

THE CAPITAL CHEMIST



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

2015 CSW-Project SEED Summer Research Program Report

Contributed by Ajay Mallia, Project SEED Coordinator

Started in 1968, the ACS Project SEED program provides summer research opportunities to economically disadvantaged high school students at academic/ government/industrial laboratories under the supervision of a mentor.

This year, CSW's Project SEED program supported 18 high school students from DC, VA, and MD schools to participate in summer research at NIST, Georgetown University, George Washington University, and University of Maryland (College Park and Baltimore County campuses). The names and institutions of the mentors who volunteered to guide these young scientists are described below.



Second Year (SEED-2) Students

- Professor Kaveh Jorabchi of Georgetown University mentored Ms. Feven Gezahegn of Woodrow Wilson High School.
- Prof. Jeffery Davis of University of Maryland College Park mentored Ms. Sindy Rosales of High Point High School.
- Professor Nicole LaRonde of University of Maryland, College Park mentored Ms. Ariane Chandler of McKinley Technology High School.

First Year (SEED-1) Students

- Dr. Wes Tew of NIST mentored Mr. Andrew Almeida of Wheaton High School.
- Professor Zhihong Nie from University of Maryland, College Park mentored Ms. Enjolique Chandler of McKinley Technology High School.
- Professor Michael Massiah of George Washington University mentored Ms. Aisha Abdulkarimu of Wheaton High School.
- Dr. Michal Chojnacky of NIST mentored Mr. Joe Amaya of Wheaton High School.
- Professor Travis Holman from Georgetown University mentored Ms. Monae Richardson of McKinley Technology High School.
- Professor Stuart Licht of George Washington University mentored Mr. John Mitchel Arcibal of John Randolph Tucker High School.
- Prof. Timothy Warren of Georgetown University mentored Ms. Jasmine James of Wheaton High School.
- Dr. Julia Scherschligt of NIST mentored Ms. Renard Petiangamba, Wheaton High School.
- Professor David C. H. Yang of Georgetown University mentored Ms. Jennifer Song of Thomas Jefferson School of Science and Technology.
- Professor Hanning Chen of George Washington University mentored Ms. Alexis Mosby of McKinley Technology High School.

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Featured Items:

- Project SEED Summer Report
- National Chemistry Week's Theme: "Chemistry of Color"
- Nominate someone for the Schubert or Gordon awards
- Nominate someone for the Hillebrand Prize
- Register for the ACS Entrepreneurial Summit

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Project SEED Summer Report, Continued

- Professor Marie-Christine Daniel-Onuta of University of Maryland, Baltimore County mentored Mr. Harrison Razanajatovo of High Point HS.
- Professor Akos Vertes of George Washington University mentored Ms. Jenny Chen of High Point High School.
- Professor Andrei Vedernikov of University of Maryland, College Park mentored Mr. Leul Tesfaye of Wheaton High School.
- Professor Michael Massiah of George Washington University mentored Ms. Raubie Raiford of McKinley Technology High School.
- Dr. James Fedchak of NIST mentored Mr. Tojo Rabemananjara of Walter Johnson High School.

The Project SEED students participated in a broad spectrum of research projects as follows:

