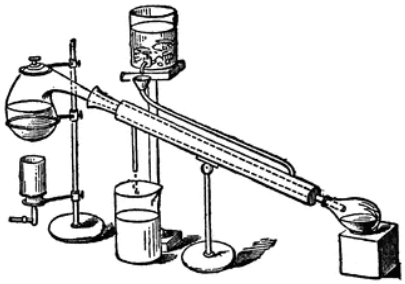
SOUTHWEST RETORT



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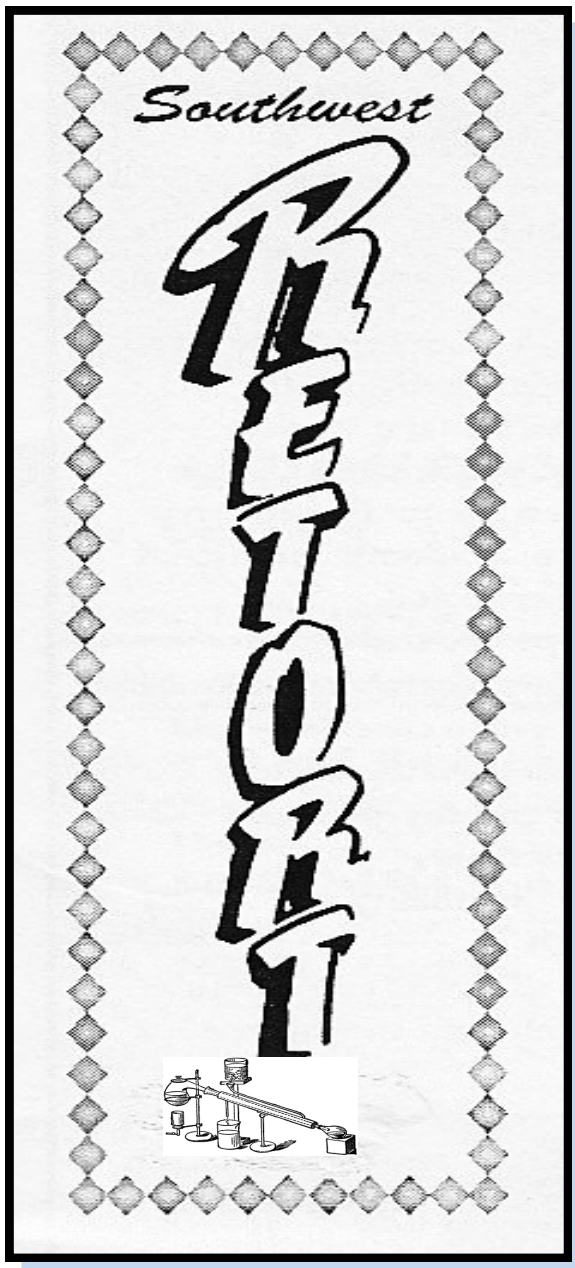

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SERVICES and ANNOUNCEMENTS

FIFTY YEARS AGO IN *THE SOUTHWEST RETORT*

Compiled by
E. Thomas Strom

Dr. Gordon Teal, Vice President and Chief Scientist for Corporate Development at Texas Instruments (TI) and past-chair of the Dallas-Ft. Worth ACS Section was honored with the ACS Award for Creative Invention at the Toronto ACS meeting in May. Dr. Teal, holder of 50+ patents on a variety of electronic innovations, was cited for "essential contributions to the achievement of the junction transistor and for his germanium and silicon single crystal developments vital to semiconductor science and technology."

Gordon Teal's working career started in Dallas at an early age: At eight he was nailing trays together in a trunk factory; next he was a barefoot newsboy on downtown streets, and from age ten to twelve he was working half day as a printer's assistant for a Texas oil well status reporting sheet. On turning to public schools he graduated first in his class in June, 1924 with the highest scholastic record of all students graduating from all Dallas high schools at that time. At Baylor he was a math major until his senior year when he became fascinated with chemistry. He received his Ph.D, from Brown University in 1931. He worked at Bell Laboratories from 1930 until he joined Texas Instruments in 1953. While with Bell he prepared the first high purity single crystals of germanium. Subsequently he invented the grown-junction technique for adding impurities to single germanium crystals in precisely controlled amounts. Using these techniques, he worked with Morgan Sparks and William Schockley to make the first junction transistor. About a year after returning to TI his native Dallas, his group produced the first commercial silicon transistors.

The officers for the Dallas-Ft. Worth ACS section are as follows: Chair, **Dr. Morton D. Prager**; Chair-Elect, **Dr. William H. Watson**; Secretary, **Dr. John A. Maguire**; Treasurer, **Dr. James E. Cooper**; Directors, **Dr. Robert J. Spear, Dr. Manfred G. Reinecke**; Councilors, **Dr. Frank C. Edwards, Mr. Russell Walker**.

