

The Chemical Record

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Columbus Section of the American Chemical Society, Inc.

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ABOUT THE COLUMBUS SECTION



The Columbus Section of the American Chemical Society comprises approximately 1,500 members who live and work in the following central Ohio counties: Delaware, Fairfield, Fayette, Franklin, Hocking, Knox, Licking, Madison, Marion, Morrow, Muskingum, Perry, Pickaway, Ross, and Union.

The Mission of the American Chemical Society (ACS) is to encourage in the broadest and most liberal manner the advancement of the chemical enterprise and its practitioners. Toward that end, the ACS advances scholarly knowledge, provides professional services and support, communicates with varied audiences, and is actively involved in the science, education, and public policy arenas.

The Columbus Section of the ACS adheres to this mission and the strategic thrusts of the national organization and leadership by providing programs and networking opportunities for Chemistry professionals in Central Ohio.

We invite ACS members and scientists in the community to lend their expertise and talents to our activities in science education, government and legislative policy issues, safety in our industrial plants and in our communities, and care of our land.



MEETING NOTICE

Columbus Section of the American Chemical Society, Inc.
columbus.sites.acs.org

Meeting #895

Drugging Undruggable Targets with Macrocyclic Peptides

Prof. Dehua Pei
Kimberly Professor, Department of Chemistry and Biochemistry
The Ohio State University

Tuesday, May 15, 2018

Ohio Dominican University
Bishop James A. Griffin Student Center (Room No. 259/260)
1216 Sunbury Road
Columbus, Ohio 43219

PROGRAM DETAILS

5:00 – 6:00 PM	Executive Committee Meeting – All members are welcome to attend.
6:00 – 6:30 PM	Check in, Social Hour – Cash Bar
6:30 – 7:15 PM	Dinner: <ul style="list-style-type: none">• Chinese Slaw• Chicken stir-fry• Seasoned Rice• Side of Vegetables• Beverages – Tea, Coffee, Iced tea, Water, and Soft Drinks
7:15 – 7:30 PM Award Presentation	Columbus Section Award Presentation to Prof. Dehua Pei, Professor, The Ohio State University



7:30 – 8:15 PM Program	Presentation by Prof. Dehua Pei: Drugging Undruggable Targets with Macrocyclic Peptides
8:15 – 8:30 PM Closing remarks, if any	End of meeting
Cost	ACS members: \$20 per person. Non-members: \$25 per person. \$5 for retired and unemployed section members and students. New members attending first Section event: Free. Payment will be collected at the door. Cash and checks accepted. There is no cost to attend the program only. Dinner cost will be waived for new members who joined the local section in 2017 and 2018 when they attend their first local section meeting. <i>Remember that this is a dinner order and must be paid. Please help control costs by honoring your order.</i>
RSVP	Please e-mail at the following e-mail address: columbusacs@gmail.com providing the information listed below to reserve.
E-mail Reservations Template	<ul style="list-style-type: none"> • First and last name • Membership category: <ul style="list-style-type: none"> ○ Emeritus member ○ Regular Member ○ Retired Member ○ Unemployed Member ○ Non-member ○ Student • Employer (if applicable) • Please indicate if you will join us for the: <ul style="list-style-type: none"> ○ <u>Dinner & Program</u> OR ○ <u>Program-Only</u> • If you are a new member and attending a Columbus Section event for the first time. • Your phone number, in case we need to contact you.
Reservation Deadline	Monday, May 14, 2018 at 5:00 pm.
Program Contact	Bob Kroshefsky , Email: columbusacs@gmail.com
Directions & Parking Free Visitor Parking at Gold Lot near Alumni Hall	The Bishop James A. Griffin Student Center at Ohio Dominican University is located on the east side of Sunbury Road. From the South <ol style="list-style-type: none"> 1. Take I-670 to the 5th. Avenue exit and get off there. 2. Turn towards the Downtown (west) on Fifth Avenue and proceed through two traffic lights to Sunbury Road. 3. Turn right on Sunbury Road (north) and continue through two traffic lights and an automatic pedestrian traffic light. 4. Turn left into the parking lot at the next traffic light. From the North <ol style="list-style-type: none"> 1. Proceed south on Sunbury Road from Morse Road. 2. Go past the turns for Easton, and keep going until Ohio Dominican University brick buildings are seen on both sides of the road. 3. Turn right at the traffic light and go into the parking lot.

