DivCHED Newsletter
Fall 2016

In Memorium - Jane L. Crosby
(1928-2016)

2016 Election Information, Candidates & Statements

DivCHED Travel Award Deadline
September 15, 2016

ACS 252nd Nation Meeting
Chemistry of the People, by the People, for the People
August 21-25, 2016, Philadelphia, PA

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Chair’s Report, Cathy Middlecamp [chmiddle@wisc.edu]

Two F-words

In 2004, when Frank Torre turned over the reins as the incoming CHED Program chair, he gave me one piece of advice: “Be fair.”

I never forgot his words.

What did Frank mean by being fair? Fair has several meanings, including:

- free from bias, dishonesty, or injustice
- in accordance with the rules or standards; legitimate
- treating people in a way that does not favor some over others

Over the course of my three-year term, I learned the wisdom of his advice. Fair meant that speakers in a symposium could not be favored over other speakers (Long-winded folks need to be stopped when their time speaking is up). Fair meant in accordance with the ACS even-programming rules (Oh did I get scolded once by an NSF program officer who thought otherwise). And fair meant that I legitimately requested of ExComm that the Program chairs be given a per diem for as many days as they remained on site to shepherd the program (I didn’t benefit from this, those after me did).

Most importantly, though, “fair” meant that I kept my word and did the job entrusted to me. It would not have been fair to the Division members to have taken the reins from Frank and done otherwise.

Serving as your CHED program chair for six national ACS meetings (seven if you count an extra that came my way) hit the top of the charts for time-on-task as a CHED volunteer. But I loved it! I got to work with a group of smart and can-do people:

- Marcy Towns, MaryKay Orgill and Don Wink as fellow chairs,
- Resa Kelly as Secretary,
- Anna Wilson as Treasurer, and
- Heather Johnson as our CHED executive assistant.

Could’ve asked for a better team.

Now, a decade later, I’m at the mid-point of my three-year cycle as Chair of the Division.

What advice would I give to an incoming chair?

Before I answer this, again serving as a member of the chair succession is hitting the top of the charts for time-on-task as a CHED volunteer. Again it has been rewarding to work with a group of smart and can-do people: Marcy Towns, MaryKay Orgill and Don Wink as fellow chairs, Resa Kelly as Secretary, Anna Wilson as Treasurer, and Heather Johnson as our CHED executive assistant. Couldn’t have asked for a better team.

Being fair still strikes me as good advice. We all – your officers and committee chairs – need to perform the tasks entrusted to us. Some of these tasks, as I have come to learn, require expertise outside of our own. As a result, Marcy, MaryKay and I have teamed up with others in the Division to hire professionals to perform these tasks. Look for a parliamentarian, for example, at our next Executive Committee meeting (actually, Jordan Harshman IS one of our own, co-chair of YCES, Younger Chemical Education Scholars Committee). Also at Philly, look for an announcement that we are signing a contract for the BCCE to tap the expertise of LaTrese Garrison’s team at the ACS in order to employ MAPS for the abstracts and program.

On the heels of the Philly, look for discussions of hiring a meeting planner, also for the BCCE.

As your chair, I have come to learn another f-word: fiduciary.

Down the line, if an incoming CHED chair were to ask me for a piece of advice, my response would be “Be fiduciary.”

Hmm. Fiduciary is both a noun and an adjective.

So this works as well: “Be a fiduciary.” Frankly, neither sentence just rolls of my tongue. I’m not good at fugacity either.

As I came to learn, I wasn’t the only one who needed to better understand the fiduciary responsibilities of our CHED Executive Committee. So at the 2016 spring meeting in San Diego, we held an afternoon workshop to better understand the meaning of this f-word. Hey, none of us on the Executive Committee are lawyers!

But we knew a lawyer. Thankfully, in San Diego we had the help and expertise of Dave Smorodin, ACS legal counsel, to guide us. Dave pointed out that “Fiduciary duty is a legal duty to act for another’s benefit.” In bullet points:

- It is a legal duty.
- It places reliance on us to act.
- And the benefit is accrued by another.

As Jon Hockman, our facilitator at the meeting in San Diego pointed out to those assembled: “The Division was feeling vulnerable because practices were missing that needed to be in place.” He added: “All fiduciary responsibility with the Executive Committee. Crystal clear.”

We, the Executive Committee of your Division, are working to put needed practices in place that have been missing. Thanks to the work of several folks (stay tuned), we are revisiting our Ops Manual and our By-Laws. Check out the helpful article in this Newsletter by incoming chair MaryKay!

We also have the resources to hire professionals; we are deploying these resources. We have a great set of people who are volunteering their time. These professionals will support your work and allow you to better carry out the responsibilities entrusted to you.

Be fair! Thank you Frank, for your words of wisdom.

Be fiduciary! Thank you good colleagues in the Division, for helping me to learn why this word is key to the work of our Division.

Thanks for reading.
After I received my bachelor’s degree and before starting graduate school, I spent some time living in New York City. I remember seeing an advertisement during the first week I was there. The picture was long, spanning the length of a bus. On the left was a line of yellow rubber duckies, organized neatly in a row. The placement of the ducks became increasingly more random toward the right of the picture. The text that accompanied the picture suggested that, by working with a particular bank, customers could get their ducks back in order.

This advertisement could be an analogy for the practices of the Division. We have an Operations Manual. If you haven’t seen it—or haven’t seen it for a while—you can find it on our Division website (http://www.divCHED.org/content/operations-manual). This document describes our purpose, our official Bylaws, our administrative organization, and our duties and practices. It was established to ensure that the activities of the Division “are satisfactorily planned, coordinated, and completed in a timely manner” (Division of Chemical Education Operations Manual, Introduction). In other words, the document provides a scaffold for organizing the Division.

Over time, though, our practices have drifted from those described in the Operations Manual. In some cases, we have used the expertise of our membership to improve on the practices described in the Manual. In other cases, we have slackened in our observance of the practices described in the Manual. Either way, our practices don’t always match what the Operations Manual says we do as a Division.

Before I was elected, I didn’t know that we had an Operations Manual, and I certainly hadn’t read it, despite having served on multiple Division committees for multiple years. I had no idea that all of my duties as chair-elect (and, eventually, as chair) were described in that document. I learned that we have an Operations Manual when I attended the fiduciary training in San Diego at the Spring 2016 meeting. During that meeting, our moderators made it clear that, legally and ethically, it is important that our practices as a Division match what is described in our Operations Manual. I decided at that point that I should find and read the Operations Manual. Much to my chagrin, I discovered that I had already neglected some of my duties as an elected officer of the Division.

Since that first reading, I have worked with Division secretary-councilor Resa Kelly and councilor Renee Cole to examine the Operations Manual in more detail. Our goal was to identify the specific ways in which our practices had drifted from those described in the Manual. As it turns out, there are a rather large number of differences between what we said we would do and what we actually do. To be the best Division we can be and to serve our membership in the best way we can, we need to get our ducks back in order. We need to align our practices with our documents. Maybe that means changing the Operations Manual to better match our improved practices. Maybe that means changing our practices to better match the Operations Manual. Maybe that means changing both our practices and the Manual. Again, what is important is that we get our ducks back in order.

I invite you to be part of this process. Become familiar with the Operations Manual. Read through it to discover your duties, the duties of others, and the potential ways in which you could contribute to the Division and its activities both now and in the future. Consider the ways in which the Manual or our practices could be improved. You will have opportunities to contribute to the conversation about how to improve our practices and their alignment with our Division document over the next few months. Friday afternoon before the spring meeting in San Francisco, we will have a training/working session focused on our Operations Manual. Our plan is to invite Society experts to give us some background about Operations Manuals and their contents. Those experts will then be available to answer questions as we work in small groups to align our Division document with our practices. Before that training/working session, we will invite the members of ExComm and other interested members of the Division to give feedback about the contents of the Operations Manual in an online format. Please take advantage of these opportunities. By working together, we can improve the Division and the way it functions. We can get our ducks back in order.

From the Chair-Elect, MaryKay Orgill [marykay.orgill@unlv.edu]
Greetings DivCHED Members! We have a fall election approaching and, once again, Vote-Now will be assisting us with our voting process. In this election, you will be voting for Chair-Elect, Councilor and Alternate Councilor, Secretary/Councilor and Member at Large. As we have done in the past, your invitation to vote will be sent to you by email around the last week of August and voting will begin on September 1st and run through September 30th. Please be sure to check your spam mail to make sure that you get your ballot. The ballots will contain pictures and biography statements for each candidate. Here are the candidates:

Chair-Elect: Renée S. Cole and Cheryl Baldwin Frech
Secretary/Councilor: Dawn Del Carlo and Dan King
Councilor/Alternate Councilor: Amiee L. Modic, Iona Black, Kara A. Pezzi, Marilyne Stains and Paul D. Price
Member at Large: Deanna Cullen, Scott Donnelly and Patrick Daubenmire

Congratulations and thank you to all of our candidates for running.

The 2016 ACS Fellows have been announced and have been posted on the Division website. Congratulations to the winners! [http://goo.gl/gh4uPz](http://goo.gl/gh4uPz)

Lastly, since this is my last newsletter as Secretary/Councilor I would like to thank a few key people who helped me along the way. First, thanks to Don Wink, former Secretary/Councilor and Past Chair of the Division, who gave me my first lesson on the ACS governance structure and the many tasks of the Division Secretary. I particularly appreciated the subtle recommendation to pursue a heart healthy diet during my terms. Thanks to Arlene Russell, the first chair that I had the pleasure of working with and who taught me so much about the meeting structure and how to construct the minutes. The learning curve was steep, but I thank you for your patience, confidence and good humor. Thanks also to Cathy Middlecamp, the last chair I have had the good fortune to work with, your drive and enthusiasm have been contagious. Heather Johnson, Executive Assistant of the Division, much thanks to you and your magical ability to help during trying times and mostly for making things happen! Finally, to all of the ExComm Members and Committee Chairs, a hearty thanks for your commitment and getting those consent agenda reports in on time. I am in awe of your work and dedication to the Division. I leave inspired by you and our members. Thank you!

Respectfully submitted,
Resa Kelly
Secretary/Councilor

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**Know Your Way Around the Division**

If you need to pay membership dues, want to make a contribution to the DivCHED Service Award fund, or want to know about money, budgets, etc., contact the Treasurer.

If you want to change your mailing address, want a Division publication, or want to know about official Division actions, etc., contact the Secretary. If you want to receive this CHED Newsletter (or not receive it), contact the Secretary.

If you want to bring an idea before the Executive Committee or want to make an opinion known, contact the Member-at-Large.

If you want to contribute something to CHED News, contact Heather Johnson.
From the Member-At-Large, Jimmy Reeves [reeves@uncw.edu]

As I thought about this, my last newsletter article as your Member at Large, I was reminded of the admiration I have felt over the last six years for all of the officers and committee chairs associated with the Division of Chemical Education. The work of the Division is vital to the success of chemical education and those of us who practice it, and yet there is little or no professional reward for taking it on. The sad reality is that in most chemistry departments, service is considered a third class activity, a line in a year-end review that has little or no effect on its outcome. Yet I witnessed folks devoting enormous amounts of time and energy seeing to it that the jobs got done. And not just jobs that constituted “business as usual”. In the last six years, boards of the Division, the Exams Institute and the Journal of Chemical Education have instituted major reforms that have professionalized their accounting and business functions, and streamlined their services. These vital reforms, made necessary by their impressive fiscal successes, were undertaken by individuals with little or no business expertise, who took the time to consult with professionals so that the accounts could be put on a sound financial footing. Sad as I will be to leave this post, I’m proud to have made a small contribution to these efforts.

I’m also happy to report that the new business division of the Exams Institute is now functioning from its permanent venue in Colorado. The remaining inventory was transferred from Iowa State this summer, and Tom Holme has completed his stint as Associate Director. We are so very sorry to see him go. The on-line operations of the institute are also located in the Colorado facility and continue to be overseen by Julie Adams, our Business Operations Manager. We are evaluating a new on-line service provider, ExcelSoft-SARAS, with whom a license agreement for the creation of a pilot phase has been executed. The pilot, using a “lock-down browser”, will provide practice and placement tests. In addition to the “lock-down browser”, the new provider offers a significant increase in capacity. It is my hope that this change will pave the way to a significant increase in on-line testing offered by the Institute, with a concurrent emphasis on creating exams that utilize the significant advantages offered by web-based exams over multiple choice black and white paper exams.

