OCTOBER 2015

DEL-CHEM Bulletin

Volume 82/7

Joint Meeting of Delaware Section of SAS and ChemVets

October 27, 2015

Noon to 2:00 pm • DuPont Chestnut Run Laboratories

"Spectroscopic Analysis of Modern and Contemporary Art: Paints, Coatings, and Plastics"

Dr. Francesca Casadio

Art Institute of Chicago

For information on section activities visit our web site at:

www.delawareacs.org

DELAWARE ACS NETWORKING HAPPY HOUR

1. Provide input to the executive committee on future events
2. Network with fellow members

Date: Wednesday, October 21, 2015

Time: 5:00 - 7:00 pm

Location: BBC Grill and Tavern, 4019 Kennett Pike, Greenville, DE 19807

Cost: FREE

Food will be provided.

Soft drinks and alcoholic beverages will be available for cash or charge at the bar.

Please register.

Registration:

1. Use the link provided on the section website, http://delacs.sites.org, or in the Del-Chem Bulletin distribution announcement to register online.

2. E-mail delawareacs@gmail.com to receive a link to online registration Members who are unable to register online should call Justin Chan at 302-695-3514

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EDITOR
Sheree R. Gold
(610) 742-4981
Inter Media Consultants

ADVERTISING MANAGER
Vince Gale
(781) 837-0424
MBO Services

DELAWARE SECTION OFFICERS
Justin Chan. . . . . Chair
(302) 695-3514 DuPont
justin.w.chan@dupont.com

Rakesh R. Nambiar . . . . . Past Chair
(302) 695-2760 DuPont
rakeshgatech@gmail.com

Peiwen Zheng. . . . . Chair Elect
(302) 695-2964 DuPont
Peiwen.Zheng@dupont.com

Julie Brady. . . . . Secretary
(302) 453-3786 Delaware Technical Community College
jbrady@dtcc.edu

Mary Jo Bock . . . . . Treasurer
(302) 407-4224 Axalta
mary.j.bock@axaltacs.com

DIRECTORS
Todd Brugel (2013-2015)
(302) 995-3309 Ashland
tbrugel@ashland.com

Biswajit Choudhury (2014-2016)
(302) 695-3091 DuPont
Biswajit.Choudhury@dupont.com

Allison Moore (2014-2016)
(302) 995-4140 Ashland
abmoore@ashland.com

COUNCILORS
John Gavenonis (2013-2015)
(302) 733-8007 DuPont
john.gavenonis@dupont.com

Martha G. Hollomon (2013-2015)
(302) 368-7061
marthahollomon@comcast.net

Tiffany N. Hoerter (2014-2016)
(302) 695-3032 DuPont
tiffany.hoerter@dupont.com

Maggie Schooler (2014-2016)
(302) 407-4238 Axalta
Margaret.J.Schooler@axaltacs.com

ALTERNATE COUNCILORS
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shbp65@comcast.net

Kim Huynh-Ba (2015)
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kim.huynhba@pharmalytik.com

Nora S. Radu (2013-2015)
(302) 695-3363 DuPont
nora.s.radu@dupont.com

Craig Westphal (2014-2016)
(302) 695-3103 DuPont
craig.westphal@dupont.com

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CHAIR'S COLUMN

Hello Everyone,

Thank you all for your efforts in participating in the Delaware Section of the American Chemical Society. I look forward to the events that will take place this month, **in particular the DE Section Networking Event. Please look out for email updates and register for this** and other events detailed in this edition of the Bulletin. The networking event will be held in Greenville, DE at the BBC Grill and Tavern on October 21st. Please plan to attend and register for the event.

Congratulations to the 50 and 60 year ACS members. As many of you know, there was an event held in their honor in Wilmington, DE late in September. Thank you all for participating and attending.