**Once in the Parking Lot:**

Free visitor parking at Gold Lot near Alumni Hall. Go forward through the parking lot and turn left in order to get to the southerly end. The new brick building is the Bishop Griffin Student Centre. Enter the building by using the walkway between the brick structures and use the door on the right hand side. For the Executive Committee Meeting go upstairs to room #276 just at the top of the stairs. For the meeting, turn right at the top of the stairs and walk along the corridor to rooms 258, 259 and 260.

ABOUT THE TALK:***DRUGGING UNDRUGGABLE TARGETS WITH MACROCYCLIC PEPTIDES***

The majority (~80%) of disease-relevant human proteins, including most of those involved in intracellular protein-protein interactions (PPIs), are undruggable by the current drug modalities, namely small molecules (MW<500) and biologics (MW>5000). I will discuss our efforts on developing molecules in the "middle space" (MW 500-2000; e.g., macrocyclic peptides) to target intracellular proteins. We first developed a combinatorial library technology to discover macrocyclic peptidyl ligands that bind to a protein target of interest with antibody-like affinity and specificity. We next discovered a family of small, amphipathic cyclic peptides as a novel class of exceptionally active cell-penetrating peptides and elucidated their mechanism of action. Finally, by integrating the two platform technologies, we have designed potent, selective, cell-permeable, and metabolically stable macrocyclic peptidyl inhibitors against a wide variety of intracellular enzymes (e.g., Pin1 and PTP1B) and PPIs (e.g., calcineurin-NFAT, CFTR-associated ligand-CFTR, K-Ras-Raf, and NEMO-IKK interactions).

ABOUT THE SPEAKER:**PROF. DEHUA PEI*****THE OHIO STATE UNIVERSITY – KIMBERLY PROFESSOR, DEPARTMENT OF CHEMISTRY AND BIOCHEMISTRY***

Dr. Dehua Pei is a Kimberly Professor at the Department of Chemistry and Biochemistry at the Ohio State University. He has been a faculty at OSU since 1995.

Dr. Pei obtained his B.S. degree in Chemistry from Wuhan University, China in 1986. He received his Ph.D. degree in organic chemistry from University of California, Berkeley in 1991. After receiving his Ph.D. he worked with Dr. Christopher T. Walsh at Harvard Medical School for a stint as postdoctoral fellow prior to joining the Department of Chemistry and Biochemistry at OSU in 1995.

Dr. Pei has been a pioneering researcher in his field. He was elected as a Fellow of the American Association for the Advancement of Science in 2010 for his contributions in his field of research.





UPCOMING ACS WEBINARS
FROM THE ACS WEBSITE

Exceptional Presentations In Spite of PowerPoint: The Sequel

Thursday, May 17, 2018 @ 2-3pm ET

Mark Jones returns to share more tips on giving effective presentations; including methods for engaging an audience, and how to communicate data in a straightforward manner.


Ready to Drink Yet? The Chemistry of How Wine Flavor Changes During Aging

Thursday, May 24, 2018 @ 2-3pm ET

Join Gavin Sacks, Associate Professor of Enology at Cornell University, as he discusses what is known about the chemistry of wine aging and what winemakers can do (or could potentially do) to achieve better wine longevity.


Advanced Nano-Delivery Systems: Facilitating Tumor Delivery and Mitigating Resistance

Thursday, May 31, 2018 @ 2-3pm ET

Mansoor Amiji of Northeastern University discusses solutions for enhancing delivery efficiency in solid tumors and overcoming multidrug resistance by employing innovative methods like using modulation of apoptotic threshold with exogenous ceramide, inhibition of glycolytic metabolism and lactate production, and RNA interference therapy.


Why Attend ACS Webinars®?

FAST – Get right to the heart of addressing issues important to you in 60-minutes.

CONVENIENT – Listen from the comfort and convenience of your home or desk.

EASY – Online access is all you need. Register, then click the link in your email confirmation, and you're in!

ACTIONABLE – Learn from luminaries and subject matter experts on strategies and tactics you can use immediately after the webinar.

LEARN – Share with friends and engage group discussions on key issues in a fresh new manner.

AFFORDABLE – A free weekly online event provided to by the American Chemical Society.

All recordings of ACS Webinars® are available as a benefit to current ACS members. Live weekly ACS Webinars® continue to be available to the general public.