Dr. George H. Stewart, formerly of Gonzaga University, became chairman of the chemistry department at Texas Woman's University (TWU) on Sept. 1. Previous chairman **Dr. Lyman R. Caswell** asked to be relieved of administrative duties to return to teaching and research. A new faculty member at TWU is **Dr. James E. Johnson**, who comes to Denton from Sam Houston State University.

North Texas State University *(now UNT)* faculty members attending the September ACS meeting in Chicago include **Drs. L. J. Theriot, J. L. Carrico, P. R. Jones** and **J. L. Marshall.** New instrumentation obtained by the chemistry department includes Jeolco PS-100 and MH-60 NMR spectrometers and a Beckman-Spinco amino acid analyzer.

At UT-Dallas **Dr. Harold Werbin** presented a paper at the 4th International Congress of Radiation Research in Evian, France. At the Mobil Field Research Laboratory **Dr. James C. Melrose** is a member of the Advisory Board for the series *Recent Progress in Surface Science*. **Dr. E. Thomas Strom** gave a seminar on "ESR of Substituent Effects" at TWU.

From the ACS Press Room

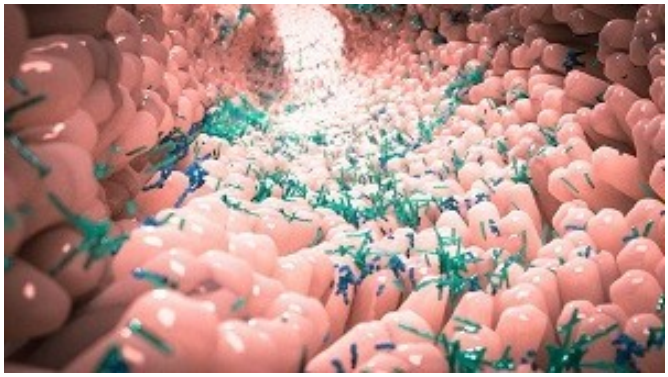
Sampling the Gut Microbiome with an Ingestible Pill

"An Ingestible Self-Polymerizing System for Targeted Sampling of Gut Microbiota and Biomarkers"

ACS Nanonalytical Chemistry

Gut microbes affect human health, but there is still much to learn, in part because they're not easy to collect. But researchers now report in ***ACS Nano*** that they have developed an ingestible capsule that in rat studies captured bacteria and other biological samples while passing through the gastrointestinal (GI) tract.

Currently, researchers obtain gut microbes by collecting stool samples or using techniques such as colonoscopy or endoscopy. However, stool samples can't capture all the microorganisms in the upper GI tract, and they can't keep microbes from different parts of the tract separate. Colonoscopy and endoscopy are invasive procedures, which deters some patients. Sarvesh Kumar Srivastava and colleagues wanted to avoid these drawbacks by designing a device that could be swallowed and then eliminated.



To better understand the gut microbiome, researchers have developed a pill that can capture samples while passing through the GI tract.

Credit: Alpha Tauri 3D Graphics/Shutterstock.com

The researchers developed a self-polymerizing reaction system of poly (ethylene glycol) diacrylate monomer, iron chloride and ascorbic acid — all loaded into tiny hollow cylinders. The cylindrical microdevices were packaged in miniature gelatin capsules, which were coated with a protective layer to prevent digestion in the stomach's acidic environment. After they were fed to rats, the capsules remained protected in the stomach but disintegrated in the small intestine's more-neutral pH, releasing the microdevices. Exposure to intestinal fluid caused the cylinders' chemical cargo to polymerize, forming a hydrogel that trapped microbes and protein biomarkers in its surroundings, much like an instant snapshot of the intestine. The devices, which didn't cause inflammation or toxicity, were then surgically removed — a step that the researchers say will be replaced by natural elimination in future. High-throughput ***se-***

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Press Room continued from page 6

uencing studies showed that the bacterial population the devices captured closely resembled that of the gut. The researchers also demonstrated that these tiny cylinders could be triggered over a range of pH to deliver biologics, like insulin, to cells in a petri dish in the presence of intestinal mucus. This technology could advance understanding of host-microbiome interactions, providing insight into associated GI disease progression and paving the way for personalized gut therapies, the team says.

The authors acknowledge funding from H.C. Ørsted COFUND, the European Union's Horizon 2020 Programme, the Danish National Research Foundation and Villum Fonden.

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From the ACS Press Room

Making Dog Food More Delectable by Analyzing Aromas

"Characterization of the Key Aroma Compounds in Dog Foods by Gas Chromatography–Mass Spectrometry, Acceptance Test, and Preference Test"

Journal of Agricultural and Food Chemistry

Dogs aren't known for being picky about their food, eating the same kibble day after day with relish. However, owners of pampered pooches want their pets to have the best possible culinary experience, especially for those rare finicky canines. Now, researchers reporting results from a pilot study in ACS' ***Journal of Agricultural and Food Chemistry*** have identified key aroma compounds in dog food that seem to be the most appealing to canines.