Justin Chan

2015 Delaware Section of the ACS Chair

Joint SAS (Society for Applied Spectroscopy) and ChemVets Meeting

"Spectroscopic analysis of modern and contemporary art: paints, coatings and plastics"

Dr. Francesca Casadio
A.W. Mellon Senior Conservation Scientist
Art Institute of Chicago
Co-Director, NU-ACCESS
fcasadio@artic.edu

Date:	**October 27, 2015**
Time:	12 p.m. –2 p.m.
Location:	DuPont, Chestnut Run Laboratories 12:00 Lunch (Admin. Bldg. 1:00 Lecture (Bldg. 713 auditorium)
Event Type:	Open to the Public
Fee:	None
Registration:	Not Required

The wide availability of compact and relatively low-cost portable systems for point molecular and elemental analysis has opened up many new avenues for wide-spectrum studies of the materials of works of art that overcome the ethical dilemma of sampling or at least allow a drastic reduction of the need for samples. A non – invasive approach is essential for those modern and contemporary works of art where uniform and often pristine fields of color dominate the picture plane, making inconspicuous sampling impossible. Since most modern and contemporary paintings are unvarnished analysis with Fourier Transform Infrared (FTIR) systems in reflectance in the mid-infrared is particularly revealing and may bring to light surface constituents, such as metal carboxylates and other degradation products that are not always apparent with bulk analysis, alerting conservators to specific conservation conditions that may become problematic. Imaging in the mid and near-infrared brings the multi-point analysis to the next level, by allowing broad surveys of organic binding media and coatings in these works, an analytical frontier that was still unconquered until recent times. For plastic objects entering museum collections with often non-existent media information, in situ analysis in galleries or storage areas is of great benefit for a more accurate identification of their constituent materials, which has important implications for preservation and storage.

This talk will present an overview of relevant case studies including the in-situ identification of paints used by Roy Lichtenstein, leading to a systematic and accurate media description of his work, where distinguishing between oil and acrylic use is not always straightforward

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Joint SAS and ChemVets continued from page 4

by visual observation alone; the identification of oxalates and zinc soaps in modern paintings by Pablo Picasso and László Moholy-Nagy, and the in-depth analysis of plastics used in modern and contemporary art and design collections.

Dr. Francesca Casadio examining a Roy Lichtenstein painting with reflectance FTIR spectroscopy. (Brush-stroke with Spatter, 1966; Oil and magna on canvas; Barbara Neff Smith and Solomon Byron Smith Purchase Fund, 1966.3)

Biography:

Dr. Francesca Casadio
A.W. Mellon Senior Conservation Scientist
Art Institute of Chicago
Co-Director, NU-ACCESS

Francesca Casadio joined the Art Institute of Chicago in 2003 to establish and direct a state of the art conservation science laboratory. As the Museum's first A.W Mellon Senior Conservation Scientist she is in charge of planning and carrying out scientific research in support of the preservation and study of the Museum's collection. Francesca Casadio received her Ph.D. and M.S. degrees in Chemistry from the University of Milan, Italy.

Since 2013, Dr. Casadio has also established and co-directs the Northwestern University/ Art Institute of Chicago Center for Scientific Studies in the Arts (NU-ACCESS), an interdisciplinary center that aims to become a new model of collaborative scientific research in the arts, providing expanded access to scientific expertise to Museums and Institutions that do not have such facilities in-house.

In 2006 Dr. Casadio was awarded the L'Oréal Art and Science of Color Silver Prize for distinguished contribution to the creative meeting of science and art through color with her collaborative research with Professor Richard P. Van Duyne of Northwestern University. She has authored over 80 publications in peer-reviewed scientific and conservation journals, museum catalogs, books and other publications. Her work has been featured on air, online and in print on: Reuters online media, US National Public radio, The Chicago Tribune, Crain's Chicago Business, Italy's il Corriere della sera, il Sole 24 ore, Vogue Italia, radio rai, and other media.

Call for Nominations

Delaware Section Award
The purpose of this award is to recognize conspicuous scientific achievement in an area of chemistry or chemical engineering by a Delaware Section member. The Award, established in 1956, is funded by the ACS Delaware Section, and consists of a certificate and honorarium. It will be presented at the January 2016 Delaware Section meeting, at which the recipient is the main speaker. Any member of the ACS Delaware Section may be nominated for this award. Nominations, which are processed through the Awards Committee, may be based on the member's single or extended activities. The scientific achievement and contribution should be of such a nature that a meaningful address before the Section can be given. Previous recipients may be nominated based on new contributions. Nomination should take the form of a written documentation of achievements and contributions with supporting references such as patents and publications. The deadline for nomination is November 15, 2015.