Editor's Note: For more details about the webinars described above, please visit <https://www.acs.org/content/acs/en/acs-webinars.html>



UPCOMING ACS SHORT COURSES
FROM THE ACS WEBSITE



Upcoming Laboratory/Lecture Courses

ACS offers week-long courses that combine traditional lectures with a hands-on component. In conjunction with our partners, Virginia Tech and Axion Labs, these innovative courses are taught by world-renowned experts in their fields and have limited seats to ensure you make the most of your experience. [Register today to secure your seat.](#)



Upcoming Short Courses in Chicago, IL

June 19 – 21, 2018

American Chemical Society will be holding Short Courses in Chicago, IL on June 19 – 21, 2018 to help you gain invaluable training in just a few days. Short Courses from the ACS give you the tools to stay on top of new technology, growing trends in the science industry and basic skills you need to advance in your career. [See all courses »](#)

Editor's Note: For more details about the short courses described above, visit www.proed.acs.org/.

22ND ANNUAL GREEN CHEMISTRY & ENGINEERING CONFERENCE
JUNE 18-20, 2018



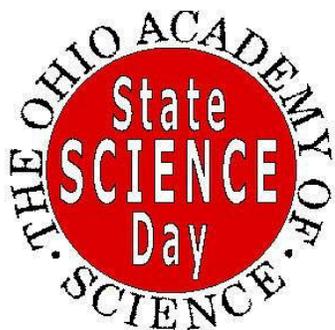
The poster features the ACS logo and ACS Green Chemistry Institute logo. The main text reads: "22nd Annual Green Chemistry & Engineering Conference", "Product innovation using greener chemistries", "PORTLAND, OR | JUNE 18 - 20, 2018", and "#gcande | @ACSGCI | gcande.org". The background is a collage of images including a mountain, laboratory glassware, and a cityscape.

The 22nd Annual Green Chemistry & Engineering Conference (GC&E), hosted by the ACS Green Chemistry Institute®, will be held in Portland, Oregon on June 18-20, 2018.

GC&E provides an opportunity for a diverse network of over 500 academic, industrial and government stakeholders to network and learn about the newest ideas in sustainable approaches to chemistry, chemicals and processes and products. This year's conference is highlighting the theme, "Product innovation using greener chemistries."

STATE SCIENCE DAY 2018: VOLUNTEERS NEEDED!

By BOB KROSHEFSKY



On Saturday, May 12th, State Science Day 2018 will be hosted by The Ohio State University at the French Field House in Columbus – just up the road from the 'Shoe. This is the Saturday BEFORE Mother's Day this year. Since 1998, as part of its commitment to chemical education at all levels, the Columbus Section has sponsored awards for outstanding projects in the chemical sciences. The objective is to acknowledge



and reward those students who have not only understood the scientific method, but also have exhibited creative thought. The section awards \$2,500 in prizes to the various winners.

Clearly, these students are some of the best that Ohio has to offer and are already showing an interest in chemistry. What better way to encourage them and show them the human face of the chemical enterprise? Professors and employers, it might also be a good way to do early recruiting for future students and interns.

WE NEED YOUR HELP!!!

The number of projects entered is large and we need around 30 judges to evaluate them and decide on the winners. A general knowledge of some branch of chemistry is desirable, but being a chemist or ACS member is not required. And even having limited knowledge in one area can be supplemented and effectively utilized through interactions with judges having complementary skills.

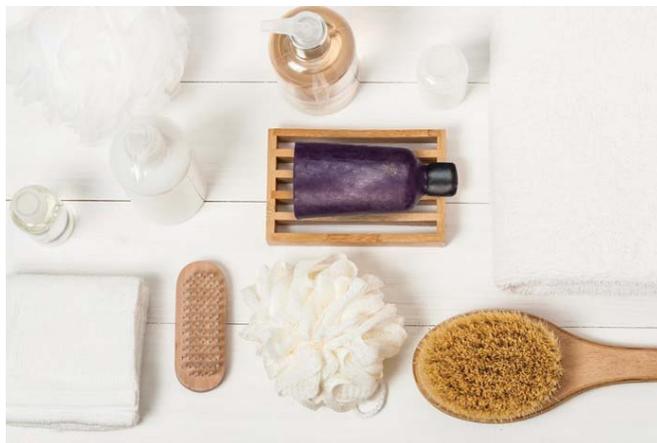
Judging is scheduled to run from 9:00 a.m. to noon. Refreshments and orientation will occur from 7:00 to 8:30 a.m. Access and parking get more difficult the later it gets, but you really need not be there much before 8:00 a.m. in order to get a clear idea of what will be happening that morning. You will be well-informed in advance. Previous judges have thoroughly enjoyed the experience.