The Executive Committee of the Division has been involved in a number of initiatives. A Fiduciary Workshop held at the Spring Meeting in San Diego drew 23 Chem Ed participants. The third such workshop held by the Division, the gathering focused on the fiduciary responsibility of the Executive Committee and the need to pass knowledge forward to new ExComm members. Efforts to professionalize all of the Chem Ed divisions involved hiring Kollath CPA to advise us in our financial dealings. Efforts to consolidate all business with the Division under one email address and one postal address have not yet come to fruition. Nevertheless, these efforts by the Division ensure that attending to our financial responsibilities will continue to be a priority. A second important initiative involves the Division’s sponsorship of the Pimentel Award. Although we currently cosponsor the award with Cengage Publishing, Cengage has indicated that, as of 2021, they will no longer continue their co-sponsorship. The Division is has decided to continue to co-sponsor the award until 2021, then consider the possibility to permanently endow the award in 2022. Cathy Middlecamp, the current president of the Division, will bring more information about this choice to the Fall meeting in August. Also at this meeting, we will consider the final report on restructuring the organization of the BCCE conferences by Cheryl Frech, who reported at the San Diego meeting that a group consisting of herself, Irv Levy and Anna Wilson was charged with looking at the organization of the Biennial conferences. They prepared a white paper with 4 to 5 suggestions for the operations of the Biennial Conferences. Two were put into place: 1) Work with ACS to use the MAPS system for abstract submission at future BCCEs. 2) Use the Division’s website as the host website for the BCCEs. Heather Johnson will develop a template for the 2018 BCCE. Frech reported that there were several BCCE management pieces that were still in discussion with the BCC and they expected to have a full and final report at the fall national meeting. The other major initiative I think it’s important to highlight is the effort to develop Record Retention Policies and Procedures that will ensure that sensitive information shared among the ExComm and Board members will be handled appropriately.
The View from the Program Chair, Irv Levy [irv.levy@gordon.edu]

The fall meeting in Philadelphia will be a special meeting to me for a number of reasons.

First, at this meeting we will host a special symposium titled “Reflections of Perkin Medalists” as part of the theme Chemistry of the People, By the People, For the People. The Perkin Medal is an award given annually to a scientist for an “innovation in applied chemistry resulting in outstanding commercial development.” It is considered the highest honor given in the US chemical industry. We are honored to have a full day symposium of these award-winning chemists in our division and I hope many will plan to attend some or all of these lectures. The efforts of Perkin Medalist, and true friend of chemical education, John Warner, made this symposium possible.

Next, we will once again host a “pan-Society” symposium as speakers from almost every ACS technical division will speak from the perspective of their division on the topic of Chemistry of the People, By the People, For the People. Many thanks to lead organizer Rudy Baum along with Cathy Middlecamp for working with me to make this happen.

Also, this meeting will mark the end of my term as Program Chair. I would be remiss if I failed to thank the Division for the honor of serving in this role for the past six years. This has been a remarkably enjoyable experience as I have had the opportunity to work with countless people across the nation and beyond, a number of whom have become dear friends.

There have been some rough spots. For example, my first meeting as Program Chair (Anaheim) was also the first to use the terribly flawed PACS abstract submission system. Boy, was that fun! I was pleased to serve on the Abstract Replacement System Advisory Group that dumped PACS and selected MAPS for our membership. As of the current meeting, it appears that MAPS has finally had almost all of the bugs worked out. While no system is perfect I think we can fairly say that we are in a stable situation now.

The Division still has challenges as far as placement in venues at the meeting. We make an impassioned plea prior to every meeting explaining why we should be in the Convention Center (or at least adjacent) and we have made headway but it continues to be a meeting-to-meeting nail biter. If we don’t end up in the Convention Center in San Francisco, don’t hold it against your new Program Chair, Tyson Miller. We’re really trying!

And Thursday. Oh Thursday. How we struggle to program on Thursday. We now try to show our Thursday presenters that they are not unloved by providing hospitality for the Thursday sessions. We have also begun to invite select Thursday presenters to participate in Sci-Mix, giving them a wider audience. These all seem to help but unless ACS changes its programming policies we will still have unhappy authors who must present to small rooms on Thursday.

There have also been very positive and exciting activities in “programming world” during these past six years. For example, the Division has improved funding to support meeting co-chairs, making it easier for the right folks to step forward to work on our behalf.

We have taken great strides in our support of pre-college educators as we have lobbied ACS to provide funding for the High School/College Luncheon, removing a fund-raising burden from our High School Program organizers. We have now added a regular workshop-style session for pre-college teachers, thanks to our Polymer Ambassador, Sherri Rukes.

Green chemistry and sustainability have become regular topics for sessions in our Division’s program with both oral and poster sessions at every meeting.

We are welcoming our undergraduates to participate at a higher level with the oral Undergraduate Research Papers sessions that have become part of the regular program.

We have improved the visibility of our Division by hosting two pan-society symposia that bring presenters from all of the other technical divisions into the CHED program. And, recently we have begun to dabble with State-of-the-Art symposia in our program, essentially providing tutorial sessions in areas of broad interest.

All of this is possible only because of the work of countless volunteers who are dedicated members of the Division willing to commit an enormous number of hours of their professional life to national meeting programming. Thank you thank you thank you to the meeting co-chairs who have worked with me these past years: Mary Kay Orgill, George Bodner, Wayne Jones, Joe March, Bill Harwood, Amy Cannon, Paul Rillema, Steve Fleming, Carmen Gauthier, Nicole Snyder, Julie Smist, Tyson Miller, Christine Jaworek-Lopes, Beatriz Rios-McKee, Cathy Middlecamp, Andy Marsh, Iona Black, Denyce Wicht, and Patrick Daubenmire. You are not just entries on a list. You have all become valued colleagues and friends. Thank you!

While the list above provides many reasons for me to smile and recall fun times with these colleagues, there is also profound sadness as I reflect on the loss of Christine Jaworek-Lopes who passed away at a very young age. Her life ended this spring after a valiant battle against an aggressive cancer. She was an amazingly positive person and tireless in her support of outreach in chemical education and as a volunteer in our division. In fact, even while battling cancer she continued to attend our meetings and to plan to serve as a future meeting co-chair for the division. In Chris’ honor we will host a special symposium in San Francisco “Celebrating Chemistry Through Outreach: Honoring the Legacy of Christine Jaworek-Lopes”. I encourage you to submit an abstract and attend this memorial symposium.

I enjoy numbers and I recently realized that during these years I have worked with these meeting chairs and hundreds of symposium organizers, and thousands of presenters. In fact, during the past 12 meetings, from Anaheim to this meeting in Philly, we have accepted and scheduled 13,138 presentations (papers and posters)! And I’ve traveled 43,212 miles from Boston to our various venues as I’ve served as the Program Chair.

What a long, strange trip it’s been… THANK YOU!
Early in the morning of May 20, 2016 Jane Crosby passed away. She was 88 years old. Jane’s contributions to the Division of Chemical Education, to the American Chemical Society, and to chemical education in general were myriad. Her unstinting dedication to children and students, to teachers, and to bringing together everyone who could contribute to chemical education were unmatched. Without Jane’s efforts more than a quarter century ago DivCHED would be a much less effective organization today.

Jane actively supported chemical education in the Washington-Idaho Border ACS Local Section, at Washington State University, and through Northwest Regional ACS Meetings. Jane’s work was always intertwined with that of her husband, Glenn A. Crosby—so inextricably that it is impossible to attribute any of their contributions to one or the other alone. Jane and Glenn organized educational programs for high school teachers and pre-college students as well as mentoring ACS Student Affiliates (now Student Members) at Washington State University. They organized Northwest Regional ACS Meetings and encouraged chemical education programming at regional ACS meetings throughout the country. They initiated a fundraising effort to endow what are now ACS Regional Awards for Excellence in High School Teaching.

During the 1990s Jane and Glenn organized and mentored Operation Progress workshops for high school teachers at Biennial Conferences on Chemical Education and set up symposia at regional meetings where Operation Progress participants could share their post-workshop experiences. Wherever there was a perceived need in the field of chemical education Jane and Glenn could be found generating ideas and bringing them to fruition. In 2006 Jane received the DivCHED Outstanding Service Award and in 2009 Jane and Glenn were jointly honored by receipt of the Charles Lathrop Parsons Award for service to the ACS.

During the late 1970s and early 1980s DivCHED underwent a transformation that involved a new model for programming at national meetings, enhanced efforts to recruit new members from outside a group of “old tigers”, and a new level of activities at national and biennial conferences. Jane was at the center of these changes. When Glenn became DivCHED Program Chair in 1978 Jane began a newsletter that was distributed with each set of national meeting abstracts. Division members could exchange information rather than just see what papers would be presented at the next meeting. That newsletter continued for many years and eventually became this website. In addition, for many years we shared with Jane and Glenn a hotel suite that provided a place for Division members and others to relax, develop collaborations and friendships, learn about DivCHED, and exchange views. The Hospitality Suites recruited many new faces to participate in Division activities.

We hope that Jane Crosby’s example will spur current DivCHED members to renew their efforts to reach out to groups outside the traditional membership and encourage the broadest possible range of participation in chemical education activities. Those who would like to make a more concrete contribution in Jane’s memory can donate to the Jane L. Crosby Scholarship Fund at Waynesburg University. Send a check made out to “Jane L. Crosby Scholarship Fund” to Ashley Mason, Institutional Advancement, Waynesburg University, 51 College Street, Waynesburg, PA 15370.

John Moore
Elizabeth Moore
University of Wisconsin-Madison
June 2016
Theme: Chemistry of the People, by the People, and for the People
August 21-25, 2016

Meeting Co-Chairs:
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Sally Button Mitchell. Albert Einstein Fellow, Department of Energy, Office of Science, Room 3-F-061, 1000 Independence Ave SW, Washington, DC 20585, (202) 287-6489, sbmitchell2@gmail.com
Audrey Smeltzer, Science Department Chairperson, chemistry and physics teacher, Muhlenberg High School, 400 Sharp Avenue, Laureldale, PA 19605, (484) 638-3528, bluetiger313@yahoo.com

Undergraduate Poster Chair:
Nicole DiFabio, Undergraduate Programs Office, American Chemical Society, 1155 Sixteenth St NW, Washington, DC 20036, (800) ACS-5558, ext. 8010, N_DiFabio@acs.org

CHED Program Co-Chairs:
Irvin J. Levy, Gordon College, 255 Grapevine Road, Wenham, MA 01984, 978-867-4877, irv.levy@gordon.edu
Tyson A. Miller, Heritage University, 3240 Fort Road, Toppenish, WA 98948, (509) 865-0421, miller_t1@heritage.edu

GSSPC Organizers:
Ben Partridge and others from UPenn “From Bench-to-Bench and Beyond: Engaging People with High Impact Chemistry”
Contact: Ben Partridge (bpart@sas.upenn.edu)

Program Synopsis (DivCHED abstracts can be found at http://divched.org/sites/default/files/Philadelphia16CHED_Abstracts.pdf)

SUNDAY MORNING
High School Program
S. B. Mitchell, Organizer; A. S. Smeltzer Schwab, Organizer; S. B. Mitchell, Presiding Papers 1-6

Undergraduate Research Papers
C. V. Gauthier, Organizer; J. V. Ruppel, Organizer; N. L. Snyder, Organizer; N. L. Snyder, Presiding Papers 7-11

Green Chemistry Education: By the People & for the People
E. J. Brush, Organizer; J. E. Wissinger, Organizer; E. J. Brush, Presiding Papers 12-18

Integrating the General & Organic Chemistry Curricula
J. P. Bullock, Organizer; J. B. Foley, Organizer; J. P. Bullock, Presiding Papers 19-24

SUNDAY AFTERNOON
High School Program
S. B. Mitchell, Organizer; A. S. Smeltzer Schwab, Organizer; S. B. Mitchell, Presiding Papers 25-30

Undergraduate Research Papers
C. V. Gauthier, Organizer; J. V. Ruppel, Organizer; N. L. Snyder, Organizer; N. L. Snyder, Presiding Papers 31-39

Green Chemistry Education: By the People & for the People
E. J. Brush, Organizer; J. E. Wissinger, Organizer; J. E. Wissinger, Presiding Papers 40-46

Context-Based Learning in Chemistry: Research on Structure, Function, Use & Outcomes
Y. Dori, Organizer; I. Parchmann, Organizer; H. Sevian, Organizer; H. Sevian, Presiding; Y. Dori, Presiding Papers 47-54

SUNDAY EVENING
General Posters
I. J. Levy, Organizer; Papers 55-88

MONDAY MORNING
Chemistry of the People, by the People, for the People
R. Baum, Organizer; C. H. Middlecamp, Organizer; I. J. Levy, Organizer; R. Baum, Presiding Papers 89-94

Chemistry For the People: Reflections from Perkin Medalists
J. C. Warner, Organizer; I. J. Levy, Organizer; J. C. Warner, Presiding Papers 95-98

General Papers
S. A. Fleming, Organizer; A. G. Karatjas, Presiding; J. A. Webb, Presiding Papers 99-106

Research in Chemistry Education
M. A. Teichert, Organizer; D. J. Wink, Organizer; M. A. Teichert, Presiding; D. J. Wink, Presiding Papers 107-114

MONDAY AFTERNOON
Chemistry of the People, by the People, for the People
R. Baum, Organizer; C. H. Middlecamp, Organizer; I. J. Levy, Organizer; R. Baum, Presiding Papers 115-120