Tillmanns-Skolnik Award
The Delaware Section Awards Committee is accepting nominations for the Tillmanns-Skolnik Award to be given in January 2016. The award is granted for outstanding contribution to the content of Section programs, to the administrative function of the Section, or to the improvement of the public perception of the Section. Either a single noteworthy achievement or long continuous service may be recognized. Any Delaware Section member can submit the name of a nominee and a short description of the nominee's qualifications for the award. The nominee cannot be a voting member of the Executive Committee during the calendar year prior to the presentation of the award. The deadline for nominations is November 15, 2015.

Lillian Webster Award
This award is given to recognize unusual service or extra-ordinary dedication to the Delaware Section through long term activity or other meritorious work. It is given sporadically at the discretion of the Chair to a non ACS member who has served the Delaware Section by giving freely of their time for the betterment of the section. The deadline for nominations is November 15, 2015.

Submit nominations to the Awards chairman:
Norman W. Henry III
129 Ballantrae Drive
Elkton, MD 21921-2982
(410) 398-9484
E-mail: SHBP65@comcast.net

First Friday: Where's My Hoverboard

Date: **October 2, 2015**
Time: 5-8 p.m.
Location: CHF
315 Chestnut Street
Philadelphia, PA 19106
Fee: None
Registration: Required (https://www.chemheritage.org/secure/register-for-an-event.aspx?eventid=85013)

The movie Back to the Future Part II promised us all sorts of things—hoverboards, self-tying shoes, and trash compacters powered by nuclear fusion—but what is the movie's track record for making accurate predictions? Put on your best '80s outfit, and come out for a First Friday where we'll discuss the science of what is and is not possible from this iconic film.

About First Fridays
Spark your curiosity while exploring the exhibits after hours! First Fridays bring together a lively lineup of guest speakers and hands-on activities covering everyday science, historical oddities, and everything in between. Grab your friends, and kick off an evening of discovery, surprise, and a little nerdy fun.

First Fridays at CHF are always free and open to the public; no registration required. For more information about our First Friday programs, contact Alexis Jeffcoat at 215.873.8293 or ajeffcoat@chemheritage.org.

Day of Play

Date: **October 11, 2015**
Time: 1:00–4:00 p.m.
Location: CHF 315 Chestnut Street, Philadelphia, PA 19106
Event Type: Open to the Public
Fee: $5
Registration: Requested http://www.chemheritage.org/visit/events/public-events/2015-10-11-day-of-play.aspx

Take a deeper look at chemistry sets and science toys through the lens of design! Join us for a Day of Play where you can explore, learn, and of course play with science and design through spotlight talks, tours, and interactive demonstrations.

Tour Our Tiny Labs
Take short tours of the Science at Play exhibition, where you can explore the world of science in miniature. Get the inside scoop on the set design and graphics from Science at Play curator Jane E. Boyd.

Hack This (Science) Game
Do these games help you better understand scientific concepts? Does their design improve

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Day of Play*continued from page 7*

game play? You be the judge. Play with science-themed card and board games, and then submit your own ideas for improving their design and making them better.

Tanks and Tubes
Hydrodynamic sets allow you to use tanks, valves, pumps, and pipes to build scale models powered by water. Put your engineering mind to work in teams to design and construct a building.

Science, Design, and DIY
It's our turn for show and tell with everything from a wacky corporate science game to fascinating and highly designed objects in our collection.

More information
For more information please contact Alexis Jeffcoat at 215.873.8293 or ajeffcoat@chemheritage.org.

Science on Tap

Science on Tap is a monthly science café in Philadelphia for anyone interested in getting together with other people to discuss a range of engaging science topics. It is held the second Monday of (most) every month.

Located at National Mechanics, a relaxed, convivial bar in Old City, Science on Tap features a brief, informal presentation by a scientist or other expert followed by lively conversation. The goal is to promote enthusiasm for science in a fun, spirited, and accessible way, while also meeting new people. Come join the conversation! Check back soon for this month's topic.

Presented by the American Philosophical Society.
Open to the public (age 21+ or accompanied by chaperone 25 years or older).