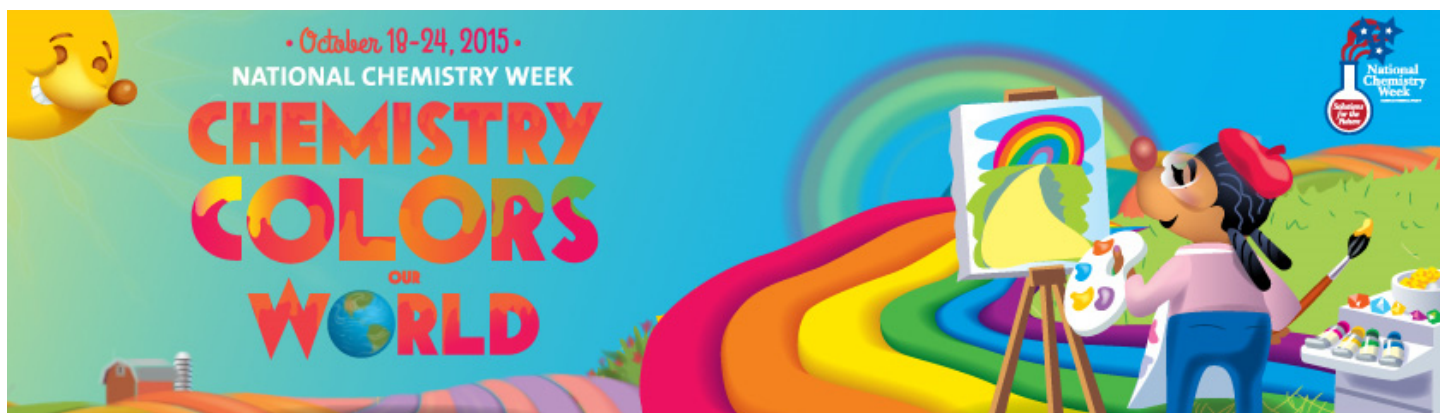
- Developing new instrumentation and methods for sample analysis
- Characterization and function of hydrogels from nucleosides
- Design and validation of inhibitors of kinases
- Physical chemistry aspects of flowmeter for high-vacuum calibration
- Studying proteins required for proper facial development during embryogenesis
- Chemical aspects of absorption and outgassing properties of 3-D printed materials
- Environmental and biological nitric oxide
- Reactivity at copper porous molecular materials with embedded host molecules
- Study of adaptive three-dimensional shape transformation of soft hydrogel materials
- Understanding the biochemical, molecular and kinetic mechanisms of enzymes
- Characterization of novel protein-protein interactions associated with bacterial virulence
- Characterizing and chemistry of thermal ballast materials for improved temperature control of vaccine storage units
- Computer simulations to construct silicon atomic structures
- Synthesis and characterization and use of new Pd Compounds
- Laser ablation electrospray ionization mass spectrometry
- Preparation and characterization of functional gold nanoparticles for biomedical applications
- Photonic thermometry using Bragg Grating

CSW's Project SEED committee organized an event on July 18, 2015 at ACS Headquarters to review the objectives, responsibilities, and expectations of the Project SEED program. A variety of speakers, ranging from Project SEED mentors to Project SEED alumni, presented their own perspectives on Project SEED, including mentoring experience, lab safety, and tips for success. At the event, the Project SEED fellows explained their research goals and the mentors discussed the students' performance. One of the speakers, Professor Timothy Warren from Georgetown University, discussed the importance of the Project SEED program and his experience as a mentor. Ms. Marta Walter, a chemistry teacher at High Point High School, discussed the impact of Project SEED on her students. Project SEED alumnus, Mr. Sang Ho Jee (presently a student at UMD), presented his success story and introduced the expected work schedule for the new Project SEED fellows. This event was well attended by the Project SEED fellows and their family members, school teachers, and mentors, as well as other CSW members. CSW's Project SEED committee would like to recognize and thank the high school chemistry and science teachers, as well as the tireless work of all the mentors, for the success of Project SEED.



Celebrate National Chemistry Week October 18-24, 2014

Contributed by Kim Morehouse, CSW NCW Coordinator



The NCW 2015 theme is "Chemistry Colors Our World", focusing on the chemistry of food colors and fireworks, rainbows, natural dyes and pigments, and more. The electronic version of the *Celebrating Chemistry* Newsletter is available from the ACS website (www.acs.org/ncw).

Each year the American Chemical Society's (ACS) NCW campaign reaches millions of people with positive messages about the contributions of chemistry to their daily lives. NCW is a community-based annual event that unites ACS local sections, businesses, schools, and individuals in communicating the importance of chemistry to our quality of life. It is the one time during the year that chemists, regardless of background, unite with the common goal of spreading the word that chemistry is good for our economy, our health and our well-being.

The Chemical Society of Washington (CSW), along with the ACS Office of Community Activities, is planning several NCW events. Volunteers are needed for these outreach activities. We are in the early stages of planning the events, so watch for additional information in the October *Capital Chemist*, or on the *Capital Chemist* and CSW websites.

You can contribute to the NCW campaign by performing chemical demonstrations at a neighborhood school (consider having an illustrated poem contest); conducting hands-on activities with children at museums, malls, or libraries; or writing articles or letters to the editor of your local paper. If you would like to lead an activity at your local school or library, CSW will provide you with some grade specific materials to hand out to the students, as well as some simple demonstrations that you can use.

More information about local activities will be posted on the CSW (www.csw-acs.org) or the *Capital Chemist* (www.capitalchemist.org) websites as they become available. For further information, or to volunteer, contact the CSW NCW coordinator, Kim M. Morehouse, via e-mail at Kim.Morehouse@fda.hhs.gov, or by phone at 240-402-1889 (day) or 301-384-7311 (evening).