Chemistry For the People: Reflections from Perkin Medalists
J. C. Warner, Organizer; I. J. Levy, Organizer; J. C. Warner, Presiding Papers 121-123

Chemistry Explained by Teachers for Teachers: The Chemistry behind Everyday Things
S. C. Rukes, Organizer; S. C. Rukes, Presiding Papers 124-129

Research in Chemistry Education
M. A. Teichert, Organizer; D. J. Wink, Organizer; M. A. Teichert, Presiding; D. J. Wink, Presiding Papers 130-136
Undergraduate Research Posters
N. Di Fabio, Organizer; Papers 137-322

MONDAY EVENING
Sci-Mix
I. J. Levy, Organizer; M. Orgill, Organizer; P. L. Daubenmire, Organizer; Papers 2, 14, 18, 23, 44, 55-56, 58, 60-61, 64-65, 70, 79, 81, 83, 88, 112, 130, 133, 337, 367, 369, 385, 390, 419, 423, 429

Successful Student Chapters
N. Di Fabio, Organizer; Papers 323-327

TUESDAY MORNING
Chemistry of the People, by the People, for the People
R. Baum, Organizer; C. H. Middlecamp, Organizer; I. J. Levy, Organizer; R. Baum, Presiding Papers 328-333

Crafting Chemical Communication
J. D. Batteas, Organizer; R. M. Burks, Organizer; R. M. Burks, Presiding Papers 334-338

GSSPC: From Bench-to-Bench & Beyond: Engaging People with High Impact Chemistry
N. Bellonzi, Organizer; B. Cole, Organizer; N. Krock, Organizer; S. Najmr, Organizer; M. Nicastri, Organizer; B. E. Partridge, Organizer; C. R. Walters, Organizer; B. E. Partridge, Presiding; S. Najmr, Presiding; B. Cole, Presiding; N. Krock, Presiding Papers 363-366

General Papers
S. A. Fleming, Organizer; T. G. Goudreau Collison, Presiding Papers 367-375

WEDNESDAY MORNING
Advances in Teaching Inorganic Chemistry Lecture & Laboratory
J. R. Miecznikowski, Organizer; J. R. Miecznikowski, Presiding Papers 376-384

Citizens First! Using Real-World Contexts for Engaging Students in Learning Chemistry
K. Anderson, Organizer; B. A. Davis, Organizer; M. A. Fisher, Organizer; B. A. Davis, Presiding; K. Anderson, Presiding Papers 385-391

Effective Team-Teaching in Undergraduate Chemistry Programs
K. J. Castle, Organizer; K. J. Castle, Presiding Papers 392-399

WEDNESDAY AFTERNOON
Advances in Teaching Inorganic Chemistry Lecture & Laboratory
J. R. Miecznikowski, Organizer; J. R. Miecznikowski, Presiding Papers 400-407

Citizens First! Using Real-World Contexts for Engaging Students in Learning Chemistry
M. A. Fisher, Organizer; B. A. Davis, Organizer; K. Anderson, Organizer; M. A. Fisher, Presiding; B. A. Davis, Presiding Papers 408-414

General Papers
S. A. Fleming, Organizer; G. A. Szteinberg, Presiding Papers 415-422

THURSDAY MORNING
Present & Future Impact of the Internet, Web Apps & High-Speed Networking Technology on Local & Global Chemistry Education
M. A. Christiansen, Organizer; J. M. Weber, Organizer; M. A. Christiansen, Presiding Papers 423-430

General Papers
S. A. Fleming, Organizer; S. A. Fleming, Presiding Papers 4

Schedule of CHED Committee Meetings and Social Events

All DivCHED committee meetings and the social reception will be held at the Pennsylvania Convention Center, 1101 Arch St, Philadelphia, PA 19107

SATURDAY, AUGUST 20 2016
Exams Institute, Board of Trustees (open)
7:30AM – 12:00PM
Room 120C

Board of Publications (open)
8:00 – 12:30PM
Room 121A

Program Committee (open)
10:30AM – 12:00PM
Room 120B

Executive Committee
1:00PM – 1:30PM (closed)
1:30PM – 4:00PM (open)
4:00PM – 5:30PM (closed)
Room 119B

SUNDAY, AUGUST 21, 2016
Finance Committee (closed)
9:30A – 11:30AM
Room 120A

Regional Meetings (open)
12:00PM – 2:00PM
Room 107A

Long Range Planning Committee (open)
2:30PM – 4:30PM
Room 107A

Safety Committee (open)
4:00PM – 5:30PM
Room 102B

DivCHED Social Reception (open)
5:30PM – 7:00PM
Room 120C
AGENDA – Executive Committee (Open)

Division of Chemical Education
Saturday, August 20, 2016
Pennsylvania Convention Center, 119B, Philadelphia, PA 19107

Notes:
1. The agenda packet is available on the Division web site: http://www.divched.org/
2. The Executive Committee (ExComm) consists of 19 members, 13 elected members, plus the Chair of the Board of Publication, Editor-in-Chief, J. Chem. Educ., the Chair of the Board of Trustees, the Director, Examinations Institute and the Chair, Division Program Committee (Chair and Chair Elect). Only ExComm members are present in Executive Session. Input is welcomed from all in attendance at the Open Session, but ExComm members are the only persons who may vote on actions before the Executive Committee.
3. Reimbursement forms for ExComm members will be provided via interactive form on the Division's website – Under the tab - Meetings. http://www.divched.org

Open Session -1:30PM to 4:00PM

<table>
<thead>
<tr>
<th>Action (X)</th>
<th>Time</th>
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<tr>
<td></td>
<td>1:30</td>
<td><strong>Call to order</strong></td>
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<td>X</td>
<td></td>
<td>Approve meeting agenda and consent agenda reports</td>
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<tr>
<td>X</td>
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<td>Approval of the Spring 2016 ExComm Meeting Minutes, Open Session</td>
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**Introductions**
- Parliamentarian – Jordan Harshman
- Chair’s Announcements – C. Middlecamp
  - Thank you’s – Past chair, secretary, SOCED Taskforce (Wink)
- Past Chair’s Announcements – M. Towns
- Chair Elect’s Announcements – MK. Orgill
  - Ops Manual
- Secretary’s Announcements – R. Kelly

<table>
<thead>
<tr>
<th>2:00</th>
<th><strong>Discussion</strong></th>
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<tr>
<td>X</td>
<td>Safety Committee - Motion to Approve Safety Guidelines - D. Finster</td>
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<tr>
<td>X</td>
<td>LRP Committee - Motion to approve strategic plan - T. Jose</td>
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</table>

- Pimentel Award – the pros and cons of endowing it vs. using funds for other purposes ($300,000). – C. Middlecamp
- Bylaws/Operations Manual-Overview of changes and announcement of upcoming meeting – MK. Orgill
- BCC Committee – Changes to bring this conference fully into the financial/professional fold. – MK. Orgill, C. Frech

| X    | BCCE site for 2020 – B. Harwood & S. Soman |
|------| Fiduciary/Financial Responsibilities/Records Retention– M. Towns |

(Break)

| 3:00 | Program Committee Report - I. Levy & T. Miller |
|------| Treasurer’s General Report - A. Wilson | 11-13 |
|      | Board of Publication Oral Report – E. Yezierski |
|      | Board of Trustees of the ACS Exams Institute Oral Report– A. Grushow |
| 3:30 | Open Discussion/Input to the Executive Committee |
|      | AACT Representative – R. Allen |
|      | Committee Chair Voices |
|      | CHED Liaisons |
| 4:00 | ACS Education - Coordination with SOCED – K. McCue |
|      | Adjourn Open Session |
HIGH SCHOOL CHEMISTRY TEACHER PROGRAM Philadelphia, PA August 21 – 25, 2016

REASONS TO ATTEND the ACS National Meeting in Philadelphia

• Only $105 includes the high school program, exposition hall, and the whole ACS meeting
• Networking opportunities, including a free lunch and reception on Sunday
• Try out some hands-on activities during the Sunday and Monday programs
• Earn Professional Development Hours
• Sign up for the Monday morning Polymer workshop and your registration may be reimbursed

WHAT TEACHERS HAVE ENJOYED ABOUT PAST PROGRAMS:
“As a new teacher, I learned how to take some of the old labs I’ve seen and adapt them”
“Great presentation! Really interesting connection between class and current research.”
“Loved the practical applications done by real teachers”

Visit www.acs.org/hsday for more information

Follow #ACSHSDay on Twitter
## High School Chemistry Teacher Program

**Sunday, August 21, 2016 | 8:30 AM – 4:30 PM**

**Organizers:** Sally Mitchell and Audrey Smeltzer Schwab

<table>
<thead>
<tr>
<th>Topic</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>Green Chemistry: Connections to Our World</td>
<td>Kate Anderson</td>
</tr>
<tr>
<td>Developing a High School Organic Chemistry Course</td>
<td>Esther Hines</td>
</tr>
<tr>
<td>Atoms, molecules, and ions — Oh my! Teacher-designed inquiry activities with particulate models</td>
<td>Ellen Yezierski</td>
</tr>
<tr>
<td>Advancing Scientific Literacy with Inquiry Based Lessons Designed Around ChemMatters Articles</td>
<td>Kathy Chesmel</td>
</tr>
<tr>
<td>Student centered activities from JCE &amp; ChemEd X</td>
<td>Deanna Cullen</td>
</tr>
<tr>
<td>Ötzi the Iceman Meets the New IUPAC Periodic Table of the Elements and Isotopes</td>
<td>Peter Mahaffy</td>
</tr>
<tr>
<td>Innovative Technologies for Chemistry Instruction</td>
<td>Terence Laughlin</td>
</tr>
<tr>
<td>Climate Science in Context; providing teachers with tools to elevate climate science literacy</td>
<td>Gregory Foy</td>
</tr>
<tr>
<td>ChemClubs — fun, food and outreach</td>
<td>Karen M. Kaleuati</td>
</tr>
<tr>
<td>Why Data Collection?</td>
<td>Tom Loschiavo</td>
</tr>
<tr>
<td>Creating a Culture of Safety in the Science Classroom</td>
<td>Regis Goode</td>
</tr>
<tr>
<td>Edible Materials Science with Kitchen Chemistry</td>
<td>Sherri Rukes</td>
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## Polymer Science of Everyday Things: Polymers for Beauty, Sports and Leisure

**Monday, August 22, 2016 | 8:30 AM – 11:45 AM**

**Presenter:** Sherri Rukes

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<th>Topic</th>
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<tr>
<td>Lotions, potions, and scrubs: Polymer science in cosmetics</td>
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<tr>
<td>Polymers and elastomers in sports</td>
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## Chemistry Explained by Teachers for Teachers: The Chemistry behind Everyday Things

**Monday, August 22, 2016 | 1:30 PM – 5:00 PM**

**Presenters:** Sherri Rukes, Debbie Goodwin, Andrew Nydam, Caryn Jackson, Edmund Escudero

<table>
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<tr>
<td>Teach engineering principles on the cheap with concrete</td>
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<td>Composites and their uses</td>
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<td>Cars: A fun and relevant way to teach chemistry</td>
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<tr>
<td>BioPlastic: Going from synthetic to natural polymers</td>
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<tr>
<td>Polymer food chemistry: Have fun with polymer chemistry by making Mountain Dew'viar</td>
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<tr>
<td>Chemistry of toys</td>
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Visit [www.acs.org/hsday](http://www.acs.org/hsday) for more information
HOURS OF OPERATION

**SUNDAY, August 21**
7:00 AM - 10:00 AM .......... 15 minute service
10:00 AM - 4:00 PM .......... 30 minute service
4:00 PM - 7:00 PM .......... 15 minute service
7:00 PM - 11:00 PM .......... 30 minute service

**MONDAY, August 22**
7:00 AM - 10:00 AM .......... 15 minute service
10:00 AM - 4:00 PM .......... 30 minute service
4:00 PM - 11:00 PM .......... 15 minute service

**TUESDAY, August 23**
7:00 AM - 10:00 AM .......... 15 minute service
10:00 AM - 4:00 PM .......... 30 minute service
4:00 PM - 11:00 PM .......... 15 minute service

**WEDNESDAY, August 24**
6:30 AM - 11:00 PM .......... 30 minute service

**THURSDAY, August 25**
7:00 AM - 6:00 PM .......... 60 minute service

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**Route 3**
Walk to Convention Center Boarding Location
UPCOMING MEETING INFORMATION

25rd ACS Meeting & Exposition, San Francisco, CA

April 2-6, 2017
Theme: Advanced Materials, Technologies, Systems and Processes

Meeting Co-Chairs:
Cinzia Muzzi, DeAnza College, 21250 Stevens Creek Blvd., Cupertino, CA 95014, 408.864.5790, muzzicinzia@deanza.edu
Irvin J. Levy, Gordon College, 255 Grapevine Road, Wenham, MA 01984, 978-867-4877, irv.levy@gordon.edu

High School Program Chair:
Sally Button Mitchell. Albert Einstein Fellow, Department of Energy, Office of Science, Room 3-F-061, 1000 Independence Ave SW, Washington, DC 20585, (202) 287-6489, sbmitchell2@gmail.com

Undergraduate Poster Chair:
Nicole DiFabio, Undergraduate Programs Office, American Chemical Society, 1155 Sixteenth St NW, Washington, DC 20036, (800) ACS-5558, ext. 8010, N_DiFabio@acs.org

CHED Program Co-Chair:
Tyson A. Miller, Heritage University, 3240 Fort Road, Toppenish, WA 98948, (509) 865-0421, miller_t1@heritage.edu

GSPPC Organizers:
Susette Ingram (georgetowngsppc@gmail.com) and others from Georgetown University
“Water Sustainability: Chemists in Pursuit of Clean Water”

Symposia List
Communicating Science in the Twenty-First Century to Diversified Audiences, Organizer(s): Cary Supalo (csupalo@purdue.edu), Ashley Neybert (crazy4chemistry@att.net), Cosponsors: CWD; Presiding: Ashley Neybert | Cary Supalo (crazy4chemistry@att.net | csupalo@purdue.edu)

This symposium seeks presentations that discuss unique ways of communicating chemistry and other science content to persons of all audiences in hopes of promoting an inclusive atmosphere within the chemistry community. This may include, but is not limited to persons from diverse backgrounds, persons with disabilities, and persons with other forms of communications. The use of twenty-first century technologies to enhance effective communication of science content is also germane to this audience. Practitioners, researchers, and technology developers working to improve science communication and other aspects pertaining to this valuable approach are welcome to participate. The use of new innovative twenty-first century technologies as well as more traditional approaches is encouraged to be included in this session. The organizers feel that much can be learned from both approaches to communicating chemistry to all audiences. These approaches to communicating science will enhance the educational learning experience and inclusivity of all individuals in the Science, Technology, Engineering, and Mathematics fields of study.

