

# THE CAPITAL CHEMIST



A Publication of the Chemical Society of Washington Section of the American Chemical Society

## March 29th Dinner Meeting

The March meeting of the Chemical Society of Washington will include the presentation of several awards: Hillebrand Prize, Gordon Award, Schubert Award, and Outstanding Volunteer Award. Dr. Kafafi, winner of the Hillebrand Prize, will present, *From Inert Bond Activation to Organic Optoelectronics: My Journey in Chemical and Materials Research*. Please join us on March 29th to honor the winners:

**Hillebrand Prize** – awarded for original contributions to the science of chemistry by member(s) of CSW, the Hillebrand Prize is named for William F. Hillebrand (1853-1925), one of Washington's most distinguished chemists.

### 2017 Recipient – Dr. Zakya H. Kafafi

Dr. Kafafi receives this award in recognition of her pioneering contributions to organic optics and electronics technologies through innovative physical chemistry and materials chemistry research. Dr. Kafafi is an internationally recognized leader in the chemistry of materials for organic photonics and electronics. Over her long and distinguished career, Dr. Kafafi has served at the U.S. Naval Research Laboratory where she rose to the rank of Head of the Organic Optoelectronics Section. She has also been the Director of the Division of Materials Research at the National Science Foundation. Also she has been a visiting/adjunct professor at Rice University, The Catholic University, the University of Pennsylvania, Northwestern University, and Lehigh University (current). Dr. Kafafi is a Fellow of the Materials Research Society, AAAS, the Optical Society of America, and the International Society of Optics and Electronics.

**Leo Schubert Memorial Award** - awarded to recognize an outstanding teacher of high school chemistry in the Washington, D.C. area. The award was established in 1979 to honor Dr. Leo Schubert, a chemistry professor at American University who devoted much of his career to developing programs for high school teachers and students.

### 2017 Recipient - Brendan Mallory

Mr. Mallory, a teacher at Richard Montgomery High School in Rockville, Maryland, receives this award in recognition of his exemplary service in the classical chemistry program, for being at the forefront in bringing new pedagogical methods into the existing curriculum, teaching chemistry at the On-Level and Honor programs, and overseeing the update of curriculum in Environmental Chemistry at the high school level.

**Charles L. Gordon Memorial Award** – named after Charles Gordon for his years of service as managing editor of the *Capital Chemist*, the Charles L. Gordon Memorial Award is given in recognition of exemplary service by a CSW member to the profession of chemistry, to the science of chemistry, and/or to the Chemical Society of Washington.

### 2017 Recipient – Stefanie Wittenberg

Dr. Wittenberg is a Primary Patent Examiner at the USPTO reviewing electrochemical patents and determining the patentability of chemical subject matter based on the state of the art. She has been a leader in the greater Washington D.C. area as Councilor, Treasurer, and Manager for the Chemical Society of Washington and a representative in various roles while attending the University of Maryland, including President of the Chemistry/Biochemistry Graduate Student group. She has been a part of 7 peer-reviewed publications in the fields of nanoscience, energy storage, and electrochemistry. Stefanie served as a CSW Councilor from 2015-2017, as Treasurer from 2013-2016, and as Manager from 2011-2012. She has served on several CSW committees including the Younger Chemists Committee and the Budget Committee. She has also served on the ACS Membership Affairs Committee. She agreed to continue as Treasurer for a second term when the

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### Inside this issue:

- Learn about the next CSW meeting on March 29th
- See the students who received College Chemistry Achievement Awards at the last CSW Meeting
- Presenting at ACSNOLA? Let us know!
- Plan to participate in YCC's practice presentation session March 10<sup>th</sup>.
- Learn more about this year's Chemathon.
- Learn about this year's CCED theme and Events

elected Treasurer was unable to assume the duties. As CSW Treasurer, she provided exceptional records and kept the Section on excellent financial footing. The Chemical Society of Washington is pleased to recognize Dr. Wittenberg's outstanding contributions to CSW and the chemistry community by naming her as the 2017 recipient of the Charles L. Gordon Award.

