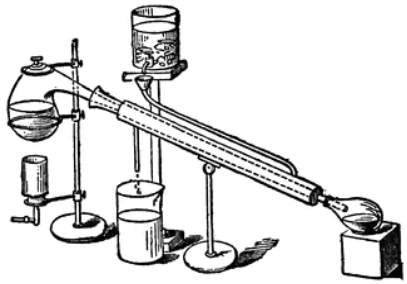
SOUTHWEST RETORT



SEVENTY-FIRST YEAR **MARCH 2019**

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.

Vol. 71(7) MARCH 2019

Editorial and Business Offices: ***Contact the Editor for subscription and advertisement information.***
Editor: Connie Hendrickson: retort@acsdfw.org
Copy and Layout Editor: Becky Escher: becky@beckyescher.com
Business Manager: Martha Gilchrist: Martha.Gilchrist@tccd.edu

The Southwest Retort is published monthly, September through May, by the Dallas-Ft. Worth Section of the American Chemical Society, Inc., for the ACS Sections of the Southwest Region.

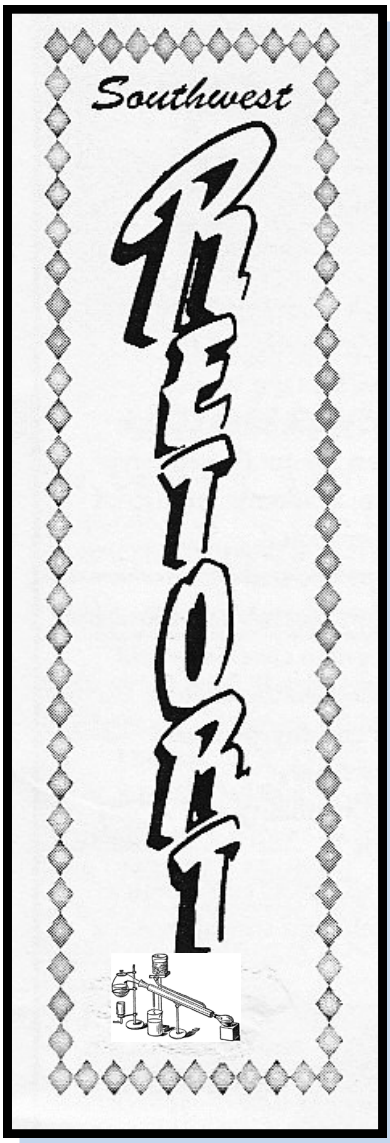


TABLE OF CONTENTS

Contact the DFW Section

General: info@acsdfw.org
Education: ncw@acsdfw.org
Elections: candidates@acsdfw.org
Facebook: DFWACS
Twitter: acsdfw

SERVICES and ANNOUNCEMENTS

EDITING AND PROOF-READING SERVICES

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

FIFTY YEARS AGO IN THE SOUTHWEST RETORT

ACS tour speakers for March are Dr. W. Conard Fernelius of Koppers Co. in Pittsburgh and Dr. Cal Y. Meyers of Southern Illinois University. Dr. Fernelius will speak from the topics "The Crisis in Chemistry," "The Academic Industry Interface," or "The Problems of Chemical Nomenclature." Dr. Meyers will talk on "Organosulfur Chemistry-Bonding Reactions and Mechanisms."

Fisher Scientific Co. announced the availability of laboratory glassware with Teflon sleeves.

The issue featured a photo dealing with the new "Heart O' Texas" ACS Section located in Waco. The photo showed the new framed charter. Others in the photo were Chair Dr. Thomas C. Franklin, Chair-Elect Dr. Raymond Mc Crory, Secretary-Treasurer Mrs. M. J. Ross, and from the ACS Local Section Activities office in Washington, D.C., Mr. Marshall. W. Mead.

Following are the officers for the DFW ACS Section for this year: Chair, William H. Glaze; Chair-Elect, Morton D. Prager; Secretary, Joseph B. Wilson; Treasurer, James E. Cooper; Directors, Peter R. Girardot, Robert J. Speer; Councilors, Frank C. Edwards, Russell C. Walker.

At North Texas State University, Dr. Benny R. Russell joined the faculty. Recent seminar speakers were Dr. William Shive from UT-Austin and Dr. Arnuff P. Hagen from the University of Oklahoma.