George C. Pimentel Award in Chemical Education, Organizer(s): TBA after award announcement; Presiding: TBA after award announcement

ACS Award for Achievement in Research for the Teaching and Learning of Chemistry, Organizer(s): TBA after award announcement; Presiding: TBA after award announcement

State of the Art: Applying Chemistry Education Research to Practice, Organizer(s): Patrick Daubenmire (Pdauben@luc.edu), Deborah Herrington (herringd@gvsu.edu), (, ); Cosponsors: ; Presiding: Patrick Daubenmire (Pdauben@luc.edu)

Though a younger research area in the field of chemistry, chemistry education research (CER) provides us with critical tools and findings to promote better understanding of chemistry within a changing student population. Across the decades of this research, we have gained much knowledge about how students learn chemistry, but yet instruction in chemistry classrooms remains largely unchanged. For this current student population, these digital natives, traditional instruction does not meet their needs, as evidenced by deficiency, failure, and high attrition rates from continuation in chemistry studies. This State of the Art symposium will highlight current findings in CER and demonstrate how these findings can be applied in one’s own learning environment (classroom, lab, museum, etc.). Sessions will include a description of high impact practices, learning settings and environments, assessments, and student motivation and metacognition.

Embedding Authentic Research into Curricula, Organizer(s): Janice Hall Tomasik (tomas1jh@cmich.edu), Tami Sivy (tsivy@gvsu.edu), David Karpovich (dsk@gvsu.edu, Bernadette Harkness | Dale LeCap1dj@cmich.edu (bernadetteharkness@delta.edu | lecap1dj@cmich.edu); Presiding: Janice Hall Tomasik | Tami Sivy | David Karpovich | Bernadette Harkness (tomas1jh@cmich.edu)

Incorporating authentic research experiences into the classroom can have many benefits for students and faculty. The
challenges that are encountered as one moves research into curricula can be significant. This symposium invites educators and students from all types of institutions and science disciplines to share their work for incorporating research into lecture or laboratory courses. Presentations discussing all stages of work are welcome, especially those that explore evaluation findings of such programs and those that consider barriers and solutions for implementing this approach.

**How Do We Teach Collaboration? Best Practices for Educating Future Researchers and Innovators, Organizer(s): Miriam Krause (mkrause@umn.edu), Becky Hames (bhames@ucsd.edu), Michelle DeBoever (mchansen@caltech.edu), Danielle Watt (dwwatt@uci.edu); Cosponsors: NSF Centers for Chemical Innovation; Presiding: Michelle DeBoever (mchansen@caltech.edu)**

Collaboration is key when developing advanced technologies, systems, and processes; moreover, multi-disciplinary collaborations are the cornerstone to drive innovation and grand challenge, cutting-edge research. Students in chemistry encounter collaboration across a broad range of contexts, including within their own lab and across large multi-institute centers. This means that when educating graduate and undergraduate students and postdoctoral trainees, we have to teach collaboration as well as the relevant scientific knowledge and skills. The goal of this symposium is to explore the range of training and professional development that can contribute to encouraging the next generation of researchers to be knowledgeable and experienced with best practices for collaborative science. Contributors from research centers, large university departments, PUIs, and other research contexts are welcome to share their experiences; the target audience is researchers at all levels who are interested in collaborative endeavors.

**Advances in e-Learning and Online Chemical Education, Organizer(s): Pia Sorensen (sorensen@seas.harvard.edu), Layne Morsch (lmorsch1@uis.edu), Dorian Canelas (dorian.canelas@duke.edu); Presiding: Pia Sorensen | Layne Morsch | Dorian Canelas (sorensen@seas.harvard.edu | lmorsch1@uis.edu | dorian.canelas@duke.edu)**

E-learning, online learning, blended learning, and the development of web-based courses, content, learning tools, and communities of scholarship are important topics for contemporary educators and chemical education researchers. This symposium invites you to join other researchers, instructors, and course and tool developers for an exchange of relevant successes, challenges, research findings, and practical examples in your experiences with various aspects of online education.

**Mass Spectrometry in the undergraduate educational settings, Organizer(s): Donald Mencer (donald.mencer@wilkes.edu); Cosponsors: Advion Corporation; Presiding: Donald Mencer (donald.mencer@wilkes.edu)**

It would be difficult to overstate the significance of the role played by Mass Spectrometry (MS) as a tool for probing all states of matter, probing structure / stability, and developing chemical images. Recent advances in biological applications of Mass Spec have accelerated discovery and understanding of complex systems. As this important method continues to evolve and gain power it is critical for the undergraduate curriculum to incorporate modern methods and applications of mass spectrometry. However, outside of Gas Chromatography-Mass Spectrometry (MS), these instruments have been only sparingly incorporated into the undergraduate curriculum. This session highlights recent curricular developments in the use of mass spectrometry (MS) to study structure, bonding, chemical environment, dynamic processes, and complex systems. Special attention will be given to need to more completely integrate a variety of mass spectrometry methodologies into the undergraduate teaching and research settings. This should be possible with the decrease in cost and improvements in ease of use and maintenance of mass spectrometers.

**Eliciting attentiveness from cyber-savvy students without using electronic tools, Organizer(s): Charles E. Cannon (ccannon@colum.edu), Keith Kostecka (kkostecka@colum.edu)**

The chemistry student of today typically encounters so many electronic distractions at their fingertips that it is more challenging than ever before for the chemistry instructor to reach them and teach them. This session will investigate effective teaching practices and/or laboratory activities that do not use a computer but yet work well for chemistry majors in liberal arts and large university classrooms as well as for non-science major students. The ultimate challenge of teachers is to effectively engage students in all activities in the classroom environment. With so many electronic distractions it becomes even more challenging to maintain students’ interest and engagement. Concentration and students being present in the moment are critical factors in ensuring that conditions are right for learning to take place. As Herbert A. Simon states, “The teacher can advance learning only by influencing what the student does to learn.” Preference will be given to presentations that incorporate some explicit form of assessment or other evidence of the effectiveness of the teaching approach(es) being described, including data from real classroom practice.

**Simulations, Animations, and other Visualizations in Educating about Chemistry – SAVE Chemistry!, Organizer(s): Resa Kelly (resa.kelly@sjsu.edu), Roy Tasker (rtasker@purdue.edu); Presiding: Resa Kelly | Roy Tasker (resa.kelly@sjsu.edu | rtasker@purdue.edu)**

The ultimate challenge of teachers is to effectively engage students in all activities in the classroom environment. With so many electronic distractions at their fingertips it becomes even more challenging to maintain students’ interest and engagement. Concentration and students being present in the moment are critical factors in ensuring that conditions are right for learning to take place. As Herbert A. Simon states, “The teacher can advance learning only by influencing what the student does to learn.” Preference will be given to presentations that incorporate some explicit form of assessment or other evidence of the effectiveness of the teaching approach(es) being described, including data from real classroom practice.
Advances in Teaching Organic Chemistry, Organizer(s): Susan Hornbuckle (SusanHornbuckle@clayton.edu)

This symposium will allow chemistry educators to share their experiences with the design and/or utilization of various pedagogical techniques for organic chemistry courses. Individual or departmental efforts in this area are essential in the endeavor to educate our next generation of scientists. Papers involving different approaches for teaching organic chemistry concepts in the classroom or the laboratory would be appropriate presentations for this symposium.

Advancing Undergraduate Research, Organizer(s): Rebecca M. Jones (rjones22@gmu.edu), Bridget L. Gourley (bgourley@depauw.edu)

Innovation in research comes when diverse groups and fresh minds, unfettered by disciplinary boundaries, approach a problem. Undergraduate students are creative problem solvers looking for high quality experiences that will facilitate their future success. The American Association of Colleges and Universities (AAC&U) considers undergraduate research a high-impact educational practice. We invite submissions that describe advances related to research experiences for undergraduates, both small and large. Presentations regarding individual or group projects in lecture or laboratory; redesigned courses that focus on a specific research topic or the research process; and the approaches to the broader undergraduate research experience are welcome. Faculty who have incorporated research activities into specific classes or developed advantageous structures in support of undergraduates in their laboratory are invited to share their experiences. Directors of undergraduate research programs should also consider sharing broader programmatic stories. Evidence of the impact on the number and diversity of student researchers is particularly welcome. Expanding participation in research, while ambitious and rewarding, also poses difficulties and challenges that differ from those accompanying traditional instruction. Come share your best practices that maximize rewards and overcome challenges. Through research experiences undergraduates join the chemical science professions addressing societal needs served by new technologies and advanced materials.

Celebrating Chemistry Through Outreach: Honoring the Legacy of Christine Jaworek-Lopes, Organizer(s): Denyce Wicht (dwicht@suffolk.edu), Beatriz Rios-McKee (beatrizmckee@me.com), Irv Levy (irv.levy@gordon.edu; Presiding: Denyce Wicht | Beatriz Rios-McKee (dwicht@suffolk.edu | beatrizmckee@me.com)

This symposium is open to speakers who will share their favorite ways to bring chemistry to the community through outreach activities - especially focusing on National Chemistry Week, Chemists Celebrate Earth Day, and other outreach activities in the community. Come share your favorite stories -- What works well? What didn't work quite as planned? And what would you do next time? This symposium is organized in memory of Christine Jaworek-Lopes (Dr. J-Lo) whom we lost in the spring of 2016. Christine was inspirational to many in DvCHED both for her award-winning, tireless activities bringing chemistry to the community and also through her courageous battle with the cancer that took her from us.

Chemistry Education Research: Graduate Student Research Forum, Organizer(s): Julie Donnelly (jdonnelly319@knights.ucf.edu), Maia Popova (popovam@miamioh.edu; Presiding: Julie Donnelly | Maia Popova (jdonnelly319@knights.ucf.edu | popovam@miamioh.edu)

Graduate students in the chemistry education research (CER) community will benefit greatly from opportunities for presentation experience and collaboration with their peers. A symposium at a national conference will be an excellent forum for these opportunities. This research forum will be a platform for graduate students to present any stage of their research in chemical education. Speakers will be asked to prepare 12 minute presentations, leaving 3 minutes for questions followed by a 15-20 minute panel discussion with the speakers and audience facilitated by the presiders at the end of the session. The nature of this symposium will open lines of communication and collaboration between current graduate student researchers in chemistry education around the country. In addition, it will bring the current research in chemistry education to the broader chemistry community.

Citizens First!, Organizer(s): Richard Sheardy (rsheardy@twu.edu), Cynthia Maguire (cmaguire@twu.edu); Cosponsors: CEI

The title of this symposium acknowledges that ALL of our general chemistry students are citizens. Yes, some will pursue careers in the chemical sciences and engineering. All, however, will have roles in decisions and behaviors that shape the future of their community and nation. Understanding the chemistry that underlies environmental, societal, and personal health issues is critical to having a sustainable future. This symposium welcomes all who in some way teach/connect chemistry with civic engagement. This can include those who launch their courses – both for majors and non-majors - by using real-world contexts to engage students in learning. We would like to hear about the different contexts you select, what works well and what does not.