For dogs, palatability depends on a food's appearance, odor, taste and texture — just as it does for people. Previous studies have suggested that odor is especially important for dogs. Some scientists have identified volatile compounds in dog food, but not much is known about how specific aroma compounds influence how readily the dog eats the food. Maoshen Chen and colleagues wanted to identify the key aroma compounds in six dog foods and correlate the compounds with dogs' intake of the foods.

The researchers began by feeding six adult beagles one of six foods for one hour each and determining how much the dogs ate. The intake of three of the foods was two to four times higher than that of the other three foods. Using mass spectrometry, the researchers found that 12 volatile aroma molecules were correlated, either positively or negatively, with the beagles' intake of the six foods. Then, the researchers added each aroma compound to an odorless food and gave the beagles a choice between food containing one of the compounds and the odorless food itself. From these experiments, the team determined that the dogs preferred food containing (*E*)-2-hexenal (which humans associate with an unpleasant, fatty odor), 2-furfurylthiol (sulfury, roasted, smoky odor) and 4-methyl-5-thiazoleethanol (meaty odor). In contrast, the dogs didn't care for food containing (*E*)-2-octenal (a slightly different unpleasant, fatty odor). Although other dog breeds and more subjects should be tested, these results could help dog food manufacturers formulate more palatable chow, the researchers say.

The authors acknowledge funding from the National Natural Science Foundation of China, the National Key R&D Program of China, the 111 Project, the National First-Class Discipline Program of Food Science and Technology, and the program of Collaborative Innovation Center of Food Safety and Quality Control in Jiangsu Province, China.

From the ACS Press Room

The Widespread Footprint of Blue Jean Microfibers

"The Widespread Environmental Footprint of Indigo Denim Microfibers from Blue Jeans"

Environmental Science & Technology Letters

With many people working from home during the COVID-19 pandemic, blue jeans are a more popular wardrobe choice than ever. But most people don't think about microscopic remnants of their comfy jeans and other clothing that are shed during laundering. Now, researchers reporting in

Denim microfibers shed during washing were detected in wastewater effluent, lakes and remote Arctic marine sediments.
Credit: Moonflies Photo/Shutterstock.com

ACS' ***Environmental Science & Technology Letters*** have detected indigo denim microfibers not only in wastewater effluent, but also in lakes and remote Arctic marine sediments.

Over the past 100 years, the popularity of denim blue jeans has grown immensely, with many people wearing this type of clothing almost every day. Studies have shown that washing denim and other fabrics releases microfibers — tiny, elongated particles — to wastewater. Although most microfibers are removed by wastewater treatment plants, some could still enter the environment through wastewater discharge, also known as effluent. Blue jean denim is composed of natural cotton cellulose fibers, processed with synthetic indigo dye and other chemical additives to improve performance and durability. Miriam Diamond, Samantha Athey and colleagues wondered whether blue jeans were a major source of anthropogenic cellulose microfibers to the aquatic environment.

The researchers used a combination of microscopy and Raman spectroscopy to identify and count indigo denim microfibers in various water samples collected in Canada. Indigo denim made up 23, 12 and 20% of all microfibers in sediments from the Great Lakes, shallow suburban lakes near Toronto, Canada, and the Canadian Arctic Archipelago, respectively. Despite a high abundance of denim microfibers in Great Lake sediments, the team detected only a single denim microfiber in the digestive tract of a type of fish called rainbow smelt. Based on the levels of microfibers found in wastewater effluent, the researchers estimated that the wastewater treatment plants in the study discharged

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From the ACS Press Room

New Fabric could Help Keep You Cool in the Summer, Even without A/C (video)

"Thermoconductive, Moisture-Permeable, and Superhydrophobic Nanofibrous Membranes with Interpenetrated Boron Nitride Network for Personal Cooling Fabrics"

ACS Applied Materials & Interfaces

Air conditioning and other space cooling methods account for about 10% of all electricity consumption in the U.S., according to the U.S. Energy Information Administration. Now, researchers reporting in ***ACS Applied Materials & Interfaces*** have developed a material that cools the wearer without using any electricity. The fabric transfers heat, allows moisture to evaporate from the skin and repels water.

Watch a video about the new fabric here.

Cooling off a person's body is much more efficient than cooling an entire room or building. Various clothing and textiles have been designed to do just that, but most have disadvantages, such as poor cooling capacity; large electricity consumption; complex, time-consuming manufacturing; and/or high cost. Yang Si, Bin Ding and colleagues wanted to develop a personal cooling fabric that could efficiently transfer heat away from the body, while also being breathable, water repellent and easy to make.