At the University of Arkansas, Dr. S. Siegel recently received a three year, $24,000 PRF grant to continue research on catalytic hydrogenation of hydrocarbons. Arkansas faculty member Dr. Arthur Fry recently gave seminars at Vanderbilt, Middle Tennessee State College, and Drury College. Dr. E. S. Amis gave a seminar at the University of Mississippi. Recent speakers for the University of Arkansas local ACS section include Dr. S. P. Massie of the US Naval Academy talking on "Man, Molecules, and the Mind" and Dr. Arthur E. Martell of Texas A&M University speaking on "Chelation and Catalysis."

The Thermodynamics Research Center at Texas A&M University published a new book in January titled "Comprehensive Index of API44-TRC Selected Data on Thermodynamics and Spectroscopy" The authors were Bruno J. Zwolinski and Randolph C. Wilhoit. Dr. Zwolinski gave a seminar at TCU on Jan. 10. Dr. Frank. J. Smentowski received a $2,000 grant from the College of Science to perform NMR rate studies in liquid ammonia.

A recent seminar speaker at Texas Tech was Dr. C. W. Shoppee of the University of Sydney, Australia, who presented "Physico-Chemical Methods and Structure Determination."

contributed by
E. Thomas Strom

ACS Local Section
Dallas-Fort Worth

Officers and Councilors

Chair 2019
Dr. Denise Merkle:
dmerkle@sciconsult.com

Past Chair 2019
Kirby Drake
kirby.drake@klemchuk.com

Secretary (2018-2019)
Mandy Dark
mandydark@tsogiant.sorg

Treasurer (2019-2020)
Martha Gilchrist
Martha.gilchrist@tccd.edu

Councilors
Tom Strom (re-elected)
Jason McAfee (re-elected)
Linda D. Schultz
Mary E. Anderson

Alternate councilors
John McIlroy (re-elected)
Michael Bigwood
Edward G. Donnay
Daniela Hutanu

#ACSDFW

We TWEET
and
we're on facebook
https://www.facebook.com/DFWACS/

Follow Us - so you don't miss a thing!

"TWITTER, TWEET, RETWEET and the Twitter logo are trademarks of Twitter, Inc. or its affiliates."

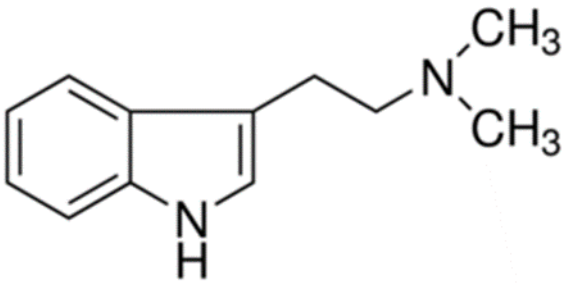

EL PASADO NUNCA SE TERMINA
FEATURING
MARIACHI
NUEVO TECALITLÁN
JOSÉ "PEPE" MARTÍNEZ COMPOSER
LIBRETTO BY LEONARD FOGLIA
FOR TICKETS CALL 817-731-0726
OR VISIT WWW.FWOPERA.ORG
MAY 10, 11, 12
BASS PERFORMANCE HALL
FORT WORTH OPERA
American Airlines
THE OFFICIAL AIRLINE OF FORT WORTH OPERA.
Texas Commission on the Arts
ARTS COUNCIL OF FORT WORTH
FORT WORTH
MELLON FOUNDATION
Autobahn FORT WORTH
TOWNEPLACE SUITES MARRIOTT
VIRGINIA HOBBS CHARITABLE TRUST, SIMMONS BANK, TRUSTEE
THE NATIONAL OPERA CENTER AMERICA

Small 'microdoses' of psychedelic drugs could treat depression and anxiety

Chronic, Intermittent Microdoses of the Psychedelic N,N-Dimethyltryptamine (DMT) Produce Positive Effects on Mood and Anxiety in Rodents

ACS Chemical Neuroscience

Lava lamps, tambourines and, of course, psychedelic drugs were hallmarks of the 1960s. Psychedelic drugs can make people euphoric, though users can also become extremely anxious and agitated. But that's at a high dose. Now, in ACS *Chemical Neuroscience*, researchers report one of the first peer-reviewed studies on a new "microdose" psychedelic treatment regimen. In rats, the treatment appears to relieve anxiety and depression without the typical negative effects of the drugs.