Curricular Innovations in Undergraduate Chemical Education Impacted by NSF, Organizer(s): Cindy Burkhardt (caburkha@radford.edu), Robert K. Boggess (rboggess@radford.edu); Presiding: Cindy Burkhardt | Robert K. Boggess (caburkha@radford.edu | rboggess@radford.edu)

This symposium will feature speakers whose projects have been funded both within and outside of the Division of Education (DUE) of the National Science Foundation (NSF). The projects have enhanced the learning of chemistry or other STEM disciplines by undergraduate students through the development and/or implementation of new educational materials or teaching pedagogy, through the development of meaningful tools for evaluating learning outcomes, and the development of scholarship programs for STEM students. The Symposium will also feature a NSF Program Officer or representative who will inform attendees of funding opportunities available through NSF and will answer specific questions of attendees.

Current Best Practices for Chemistry REU Programs, Organizer(s): Mark Griep (mark.griep@unl.edu); Presiding: Mark Griep (mark.griep@unl.edu)

Over 60 Chemistry Departments are funded by the National
Science Foundation to provide Research Experience for Undergraduates programs. The evidence indicates that these programs have the highest success rate of any activity for motivating students to embark on the graduate school pathway. Despite the extraordinary breadth of research projects that the participating students carry out, these programs are similar in their need to recruit applicants, to evaluate applicants and make offers, and then to offer workshops and tours during which students learn about chemical safety, scientific ethics, and many other topics. In many cases, a coordinator or small group of co-coordinators is responsible for these common programmatic activities. This symposium seeks presentations from these coordinators and co-coordinators about their program’s current best practices with regard to recruitment methods, the workshops and other non-research activities, and program evaluation methods.

**From Nanoparticles to Macromolecules: Using Materials to Help Illustrate Core Concepts in Chemistry Laboratory Experiences, Organizer(s): Anderson Marsh (marsh@lvc.edu); Cosponsors: MPPG | COLL; Presiding: Anderson Marsh (marsh@lvc.edu)**

Instructors are continually looking for ways to engage and to motivate students, particularly in laboratory courses. Developing laboratory activities that utilize materials, nanoparticles, self-assembled monolayers, thin films, catalysts, and polymers, for example, are one means of increasing student interest. Because the size range of materials such as these spans the nanoscale to the macroscale, a variety of topics may be introduced. These concepts may cover areas such as reactivity, periodicity, thermodynamics, electrochemistry, kinetics, electronic structure, and spectroscopy, to name several. Student learning objectives may not only be related to the materials themselves, but also may be connected to core concepts. Furthermore, these experiences need not be limited to bench work; with the development of modern computational programs, material properties may also be investigated from a theoretical standpoint. This symposium will bring together educators who have integrated experimental and/or computational approaches using materials into laboratory experiences for students. Submissions are encouraged at all levels: from general chemistry to upper-level topical and integrated laboratory courses.

**Fundamentals of Chemistry Outreach Education: From Program Design to Assessment, Organizer(s): Ed Brush (ebrush@bridgew.edu), Emily Garcia Sega (emily.garcia-sega@wne.edu), Saritha Nellutla (Saritha.Nellutla@bridgew.edu); Cosponsors: SOCED | YCC | CCA | LSAC**

This symposium will provide a unique forum to exchange ideas on innovative approaches to the design, funding, delivery and assessment of chemistry outreach education and service learning programs. Effective outreach programs increase exposure and interest in chemistry for students at the K-12 levels and the general public, while hands-on experiences and project-based learning allow teachers to make real-world connections and enhance the appreciation for how chemistry impacts our world. Speakers from all sectors of the CHED community are invited, including 2- and 4-year faculty, high school educators, current and former NSF GK-12 awardees, and students at the undergraduate, graduate and post-doctoral levels. A broad variety of topic areas in the past have included college and high school programs and courses, green chemistry, hands-on activities and project-based learning, family science programs, professional development programs for high school educators, participatory action research, partnerships with industry, and program assessment.

**General Papers, Organizer(s): Steven Fleming (sfleming@temple.edu),**

Chemistry education topics - NO UNDERGRADUATE PRESENTATIONS; NO TECHNICAL CHEMISTRY PRESENTATIONS

**General Posters, Organizer(s): Tyson Miller (Miller_T1@heritage.edu)**

Chemistry education topics - NO UNDERGRADUATE POSTERS; NO TECHNICAL CHEMISTRY POSTERS

**Green Chemistry: Theory and Practice, Organizer(s): Ed Brush (ebrush@bridgew.edu), Jane Wissinger (jwiss@umn.edu); Cosponsors: I&EC Green Chem | GCI | CEI; Presiding: Ed Brush | Jane Wissinger (ebrush@bridgew.edu | jwiss@umn.edu)**

This symposium will engage and inform the CHED community on recent advances in green and sustainable chemistry education for majors, non-majors and K-12 students. Speakers from all sectors of the CHED community are invited to discuss advances that integrate green chemistry, toxicology and sustainability into the chemistry curriculum, including classroom and laboratory pedagogy, research and outreach activities. Interdisciplinary and international perspectives are welcome, as are student speakers at the undergraduate, graduate and post-doctoral levels.

**GSSPC: Water Sustainability: Chemists in Pursuit of Clean Water, Organizer(s): Susette Ingram (si274@georgetown.edu), Zeus De los Santos (zod2@georgetown.edu), Ivana Brekalo (ib308@georgetown.edu), Sima Sakhaei | Alyssa Adcock | Jenny England (z134@georgetown.edu | aka75@georgetown.edu | jpe34@georgetown.edu); Cosponsors: Nominal CEI; FINANCIAL: Georgetown University Department of Chemistry, Graduate Education Advisory Board; Presiding: (According to the World Health Organization, at least 1.8 billion people worldwide lack access to a clean drinking-water source, resulting in the deaths of over 500,000 people each year. Since water plays a fundamental and central role both in everyday life and chemical research, the issue of clean water conservation and sustainability is very multifaceted. This symposium aims to highlight the issue of water sustainability by showcasing the impactful research of chemists from across the chemical sciences. This symposium is organized by a group of graduate students from Georgetown University as part of CHED’s Graduate Student Symposium Planning Committee (GSSPC) initiative.**

**High School Program, Organizer(s): Sally Mitchell (sbmitchell2@gmail.com); Presiding: Sally Mitchell (sbmitchell2@gmail.com)**

Invited program designed for pre-college teachers
Instructors and Researchers: Advancing Graduate Student Education, Organizer(s): Sarah Hansen (sjh2115@columbia.edu), Gautam Bhattacharyya (GautamB@MissouriState.edu); Presiding: Sarah Hansen | Gautam Bhattacharyya (sjh2115@columbia.edu | GautamB@MissouriState.edu)

Scholarly work has only rarely focused on the experiences of students in chemistry graduate programs. There is emerging interest in the training of graduate students in their role as teaching assistants, as well as their identity development, development of scientific skills and expertise, and the effect of teaching on graduate learning. This symposium invites submissions that explore and analyze the graduate education experience from any of these multiple perspectives. In addition, this symposium welcomes submissions on graduate course design, program/policy development, pedagogical training, and any other topic that directly relates to the graduate education experience in the chemical sciences.

International and Multicultural Perspective, Organizer(s): Sarah Hansen (sjh2115@columbia.edu), Wendy Schatzberg (schatzberg@dixie.edu), Charlie Cox (ctcox@stanford.edu); Cospromors: IAC; Presiding: Sarah Hansen | Wendy Schatzberg | Charlie Cox (sjh2115@columbia.edu | schatzberg@dixie.edu | ctcox@stanford.edu)

Despite the impetus of globalization and the influence of communication and information technologies, approaches to teaching and learning remain dependent on contextual factors. Likewise, views about educational research — what may be relevant and how research may be conducted and applied to teaching — are varied for different world regions and cultures. This symposium intends to create a space to share ideas within the international chemistry education community and to allow presentation of experiences and views about chemistry education research and education from an international and multi-cultural perspective. This symposium invites chemistry educators at all levels to contribute presentations addressing, among other topics, experiences and challenges in the classroom and laboratory, effective teaching/mentoring strategies, and educational policies from their own national and cultural perspectives. Chemical education researchers conducting studies with a focus on culture or nationality or collaborative studies across cultural and national borders are encouraged to submit their work. Descriptive presentations with the purpose of informing about specific educational experiences will also be welcome. Additionally, former IAC travel award winners are invited to present their experiences attending international conferences.

NMR Spectroscopy in the Undergraduate Curriculum, Organizer(s): David Soulsby (david_soulsby@redlands.edu), Laura J. Anna (Laura.Anna@montgomerycollege.edu), Anton S. Wallner (twallner@barry.edu); Cospromors: FINANCIAL: Bruker, ThermoFisher Scientific, JEOL

With the increasing availability of nuclear magnetic resonance instruments at the undergraduate level, NMR spectroscopy has become an integral component of the chemistry curriculum. The broad array of experiments and instruments now available to a chemist or biochemist for characterizing molecules presents many challenges on how to best integrate NMR spectroscopy into a crowded undergraduate curriculum from General Chemistry to Undergraduate research. Challenges include creating multiple opportunities for the use of NMR spectroscopy, developing novel experiments, incorporating NMR spectroscopy into undergraduate research, and the assessment of outcomes associated with these approaches. This symposium will provide an opportunity for participants to share their successful approaches to incorporating NMR spectroscopy into the classroom at all levels of the undergraduate curriculum.

Perspectives on Climate Change Literacy and Education; Local to International, Organizer(s): Keith E. Peterman (peterman@ycp.edu), Gregory P. Foy (gfoy@ycp.edu); Cospromors: CEI | IAC; Presiding: Keith Peterman | Greg Foy (peterman@ycp.edu | gfoy@ycp.edu)

Climate change literacy and education is one of four actions highlighted in the ACS Public Policy Statement on climate change. This symposium is designed for individuals to share perspectives on enhancing climate science literacy in the classroom or public forums. We invite papers that focus on efforts towards education, mitigation, adaptation, or other scientific issues surrounding this global crisis.

Innovating Materials for the Next Generation: Bring Practical Applications into the Chemistry Classroom, Organizer(s): Sherri Rukes (sherri.rukes@128.org); Cospromors: POLY | PMSE | RUBB | Financial: IPEC

As teachers, we prepare children for a future and for jobs that we do not even know will exist. It’s the innovation and discoveries that excite kids for the future. For example: pretend it’s 1903 and the Wright brothers took flight. A seven-year-old girl at the time would have been awe-inspired and amazed. Jump 66 years forward and man not only took flight, but landed on the moon. That seven-year-old girl is now a 73-year-old woman and never thought she would see anything more amazing than the airplane. But she did. It took 66 years for science and engineering to go from man flying to man landing on the moon.

The rapid change in technology and materials are even greater today. The moment a cell phone is bought and taken out of the store, that technology is old. New technology has already been developed. During this symposium, learn how the innovations, discoveries of various materials shape the world we live in today. Using these lessons from the past and the new innovations of the future will enhance and make your classroom come alive. This symposium, labs and demonstrations will be shared to make chemistry concepts easier to teach, learn, and inspired students for the future. As teachers, we prepare children for a future and for jobs that we do not even know will exist. It’s the innovation and discoveries that excite kids for the future. For example: pretend it’s 1903 and the Wright brothers took flight. A seven-year-old girl at the time would have been awe-inspired and amazed. Jump 66 years forward and man not only took flight, but landed on the moon. That seven-year-old girl is now a 73-year-old woman and never thought she would see anything more amazing than the airplane. But she did. It took 66 years for science and engineering to go from man flying to man landing on the moon.

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Meetings
POGIL is a student-centered instructional approach combining group learning and guided inquiry, with an emphasis on the development of important process skills. This symposium will include presentations concerning all aspects of this pedagogic approach, across a range of courses and institutional types, including lessons learned from classroom experience, the assessment of student learning outcomes, and the development of new materials and their use.

**Research in Chemistry Education, Organizer(s):** David Cartrette (dpcartrette0304@email.campbell.edu), Doug Mulford (douglas.mulford@emory.edu)

This symposium provides a broad forum for chemistry education research (CER) including but not limited to quantitative, qualitative, mixed methods, and action research studies. A submitted abstract and presentation should be aligned with the criteria for CER published in the Journal of Chemical Education and address (1) the motivation or purpose for the research and type of problem investigated, (2) the research question(s), (3) the conceptual and methodological frameworks chosen to guide the study, and (4) the findings and implications of the study. Presentations should focus primarily on the findings and interpretation of data.

This symposium is sponsored by the ACS DivCHED Committee on Chemistry Education Research.

**Research on Learning in the Lab, Organizer(s):** Santiago Sandi-Urena (guillermo.sandiurena@ucr.ac.ccr), Matthew Chrzanowski (mjc238@case.edu); Co-sponsors: IAC; Presiding: Santiago Sandi-Urena | Matthew Chrzanowski (guillermo.sandiurena@ucr.ac.ccr | mjc238@case.edu)

While most chemists agree that laboratory work is an important part of science courses, there is scant evidence for the relationship between laboratory work and learning, particularly at the college level. This symposium invites the discussion of research on the effectiveness of laboratory environments in promoting learning, skills (technical and intellectual) and other types of gains in participants (students and teaching assistants). Abstracts submitted for this symposium are expected to explicitly address the research design and evidence associated with the work to be presented. Studies of diverse laboratory formats and academic levels are welcomed.