The researchers made the new material by electrospinning a polymer (polyurethane), a water-repelling version of the polymer (fluorinated polyurethane) and a thermally conductive filler (boron nitride nanosheets) into nanofibrous membranes. These membranes repelled water from the outside, but they had large enough pores to allow sweat to evaporate from the skin and air to circulate. The boron nitride nanosheets coated the polymer nanofibers, forming a network that conducted heat from an inside source to the outside air. In tests, the thermal conductivity was higher than that of many other conventional or high-tech fabrics. The membrane could be useful not only for personal cooling, but also for solar energy collection, seawater desalination and thermal management of electronic devices, the researchers say.

The authors acknowledge funding from the National Natural Science Foundation of China, the Interdisciplinary Studies Program for the Central Universities and the Fundamental Research Funds for the Central Universities.

From the ACS Press Room

Decreased Iron Levels in Seawater Make Mussels Loosen Their Grip

"Availability of Environmental Iron Influences the Performance of Biological Adhesives Produced by Blue Mussels"

Environmental Science & Technology

Mussels secrete sticky plaques that help them attach to wet surfaces, such as rocks on the beach. These adhesive structures are rich in iron, which is thought to help make the attachments strong yet flexible. Now, researchers reporting in ***Environmental Science & Technology*** have shown that mussels form weaker attachments in iron-deficient seawater, revealing a possible consequence of altered iron bioavailability in oceans.

As oceans become more acidic in a changing climate, iron dissolves and is less bioavailable to filter feeders, such as mussels, that strain iron particles from seawater. In mussels, iron helps cross-link proteins in the sticky plaques that attach to surfaces and adds mechanical toughness to the hair-like threads that link the plaque to the mollusk's inner tissues. Jonathan Wilker and colleagues at Purdue University wondered how mussels' ability to adhere to surfaces would be affected by changing iron levels in seawater.

To find out, the researchers cultured mussels in artificial seawater containing lower, normal and higher iron levels. The researchers grew the mussels in each water condition for three days, during which the creatures attached to aluminum plates. Then, the researchers cut off the threads near the shell and pulled upward on them, measuring the force needed to remove the plaque from the plate.

As the concentration of iron in the water increased, so did the plaque's stickiness, except for the highest iron level, at which adhesion slightly decreased. The team also observed that the plaques became smaller and darker as the iron concentration increased, and the porous microstructure of the plaques became more pronounced. This study is the first to examine how changing iron levels affect the performance of a biological material in a whole animal, the researchers say.

The authors acknowledge funding from the Office of Naval Research, the National Science Foundation and the Purdue Research Foundation.

From the ACS Press Room

Technique Fishes Valuable Nutrients Out of Shrimp Processing Water

"Flocculation and Flotation to Recover Protein-Enriched Biomasses from Shrimp Boiling and Peeling Process Waters: A Case Study"

ACS Sustainable Chemistry & Engineering

The seafood industry requires large amounts of water for food processing. Before used water is discharged, some organic matter, including protein, is typically removed. This sludge is usually landfilled or converted into biogas, which results in the valuable nutrients it contains being lost from the food chain. Now researchers report in *ACS Sustainable Chemistry & Engineering* a method to recover these nutrients from shrimp processing water so they can be incorporated in food or feed.

At present, food processing factories remove organic matter from water by first clumping it together with chemical treatments (coagulation) and then raising those clumps to the surface with a technique such as "dissolved air flotation" (DAF). Coagulation is traditionally carried out with iron or other non-food-grade flocculants that clean the water efficiently, but render the removed sludge unsuitable for food or feed purposes. One alternative is to filter the nutrients from the water using membranes, but the equipment is expensive and can clog. A more sustainable option is to switch to food-grade flocculants in combination with DAF. Although a few other studies have shown that such a combination could work, these were small-scale experiments. Ingrid Undeland and Bita Forghani of Chalmers University of Technology and colleagues wanted to scale up the combined food-grade flocculation-DAF process and assess the nutrient composition of the recovered biomass.

At a processing plant, the team treated shrimp processing water with alginate or carrageenan, edible flocculants derived from seaweed. The resulting particles were then collected via DAF and dried. The combination technique captured up to 98% of the protein present in the water, considerably more than flotation alone could collect. The recovered shrimp biomass contained up to 61% proteins and 23% total lipids. The researchers concluded the process could be used for recovering nutrients from shrimp processing water for later use in food or feed.

The authors acknowledge funding from Nordic Innovation.