Date:	**October 12, 2015**
Time:	6:00 p.m.
Location:	National Mechanics 22 South Third Street Philadelphia, PA 19106
Event Type:	Open to the Public
Fee:	Free
Registration:	Not Required

For more information about this event, please contact at 215.873.8289 or bbl@chemheritage.org

Brown Bag Lecture:

"The Chymical Capuchins of the Louvre and Their Planned Mission to Ethiopia (1678–1681)"

Date:: October 13, 2015

Time: 12:00 – 1:00 p.m.

Location: CHF 315 Chestnut Street, Philadelphia, PA 19106

Event Type: Open to the Public

Fee: Free

Registration: Not Required

***A talk by Justin Rives*t**

This talk will examine the prominent role of iatrochymistry in the missionary projects of two Capuchin friars, Henri de Montbazon and Nicolas Aignan, known as the Louvre Capuchins (les Capucins du Louvre). Using their skills in the production of chymical medicines, the Louvre Capuchins curried favor at the court of Louis XIV for a proposed mission to Ethiopia. Their popularity led the king to grant them quarters and a laboratory in the Louvre palace, where they produced remedies for the consumption of the court, charitable dispensation to the poor, and possibly even the French army. They believed these same iatrochymical skills would allow them to make inroads with local elites in Egypt and Ethiopia, aiding them in their ultimate goal of bringing the Orthodox Christians of Ethiopia back into communion with the Church of Rome. I will also contextualize their ideas in the mainstream of late-17th-century chymical discourse, most notably as proponents of Helmontianism, "chymical Hippocratism," and the acid-alkali theory of pathology.

Justin grew up on a farm in southwestern Ontario. He earned his BA and MA degrees at Carleton University in Ottawa and is currently a doctoral candidate in the history of medicine at Johns Hopkins University. His dissertation focuses on the relationship between familial pharmaceutical monopolies and the state in early modern France. Justin also cultivates interests in the history of astrology and in the local history of the Detroit River region. He is a Beckman Center Price Fellow for the 2015–2016 academic year.

About Brown Bag Lectures:

Brown Bag Lectures (BBLs) are a series of weekly informal talks on the history of chemistry or related subjects, including the history and social studies of science, technology, and medicine. Based on original research (sometimes still in progress), these talks are given by local scholars for an audience of CHF staff and fellows and interested members of the public.

For more information, please call 215.873.8289 or e-mail bbl@chemheritage.org.

Joseph Priestley Society: Henry Dubina, "Key Eabling Instrument Technologies in Biopharmaceutical R&D"

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Chymical Capuchins of the Louvre continued from page 9

Date: **October 15, 2015**
Time: 11:30 – 2:00 p.m.
Location: CHF 315 Chestnut Street, Philadelphia, PA 19106
Event Type: Open to the Public
Fee: $25
Registration: Required

This month's Joseph Priestley Society program features a keynote address by Henry Dubina, president, Mettler-Toledo AutoChem, Inc. Dubina will reveal how Mettler Toledo characterizes chemical processes quickly through full analysis of thermodynamics, kinetics, and particle behavior in the lab under plantlike conditions.
The Joseph Priestley Society (JPS) lecture series explores topics in science, technology, and industry through professional networking receptions and lectures by industry leaders.

More information:
For more information about this event, please contact Sarah Reisert, awards program manager, at 215.873.8263 or sreisert@chemheritage.org.
Boyle Society members receive complimentary admission!
Robert Boyle Society members: To register yourself and up to four guests free of charge, please contact Nancy Vonada, manager of events and donor relations, at 215.873.8226 or nvonada@chemheritage.org.

Othmer Library Open House

Date: October 22, 2015
Time: 6:00 – 8:00 p.m.
Location: Othmer Library of Chemical History CHF
315 Chestnut Street, Philadelphia, PA 19106
Event Type: Open to the Public
Fee: Free
Registration: Required

For one night only, discover hidden treasures from the Othmer Library of Chemical History as we open our vaults in celebration of American Archives Month!

Visitors will have the opportunity to browse a selection of our most unique and interesting materials, from alchemical manuscripts and alternative versions of the periodic table, to vintage chemistry notebooks and advertisements from the Dow Chemical Company. Enjoy light refreshments while chatting with our archivists and librarians about these remarkable collections.

You won't want to miss this exclusive peek at everything you never knew about the history of chemistry—RSVP today!