**Strategies Promoting Success of Two-year College Students, Organizer(s):** Thomas Higgins (thhiggins@nsf.gov), Laura J. Anna (Laura.Anna@montgomerycollege.edu), Alycia Palmer (Alycia.Palmer@montgomerycollege.edu)

Nearly half of all undergraduate students enroll in a community college and many STEM students take their introductory chemistry courses at a two-year college. The educational pathway of these students is often complex and non-linear towards completion of a certificate, degree and/or transfer to a four-year program. These non-traditional pathways present unique challenges in and out of the classroom for the educators who are trying to serve this important and diverse group of students. This symposium will address the challenges of educating two-year college students and report strategies for success in chemistry at the community college. Chemical educators, administrators and employers are invited to share innovations contributing to the success of two-year college students in certificate or degree completion, workforce development for STEM careers and transfer to baccalaureate programs.

**Successful Student Chapters, Organizer(s):** Nicole DiFabio (N_DiFabio@acs.org); Co-sponsors: SOCED

**Teaching Organic Chemistry for Biology/Pre-Med Majors, Organizer(s):** Ron Swisher (ron.swisher@oit.edu), Travis Lund (travis.lund@oit.edu); Presiding: Ron Swisher (ron.swisher@oit.edu)

The majority of students taking organic chemistry in most universities are biology majors and "pre-meds". The MCAT exam has just undergone a major revision, putting much less emphasis on traditional organic chemistry synthesis and more emphasis on bioorganic chemistry. Many organizations, including the Howard Hughes Medical Institute, AAAS, and the National Academy of Sciences have called on organic chemistry courses to be made more interdisciplinary and biologically oriented to better serve the needs of future biologists and medical professionals. This symposium will provide the opportunity to present innovative changes in how organic chemistry is taught.

**The Role of Research Experiences in the ACS Certified Degree, Organizer(s):** Thomas Wenzel (twenzel@bates.edu); Presiding: Thomas Wenzel (twenzel@bates.edu)

The ACS Guidelines for the certified degree emphasize the value of student participation in a research experience. Research can be used to satisfy one of the in-depth courses and can account for up to 180 of the required 400 laboratory hours for certification. Research experiences are expected to involve original work intended for publication in peer-reviewed disciplinary journals. The role and expectations of research in the certified degree will be discussed and examples of programs that effectively incorporate research into the undergraduate degree requirements will be presented.

**Undergraduate Laboratory Experiments Involving Advanced Materials, Organizer(s):** William Miller (MillerW@ssc.losrios.edu); Co-sponsors: MPPG; Presiding: William Miller (MillerW@ssc.losrios.edu)

Advanced materials have been defined by the National Institute of Standards and Technology as “materials that have been developed to the point that unique functionalities have been identified and these materials now need to be made available in quantities large enough for innovators and manufacturers to test and validate in order to develop new products.” Using this broad definition of “advanced materials,” this symposium seeks contributions that involve teaching about and using advanced materials in undergraduate laboratory experiments. We are seeking to include a broad range of advanced materials in this symposium.

**Mathematical Thinking, Language and Conventions in Chemistry Education, Organizer(s):** Sherry Seethaler (sseethaler@ucsd.edu), John Czworkowski (John.Czworkowski@gcccd.edu); Presiding: Sherry Seethaler | John Czworkowski
Czworkowski (sseethaler@ucsd.edu | John.Czworkowski@gccd.edu)

This symposium will explore the teaching and learning of mathematically rich chemistry concepts. Mathematically rich is defined broadly to encompass any or all aspects of mathematical language, conventions, and mathematical thinking including analysis of patterns, modeling reality and critiquing conclusions. The focus will be on pedagogical approaches at the high school, community college and lower division undergraduate level, and evidence supporting their efficacy or evidence demonstrating their shortcomings. Abstracts highlighting how curricular collaborations between chemists and mathematicians can improve recruitment, learning and retention of diverse learners in STEM majors are especially encouraged.

Eye Tracking Research in Chemistry Education, Organizer(s): Sarah J.R. Hansen (sjh2115@columbia.edu), Jessica VandenPlas (vandenpj@gvsu.edu); Presiding: Sarah J.R. Hansen Jessica VandenPlas (sjh2115@columbia.edu vandenpj@gvsu.edu)

This symposium will present an overview of eye tracking as a tool for chemistry education researchers. Eye tracking has historically been used by advertisers and designers to engineer products and displays that will capture a viewer's attention, as well as by psychology researchers wishing to look deeper in to a subject's visual activities. Recently, education researchers have begun to use eye tracking as a means of studying how students interact with, and learn from, visual stimuli. This symposium invites submissions that explore the role of eye tracking in chemistry education research, particularly discussions of how to get started in eye tracking, different methodologies, data analysis techniques, and a current state of eye tracking in chemistry education.

The General Chemistry Course for a Changing World, Organizer(s): David A. Katz (dakatz45@msn.com); Presiding: David A. Katz (dakatz45@msn.com)

There is no question that there is a large body of knowledge compressed in the general chemistry course. The general chemistry course is somewhat textbook driven in that most of the major textbooks follow the same order that has been in place for decades with much of the material compartmentalized in separate chapters. Recent, important, and relevant topics are placed in chapter notes, relegated to later chapters, or even the end of the book. Recent studies by Scott Freeman and colleagues (Proc. Natl. Acad. Sci. USA 2014, DOI: 10.1073/pnas.1319030111), and others, have shown that students learn better when they are actively involved in their classes, but active learning is not reflected in many courses or included in textbooks. What have you done, or what should be done, to integrate material more in line with the evolving science of chemistry and the societal and political aspects of the science in the 21st century?

Course-Based Undergraduate Research Experiences (CUREs) in Chemistry, Organizer(s): Jennifer Heemstra (heemstra@chem.utah.edu), Rory Waterman (Rory.Waterman@uvm.edu); Presiding: Jennifer Heemstra (heemstra@chem.utah.edu)

Undergraduate research is a well-accepted high impact practice that provides significant benefits to students. However, not all students have sufficient time to commit to a traditional undergraduate research experience, and larger programs cannot accommodate all students for one-on-one mentored experiences in a research laboratory. Course-based undergraduate research experiences (CUREs) provide a powerful solution to these challenges by adapting laboratory curricula to a structured, but discovery-based focus. CUREs have been demonstrated to provide many of the same learning gains as traditional research experiences and provide significantly greater capacity for undergraduate research. This symposium explores successful models at all levels to help interested faculty develop and implement this practice that their home institutions.

Using Chemistry Education Research to Inform the Design and Use of Assessment Materials, Organizer(s): Jessica Reed (reedjj@uwm.edu), Sachel M. Villafañe (svillafa@mail.usf.edu); Presiding: Jessica Reed | Sachel M. Villafañe (reedjj@uwm.edu | svillafa@mail.usf.edu)

Assessment is an important component of any instructional endeavor and can take on a variety of forms ranging from low-stakes course activities, surveys, and instruments to high-stakes exams, reports, or projects. When designed and used appropriately, assessments can provide a wealth of evidence of student learning, skill development, pedagogical efficacy, and other affective traits. In order to better understand what students know and can do with that knowledge, consideration of what is being assessed and how it is measured is necessary. This symposium will focus on areas of research that are informing assessment development and practice as it relates to not only content knowledge assessment but also to assessment of science practices, process skills, pedagogical efficacy and reform, and other affective traits. The goal is to provide a forum for both chemistry education researchers and practitioners to learn about recent developments in assessment design and practice that have practical implications for the teaching and learning of chemistry.

Writing in Chemistry, Organizer(s): Alena Moon (almoon@umich.edu), Solaire Finkenstaedt-Quinn (quinnsa@umich.edu) ; Presiding: Alena Moon | Solaire Finkenstaedt-Quinn (almoon@umich.edu | quinnsa@umich.edu)

Writing is widely perceived as essential to doing and communicating chemistry. Writing has also been tied to enhancing content learning. Due to both of these, writing is being incorporated into the chemistry classroom in numerous ways (e.g. learning-to-write, writing-to-learn, essays, in-class reflections, etc.). This symposium will include research investigating the various forms in which writing is implemented in chemistry courses. Those researching any type, length, and genre of writing are encouraged to submit an abstract. This session will contain talks lasting 15 minutes with 5 minutes for questions.
Journal of Chemical Education Symposium on Research and Scholarship in Chemistry Education, Organizer(s): Norbert J. Pienta (npienta@uga.edu); Presiding: Two members of the JCE Editorial Advisory Board (TBA)

In order to assure a continuation of high quality content in the Journal of Chemical Education, the organizers of this symposium seek contributions that highlight their high quality research or scholarship. Participants should submit an abstract that follows CHED guidelines, followed by a one-page summary of the work that will be presented. Participants will be selected by the Editorial Advisory Board of JCE, will receive a travel stipend, and will be invited to submit a short summary that will be published in JCE with the other symposium contributions. Potential participants must have published in JCE in the last 4 years or be in the first 5 years of their first academic appointment.

Undergraduate Research Papers, Organizer(s): Carmen Gauthier (cgauthier@flsouthern.edu), Nicole Snyder (nsnyder@snyderglycosciencegroup.org), Joshua V. Ruppel (jruppel@uscupstate.edu); Cosponsors: SOCED

Undergraduate students who have completed at least one semester or summer of undergraduate research are invited to present their work in a ten minute oral presentation. This session will be limited to 50 undergraduate presentations across the following disciplines: analytical chemistry (ANLY), biological chemistry (BIOL), chemical education research conducted by undergraduates (CHED), computational chemistry (COMP), inorganic chemistry (INOR), organic chemistry (ORGN) and physical chemistry (PHYS). When submitting your abstract, please use the appropriate abbreviation in your title (e.g. ORGN: Synthesis of polymer chemistry (ORGN) and physical chemistry (PHYS). When submitting your abstract, please use the appropriate abbreviation in your title (e.g. ORGN: Synthesis of polymer systems for drug delivery.) to ensure your abstract is properly sessioned. This is especially important for work that is interdisciplinary. Please note that individual undergraduates cannot present in this session in two consecutive meetings. In addition, multiple submissions from the same research group will only be accepted in cases where space is available.

Undergraduate Research Posters: Agricultural and Food Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: AGFD | SOCED

Undergraduate Research Posters: Biotechnology, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: BIOT | SOCED

Undergraduate Research Posters: Chemical Education, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: SOCED

Undergraduate Research Posters: Computational Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: COMP | SOCED

Undergraduate Research Posters: Environmental Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: ENVR | SOCED

Undergraduate Research Posters: Geochemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: GEOC | SOCED

Undergraduate Research Posters: Green Chemistry & Sustainability, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: CEI | IEC Green Chem | GCI | SOCED

Undergraduate Research Posters: Inorganic Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: INOR | SOCED

Undergraduate Research Posters: Medicinal Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: MEDI | SOCED

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UNDERGRADUATE PRESENTERS ONLY - Undergraduate students who have completed at least one semester or summer of undergraduate research are invited to present their work in poster format.

Undergraduate Research Posters: Nanochemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: SOCED

UNDERGRADUATE PRESENTERS ONLY - Undergraduate students who have completed at least one semester or summer of undergraduate research are invited to present their work in poster format.

Undergraduate Research Posters: Organic Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: SOCED

UNDERGRADUATE PRESENTERS ONLY - Undergraduate students who have completed at least one semester or summer of undergraduate research are invited to present their work in poster format.

Undergraduate Research Posters: Physical Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: SOCED

UNDERGRADUATE PRESENTERS ONLY - Undergraduate students who have completed at least one semester or summer of undergraduate research are invited to present their work in poster format.

Undergraduate Research Posters: Polymer Chemistry, Organizer(s): Nicole DiFabio (N_DiFabio@acs.org); Cosponsors: PMSE | POLY | SOCED

UNDERGRADUATE PRESENTERS ONLY - Undergraduate students who have completed at least one semester or summer of undergraduate research are invited to present their work in poster format.

Future ACS National Meetings

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<td>August 21-25, 2016</td>
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<th>253rd ACS National Meeting &amp; Exposition</th>
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<td>April 2-6, 2017</td>
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<td>San Francisco, California</td>
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2016 Regional ACS Meetings

Northeast, Oct. 5 - 8 | Binghamton, NY
Southeastern, Oct. 23 - 26 | Columbia, SC
Midwest, Oct. 26 - 28 | Manhattan, KS
Southwest, Nov. 10 - 13 | Galveston, TX
Select Presentations from CCCE Sponsored Symposia During the 2016 Biennial Conference on Chemical Education

September & October, 2016

One of the challenges associated with attending a BCCE is choosing which talks to attend, because there are often concurrent talks in different symposia in which participants are interested. These conflicts between multiple interests are especially challenging for members of the CCCE who organize symposia and workshops. Thus, the responsibility of presiding in talks of their own symposium precludes them from attending other symposia that interest them. This year, members of the CCCE will organize 4 different symposia during the BCCE and the organizers of each symposium will invite two authors to present papers related to the use of computers in chemical education in a follow-up online ConfChem Conference. This approach will not only allow participants who could not attend these talks to interact with authors, but also allow members of the broader chemical education community who could not attend the BCCE to benefit from these presentations.