From the ACS Press Room

The Widespread Footprint of Blue Jean Microfibers

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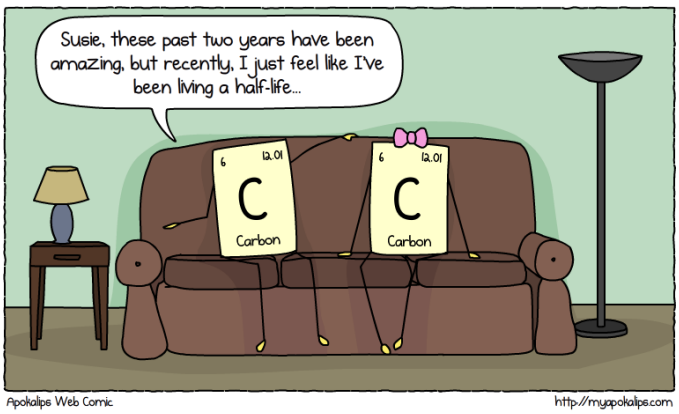
about 1 billion indigo denim microfibers per day. In laundering experiments, the researchers found that a single pair of used jeans could release about 50,000 microfibers per wash cycle. Although the team doesn't know the effects, if any, that the microfibers have on aquatic life, a practical way to reduce denim microfiber pollution would be for consumers to wash their jeans less frequently, they say. Moreover, finding microfibers from blue jeans in the Arctic is a potent indicator of humans' impact on the environment, the researchers add.

The authors acknowledge funding from Environment and Climate Change Canada, Fisheries and Oceans Canada, Natural Sciences and Engineering Research Council of Canada, the Northern Contaminants Program, the University of Toronto Faculty of Arts & Science and the Ocean Conservancy.



Winners of the Doherty, Schultz, and Chemistry Ambassador Awards for 2020

The ACS DFW local section is pleased to announce the winners for the Doherty, Schultz, and Chemistry Ambassador Awards for 2020. The ACS DFW local section would like to thank the 2020 Awards Committee led by Professor John P. Ferraris (University of Texas at Dallas) for their hard work to select the winners for 2020.

Wilfred T. Doherty Award

Nicolay V. Tsarevsky, who is an Associate Professor in the Department of Chemistry at Southern Methodist University, is the winner of the **Wilfred T. Doherty Award for 2020**. The Doherty Award recognizes excellence in chemical research or chemistry teaching, meritorious service to ACS, the establishment of new chemical methodology (for the industry), solution of pollution problems, and advances in curative or preventive chemotherapy.

Nick Tsarevsky obtained M.S. degree in theoretical chemistry and chemical physics in 1999 from the University of Sofia, Bulgaria, and a Ph.D. degree in chemistry in 2005 from Carnegie Mellon University under the supervision of Prof. Kris Matyjaszewski. He was a Visiting Assistant Professor at the Department of Chemistry at Carnegie Mellon University (2005-6), and a member of the founding team of ATRP Solutions, Inc., of which he served as Chief Science Officer (2007-2010). He joined the Department of Chemistry at Southern Methodist University in the summer of 2010 as an assistant professor, and in 2016 he was promoted to associate professor with tenure. He has authored and co-authored over 100 journal articles and book chapters, 1 textbook, and has served as the co-editor of 7 books. He also co-authored two scripts for science education programs for children (shown on national TV in Bulgaria). He received several awards, including the IUPAC Young Observer Fellowship, an NSF CAREER award, and the 2020 W. T. Doherty Award of the Dallas – Fort Worth local section of the ACS. Research interests include polymerization techniques, functional materials, coordination chemistry and catalysis, and the chemistry hypervalent compounds, in addition to the history of chemistry and chemical education. He served as chair of the Polymer group of the Pittsburgh local section of the ACS as well as chair of the Section itself. Since 2018, he has been the program chair of the Division for the History of Chemistry (HIST) of the ACS.

Werner Schulz Award

Nicole Lyssy is the winner of the **Werner Schulz Award for 2020**. The Schulz Award recognizes outstanding high school chemistry teachers, who, like the late Dr. Werner Schulz, bring excellence to the teaching of chemistry.

Winners of the Doherty, Schultz, and Chemistry Ambassador Awards for 2020

Nicole Lyssy began her chemistry teaching career at Bryan High School after earning a BS in Biochemistry from Texas A&M University in 1999 and building upon the many teachers who influenced her. A move to north Texas in 2003 brought her to Plano West Senior High, where she was able to grow the AP Chemistry program, sponsor an active ACS Chemistry Club, and co-sponsor LASER (science fair). She has been involved in curriculum and instructional design for Plano ISD and a professional development presenter at the district and state levels. She is currently creating an AP Chemistry course for the International Academy of Science and president of the Associated Chemistry Teachers of Texas.

Chemistry Ambassador Award

William H. Hendrickson Jr. is the winner of the **Chemistry Ambassador Award for 2020.** The Chemistry Ambassador Award *recognizes an outstanding member of the ACS DFW local section who has made a significant impact via promoting chemistry to the community.*

Bill Hendrickson (aka Dr. William H. Hendrickson Jr.) is a Distinguished Emeritus Professor of Chemistry at the University of Dallas, where he taught organic chemistry for 40 years. He was a department chair from 2005-2015 and the Director of the O'Hara Chemical Sciences Institute from 2000-2017. He holds a BS from Louisiana Tech and a Ph.D. from LSU. He did a post-doc at Johns Hopkins and was a Visiting Professor of Chemistry at UAB before coming to the University of Dallas. At UD, he received the President's Award twice (1989, 1993), and in 2015, he was named King Fellow for outstanding service to the university and research. Bill has been an ACS member since 1974 and has served as secretary and chair of the DFW Section, as well as participating in many ACS events (Chemistry Olympiad, Meeting-in-Miniature, science fairs, National Chemistry Week, Science Bowl). From 1989 to 2010, he did chemistry demonstration shows at numerous schools in the DFW area. Most importantly, Bill has mentored over 90 undergraduate students in summer research, with student publications in ACS journals, presentations at regional and national meetings, and the Meeting-in-Miniature

