycled typically generates materials that are of lower quality and value than the original polymer. Kenneth Poeppelmeier, Aaron Sadow, Massimiliano Delferro and colleagues wanted to develop a catalyst that could be used to selectively upcycle polyethylene into high-quality, value-added products.

The researchers deposited platinum nanoparticles onto a strontium titanate support. At moderate pressure and temperature, this catalyst cleaved carbon-carbon bonds in polyethylene to produce high-quality liquid hydrocarbons. These liquids could be used as motor oil, lubricants or waxes, or further processed to make ingredients for detergents and cosmetics. The new catalyst preferentially bound and cleaved longer hydrocarbon chains, so that the products were all of a

similar, intermediate size. In contrast, a commercially available catalyst generated lower-quality products with a broader size range and many short hydrocarbons, limiting the products' usefulness.

The authors acknowledge funding from the Catalysis Science Program, Division of Chemical Sciences, Geosciences and Biosciences, Office of Basic Energy Sciences at the U.S. Department of Energy.

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Mark Your Calendars
for 7.30p -10.30p,Thursday
December 12, 2019
to Join

ACS Local Section
Dallas-Fort Worth

&

Fort Worth Life Sciences Coalition

@ Arts 5th Ave in FW TX
for a
jointly presented event.
Topic TBA,
registration via eventbrite

www.fwlsc.org @fwlsc
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"Climate Change Presentations for Fall/Winter 2019-2020

Three categories of talks as described below are now availabile. All are aimed and appropriate for general audiences.

- ***Shining a Light (not a pun) on Climate Change, for Children!***
- ***Interactive WEB based Activity for Climate Change Decision Making!***
- ***Climate Change Story Telling with 'Touches of Humor!***

E-Mail responses of interest are MOST CONVENIENT!

R. G. (Bob) Landolt
Emeritus Professor of Chemistry
Texas Wesleyan Universtiy
rlandolt@txwes.edu

From the ACS Press Room

How hot (and not-so-hot) compounds in chili peppers change during ripening

"Assessment of Capsaicinoid and Capsinoid Accumulation Patterns during Fruit Development in Three Chili Pepper Genotypes (Capsicum spp.) Carrying Pun1 and pAMT Alleles Related to Pungency"

Journal of Agricultural and Food Chemistry

Anyone who has tasted a hot chili pepper has felt the burn of capsaicinoids, the compounds that give peppers their spiciness, as well as possible health benefits. Related pepper compounds, called capsinoids, have similar properties, minus the heat, so they are attractive as potential functional food ingredients and supplements. Now, researchers reporting in ACS' *Journal of Agricultural and Food Chemistry* have measured amounts of both compounds in three types of chili peppers as they ripen.

Hot peppers are cultivated all over the world for use as foods, spices and ingredients. The spiciness, or pungency, of chili peppers depends on the accumulation of capsaicinoids. Although capsinoids have similar structures to capsaicinoids, they are about 1,000 times less pungent. Scientists have reported health benefits for both groups of compounds, including antioxidant, anti-inflammatory, pain-relieving, anticancer and anti-obesity effects. However, the lower pungency of capsinoids could make them more promising candidates for the development of drugs, supplements and functional foods. Ana Garcés-Claver and colleagues wanted to analyze the capsaicinoid and capsinoid content of three types of chili peppers as they ripened: the spicy Chiltepin and Tampiqueño 74 from Mexico, and the super-hot Bhut Jolokia from India.

The researchers grew and collected the three types of peppers at various stages of fruit development. Using a sensitive mass spectrometry technique, they found that capsinoids in all three peppers began to accumulate 20 days after flower opening, reaching a peak at 40 days, and then decreasing until 60 days after flowering. In contrast, capsaicinoid accumulation varied between the super-hot Bhut Jolokia and the other two peppers. In Chiltepin and Tampiqueño 74, capsaicinoid accumulation followed a similar pattern, although at higher levels, as capsinoids. But in Bhut Jolokia, capsaicinoids were detected earlier (at 10 days post-flowering) and reached a maximum later (60 days post-flowering), allowing the pepper to accumulate much higher levels of the spicy compound. These results could guide future breeding studies to understand factors that affect capsaicinoid and capsinoid accumulation, the researchers say.

The authors acknowledge funding from the National Institute for Agricultural and Food Research and Technology (Spain), the European Regional Development Fund and the University of Cadiz.