This ConfChem will be on the general topic of Computers in Chemical Education with papers being invited from the following symposium.

- Homework: Past, Present, and Future
- Social Networking in Chemical Education Research
- Active Learning in Organic Chemistry
- Web-based Resources for Chemical Education

Conference Organizers
Jennifer Muzyka, Centre College, KY, jennifer.muzyka@centre.edu
Robert E. Belford, University of Arkansas at Little Rock, AR rebelford@ualr.edu.

Mathematics in First-Year Chemistry Instruction

September and October, 2017

Chemistry is a quantitative science. For college majors in the sciences and engineering, “general chemistry for science majors” is a required course that is expected to provide students with a foundation in solving scientific calculations: mathematics applied to measurements. In recent years, many instructors have noted deficits in the background of growing numbers of students seeking to enroll in general chemistry. In a 2012 survey of nations with highly developed economies, US 16 to 24 year olds had the lowest scores in “numeracy” among the 24 nations tested.

For this virtual conference, we seek submissions focused on how we can help students learn to solve calculations in courses that teach or prepare students for the quantitative component of general chemistry:

- What experiments have instructors conducted to improve student success rates in solving scientific calculations? What strategies would be recommended as a result?
- What online or other resources have been found to be effective in assisting students who need additional preparation or review for the mathematics that is prerequisite for general chemistry?
- What topics in mathematics are most important in courses preparing students for general chemistry? Which skills should be measured to determine placement in general versus preparatory chemistry sections? What levels of proficiencies should be required before placement in general chemistry?
- Which strategy has proven to be more effective for students when solving scientific calculations: The application of critical thinking and reasoning skills or the application of memorized problem solving algorithms?

Anyone interested in submitting a paper should contact Cary Kilner: carypq@aol.com or Eric Nelson: EANelson@ChemReview.Net. Further information may be obtained at the conference site, http://confchem.ccce.divched.org/2017SpringConfChem.

Relevant Dates:
May, 2017: Abstracts Due
August, 2017 Papers Due
September, 2017: Conference Begins
Committee on Chemistry in the Two-Year College Report
Tamika Duplessis [chair@2yc3.org], 2016 Chair

INTRODUCTION/OPENING COMMENTS The Committee on Chemistry in Two-Year Colleges, COCTYC, is the executive committee governing the Two Year College Chemistry Consortium, 2YC3. 2YC3 provides a forum for chemistry educators to enhance student learning through professional development conferences. This committee is charged with the responsibility of three to four 2YC3 conferences per year, management of finances and publication of quarterly newsletter. 2YC3 is committed to the advancement of chemical education, the art of teaching chemistry, and the exchange of ideas and strategies regarding the first two years of chemistry and chemical technician programs. 2YC3 is open to chemistry educators at all levels—pre-service, high school, technical programs, two- and four-year colleges/universities in the US or elsewhere to learn more about innovative and effective ideas regarding teaching chemistry.

INFORMATION SINCE LAST REPORT Since the last meeting, the committee has elected Mary Roslonowski as Chair-elect 2017. The committee has also hosted its 213th Conference at San Deigo City College March 11-12, 2016. In addition the committee has continued efforts to populate the Task Advisory Board Working Groups and appoint TAB Leads to those working groups. The Task Advisory Board now replaces our Regional Advisory Board and organizes its work according to specific tasks and is goal oriented. Some of the newly formed TAB Working Groups include College Sponsors, Membership, Newsletter, BCCE, and Partnerships.

PLAN(S) FOR FUTURE At the upcoming meeting we will focus on efforts to provide support for upcoming conferences. Two new conferences have been confirmed—Yavapai College in Prescott, AZ (Nov. 4-5, 2016) and Bronx Community College (May 26-27, 2017). At the upcoming meeting, the committee will also continue working on plans for participation in the Biennial Conference on Chemical Education (BCCE 2018). Additionally, discussions will continue on boosting membership and college sponsorships.

International Activities Committee
Charles (Butch) Atwood [chatwood@chem.utah.edu], Resa Kelly [resa.kelly@sjsu.edu], Co-Chairs

The committee continues its efforts to promote issues on global education by organizing or co-sponsoring programs both nationally and internationally. At the San Diego ACS Meeting the committee heard a presentation from Bradley Miller, from the ACS International Activities Committee, who told us about some of their initiatives. In particular, the ACS asks us to consider partnering with several internationally involved people: US Patriot ACS members (ACS members who live in foreign countries), foreign graduate students and postdocs who live/work in the US, as well as US graduate students who intend to study abroad. It was noted that the ACS has funds to pay graduate student expenses for 10 week research experiences in foreign countries. The graduate advisor can also be paid to travel to the country for an oversight visit. Another suggestion to assist us with reaching a more global population was to cross-list our symposia with other divisions. Brad reminded us that the Global Innovation Grants (GIG) are still operative and he encouraged us to apply. The ACS has a funding request process which could include some innovative outreach efforts to foreign chemical societies. He highlighted how the Festival de Quimica program had grown from one such request and he advised us to submit others. The Atlantichem (similar to Pacifichem but for countries sharing an Atlantic border) project is fully underway with a theme of nanomaterials and chem/bio interfaces. A CHED proposal which fit into the conference themes may be included. Finally, Brad mentioned that his office has “stopover” grant money to pay for people who are already traveling to a foreign country to stop in between and present at another conference.

DivCHED IUPAC representative Marcy Towns discussed her experiences at the Busan, Korea IUPAC meeting. She discussed her work on the mole redefinition committee. She will attend the Malaysian IUPAC meeting just prior to the Philadelphia ACS meeting. It appears that IUPAC is interested in starting a new chemistry education journal based on practice more than research. The next IUPAC meeting will be in Sao Paulo, Brazil July 9th-14th, 2017.

DivCHED IAC has sponsored and supported several initiatives in the last year. Santiago Sandi-Urena and Norbert Pienta attended the 2016 CLAQ meeting in Concepcion, Chile in January. This was the second time this conference has asked us to send DivCHED members. A second initiative occurred when the DivCHED IAC and the International Activities Office of ACS sent an ACS Chem. Ed. contingent to the 39th Reuniono Anual da Sociedade Brasileria de Quimica in Goiania, Brazil from May 30th to June 2nd, 2016. In attendance were Charles Atwood, Resa Kelly, Marcy Towns, and Norbert Pienta. In early June 2016, Atwood, Kelly, Pienta, and Tom Bussey attended the Simposio do Quimica in Cayo Santa Maria, Cuba where they each gave presentations at an Ernest Eliel Symposium.
DivCHED has been invited to return to all three countries/conferences for future interactions.

Reasa Kelly and Charles Atwood partnered with Joel Harris of the ANYL Division and were awarded an Innovative Projects Grant from the ACS to hold a workshop for Cuban chemists and educators in April, 2017 at the University of Utah’s campus in Salt Lake City, UT. Plans are for 8 to 10 Cuban chemists to fly to Salt Lake City where presentations and discussions will focus on the teaching and practice of General and Analytical chemistry with an emphasis on laboratory learning. Kelly and Atwood were also awarded a GIG award to develop the DivCHED IAC as a consultant for assisting international guests with connecting and collaborating with DivCHED members. An online form was created and is available on our newly remodeled website.

At the San Diego ACS meeting the committee sponsored the symposium, “Chemistry Education: International and Multicultural perspectives” co-organized by Sonali Raje and Sarah Hansen which had a total of total of 9 papers presented. Next spring, this symposium will be co-organized by Sarah Hansen, Charlie Cox and Wendy Schatzberg at the San Francisco ACS meeting in 2017. In addition to inviting international and multicultural perspectives, they will also encourage former IAC travel award winners to present their experience from winning the award and attending international conferences.

The 2016 CHED-IAC International Travel Award was awarded to Michael Dianovsky of South Dakota State University in Brookings, SD. Mike will attend the ECRICE Conference in Barcelona, Spain September 7-10, 2016. He will present two papers. Mike will present a report at the San Francisco ACS meeting and also share his experience on the DivCHED IAC webpage.

Reasa Kelly worked with Division Executive Assistant Heather Johnson to update the IAC website - http://www.divched.org/committee/international-activities. New items are: Connection to an electronic form to foster collaboration with international researchers and others interested in Chemical Education, blogs from our IUPAC representative, Marcy Towns, and from award winners – Carmen Valdez Gauthier and Mike Dianovskly. We are also showcasing photos from our international meetings that our members attend such as The Canadian Society for Chemistry meeting, ACS-SBQ and SCQ-ACS, and international activities that involve collaboration between our members and researchers from other countries.

CHED Travel Award

The award is designed to support a DivCHED member who attends and fully participates in an international chemical education conference held outside the U.S. Preference is given to junior and/or under-represented faculty members who have not had the opportunity to attend an international meeting in chemical education. Information about the travel award and deadlines can be found at http://www.divched.org/content/international-travel-award. If you or someone you know meet the criteria please encourage them to apply, the deadline for the submission of application for the 2017 CHED Travel Award is November 30th, 2016.

**Long Range Planning Committee**

*Thomas Jose [thomas.jose@blinn.edu]*

The purpose of the Long-Range Planning Committee (LRPC) is to monitor internal and external trends and to develop plans that will allow the Division to evolve and adapt to changes in technology, in science, and in the needs and expectations of Division members. To that end, we have been working with the Chair succession to operationalize the Division’s Strategic Plan.

Since 2014, LRPC members and Past Chair, Donald Wink, have asked Committee Chairs to re-visit the strategic plan. Although, largely unchanged from its original 2007 form (http://www.divched.org/CHEDarchives/strategicPlanning/CHED2007StrategicPlan.pdf), the language of the Strategic Plan has been tightened and aligned with the Mission of the Division:

**Strategic Plan for the Division of Chemical Education**

**Mission:** To engage its’ global network of members by communicating, promoting and effectively identifying opportunities and resources responsive to the spectrum of chemistry teaching and learning environments.

**Goal 1:** Maintain and enhance an inclusive global communication plan and social network infrastructure.

**Goal 2:** Exchange ideas and expertise for the teaching and learning of chemistry within ACS and with national and international organizations.

**Goal 3:** Establish an infrastructure to foster professional development and mentoring opportunities for DivCHED members, promote broader participation of membership in DivCHED activities, and nurture future DivCHED leaders.

**Goal 4:** Maintain and enhance access to quality resources, including those developed within and outside of CHED that enrich
Regional Meetings Committee
Frank Creegan [fcreegan2@washcoll.edu], Marty Perry [perrym@obu.edu], Co-Chairs

The Regional Meetings Committee (RMC) is charged by the Division to:

1. Provide oversight of the ACS Division of Chemical Education Region Awards, which includes the development and maintenance of Award Guidelines, participation in the selection and presentation of the Region Awards,
2. Insure that a Chemical Education Program is part of each Regional Meeting, and
3. Promote the purpose and work of the ACS Division of Chemical Education.

RMC is pleased to outline in this NEWSLETTER Report recent efforts to address its charge.

1. ACS Division of Chemical Education Region Awards:
   • 2016 ACS Division of Chemical Education Region Awardees for Excellence in High School Teaching, VOLUME 1:
     Seven of the ten ACS Regions will hold meetings in 2016 providing opportunities to recognize and reward excellence in the teaching of high school chemistry. RMC is pleased to report on the following three region Awards presented in Spring 2016.
The 47th ACS Central Regional Meeting  
May 18-21, 2016, Covington, KY

The winner of the 2016 Division of Chemical Education Central Region Award for Excellence in High School Teaching is Alice Putti from Jenison High School in Jenison, MI.

Alice Putti graduated from the University of Michigan, Ann Arbor, Michigan, with a B.S. Chemistry/Secondary Education Certification in 1994, followed by a M. Ed Secondary Education degree from Grand Valley State University, Allendale, Michigan, in 2000. She has been teaching Chemistry at Jenison High School, Jenison, Michigan, for the past 20 years. She founded and continues to lead the West Michigan Chemistry Teachers Association, comprised of chemistry teachers in her area. This professional learning community collaborates with each other and shares ideas and strategies for teaching and learning. Alice works closely with the College Board, serving as a workshop consultant, free response exam writer, question leader and test reader. She has multiple publications and presentations: Conference Presentations in 2012 and 2014 at BCCE (Biennial Conference on Chemical Education) and in 2013 at MSTA (Michigan Science Teachers Association); led a webinar for American Association of Chemistry Teachers (AACT), October 2014 “Cookbook to Inquiry: Strategies to revise traditional cookbook labs into guided inquiry activities;” A teacher’s Workshop at PITTCON 2016 and in Pittsburgh at a Society of Analytical Chemists of Pittsburgh meeting in 2013; publications in JCE and Science Teacher. In addition to her teaching assignments, she founded and sponsored since 2014 Girls in STEM Club, an outreach program of the local high school and elementary school. She also coaches for Science Olympiad.