LOSS OF A SECTION ICON
SMU'S EDWARD BIEHL LEAVES US
1932-2019
A Tribute from E. Thomas (Tom) Strom

We in the DFW Section recently learned that SMU chemistry professor Edward Biehl died on Oct. 14, 2019 at age 87. Because of his long service to the DFW chemical community, his many contributions to synthetic organic chemistry, and his spearheading the amazing growth of chemical research at SMU, his career deserves to be carefully evaluated and celebrated.

I knew and admired Ed for over 50 years, so I can't avoid adding my personal reminiscences to this tribute. One factor will be emphasized in this piece, Ed's lasting efforts in music. Ed was trained as a musician, and throughout his life he also continued to function as a musician at a high level. My last memory of Ed was from a couple of years ago when I gave him and his wife Julianne a ride to their car after a Sunday afternoon performance of the Dallas Opera. Although I met Ed very soon after my coming to work at Mobil in Dallas, I learned about his musicianship only by accident. I walked into my church to attend a wedding service, and I found Ed sitting at the organ. The bride, an SMU student, had asked her favorite chemistry teacher to play for her wedding. Ed had an additional career as church organist for almost 40 years in Presbyterian churches in Pittsburgh, PA, Irving, TX, and Dallas.

Ed was born on July 14, 1932, in Pittsburgh, PA, during the heart of the depression. Although his family had few resources, the family did own an upright piano and phonograph. Ed remembers loving to hear a recording of Tchaikovsky's 4th Symphony. However, he didn't play piano until he started taking group piano lessons at age nine. In nine months he was playing Beethoven's Pathetique Sonata. When he entered ninth grade, well known piano pedagogue Martin Miesler became his teacher. Ed was encouraged to learn organ when he entered high school, so that he could play with the orchestra. He played organ for the students for 30 minutes every day before the start of school. This led to a church organist job when he was an 11th grader.

Although Ed had a music scholarship to Duquesne, he was unable to enter college after high school because of poor family finances. His father had died six months after he had graduated from high school. Instead Ed joined the Air Force. He served

four years, with some of his service spent on Okinawa during the Korean war. He was a chaplain's assistant and played the organ on the side. He also played piano with an

Air Force jazz group.

After Ed left the service, he entered the University of Pittsburgh in January, 1955. He had decided he was going to be a psychiatrist. Even though he was a pre-med, he had to stipulate a major. An ex-naval officer, who was also an entering freshman, said he was going to be a chemistry major and suggested that Ed be a chemistry major. So, with only one year of high school biology and one year of high school algebra, Ed chose to become a chemistry major.

Somehow he managed to pass the math qualifier by one point, so they put him in college algebra over his strong protests (he had wanted remedial algebra).

Ed met his future wife Julianne Addis, an art teacher, when they both sang in a church choir. He wrote her a note asking her for a date. Julianne had remembered Ed from high school; but she was three years older than Ed, so she remembered him as a lower classman. Nevertheless, she agreed to the date. Eleven days later he proposed, and they were married about three months after that first date. Ed had to drop out of school to work full time for a while, but he still took ten hours per term in night school. After a year, with the help of the GI bill and part-time jobs, he was able to go back to school full time. He played organ for Pitt basketball and hockey games and also served as a church organist. With Ed's poor math and science background, he felt it remarkable that he was able to get through. He made Phi Beta Kappa as an undergraduate, and poet Robert Frost was the speaker at his initiation. He attributes much of his success to his music training, *i.e.*, he was able to memorize large amounts of material quickly. As a senior he began undergraduate research with Bob Levine. When he continued at Pitt as a graduate student, he did organic research with Levine. It was then that he did his first work on benzyne chemistry. Ed managed to navigate the path from freshman to Ph.D.

holder in six and a half years, making A's in every undergraduate and graduate course.