NCW 2014 Illustrated Poem Contest

Each year as part of National Chemistry Week (NCW) activities, the American Chemical Society (ACS) sponsors an illustrated poem contest for students in Kindergarten – 12th grades. Schools are encouraged to have a contest within the school as part of their classroom studies and submit one entry per grade category. CSW will be sponsoring a local NCW Illustrated Poem contest. The National illustrated poem contest is focused on the National Chemistry Week theme, "Chemistry Colors our World!". Participants are encouraged to explore topics related to the chemistry of dyes and pigments, natural and artificial colors, absorbed and reflected light, or any other relevant topic. Your poem can be in any style as long as it is no more than 40 words. All entries must be received by the local NCW coordinator no later than Friday, November 6, 2015. Entries should be mailed to the NCW Coordinator at the CSW office. Winning entries from each grade category will be forwarded to the ACS for the national competition and will receive a local section award as well. Additional information on the contest, as well as NCW, is available on the ACS web site (www.acs.org/ncw).

Now Accepting Nominations for the CSW Schubert Award

Contributed by Katrice Lippa

The Chemical Society of Washington (CSW) is pleased to announce the call for nominations for the Leo Schubert Memorial Award 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. The Schubert award consists of a \$500 honorarium and a certificate, which will be presented at the January 2016 CSW dinner meeting.

Nominations for the award must be comprehensive in describing the nominee's accomplishments in areas such as innovation in teaching, writing curricula, outside teaching, papers published, involvement in science fairs, and postgraduate study. The application may also include supporting letters, as well as any supporting documents that concisely illuminate the nominee's accomplishments.

To be eligible for the CSW Schubert award, the nominee must currently teach chemistry at a secondary school in the geographic region of the Chemical Society of Washington, which includes metropolitan Washington, D.C. and the neighboring counties in Maryland and Virginia – Arlington, Fairfax and Loudoun Counties in Virginia, and Montgomery, Prince George's, Charles, Calvert and St. Mary's Counties in Maryland. The region of CSW also includes six counties on the Eastern Shore of Maryland – Caroline, Talbot, Dorchester, Wicomico, Worcester and Somerset.

A CSW Schubert Award nomination form is available directly via The Capital Chemist website (<http://www.capitalchemist.org/the-chemical-society-of-washingtons-leo-schubert-memorial-award-2015-nomination-form/>). Alternatively, a pdf version of the nomination form can be obtained by an e-mail request to csw@acs.org. Completed pdf nomination forms can be sent directly to csw@acs.org. All nominations must be submitted by **November 15, 2015**. Please contact Katrice Lippa at katrice.lippa@nist.gov if you have any questions.

USPTO–ACS Technology Day a Success

Contributed by Caroline Trupp Gil

To assist patent examiners at the U.S. Patent & Trademark Office (USPTO) keep current on latest developments in the chemical sciences, OPA staff partnered with members of the ACS Chemical Society of Washington to arrange 5 speakers to participate in a USPTO Technology Day held July 28. Speakers from Case Western Reserve, Bristol Myers Squibb, the University of Maryland (2), and The Ohio State University spoke on the state of the art on topics such as polymers, batteries, mass spectrometry, and electrophoresis and electrochromatography. The speaker roster included an ACS Expert, and a member of the ACS Committee on Patents & Related Matters. Initial reports from the patent examiners indicate the speakers were well received; OPA staff, CSW and CPRM volunteers are working on further evaluation and whether the effort is worth repeating.



Photo, left to right: Alan Anderson, President of the Chemical Society of Washington; Richard Jordan, member of CSW and the ACS Committee on Patents & Related Matters; Caroline Trupp Gil, ACS Office of Public Affairs; Dr. Lawrence Sita, University of Maryland Department of Chemistry and Biochemistry; Jeffrey Barton, USPTO Supervisory Patent Examiner, Art Unit 1715 (ie, chemical sciences). Photo Credit: Keri Moss Stearns, ACS Office of Public Affairs.

Now Accepting Nominations for the Charles L. Gordon Memorial Award

Contributed by Kim Morehouse

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. Nominations are invited for this award, consisting of a plaque that will be presented at the February CSW dinner meeting. A written nomination should include a description of the accomplishments on which the nomination is based. Additional documentation that includes seconding letters and the nominee's CV are welcome.

Completed nominations for the Charles L. Gordon Award are due on or before November 15, 2015. The nomination should be submitted electronically to csw@acs.org. Please contact the Chair of the Awards Committee, Kim M. Morehouse at kim.morehouse@fda.hhs.gov, if you have any questions.

Register Now: 3rd Annual ACS Entrepreneurial Summit

The ACS Entrepreneurial Summit is an event hosted by the American Chemical Society (ACS) highlighting the interplay among chemical entrepreneurs, investors, and large innovators as they work towards advancing chemistry-based innovation into the market.