According to the National Institute of Mental Health, about 6.7 percent of U.S. adults have had at least one major depressive episode, and about 19 percent have had an anxiety disorder in the past year. Medications for these conditions can be slow to work, and many people don't get better after taking them. Anecdotal reports have recently surfaced suggesting that low doses of psychedelic drugs given on a chronic, intermittent schedule could relieve depression and anxiety in humans without the hallucinogenic high. But although this regimen is becoming popular, it hasn't been rigorously studied or proven to work. So, David E. Olson and colleagues wanted to test the method scientifically in the laboratory.

The researchers treated male and female rats with low doses of N,N-dimethyltryptamine (DMT), a psychedelic drug that gained fame decades ago for its use in certain South American religious rituals. Rats received DMT every third day for about two months and were put through various tests. The regimen had anti-depressant and anti-anxiety effects on treated rats without negatively affecting their memories or social behaviors. There were a few sex-specific differences, with male DMT-treated rats gaining a lot of weight, and female DMT-treated rats having changes in their neurons compared to controls. More work needs to be done, but the researchers say that the results give

Join **FWLSC**

at Arts 5th Avenue in FW TX

from 7.30p - 10.30p

on Thursday, April 11

for expert talks addressing

"Innovative Methods to Alleviate Hunger

& Food Insecurity"

Live Music, Desserts & Snacks by Nonna Tata

- and the people you need to know!

Registration Up SOON at eventbrite.com

We tweet! @FWLSC

www.facebook.com/fwlsc/

info@fwlsc.org www.fwlsc.org

ACS Local Section
Dallas-Fort Worth

52nd Annual Meeting-in-Miniature

Saturday, April 27, 2019

We invite and encourage graduate and undergraduate students to submit abstracts for 10-12 minute oral presentations, with an additional 3-5 minutes for questions. Submit your abstract using the link below.
The submission deadline is **April 5, 2019**, although earlier is better.

All presenters and attendees must register no later than **April 5, 2019**, although earlier is better.
Please note that there is NO fee to attend the meeting. Registration is required because lunch will be provided by the Department of Chemistry (at no cost to the attendees), so we need an accurate head-count.

Visit our website to submit your abstract and register for the DFW-ACS Meeting-in-Miniature
https://chemistry.unt.edu/meeting-in-miniature

DEPARTMENT OF CHEMISTRY
College of Science
UNT
EST. 1890

9:00-9:30AM	Check-in
9:30-11AM	Session 1
11:00-11:15AM	Morning break
11:15-12:45PM	Session 2
12:45-1:45PM	Lunch
1:45-3:15PM	Session 3
3:15-4:00PM	Entertainment (TBA)
4:00PM	Awards Ceremony

From the ACS Press Room

‘Unclonable’ tag combats counterfeiters

Versatile and Validated Optical Authentication System Based on Physical Unclonable Functions

ACS Applied Materials & Interfaces

Discovering that your new designer handbag or gold watch is a fake is costly and annoying, and counterfeit medical devices or drugs could have even more serious consequences. But seemingly as soon as manufacturers develop a new method to ensure product authenticity, counterfeiters find a way to outsmart it. Now, researchers have created an “unclonable” tag that can never be replicated, even by the manufacturer. They report their results in ACS *Applied Materials & Interfaces*.

Each year, counterfeit goods cost billions of dollars in economic losses. These knock-offs, typically of inferior quality, often masquerade as luxury brands. Manufacturers have tried to incorporate unique tags or bar codes on their products so that store owners and consumers can verify a product’s authenticity, but counterfeiters often figure out how to copy these. Riikka Arppe-Tabbara, Mohammad Tabbara and Thomas Just Sørensen wanted to develop an authentication system using physical unclonable functions (PUFs) — tags based on random processes that are impossible to replicate. As they explain in their report, an example of a PUF would be throwing a handful of sand on a surface. Each throw generates a random pattern that cannot be copied.

To develop their anti-counterfeiting system, the researchers laser-printed QR codes on paper and then sprayed the PUF pattern on the surface. The PUF inks contained microparticles, which formed random patterns that showed up as white spots on a black background when magnified. To validate their system, the team generated 10,000 tags and imaged them with a smart phone camera to establish a registry. Then, they re-imaged the tags with different smart phone readers and tried to match them to the registry. The system correctly identified 76 percent of the PUF tags. None of the tags were identified incorrectly, but some codes that were dirty or out-of-focus required an additional scan. The researchers estimate that the system can generate 2.5×10120 unique codes.

The authors acknowledge funding from the Villum Fonden and the University of Copenhagen Proof-of-Concept Programme.