About the Othmer Library of Chemical History:
The Othmer Library of Chemical History, part of the Chemical Heritage Foundation, collects, preserves, and makes accessible materials relating to the history of science, technology, and medicine, with an emphasis on chemistry and chemical engineering from ancient to modern times. The library houses approximately 160,000 printed volumes, rare books and manuscripts, significant archival materials, and a rich collection of historical photographs. Together, these collections span nearly six miles of shelves and form an unrivaled resource for the history of chemistry and related sciences, technologies, and industries.

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About American Archives Month

October is American Archives Month, an opportunity for archives and archivists around the country to celebrate their work and raise public awareness about the value and accessibility of historical records. In conjunction with participating institutions throughout the Delaware Valley, the Delaware Valley Archivists Group has assembled an exciting calendar of events at Philadelphia's most notable archives, special collections libraries, repositories, and other cultural institutions. For more information, visit archivesmonthphilly.com.

More information:
For more information about this event, contact Hillary Kativa at 215.873.8249 or hkativa@chemheritage.org.

Brown Bag Lecture:

"Scarcity or Abundance? Illuminating the Role of Scarce Metals"

Date:	**October 27, 2015**
Time:	12:00 – 1:00 p.m.
Location:	CHF 315 Chestnut Street, Philadelphia, PA 19106
Event Type:	Open to the Public
Fee:	Free
Registration:	Not Required

A talk by Hanna Vikstrom

Our current digital world is heavily dependent on metals. But metals have long shaped the world in terms of economic growth, political relations, and social and cultural change. Over time the demand for metals has shifted with the development of technology and discoveries of new properties of certain metals. The demand has grown drastically over the past century. Society's growing metal dependence has resulted in increased concerns about access to metals, creating perceptions of various elements as scarce.

Most historical research has focused on base metals such as iron or precious metals such as gold. However, rare metals, often used in small amounts have largely been invisible. Historically, many metals have been perceived as strategic or rare in different countries and at various times. Aluminum, the third most common element, was long seen as scarce as it was difficult to extract it. These metals are not necessarily scarce but are perceived as such due to various factors, for instance, if they are extracted in only a few countries. Scarce metals have historically been vital is in the development of lightbulbs and diodes, from the 1800s until today. One current example is gallium—a metal that allowed a research group to win the Nobel Prize for creating blue light diodes—which is perceived as scarce since it is mainly extracted in China. I will explore how the use of rare metals in lightbulbs and diodes has changed over time, from the 1880s to today, with a particular emphasis on how the perception of rare metals as scarce natural resources has shaped the path of technological development. Which role have scarce metals had in this development and how did the actors access them?

Hanna Vikstrom is currently working on her PhD project about rare metals in historical perspective. She has an MSc in engineering physics, and her PhD project is in the field of history of technology. Her research is centered on the social construction of scarcity, why metals are perceived as scarce in different historical periods and contexts. Additionally,

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I Survived Boston

Al Denio

The Boston ACS Meeting – I flew to this magical city on August 16th for the 250th National Meeting. I grew up in Lowell, about 25 miles northwest of this city. One of my earliest memories was of visiting Fenway Park to watch my hero Ted Williams in left field.

On this visit I never got near that sacred place. I was there to serve on the Senior Chemists Committee, along with Ed Wasserman. We also attended the Senior Chemists Breakfast with Professor George Whitesides as the main attraction.

I did manage to attend several interesting talks at the History of Chemistry Division plus visit the famous Expo to check out exhibits by some of Delaware's companies.

An early memory of my education was that famous old bit of poetry:

Oh Boston, dear Boston
The home of the bean and the cod
Where the Cabots speak only to the Lowells
and the Lowells speak only to God!

My family spoke to neither!

Still Collecting Elements –

Earlier this year I had my first dental implant, a titanium screw added to my jawbone. Then came the crown on top, made of zirconium oxide, stabilized with the additions of yttrium oxide. If this continues, I'll go to the grave with half the Periodic Table.

The Farmer's Friend –

Ammonium nitrate is a great fertilizer compound. It is water-soluble and contains 35% nitrogen. The Haber-Bosch process helped to make this chemical readily available and cheap.

This same compound is used in most auto air bags to provide rapid inflation in a collision. However, this compound can be unstable and lead to injuries and death in some types of airbags on a random basis. Luckily this failure rate is low.