Please consider taking one morning out of the entire year to offer encouragement and advice to someone who could be taking the first steps in an illustrious career. If you would enjoy the opportunity to meet the next generation of chemical scientists, e-mail me at bobkro@embarqmail.com or call me at 937-707-9276.

Refer to The Ohio Academy of Science Web site <http://www.ohiosci.org/ssd.htm> for more details.

FROM CHEMICAL & ENGINEERING NEWS MAY 9, 2018

SOLID BODY WASH COMES WITHOUT PACKAGING. BUT DOES THAT MAKE IT ECO-FRIENDLY?



When Beth Terry takes a shower, she doesn't reach for a plastic bottle of body wash. She's still troubled by an article she read 11 years ago with graphic imagery of plastic trash in a dead seabird's belly. The author of the popular My Plastic-Free Life blog has been tracking her personal plastic footprint ever since—with spreadsheets because she's an accountant by trade—and finding ways to minimize it.

Governments are responding to demands from consumers like Terry. The U.S. in 2015 banned plastic microbeads used as exfoliators in cosmetics and personal care products. Shopping bag fees and restrictions on plastic straws and utensils have taken effect in multiple cities.



And a couple of enterprising companies are creating products for consumers who want to swear off plastic packaging altogether. These trends set the stage for solid body wash.

Counterintuitive though it may seem, it's relatively straightforward to transform a liquid product like body wash into a solid that consumers can pick up off the shelf, sans packaging. But is this newfangled stuff any different from a paper-wrapped bar of soap, which has been around for millennia? And is solid body wash really the environmentally conscious choice?

Bath-product powerhouse Lush has offered solid, packageless versions of shampoo and other toiletries for years. "When Lush began, our founders took a look at products and thought, 'Do we really need a package for this?' and found that most often the answer was no," senior brand and product trainer Erica Vega says. Lush estimates that in 2017, solid shampoo bars prevented 100 metric tons of plastic waste. The firm launched solid body washes for the 2017 holiday season, an additional estimated 4-metric-ton plastic savings. "Most people just think it's soap, but as soon as you get it wet and wash with it, you can feel the difference," Vega says. "It's instantly recognizable as shower gel as it lathers up in your hands."

Regardless of whether they're solid or liquid, soap and body wash feel different because they're chemically distinct, according to Society of Cosmetic Chemists President Perry Romanowski. Every cleanser contains surfactants to help water dissolve and wash away oily filth. The surfactants in soap come from saponification, which is the reaction between a strong base, such as sodium hydroxide, and a fatty acid or triglycerides from vegetable oils or animal fats. Shower gels and body washes, in contrast, contain different surfactants derived from petroleum or plant sources, such as sodium laureth sulfate or sodium cocoamphoacetate. The feel of a given product has a lot to do with its pH, Romanowski explains. The pH of the thin layer of sweat and sebum that sits atop skin is slightly acidic at approximately 5.5, and body washes operate right around there, at pHs between 4 and 6. Traditional soaps can clock in at around pH 9, which Romanowski says can feel drying.

Lush and U.K. firm Bomb Cosmetics use sodium stearate, a saponified fatty acid and common soap ingredient, to thicken and harden solid body wash products. Other compounds would also work, Romanowski says, but sodium stearate is the best option because it's inexpensive and it's already used to solidify mainstream personal care products. "If you look at a package of Speed Stick deodorant, you'll see this is pretty standard technology," he says. Major multinational brands don't yet offer solid body wash, and Romanowski fears that a package-free product might droop and deform when exposed to the heat and humidity that can creep into a big-box store's supply chain. But he points out that big companies have been known to eventually embrace breakout products originating with smaller firms, as happened in the case of sulfate-free shampoo. "It's not unreasonable to think that packageless products might catch on in the mainstream."