**Outstanding Volunteer of the Year** – established by the Committee of Community Activities (CCA) to recognize the immeasurable outreach efforts made by local section volunteers. Each local section has an opportunity to recognize one individual annually for demonstrating extraordinary outreach volunteer service within the section.

**2018 Recipient – Betsy Jean Yakes**

Since she was an undergraduate student, B.J. Yakes has been volunteering with ACS and local sections. With CSW, she enjoys participating in their outreach events including NCW demos, the USA Sci. and Eng. Expo activities, and career sessions. When teaching, she is “Dr. Why” that helps children learn the wonderful world of “Why?”. She endeavors to create hands-on experiments for students that match their core curricula. She especially enjoys engaging children that are typically under-represented in science as seen in her outreach to minority and lower-income area schools. Her goals are to make science accessible, approachable and fun for children.

**Dr. Zakya H. Kafafi**

Adjunct Professor at Lehigh University  
Inaugural Deputy Editor of the AAAS journal *Science Advances*

**Biography**

Dr. Kafafi received her B.Sc. (*cum laude*) from University of Houston with a major in chemistry and a minor in mathematics. Three years later, she got her M.A. and Ph.D. in Chemistry from Rice University. She then crossed the Atlantic Ocean and moved to Cairo, where she pursued her academic career as an assistant professor for the next few years before returning back to Houston on sabbatical leave as a visiting professor at Rice University. She then decided to combine her chemical expertise and training with research in optics, and joined the Optical Sciences Division at the Naval Research Laboratory in Washington, DC, where she established and led an interdisciplinary research team, and a section on Organic Optoelectronics. Her work has been motivated by newly emerging technologies based on organic electronics and photonics, spanning a wide spectrum of disciplines including the chemistry and physics of organic and nanostructured materials, organic nonlinear optics, light-emitting materials and devices, photovoltaics, and plasmonics. In 2007, she joined the National Science Foundation as the Director of the Division of Materials Research (DMR). She was the first woman to lead the largest and unarguably the most complex Division in the Mathematical and Physical Sciences Directorate. During her tenure in DMR, she managed a budget portfolio close to one billion dollars, and oversaw the funding of single and group investigators, interdisciplinary research teams and centers, instrumentation, and major facilities. In 2011, she took sabbatical leave and was a visiting scholar/professor in the departments of Electrical & Systems Engineering at the University of Pennsylvania, and Chemistry and Material Sciences & Engineering at Northwestern, working with the groups of Professor Chérie Kagan and Tobin Marks, respectively. She was the President of Spectroscopic Associates, Inc. in Houston, Texas where she designed a cryogenic link that rotates and translates in vacuum for which she won an R&D 100 Award. She also received an Edison Award in 2004 for inventing a simple two-step, cost-effective method to pattern conducting polymers for flexible organic photonic and electronic devices. Dr. Kafafi has been an adjunct professor in the Department of Electrical and Computer Engineering at Lehigh University since 2008. She is the Founding Editor-in-Chief of the *Journal of Photonics for Energy*. She is also the Inaugural Deputy Editor for the online, open access *Science* journal, *Science Advances*. Dr. Kafafi serves on the Advisory Boards of IEEE Photonics and the Conference on “Spin in Organic Semiconductors.” She is the Chair of the Materials Research Society Awards Nominations Subcommittee. She also chairs and organizes the annual SPIE Symposium on Organic Photonics and Electronics, and the Conference on Organic, Hybrid, and Perovskites Photovoltaics. Dr.



Kafafi is a member of the American Chemical Society and Sigma Xi. She is a Fellow of the American Association for the Advancement of Science, the Materials Research Society, the Optical Society of America, and the International Society for Optics and Photonics.