Ammonium nitrate is also popular in the evildoer's playbook. The 1970 explosion on the Madison campus of the University of Wisconsin occurred about a week after we left to return to the Eau Claire campus. The same compound was used in the devastating explosion in the Oklahoma City blast.

It continues to be used by terrorists in Iraq, Afghanistan, Syria and other countries where evil people continue to disrupt civilization. Chemistry is indeed a mixed blessing.

The End of Edge Moor –

Chemours came into existence on July 1. Then in August we learned that it would cease to produce TiO2 at this old plant on the Delaware River. Sadly, 330 jobs will be lost over the next two months.

It is sad to see Delaware continuing to lose jobs in chemistry. This means fewer members for the Delaware Section. As we shrink, we lose Counselor positions. A few years ago we fell from five to four such positions.

The News Journal ran a major article on August 21 dealing with the Edge Moor plant. There used to be a farm and an impressive home called the Ellerslie Mansion on this site. The mansion was leased by F. Scott Fitzgerald and his wife Zelda from 1927 to 1929. He had published "The Great Gatsby" in 1925. The historic mansion was torn down in the 1970s.

Perhaps the only good news about the closing will be that tank cars of chlorine will no longer be present. People who reside in that area will no doubt sleep better!

Scarcity or Abundance continued from page 11

her other research interests revolve around the Arctic and gender studies. She is a fellow at CHF in the 2015–2016 academic year.

About Brown Bag Lectures

Brown Bag Lectures (BBLs) are a series of weekly informal talks on the history of chemistry or related subjects, including the history and social studies of science, technology, and medicine. Based on original research (sometimes still in progress), these talks are given by local scholars for an audience of CHF staff and fellows and interested members of the public.

For more information, please call 215.873.8289 or e-mail bbl@chemheritage.org.

Innovation Day 2015

Date: **October 5-6, 2015**
Time: 11.30-2 p.m.
Location: CHF
315 Chestnut Street
Philadelphia, PA 19106
Fee: Varies

On Innovation Day young innovators and industry leaders come together to celebrate innovation in the chemical industry today and seek solutions for tomorrow's challenges.

In an age of increasing interconnectivity and complexity in the chemical industries, successful innovators connect face-to-face with their peers and look beyond immediate technical matters to understand the broader implications of their work. In taking early-career scientists out of the lab and introducing them to their peers, to industry leaders, and to the historical and social context of their research, Innovation Day supports a 21st-century chemical enterprise that addresses society's most pressing needs.

Innovation Day 2015 will take place on October 5 and 6.

The Warren G. Schlinger Symposium:

The Schlinger Symposium brings together senior executives, research and technology managers, and young industry scientists to examine frontier research areas in the chemical industry.

The SCI Gordon E. Moore Medal

The Society of Chemical Industry (SCI), America Section, will award the 12th annual Gordon E. Moore Medal to John A. McCauley, Director of Medicinal Chemistry, Merck Research Laboratories.

The Perkin Medal

Following the Innovation Day events at CHF, SCI America will award its prestigious Perkin Medal to Cynthia A. Maryanoff, Foundation Distinguished Professor, Baruch S. Blumberg Institute.

For more information contact Zackary Biro at 215.873.8203 or send e-mail to zbiro@chemheritage.org. Register for an event link

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- Companies for laboratory and management positions
- Universities & Colleges for teaching positions and laboratory personnel
- Hospitals for technical and research personnel

There are several web sites that may help you search for these open positions.

- www.mboservices.net/recr_disp.php
- http://membership.acs.org/D/Del/#Jobs
- http://pubs.acs.org/chemjobs/

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Call for Nominations for Section Officers and Councilors

The Delaware Section of the American Chemical society is looking for candidates for local section officers to run in the May 2016 elections. The terms would begin January 2017. If you or someone you know is interested in running for the following positions, please contact Justin Chan at (302) 695-3514 or by email at justin.w.chan@dupont.com. The deadline for submission of materials is March 1, 2016. The positions that are open include:

Chair Elect.....1 year term
Secretary.....1 year term
Director.....3 year term
Councilors.....3 year term
Alternate Councilors.....3 year term

Job descriptions can be found at:
http://www.delawareacs.org/documents

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