DFW Section

Nominations are invited for awards: Doherty, Schulz, and Chem Ambassador

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.

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. lectures at a fall meeting of the section.

The Chemistry Ambassador Award is newly instituted by the DFW Section to recognize an outstanding Section member who has made a significant impact via promoting chemistry to the community. The 2019 Chemistry Ambassador of the Year award is based on peer or self-nominations to the selection committee. Submissions should be one page in length and address the community outreach activities either through teaching, service, or working with legislators to affect public policy. Submissions will be evaluated on the impact made, which may include but not limited to how many people were reached, impact on individual people in the community, and exemplary commitment to the promotion of chemistry in the community.

Remember, a continuous flow of nominations is needed to maintain the quality of awards. Each nomination should contain completed nomination form, cover letter highlighting the nominee's accomplishments, and a copy of the CV. One seconding letter may accompany nominations. The nomination package should be sent by email as a single pdf file to Sean O'Brien at sobrien@ti.com. Nominations remain active for five years but should be updated annually.

Complete information and nomination forms are available at

https://dfw.sites.acs.org/awards.htm

Deadline May 15

From the ACS Press Room

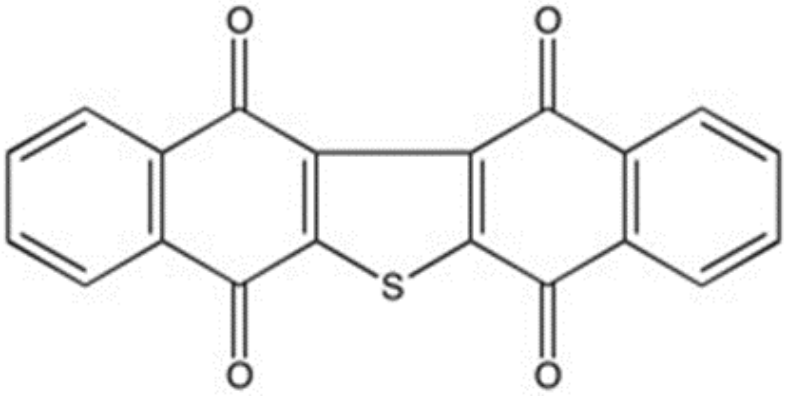
Seawater bacteria provides leads to fight melanoma

Advance of Seriniquinone Analogues as Melanoma Agents

ACS Medicinal Chemistry Letters

Malignant melanoma can be a particularly dangerous form of cancer, and more therapeutic options are needed. Now, researchers report in ACS **Medicinal Chemistry Letters** that a bacteria from seawater has inspired promising leads for an entirely new way to treat the disease.

In melanoma, cancer cells form in melanocytes, the cells that color the skin. While new cases of most types of cancer are declining, those of melanoma — the deadliest form of skin cancer — continue to climb, according to the U.S. Centers for Disease Control and Prevention. If melanoma metastasizes, or migrates to other locations in the body, prognosis is poor and treatment options are limited. New chemotherapy agents were recently approved that target melanomas with so-called "BRAF" mutations, but some of these tumors are already showing resistance to these therapies. William Fenical, James J. La Clair, Leticia Costa-Lotufo and colleagues decided the best solution would be to take aim at a completely different biochemical pathway in melanoma.



In 2014, the researchers discovered that seriniquinone, a natural product isolated from a rare marine bacteria, showed potent and selective activity against melanoma cells in a test tube. Even better, it was the first small molecule ever shown to target a particular protein involved in cancer proliferation. In their new work, the team identified the structural components of the natural product that were key to its activity, and then modified other parts of the molecule to make it more water soluble and easier to purify. Both these steps are necessary to make it more suitable as a drug. The researchers are now further refining these seriniquinone derivatives to optimize activity against melanoma.

The authors acknowledge funding from the National Cancer Institute, the Taubman Foundation and the São Paulo Research

From the ACS Press Room

What makes the deadly pufferfish so delectable

Sensory-Guided Analysis of Key Taste-Active Compounds in Pufferfish (Takifugu obscurus)
Journal of Agricultural and Food Chemistry

Some people consider pufferfish, also known as fugu, a delicacy because of its unique and exquisite flavor, which is perhaps seasoned by knowledge that consumption of the fish could be deadly. Now, researchers have identified the major compounds responsible for the taste of pufferfish, minus the thrill of living dangerously. They report their results in ACS' *Journal of Agricultural and Food Chemistry*.