### **Abstract**

Matrix isolation spectroscopy is a powerful tool to isolate unstable species and reaction intermediates by trapping them in inert gas host matrices at cryogenic temperatures, and allowing their spectroscopic study at leisure. I will review briefly some of the early work carried out on these guest:host systems to identify their molecular structures using the technique of Fourier Transform Infrared Matrix Isolation Spectroscopy. The mechanisms of several chemical reactions of catalytic interest, involving inert bond activation, have been delineated using this approach. From matrix isolated species in solid inert gases at 10K to light-emitting molecules dispersed in host matrices at room temperature, I used the same approach to launch my research in the area of light-emitting devices, which has been witnessing a revolution since the turn of this century. Conventional semiconductor technology has been challenged by potentially inexpensive, flexible, and lightweight organic electronic and photonic devices. Achieving high device efficiency and stability necessitates the design and development of electro- and photo-active organic and polymeric materials with the desired chemical, physical, electronic and optical properties. New and exciting technologies including ultra-thin flat panel displays, solid-state lighting, plastic lasers and solar cells, are starting to surface in the market place and will lead to billion dollars industries. The rest of my talk will focus on advances made in the efficient conversion of electrical energy into light and solar energy into electrical energy using molecular and polymeric organic materials.

## Meeting Logistics

**Date:** Thursday, March 29, 2018

**Time:** 6:00 p.m. Check-in/Social Hour

6:30 p.m. Dinner

7:00 p.m. Awards Presentations

7:30 p.m. Presentation

**Location:** ACS Headquarters – Marvel Hall  
1155 16th St., N.W., Washington, DC

**Menu:** Meal will be catered Fresh Connections and will feature a buffet of Prime rib, au jus, twice-baked potatoes, tossed salad, and Artisan bread. Vegetarian Option: Veggie Wellington served with roasted potatoes. Assorted cookies with fresh fruit and beverages will be provided.

**Cost:** \$28 (Members and guests) / \$14 (Students and High School Teachers)

**RSVP by noon Tuesday, March 27,** to [csw@acs.org](mailto:csw@acs.org) or by phone (messages only: 202-659-2650). Please provide the names in your party when you RSVP, and if you wish to have the meat or vegetarian option. The public is invited to attend. You may attend the talk only, but reservations are appreciated. Those who make a reservation, but are unable to attend, should send a check for the cost of their meal to the CSW office. If you need any further information or would like to make a reservation, please contact the CSW office by email at [csw@acs.org](mailto:csw@acs.org) or by voicemail at 202.659.2650.

**Parking:** Parking is available in nearby commercial parking garages. Please be aware that garage closing times vary. Parking is also available on the street after 6:30 pm, but be aware that most parking meters are in effect until 10:00 pm and may be limited to 2 hours. You should check the individual meters for details and payment methods as some are no longer coin-operated.

**Metro:** Blue/Orange/Silver Line: McPherson Square or Farragut West.  
Red Line: Farragut North

## College Chemistry Achievement Awardees

The CSW Monthly Dinner Meeting on February 8th featured presentation of the College Chemistry Achievement Awards, which are presented annually by the Chemical Society of Washington to outstanding seniors majoring in chemistry and biochemistry from each of the area colleges and universities.



*Photo credit: Allison Aldridge*

Honorees (Left to right): Christian Acosta, Ashish Bhattarai, Michael Corrado, Jacqueline Dyer, Deiaa Harraz, Linnea Lundh, Eileen McAlonan, Florencia Son

Read more about the awardees at <http://www.capitalchemist.org/2018/02/college-chemistry-achievement-award-honorees/>,

## WAS Journal Seeking Manuscripts

The Editor of the Journal of the Washington Academy of Sciences, Dr. Sethanne Howard, would like to remind us all that the Journal is continuously accepting manuscript for publication. Submissions from all science and engineering disciplines are welcomed. The Journal is peer-reviewed and has no page charges. The turn-around time is usually quite fast. Sample articles can be viewed on the Academy's website under the journal tab [www.washacadsci.org](http://www.washacadsci.org). Manuscripts from students are also solicited if they are sponsored by a full member of an Affiliated Society.