At this year's Summit, corporate partners will shed light on their innovation processes and interests, industry experts will discuss their best practices, top-performing entrepreneurs will pitch their businesses, and ACS Divisions and other organizations will share additional resources available for stakeholders interested in chemistry-based entrepreneurship.

WHEN

September 17th – 9am to 5pm

September 18th – 9am to 3pm

WHERE

National Education Association, Auditorium
1201 16th Street NW
Washington, DC 20036

DETAILS

Lunch will be provided

Seating is limited

CONTACT us at startup@acs.org or visit our website at www.acs.org/ERC

Summary: “What Can You Do With Your Chemistry Degree?”

Contributed by Ajay Mallia, Project SEED Coordinator

On August 1, 2015, CSW's Project SEED and Education committees organized a career seminar for CSW's Project SEED fellows. The Project SEED program provides opportunities for economically disadvantaged high school students to do summer internships in chemistry-related research programs under the supervision of a mentor. The 2015 fellows and their parents were invited to this seminar on “What can you do with your Chemistry Degree?”

The Panel consisted of Dr. Svetla Baykoucheva, head of the White Memorial Chemistry Library at the University of Maryland, College Park; Dr. Katrice Lippa, Scientific Advisor for the Chemical Sciences Division at the National Institute of Standards and Technology (NIST); and Dr. Fatima Sequeira, who works at the FDA as part of a team of scientists who evaluate generic drugs before they are allowed to be distributed in the U.S.

Dr. Ajay Mallia Chair, CSW's Project SEED Coordinator, gave opening remarks and welcomed the attendees and panelists. The event started with short introductions of all the students, where they described their Project SEED research. All the panelists introduced themselves and explained their backgrounds. High school students and their parents actively participated in both the discussion and question/answer sections. The discussion was moderated by Dr. Fatima Sequeira.



Hillebrand Prize Nominations Now Open

Nominations are invited for the 2015 Hillebrand Prize, awarded annually for original contributions to the science of chemistry by a member or members of the CSW.

The Hillebrand Prize is the most prestigious honor given each year by CSW and is recognized nationally as a mark of significant accomplishment in chemistry. The Hillebrand Prize originated in 1924 and is named for Dr. William F. Hillebrand (1853- 1925), an internationally recognized pioneer in analytical chemistry and one of Washington's most distinguished early chemists. The prize carries an honorarium of \$2000. Many previous Hillebrand Prize recipients have won numerous other national and international awards, including three who have received the Nobel Prize.

How to nominate:

Nomination packets must include:

- A nomination letter
 - The nomination letter must be limited to 1000 words.
- Seconding letters.
 - Two seconding letters may be sent, limited to a maximum of 500 words.
- A Curriculum Vitae
- List of publications
- A proposed citation (not more than 25 words)

The nomination package should be submitted by email, preferably as PDF files(s), to csw@acs.org. Nominations will be active for three years.

In accordance with the CSW Standing Rules, both the nominee and the nominator must be current members of CSW, but this restriction does not apply to writers of seconding letters. If you would like to verify the eligibility of an individual as a nominee or nominator, please contact the CSW Administrator at csw@acs.org.

All materials must be received by October 15, 2015. The awardee will be announced before the end of the year, and the Prize will be presented at the CSW dinner meeting in March 2016.

Anacostia Environmental Youth Summit a Success

Contributed By Ajay Mallia & Richard Goodman

CSW-Younger Chemists Committee and CSW-Environmental and Sustainability Committee participated in an outreach event at Anacostia Environmental Youth Summit (AEYS, organized by District Department of Environment (DDOE)) on May 29, 2015 at Anacostia Park, Washington DC.

This year 381 school students (from grades 4 to 8) from different DC schools participated in this event. These participants were from Burroughs School, Chance Academy, Hart Middle School, HD Cooke School, LaSalle-Backus School, Oyster-Adams Elementary School, School without Walls, Francis Stevens education campus, Sousa MS, Takoma Education Campus and Washington Latin School.

The first station explained about greenhouse gases, mentioning carbon dioxide as an example, and demonstrated an experiment that produce carbon dioxide using from citric acid and baking soda. Volunteers also explained the acidity of carbon dioxide in water with color change experiment of an indicator. A launch of 'helicopter propeller' to show that air pressure from carbon dioxide can act as "fuel" was one of the popular activity among high school students.

The second station provided demos about the subject of water: dealing with the effects of oil spills (especially on birds' feathers) and how to purify "dirty water" with the P&G water purifying packets. The water pollution related demonstration also included selective removal of gasoline from water with a polymeric material.