That's the kind of trend Terry hopes for, but the blogger's views have grown more nuanced with time. "When I started, it was really only about cutting back on plastic," she says. But then she'd go to the supermarket and find herself torn because the organic produce she prefers would be in plastic packaging and the conventional produce would not. It led, she says, to some difficult decisions.

Evaluating which products are most environmentally friendly is not as straightforward as people may think, says Margarida Gama, an expert in cosmetics life-cycle assessment at the international consulting and software firm Thinkstep. And solid body wash is relatively new, so studies are still lacking for this kind of product. Liquid body washes certainly can have their drawbacks. Plastic packaging is indeed a major contributor to toiletries' environmental impacts, but the formulation, including whether ingredients were made from fossil-fuel-derived feedstocks, has to be considered to perform any comparisons. One study found that liquid soaps for hand washing need about five times as much energy for formulation and roughly 20 times as much energy for packaging production than bar soaps do (*Environ. Sci. Technol.* 2009, DOI: 10.1021/es901236f). Compared with solid cleansers, liquids usually take up more volume in the trucks that transport them to points of sale, potentially costing more in fuel and emissions.

Bar soaps are not without environmental costs, however. The animal and plant fats in bar soaps must be sourced from somewhere, and frequently, that involves resource-intensive agricultural practices. Biobased surfactants are one of the current cosmetic industry trends, Gama points out, but the fact that the surfactants are biobased does not necessarily mean that they are more sustainable than petroleum-based ones.



It is also important to consider how a person uses the product, Gama says. Does the bottle or pump for a liquid body wash dispense more product than is needed? Which product—bar soap or body wash—takes more water to rinse off? The study comparing liquid hand soap with bar soap suggests that people use more warm water when washing with bar soap, but Gama thinks it's too big a leap to extrapolate that data to a shower and that further research on consumer behavior patterns is needed.

With so many factors involved in determining an environmental footprint, it's understandable for consumers to feel overwhelmed when choosing among body cleansers. Gama advises concerned shoppers to get informed. Websites such as Rank a Brand provide information about ingredients that brands use, packaging-reduction initiatives, and more so that people can decide what's most important to them. Many cosmetic products today are marketed with stories rather than the quantitative figures that can guide decision-making, she says. "Industry should focus both on providing consumers the information they need to make an informed decision and on grounding that information in evidence-based methodologies, such as life-cycle assessment."

As for Terry, she's at peace with her product choices, even if they include plastic on rare occasions. She prefers all-natural soaps to body washes, anyway. "I've reached the point where I've realized that every product that's created has some environmental impact," she says. For body wash diehards, she thinks a package-free version might be the greener option. Personal choices matter, she says, and people should make the most informed choices they can. But agonizing over what cleanser to buy probably isn't as important as taking action that can lead to change on a bigger level, such as contacting local legislators about environmental issues, she adds. "It's about setting your priorities, making a decision, and letting it go."

COLUMBUS SECTION ACS CALENDAR OF EVENTS

Year	Month	Date	Day	Location	Comments
2018	May	14	Monday		5:00 pm: Deadline for reservations for May, 2018 Section meeting.
2018	May	15	Tuesday	Ohio Dominican University	Monthly Section Meeting; see details elsewhere in this issue of <i>The Chemical Record</i> .

ABOUT THE CHEMICAL RECORD

The Chemical Record, official newsletter of the Columbus Section of the American Chemical Society, Inc., is published monthly, February-May and September-December (eight issues per year.) Opinions expressed by editors or contributors do not necessarily represent the official position of the Columbus Section or of the editorial staff. We welcome your contributions to your *Chemical Record*. Please submit them via postal or electronic mail to **Ashish Deshmukh**, 2690 Fishingier Road, Columbus, Ohio 43221, ashishdeshmukh@hotmail.com. Electronic mail contributions should be in MS Word file attachments (preferred) or plain-text messages. *Thank you very much!*

CHANGE OF ADDRESS

Changes in postal or e-mail address should be reported to the Membership Chair, **David Speth**, 614-688-5162, drspeth@sbcglobal.net. David will forward the change-of-address information to ACS Headquarters.

ADVERTISING RATES

Advertising rates for *The Chemical Record* are as follows (per single insertion): Full Page, \$250; Half page, \$150; Quarter Page, \$120; Eighth Page: \$60; Business Card, \$50. Discounts: 5% for four insertions or 10% for eight insertions during a calendar year. There is no charge for "help wanted" ads.