An [information sheet](#) is attached.

Please ask your membership to consider sending manuscripts by e-mail to Dr. Howard.

Sethanne Howard, PhD  
Editor  
Journal, Washington Academy of Sciences  
1200 New York Avenue, NW, Room 113  
Washington, DC 20005  
(202)326-8975  
[wasjournal@washacadsci.org](mailto:wasjournal@washacadsci.org)

## WANTED: CSW Members Presenting at ACSNOLA

Are you presenting at the upcoming ACS National Meeting in New Orleans? Many CSW members are doing amazing work, and we want to feature YOU!

[Fill out this short form](#) (it only takes a minute!) to let us know when and where you're presenting. We'll feature your talks and posters on the Capital Chemist website and we'll promote your talk on Twitter.

Questions? Email us at [thecapitalchemist@gmail.com](mailto:thecapitalchemist@gmail.com).

## YCC to host ACS Spring Meeting Practice Presentations

Please come present your ACS talk to your peers to practice and get feedback on your presentation before the New Orleans National Meeting! Other technical presentations in addition to ACS are also welcome.

The Details: March 10th starting at 10 am at Howard University Department of Chemistry, room G-9 (The Chemistry Building (CHB) is located at 525 College Street, N.W. Washington, D.C. 20059)

If you'd like to give a practice presentation - please send your abstract, presentation number (division and presentation number if for ACS) and the total allotted time for your presentation (they can vary between depending on the symposium) to [yccsw@gmail.com](mailto:yccsw@gmail.com) by March 1st so the abstract schedule can be finalized and sent out. You can also submit abstracts for non-ACS talks (seminars, interviews) as well. Please include a brief statement of who you are speaking to, if presenting a non-ACS talk, so we'll be able to give appropriate feedback appropriate for your future audience.

Here are a few links on good tips for scientific presentations:

- <https://www.elsevier.com/connect/how-to-give-a-dynamic-scientific-presentation>
- <https://pubs.acs.org/doi/pdf/10.1021/es503552t>
- <http://blogs.nature.com/naturejobs/2017/01/11/scientific-presentations-a-cheat-sheet/>

We look forward to seeing you there!

## YCC Career Day April 15<sup>th</sup>

YCC CSW career day will be Saturday, April 15th, starting at 10 am, at ACS Headquarters (1155 Sixteenth Street, NW Washington, DC 20036). There will be a mixture of presentations, a career panel, and round tables for resources and small group discussions on chemistry careers with local CSW members. If you are interested in attending, please email [yccsw@gmail.com](mailto:yccsw@gmail.com) to RSVP.



## 34th Annual Chemathon takes place April 28<sup>th</sup>

The 34<sup>th</sup> annual Chemathon will take place on Saturday, April 28, 2018. The Chemathon is an annual chemistry competition for high school chemistry students in Maryland, Northern Virginia, and the District of Columbia. The Chemathon competition is organized by a committee of area high school chemistry teachers and chemists, and is hosted by the Department of Chemistry and Biochemistry at the University of Maryland at College Park. The Chemathon is open to all area high schools who would like to participate. There are two competitive tracks; Level I: for students who have not taken and are not currently taking AP Chemistry or IB Chemistry and have not previously participated in Chemathon, and Level II: aimed at students at the AP and/or IB level as well as previous contestants. The theme for the posters this year is "The Chemistry of Global Infectious Diseases and Their Treatments and Cures." There is no entry or registration fee. If you are a high school chemistry teacher and would like your students to participate in this event, please see the Chemathon website for information on how to register your school (<http://www2.chem.umd.edu/chemathon/>).



The Chemical Society of Washington will once again be a sponsor of this event. Volunteers are needed to help judge the poster contest as well as to assist with some of the activities that the students will be competing in. If you would like to volunteer for this event, please contact Kim Morehouse via email at [kim.morehouse@fda.hhs.gov](mailto:kim.morehouse@fda.hhs.gov).