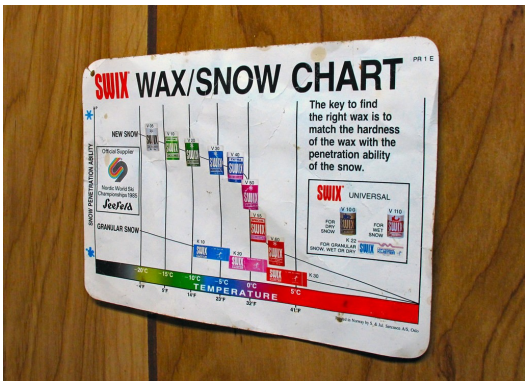
From the ACS Press Room

PFASs from ski wax bioaccumulate at Nordic resort

"Levels, Patterns, and Biomagnification Potential of Perfluoroalkyl Substances in a Terrestrial Food Chain in a Nordic Skiing Area"

Environmental Science & Technology

With winter approaching in the Northern Hemisphere, many people are looking forward to hitting the slopes. However, a recent study suggests that ski wax applied during winter months could have consequences that stretch to summer and beyond. Researchers reporting in ACS' *Environmental Science & Technology* have found that certain perfluoroalkyl substances (PFASs) found in ski wax bioaccumulate and biomagnify in the food chain at a Nordic skiing area.



PFASs are used in a variety of consumer products, including ski waxes. When applied to skis, the compounds enhance the glide on the film of water between skis and snow. Recently, scientists have become concerned about the persistence, bioaccumulation and potential toxicity of PFASs in the environment. As a result, the U.S. and other countries have banned or limited use of the most worrisome forms, perfluorooctanoic acid (PFOA) and perfluorooctansulfonate (PFOS), but these stable compounds and other PFASs can remain in the environment for many years. Randi Grønnestad and colleagues wanted to examine the levels of various PFASs in soil, earthworms and bank voles, which are small rodents, at a skiing area in Norway.

The researchers collected soil and animal samples from the Granåsen Ski Center in Trondheim, Norway, and from a reference site — a forested area not used for ski sports — about 9 miles away. When the team analyzed PFAS levels in soil, they found that three individual PFASs were present at significantly higher levels at the ski area compared with the reference site. In earthworms, only two compounds were found at significantly higher levels at the ski resort. In contrast, bank voles from Granåsen had 5.7 times higher total PFAS levels in their livers and significantly higher levels of several long-chained PFASs found in ski waxes, including PFOS, than those at the reference site. Although the detected levels of all PFASs were far below toxicity thresholds, the observed bioaccumulation in earthworms and biomagnification of PFOS from worms to voles suggests that the compounds could accumulate at much higher levels in top predators, the researchers say.

The authors acknowledge funding from the Norwegian University of Science and Technology and the County Governor of Trøndelag.

REACTIONS

is a video series produced by the American Chemical Society and PBS Digital Studios. Subscribe to REACTIONS at http://bit.ly/ACSReactions and follow us on Twitter @ACSReactions.

Vampire folklore has more chemistry than you'd think (video)

WASHINGTON, Oct. 31, 2019 — Halloween season wouldn't be the same without the undead. This week on Reactions, we unpack the chemistry that might have inspired one of our favorites: the vampire:
https://youtu.be/hTtitLeGvV0

This blacksmith forged a sword using chemistry (video)

WASHINGTON, Oct. 18, 2019 — This week on Reactions, we head to Portland, Oregon, and learn how blacksmithing is just as much chemistry as it is an art form:
https://youtu.be/Y_43_u9u_Ag

Weird ideas for combating climate change (video)

WASHINGTON, Sept. 27, 2019 —There are things you can do right now to help our climate – like investing in renewable energy. But today on Reactions, we're digging into a few of the weirdest climate change-combating ideas out there:
https://youtu.be/9agoVDFJs8A

From the editor

In October, the DFW Section presented Dr. Bob Landolt with the Chemistry Ambassador Award. Bob, although retired from Texas Wesleyan University, has been a ardent advocate of education about climate change (and chemistry topics n general). Congratulations, Bob...no one could be more deserving of this award!

Dr. Denise Merkle of the DFW Section presents the Chemistry Ambassador Award to Dr. Bob Landolt.

Speaking of climate change, be sure and watch the video *Weird Ideas for Combating Climate Change* at the ACS REACTIONS site on YouTube:

https://youtu.be/9agoVDFJs8A .

Best regards,
Connie