Today's Students, Tomorrow's Innovators

Contributed by Dr. Michelle R. Bond, Children's Science Center Board Member

Children are natural-born learners with insatiable curiosity. Who built my school? What are the ants doing with that leaf? How do you open this bag? When will the sun come up? Why does the magnifying glass make it bigger? These inquiries are among those from a much longer list I answered for my 2.5 year old son this week. Even simple questions like these inspire children to learn about the world around them. Soaking up information at an amazing rate, young students are masters of discovery – they integrate information and unabashedly explore unknown concepts.



Exploration, discovery, and creation are key principles of scientific inquiry. Indeed, it is clear that navigating our ever-changing world will require not only a brave curiosity and critical thinking skills but also a literacy of science, technology, engineering, and math (STEM). Integrating STEM with the essential skills of reading and writing is requisite for students to ultimately be competitive in the United States' fastest growing employment sector (STEM jobs are projected to expand by 17% from 2010 to 2020). Beyond the need for a diverse STEM talent pool to continue our upward trajectory of ingenuity, there is a fundamental need to ensure that we have an informed public ready to make educated decisions about STEM topics. Precisely, "responsible citizenship today requires a foundation of solid STEM education; be it engaging in health care, understanding environmental stewardship, understanding current geopolitics, or explaining global opportunities and crises."

The ability to integrate disparate ideas and synthesize new ones is key for the success of the next generation of STEM trailblazers. While high quality STEM educators in formal education environments are at the frontlines of encouraging these efforts, they are bolstered by programming in informal learning environments including inquiry-based learning at centers within communities. Students participating in after-school STEM programs have immediate and long-term gains on a number of STEM-related dimensions and, importantly, students in these programs can be inspired in STEM without the fear of academic failure. Furthermore, informal education experiences, such as science museums and centers, are linked to improved STEM literacy and an increased awareness of and interest in STEM-related topics, particularly for girls and under-represented minorities.

Strategic efforts in our region to add informal STEM programs to our K-12 STEM education ecosystem have recently become further enriched. With innovative programming that dovetails with existing curricula and programs, the Children's Science Center was, until June 20, 2015, a museum that even without walls served over 24,000 visitors overall in the 2014-2015 school year. These included community events and elementary school visits, of which 60% percent were Title I schools. At its new home, the Children's Science Center Lab at Fair Oaks Mall (11948L Fair Oaks Mall, Fairfax, Va. 22033) shows tremendous promise. The Lab is Northern Virginia's first interactive museum where children, families, and school groups can explore STEM concepts through fun, engaging hands-on exhibits, activities, and programs.

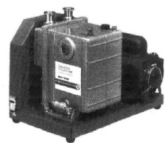
As an asset to the region, the Children's Science Center is committed to engaging and inspiring youth through hands-on inquiry based learning, mentoring opportunities, and a for-kids-by-kids design approach. Helping youth to have a "huh, that's funny" moment after which they explore a concept rather than accepting an unknown is among the tenants upon which the Center is built. Instilling a love of learning STEM in all children by providing unique opportunities to explore, create, and be inspired will help today's students to be tomorrow's innovators.

Recently, just over 20 student volunteers ages 13-15 (and one 8 year old!) compiled interesting facts, videos, podcasts, and websites about the periodic table and all the chemical elements. Every volunteer researched five elements and wrote short, creative statements describing the most interesting facts they discovered which were ultimately published on the organization's Facebook and Twitter pages using the hashtag #ChildSciElements. Tied to the Elements of Success fund development campaign, students in this educational endeavor partnered with a Ph.D. chemist to ensure every facet of the organization includes an educational component.

Photo used with permission from the Children's Science Center.

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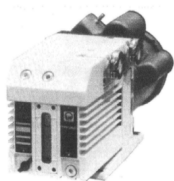
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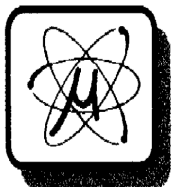
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- www.mboservices.net
- <http://membership.acs.org/W/WashDC/career.html>



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CSW Calendar of Events

September

- 9/12: Project SEED Research Symposium
- 9/21: CSW Board of Managers Meeting

October

- 10/15: Deadline for Hillebrand Prize Nominations
- 10/18-24: National Chemistry Week
- 10/20: Webinar: "Tales of Lab Safety: How to Avoid Mistakes"

November

- 11/15: Deadline for Gordon and Schubert Award Nominations
- 11/23: CSW Board of Managers Meeting