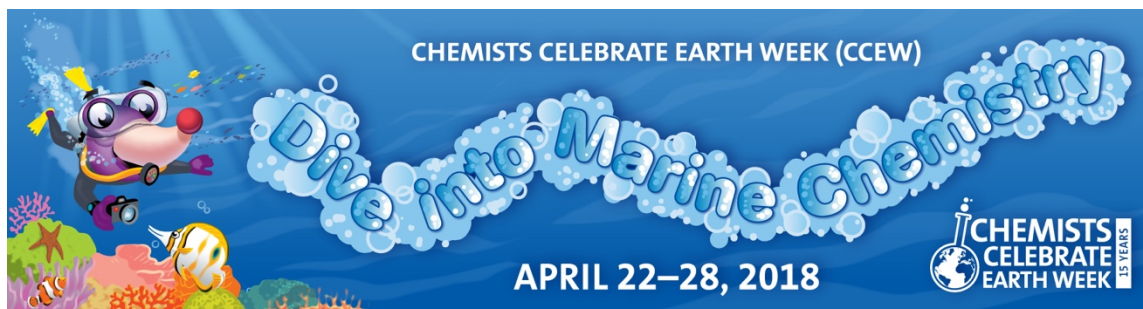
## Rockville Science Day: April 22<sup>nd</sup>

Come and join us at Montgomery College for the 29th annual Rockville Science Day on Sunday, April 22, 2018, featuring a variety of science and technology-related exhibits, activities, games and demos. Activities and exhibits include rocket-building (and launching), telescope viewing, a travelling planetarium, all kinds of robots, backyard wildlife, ship models, microscopes, snakes, oyster farming, botball, stream science, a pigeon release, Civil War medical practice, coding challenges, math puzzles, chemistry in action (flames, explosions & other reactions), electric vehicle demos, quadcopters, archaeology mini-digs, 3D printing, and brain games.

Rockville Science Day is intended to provide a friendly environment for students and their parents to participate in some hands-on demonstrations and to learn more about how science and engineering are important to our society. There will be more than 70 exhibitors with hands-on activities. Additional information about Rockville Science Day can be found on their website (<http://rockvillesciencecenter.org/rockville-science-day/>).

As part of the celebration of Chemists Celebrate Earth Week, the Chemical Society of Washington, in conjunction with the Chemistry Department at Montgomery College, Rockville Campus will participate in Rockville Science Day once again this year. Rockville Science Day is open to the public and CSW encourages you to attend.

This event will be co-sponsored by the CSW Outreach Committee and the CSW Environmental/Sustainability Committee. Volunteers from CSW will be providing hands-on activities for children who attend the event as a part of CSW's participation in Chemists Celebrate Earth Day. Volunteers will also hand out copies of the *Celebrating Chemistry* publication for CCED, and various CCED-themed products. If you would like to volunteer for this event, please contact the CSW CCED coordinator, Kim Morehouse ([Kim.Morehouse@fda.hhs.gov](mailto:Kim.Morehouse@fda.hhs.gov)).



Chemists Celebrate Earth Week (CCEW) is a community-based program of the American Chemical Society (ACS). This annual program unites ACS local sections, student chapters, technical divisions, businesses, schools, and individuals in communicating the positive role that chemistry plays in the world. Earth Day was first officially recognized on April 22, 1970 as a way to demonstrate support for a healthy environment, raise awareness about environmental issues, and remind people that we all need to contribute to a sustainable planet. For years, chemists have been promoting a better world through recyclable plastics, cleaner-burning fuels, phosphate-free detergents, environmental monitoring, and green chemistry initiatives. The ACS joined the Earth Day celebration on April 22, 2003.

This year marks the 15<sup>th</sup> year since the ACS program was started. To align the Earth Day celebration with in ACS with the National Chemistry Week celebration, this year, ACS has changed the name to Chemists Celebrate Earth Week.