Pufferfish get their name from their ability to inflate to a much larger size when threatened by predators. But if that defense mechanism fails, the predator may not survive long after its meal: The liver, ovaries, eyes and skin of most species of pufferfish contain tetrodotoxin, a potent neurotoxin. Although specially trained chefs can prepare fugu that's safe to eat, Yuan Liu and colleagues wondered if they could reproduce the flavor of pufferfish without the life-threatening toxin.

The researchers analyzed the key taste-active compounds in *Takifugu obscurus*, a species of pufferfish found mainly in the East and South China Seas. First, the team ground up pufferfish muscle tissue and cooked, filtered and centrifuged it to produce a liquid pufferfish extract. They then analyzed the extract and found amounts of 28 potential taste compounds, such as free amino acids, nucleotides and inorganic ions. Taste tests with trained panelists revealed that 12 of these compounds, when added to water, best simulated the flavor of pufferfish, which involved strong umami (savory) and kokumi (mouthfulness) components. When the researchers added two flavor peptides they isolated in a prior study, the imitation pufferfish extract tasted even more like the real thing.

These authors acknowledge funding from the National Natural Science Foundation of China.

Around the Area

UT-Arlington.

The fifth book on the history of chemistry co-edited by Dr. E. Thomas Strom was published online on Dec. 14. The hard copy from Oxford University Press will appear later this year. This ACS symposium book was titled "The Posthumous Nobel Prize in Chemistry. Volume 2. Ladies in Waiting for Nobel Prizes." As can be deduced from the title, the book dealt with women undeservedly overlooked for the Nobel Prize. The first volume in the series, "The Posthumous Nobel Prize in Chemistry. Volume 1. Correcting the Errors and Oversights of the Nobel Prize Committee," finally appeared in hard copy from Oxford University Press last October.

ACS Volunteerism: Let Me Know!

The American Chemical Society exists to promote all branches of chemistry and those who work in them. Local sections such as ours here in the Dallas-Fort Worth LS are yet more responsible for supporting their members.

So—since I have an entire Chair year to work with the Executive Committee and ACSDFW members to optimize the benefit of belonging to the ACS and the Local Section specifically, please let me know what you're thinking about ACS membership and the issues—positive and negative- that affect your view of participation in ACS.

What programs would you most enjoy? What information would be useful? Is the local section what you need?

Let me know!

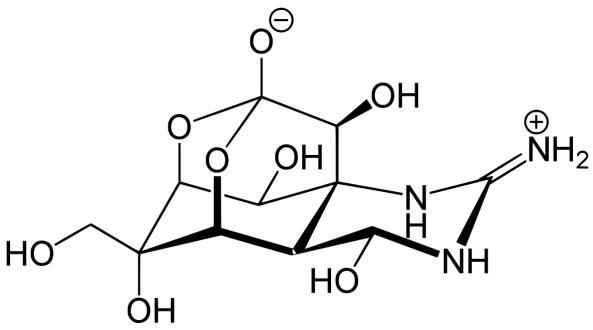
denise lynn merkle, phd

2019 ACSDFW Chair (among other things)

dmerkle@sciconsult.com

From the editor

Why does fugu taste good enough to risk being poisoned by tetrodotoxin? This compound is a sodium channel blocker (not good) and is heat-stable, so it is not inactivated by cooking. It has no known antidote and causes a plethora of symptoms (all unpleasant), including facial parasthesias (tingling, numbness), paralysis, grinding teeth, sweating, and so on, with worst case scenario being respiratory arrest and death. AND it has been implicated as the Haitian "zombie drug.". The estimated median lethal dose is 0.33 mg per kilogram of body weight.



It is found in all octopuses and cuttlefish, some angelfish, Nassarious gastropods, Naticidae snails, starfish, xanthid crabs, arrow worms and ribbon worms, some flatworms, and Atelopus toads, some newts and salamanders, as well as pufferfish. It is produced by symbiotic bacteria (*Aeromonas, Alteromonas, Bacillus, Pseudomonas*, and *Vibrio* species) that live in the liver, skin, and sex organs.

That still did not answer my initial question: why does fugu taste good enough to risk such a nasty fate? A recent article in *JAgFoodChem* (page 14 of this issue) explores the flavor molecules found in the pufferfish in search of the answer to that question.

Don't forget the upcoming Meeting-in-Miniature at UNT and be sure to submit your award nominations in May.

Best regards,
Connie