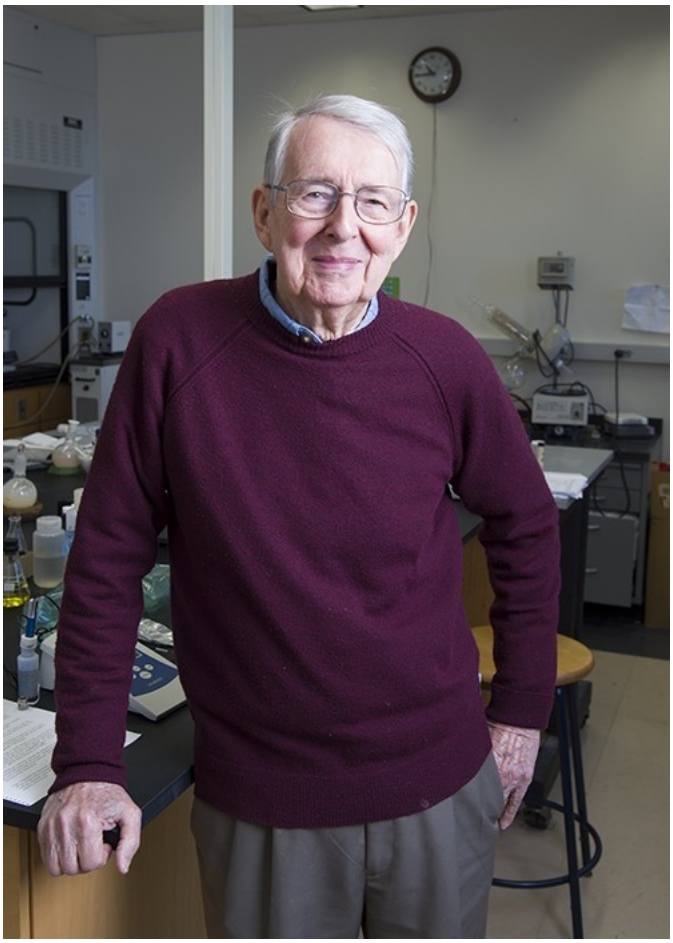
Levine had encouraged Ed to seek an academic position. After Ed spent one year working at Monsanto, he joined the SMU faculty in 1962. Julianne had actually pointed out the SMU ad in *C&EN* to Ed. At that time the focus at SMU in chemistry was mainly on teaching, and Ed turned out to be an outstanding teacher. In the '80's he won the Deschner and Perrin Awards at SMU, awards previously only garnered by humanities faculty. In those days SMU gave an occasional master's degree in chemistry, but there was no Ph.D. program in the department. Despite that handicap, Ed carried out a vigorous research program with help of undergraduates and post-docs, while carrying a significant teaching load. One of Ed's fellow faculty members told me Ed's work day started at 6 a.m. and ended at 5 p.m. One day when I visited Ed, he showed me the organic lab experiment that he was setting up. He proudly pointed out that he was teaching that three hour lab. My experience had been that regular faculty never taught labs; the labs were always the responsibility of teaching assistants. It was different with Ed.

Ed won the DFW Section's W. T. Doherty Award in 1992. At that time he had 118 articles either published or in press, a remarkable effort. Ed had become chair of the department in 1981, and 70 of those articles came after he became chair. At the time of his 2014 retirement, his publication list had reached 275 articles, nine patents, and a number of review chapters on thiophene and benzyne chemistry.

The main thrust of Ed's research involved the synthetic applications of the aryne reaction. His most significant contributions have been in the syntheses of biologically important fused ring heterocycles. Using arynes generated by lithium dialkyl amides, he had carried out a number of annulation reactions yielding a variety of fused ring heterocycles. In high yield, single pot reactions, he had been able to synthesize a number of biologically important compounds, which previously could only be obtained through a series of low yield synthetic steps. His research group was the first to carry out a successful benzyne-click reaction using microwave heating and to synthesize a nitrobenzyne intermediate.

After 29 years as chair, Ed stepped down from that position. He taught organic chemistry for the last time in the fall of 2014. Ed had served SMU with devotion. He chaired numerous faculty committees and was a member of the faculty senate as well. He also served the DFW Section of the ACS twice as chair and was an ACS councilor from 1979-1984. He received the SMU Faculty Lifetime Achievement Award

in 2016. He also won a Distinguished Alumni Achievement Award from the University of Pittsburgh. Just a few years ago he received the Kametani Award, sponsored by the Japan Heterocyclic Society for outstanding contributions to heterocyclic chemistry.



Ed was an avid walker, and he would always walk to the University from his nearby home. Last October 14th he walked to the University as usual, but on the way home he fell and severely injured his brain. There was no hope of recovery. His wife Julianne, other family members, and the night chaplain of the hospital held hands around Ed and prayed the Lord's Prayer. Immediately after the final words of the Prayer, "forever and ever," Ed breathed his last. He was a veteran, and his body was removed from the hospital in a flag-draped coffin carried by a group of military veterans. He was buried in the Dallas-Ft. Worth National Cemetery. Ed is survived by his wife of 64 years Julianne, their children Kathy Biehl, Kimberley Fryar, Kurt Biehl, and Karen Biehl, and grandchildren Michael and Zoe Biehl.