The Chemical Society of Washington (CSW) will once again participate in Chemists Celebrate Earth Week (CCEW) activities. Chemistry is all around us and is vital to our planet's sustainability. Whether it's used in recyclable and biodegradable materials or through the reduction of waste, chemistry is involved in ensuring that we can be eco-friendly and kind to our environment. CCEW seeks to bring international focus to environmental causes, such as clean air, water, and energy. ACS offers events, contests, and educational resources for members, chemical educators, and chemistry enthusiasts to illustrate the positive role that chemistry plays in preserving the Earth. The CCEW 2018 theme is "Dive into Marine Chemistry." This year's theme looks at the impact of chemistry on the oceans. Life on our planet began in the oceans, and today the oceans are full of tiny organisms that, together, weigh more than everything that lives on land. The oceans also absorb carbon dioxide and produce oxygen in a cycle that is essential for all life on earth. This and other topics are presented in this year version of Celebrating Chemistry. The electronic version of the Celebrating Chemistry newsletter for CCED as well as additional information about this year's CCED celebration is available from the ACS website ([www.acs.org/ccew](http://www.acs.org/ccew)).

## 2018 CCEW Illustrated Poem Contest - Deadline April 23

As part of the Chemists Celebrate Earth Day activities, the American Chemical Society is sponsoring an illustrated poem contest for students in Kindergarten through 12<sup>th</sup> grades. Students are asked to write and illustrate a poem using the Chemists Celebrate Earth Week 2018 theme, "Dive into Marine Chemistry." This year's theme looks at the impact of chemistry the oceans. The illustrated poems should relate to how chemistry can impact oceans. Detailed rules and guidelines are available on the Chemists Celebrate Earth Day website; [www.acs.org/ccew](http://www.acs.org/ccew). All Entries must provide the information that the ACS request via the entry form which is available via the ACS or CSW websites. The entry form is available from the CSW website. Teachers at schools in the Chemical Society of Washington area are encouraged to have a contest at their school and then submit the winning entries from the school to: Chemist Celebrate Earth Week Coordinator, Chemical Society of Washington, 1155 16<sup>th</sup> Street, NW, Stop O-218, Washington, DC 20036.

Electronic submissions should be sent to: [Kim.Morehouse@FDA.HHS.GOV](mailto:Kim.Morehouse@FDA.HHS.GOV)

All entries must be received by Monday, April 23, 2018.

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- [www.mboservices.net](http://www.mboservices.net)
- <http://membership.acs.org/W/WashDC/career.html>



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### **Capital Chemist Staff**

Voice: 202-659-2650

Email: [thecapitalchemist@gmail.com](mailto:thecapitalchemist@gmail.com)

Twitter: @CapitalChemist

### **Chair, Publications**

Christopher W. Avery

### **Editor, Business Manager**

Jessica L. Rasmussen

### **Publisher**

Chemical Society of Washington

### **Advertising Manager**

MBO Services

PO Box 1150, Marshfield, MA 02050

Vince Gale, Advertising Manager

[vincegale@mboservices.net](mailto:vincegale@mboservices.net)

781-837-0424 voice

### **CSW Correspondence**

CSW, 1155 16th Street, NW, O-218

Washington, DC 20036

202-659-2650 voice

email: [csw@acs.org](mailto:csw@acs.org)

[www.capitalchemist.org](http://www.capitalchemist.org)

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The **Chemical Society of Washington (CSW)** is the local ACS Chapter for the Washington, DC area and serves approximately 4,000 members.

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## CSW Calendar of Events

March 10: YCC Practice Presentations

March 26: Board of Managers Meeting

March 29: CSW Meeting

April 15: YCC Career Day

April 22: Rockville Science Dar

April 23: Illustrated Poem Deadline

April 28: Chemathon

May 21: Board of Managers Meeting

September 24: Board of Managers Meeting

November 28: Board of Managers Meeting