As I think about the career of Ed Biehl, it becomes quite clear that he was a triple threat, an outstanding teacher, researcher and administrator. He had a razor sharp wit, but he always used it to amuse, not to poke fun. He could make connections with a variety of people. I am so pleased that he considered me a friend, and I am awed by what he was able to accomplish. The SMU chemistry program is on firm ground thanks to his efforts. We all will miss him in the DFW ACS Section, but he left a lasting series of accomplishments for us to appreciate.

This tribute has been partially based on my earlier profile of Ed from a 1992 Southwest Retort plus a recent SMU tribute available online. For her helpful information I want to thank most of all Mrs. Julianne Biehl. For their additional insights I would like to thank SMU faculty members Drs. John Buynak, Nick Tsarevsky, Mike Lattman, Patty Wisian-Neilson, and Elfi Kraka.

Around the Area

UT Arlington

Dr. Robin Macaluso and her Ph.D. student **Melissa Orr** have been awarded an NSF award for the Graduate Research Fellowship Program. Their project is titled "Defining Structure-Property Relationships in Rare-Earth Oxychalcogenides."

Dr. Kayunta Johnson-Winters was nominated by the Provost to participate as a Fellow in Cohort #3 of the Texas Leadership Academy.

Dr. Purnendu (Sandy) Dasgupta organized a symposium titled "Ions, Macromolecules, Resins, and Flowmetry: Tribute to Hamish Small" for the recent virtual ACS San Francisco National Meeting. He presented a broadcast talk on "Open Tubular Ion Chromatography. The Trials and Tribulations to Approach Small." Sandy also received a four year renewal of his NSF grant "Tubular and Planar Approaches to Separations (TAPAS)."

Dr. Frank Foss and **Dr. Warda Ashraf** have been awarded an NSF grant for their project "Controlling the Interaction Between Carbon Dioxide (CO2) and Cementitious Materials Using Biomimetic Molecules." Dr. Foss has also received a Welch Foundation grant for his project "Ion Binding, Mobility, and Single Molecule Fluorescence Sensing at Molecularly Designed Gas-Solid Interfaces."

Dr. Rasika Dias has been awarded an NSF grant to study "Development of New Materials and Methods for Effective, Selective, and Energy-Efficient Olefin/Paraffin Separation and Ethylene Detection." Dr. Dias was also awarded an American Floral Endowment for his project on "Inhibitors of Ethylene Action for Improving Cut Flower Longevity."

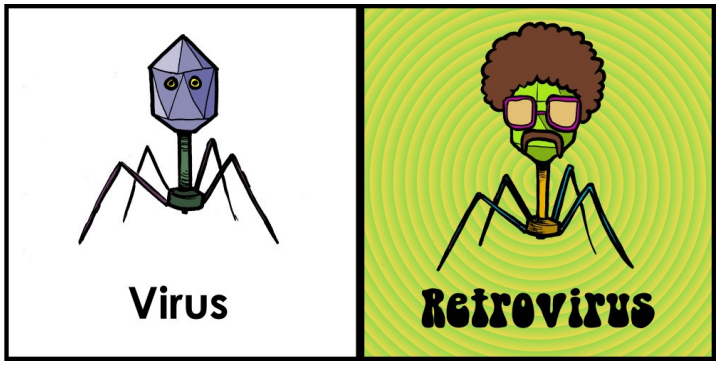
Dr. Carl Lovely has been awarded an NSF grant for "New Methods for Heterocycle Synthesis."

Dr. Junha Jeon has been awarded an NIH grant to study "Catalytic Reductive C-H and C-C Silylation with Silyl Acetals."

Dr. Sherri McFarland has been given an NSF grant to study "Collaborative Research: Developing Cancer-Specific Targeting Near-IR Photosensitizers for in vitro Theranostic Photodynamic Therapy and Photothermal Therapy."

Dr. Kwangho Nam has been awarded a Lehigh University (Prime NIH) award for his project "CHARMM-GUI Development for Biomolecular Modeling and Simulation Community."

Dr. Byung Ran (Ranny) So is a new Assistant Professor. She will be working in the area of biochemistry.



From the Editor

This season's first Southwest Retort marks its seventy-third year, and its ninth year as an online publication.

Of the Press Room articles, I found the paper on mussels' surface attachment mechanisms (*Environmental Science and Technology*) extremely interesting. It turns out that mussels use particulate iron from sea water: the iron helps to cross-link the proteins in the sticky material that attach the mussels to surfaces. As CO_2 levels in the atmosphere rise, the pH of sea water decreases as CO_2 is dissolved, and iron particulates are dissolved. In a quote from the paper, "Changing ocean chemistries will alter the iron bioavailability when a decrease in pH shifts elemental speciation from particulate to dissolved, hindering the ability of filtering organisms to capture nutrients", one of many side effects of global warming.

What can we say about 2020? National ACS meetings canceled, no local meetings...at least until everyone geared up to do virtual meetings! As a matter of necessity, this has certainly helped all of us learn how to organize, set up, and deal with on-line meetings.

So, mask up, wash your hands a lot, and stay safe!