The 44th ACS Middle Atlantic Regional Meeting  
June 9-12, 2016, Riverdale, NY

The winner of the 2016 Division of Chemical Education Middle Atlantic Region Award for Excellence in High School Teaching is Mary Calvert from The Lawrenceville School in Lawrenceville, NJ.

Mary Calvert attended The University of Illinois in Champaign-Urbana earning a B.S. in Chemistry. After working in industry for a couple of years she went back to school and earned a master’s in Chemistry from Princeton University. Calvert taught at the College of New Jersey before teaching at The Lawrenceville School where she has taught for the last 18 years. Calvert holds Lawrenceville's Oscar H. McPherson '01 Distinguished Teaching Chair. In addition to her duties in the science department, Calvert is the Housemaster of Kirby House and coaches the Kirby House Frisbee, volleyball, and basketball teams. She also co-coaches the Science and Robotics club, which enters about a dozen competitions a year. Calvert has served as a member of the following Lawrenceville committees: Selection of a New Headmaster, Health and Wellness Initiatives, Crescent Initiative: New Crescent House and Student Center, Coeducation, Review and Propose New Athletic Requirements, Student Leadership, and the Quarter Century Society. In 2012, she received Lawrenceville's Henry C. Woods Faculty Award for Service to the School and in 2000 she was honored with the School’s Ritter Award for Fostering a Nurturing Academic Environment. Calvert has also chaperoned Lawrenceville International Programs trips to Austria, Cuba, and Germany.

The 71st ACS Northwest Regional Meeting  
June 26-29, 2016, Anchorage, AK

The winner of the 2016 Division of Chemical Education Glenn & Jane Crosby Northwest Region Award for Excellence in High School Chemistry Teaching is James (Jamie) Yoos from Bellingham High School in Bellingham, WA.

Jamie Yoos is a Quantitative Chemistry, AP Chemistry, and Applied Anatomy and Physiology teacher at Bellingham High School in Bellingham, WA where he has worked for the past 13 of his 18-year teaching tenure. Jamie graduated with honors from Warren Wilson College in 1990 with degrees in biology and chemistry. After working as a chemist for a biotech company in Seattle, Jamie found his true passion in teaching and pursued a graduate degree in science education from the University of Rochester. He is a National Board Certified teacher.

Jamie believes in making science education accessible to all students. He has worked to develop curriculum that adjusts to his students’ interests and needs. He actively incorporates “hands on” inquiry and technology to empower his students in their learning. Jamie believes in meeting his students “where they are in their understanding,” and helps them to make
connections between scientific principles and what they are seeing in their world. He helps students to move past the fear of failure and focus on the learning rather than a score. Jamie seeks out opportunities to teach in a variety of settings, and can often be found with a group of his anatomy and physiology students working the sidelines of athletic events teaching athletic injury prevention, assessment and rehabilitation. Jamie is also active at the regional and state level, serving as a Washington State Science Fellow, helping his district with the transition to the new Washington State Science Learning Standards (NGSS).

Finalists for the Spring 2016 ACS Division of Chemical Education Region Awards for Excellence in High School Teaching:

In 2014 RMC began the practice of using the CHED Newsletter to recognize all nominees for the Region Award for Excellence in High School Teaching and the schools at which they teach. In the tables below we list each Region Award, the 2016 Recipient, and all those whose complete nomination portfolios came before the Region Awards Committees.

### 2016 ACS Division of Chemical Education Central Region Award for Excellence in High School Teaching

<table>
<thead>
<tr>
<th>AWARDEE</th>
<th>Jenison High School</th>
<th>Jenison, MI, 49428</th>
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<tbody>
<tr>
<td>Alice Putti</td>
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**FINALISTS**

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<tr>
<th>James Benigna</th>
<th>Kathryn Blakenship</th>
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<tr>
<td>The Roeper School</td>
<td>Highlands High School</td>
</tr>
<tr>
<td>Birmingham, MI 48009</td>
<td>Fort Thomas, KY 41075</td>
</tr>
<tr>
<td>Dr. David Lineman</td>
<td>Terese Mortemore</td>
</tr>
<tr>
<td>Hickory High School</td>
<td>Maumee High School</td>
</tr>
<tr>
<td>Hermitage, PA 16148</td>
<td>Maumee, OH 43437</td>
</tr>
</tbody>
</table>

### 2016 ACS Division of Chemical Education Middle Atlantic Region Award for Excellence in High School Teaching

<table>
<thead>
<tr>
<th>AWARDEE</th>
<th>The Lawrenceville School</th>
<th>Lawrenceville, NJ 08648</th>
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<tbody>
<tr>
<td>Mary Calvert</td>
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**FINALISTS**

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<thead>
<tr>
<th>Claudia Angle</th>
<th>Karolina Fraczkowska</th>
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<tbody>
<tr>
<td>Bridgeton High School</td>
<td>Stuart Country Day School of the Sacred Heart</td>
</tr>
<tr>
<td>Bridgeton, NJ 08302</td>
<td>Princeton, NJ 08540</td>
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</table>

### 2016 ACS Division of Chemical Education Glenn and Jane Crosby Northwest Region Award for Excellence in High School Teaching

<table>
<thead>
<tr>
<th>AWARDEE</th>
<th>Bellingham High School</th>
<th>Bellingham, WA 98225</th>
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<tr>
<td>James Yoos</td>
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<td></td>
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**FINALISTS**

<table>
<thead>
<tr>
<th>Brian Butcher</th>
<th>Lee K. Jones</th>
</tr>
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<tbody>
<tr>
<td>Jesuit High School</td>
<td>Dallas High School</td>
</tr>
<tr>
<td>Portland, OR 97225</td>
<td>Dallas, OR 97338</td>
</tr>
<tr>
<td>Barbara Nelson</td>
<td>Patty Weston</td>
</tr>
<tr>
<td>Idaho Falls High School</td>
<td>Mercer Island High School</td>
</tr>
<tr>
<td>Idaho Falls, ID 83401</td>
<td>Mercer Island, WA 98040</td>
</tr>
</tbody>
</table>
2. Chemical Education Programming at Regional Meetings:
RMC continues to work with organizing committees for Regional Meetings early on in the planning process to not only encourage Chemical Education programming but to also volunteer to organize symposia, general sessions, or poster sessions. Recent efforts have led to additional programming at NORM-2016, and NERM-2016. Attention is now directed toward expansion of the Chemical Education programming at the seven regional meetings planned for 2017.

3. Promotion of ACS Division of Chemical Education through Regional Meetings:
RMC continues its joint project with the New Members Committee involving the design, preparation, and display of a poster that describes, using text and images, the mission and activities of the Division of Chemical Education. The poster is displayed by the DivCHED Representative, at each of the Regional Meetings, in a formal poster session and/or in the Registration area. The poster serves as a device to disseminate information about Division and to recruit new members to the Division. The poster is under revision and will include new text and images from the 2016 BCCE and Spring 2016 Regional Meetings.

News from the Exams Institute, Kristen Murphy [kmurphy@uwm.edu]
Greetings to all from ACS Exams.

The first half of 2016 has been busy at ACS Exams. We have finalized all aspects of our moves, which were completed in two phases. In late winter, Tom Holme, assisted by our staff at Iowa State University, Kristie Romsdahl and Jana Taylor, moved all exams and many business files. With the completion of the first stage, all exam orders and fulfillment were conducted from our news offices in Berthoud, CO, keeping all study order and fulfillment in Ames until the spring busy season was over. At the beginning of June, again aided by Kristie and Jana, two more trucks were loaded with the remaining business files and all remaining study guides bound for Colorado and the intellectual property, archive and exam development files bound for Wisconsin. We have now shut down all operations in Ames, Iowa, and are fully operational with all business functions (including all orders and fulfillment) conducted from our permanent home in Berthoud, Colorado, and all intellectual property and research and development functions conducted from our space at the University of Wisconsin-Milwaukee. Our website has also transitioned to uwm.edu/acs-exams. In all, we estimate that we moved approximately 25,000 pounds of paper!

Most importantly, we have had the privilege of continuing to work with Tom Holme over the last year. Tom graciously agreed to assist in the transition from Iowa to our new model for business operations in his one-year term as Assistant Director of Business Operations. Throughout all of this, I am continually honored to work with such a great leader and friend. ACS Exams was transformed through Tom’s dedication and integrity, and the effects of this will always be part of the continued success and health of ACS Exams.

We continue to welcome new faces and bid farewell to friends in our staff. On the business side, Kristie Romsdahl, Jana Taylor and Mackenzie Boedeker have found new opportunities, and we truly wish them well. On the research and development side, Sachel Villafane has completed her brief postdoctoral position with us to begin a new faculty position. We wish everyone well in their endeavors! We also welcome Cherie Krayna to our office staff.

Exam development continues on many fronts as well. We have recently released two new exams: a conceptual high-school chemistry exam and a sophomore-level inorganic chemistry exam. We are excited at both the enthusiasm shown by the exam committees during development and the possibilities of offering these new exams to faculty and instructors. We have also released the newest versions of the high school chemistry exam, organic chemistry (full year) exam, first-term general chemistry exam and conceptual general chemistry exam (first-term, second-term and full year). We are in development on many exams also. In trial testing this fall are the biochemistry exam, instrumental analysis exam, diagnostic of undergraduate chemical knowledge (DUCK) exam, first-term general chemistry paired questions exam, analytical chemistry exam and first-term organic chemistry exam. We are also field testing a new Toledo Placement exam in a new electronic environment. If you are interested in participating in field testing, please let us know. As always, there is no cost to you as we provide all test booklets and answer sheets. We do request that you return student performances to us to assist us in the final stage of exam development. Finally, we are in development (with expected field testing in 2017) of the organic chemistry (full year) exam, second-term general chemistry exam and general-organic-biochemistry exam. We are very appreciative of the vast number of faculty and instructors who serve on these exam committees and the chairs who lead these groups. If you are interested in serving on future exam committees, please let us know. We are regularly starting new committees, particularly in general and organic chemistry.

Maintaining the security and integrity of the intellectual property of our exams and study materials are of the highest priority and are part of regular operations at ACS Exams. Unfortunately, we continue to deal with illegal posting of our intellectual property online predominately the posting of scans of the study guides. We take very seriously the trust the community has in the integrity of our exams and appreciate the support by the community to assist in maintaining this.

As always, ACS Exams would not function without the numerous and dedicated board members, exam committee chairs and members, trial testing faculty and instructors, and the focus group participants. The highest quality work that ACS Exams has the honor of producing is only possible due to the many, many people who contribute to this work. It continues to be a humbling and extraordinary experience working with you all. And, if you are interested in working with us on exam committees or through development projects, please let us know. For this and all other concerns or matters related to ACS Exams, please feel free to contact me at acssexams@uwm.edu.

We thank you all for your continued support of ACS Exams!
Announcements, Materials & Opportunities

DivCHED Election—Vote Fall 2016 for 2017 Executive Committee Members

Chair-Elect Candidates

Name: Cheryl Baldwin Frech
Title: Professor of Chemistry
Institution: University of Central Oklahoma
Institution Type: Regional 4-yr University (PUI)

I am humbled and honored to stand for election as Chair-Elect of the Division of Chemical Education. In 2016 I will have completed my 25th year as a faculty member at the University of Central Oklahoma. In addition to teaching thousands of students, I served as department chair for 8 years and have been on numerous department, college, and university task forces, boards, and committees. At UCO I work with the Center for Excellence in Transformative Teaching and Learning as the mentoring coordinator for all new faculty. I am the co-sponsor of the student Chemistry Club.

My service to the Division includes a term as Alternate Councilor and member of the Executive Committee, and as a member of the New Members Committee, the Regional Meetings Committee, the Long-Range Planning Committee, and the Biennial Conference Committee, which I co-chaired. I have been on two task forces looking at the structure of Biennial Conference governance. Since 2007 I have been an associate editor of the Journal of Chemical Education and I serve on the JCE Editorial Advisory Board. I have served on three ACS Exam Committees, and chaired the 2003 General Chemistry full-year exam.

One of the responsibilities of the DivCHED Chair is to represent the Division to the greater ACS, which would be one of my strengths. I have served ACS at the national level on the joint Board-Council Committee on Public Relations and Chemistry, chairing this committee from 2010-2012. I currently serve on the joint Board-Council Committee on Chemistry on Chemistry and Public Affairs and am a sub-committee co-chair. In my local section, I have been on the Executive Committee for more than 20 years, and currently serve as Public Relations Chair. In summary, what I bring to the DivCHED chair position is leadership, experience with ACS at all levels, and a willingness to lead this highly diverse group chemical educators.

Name: Renée S. Cole
Position: Associate Professor of Chemistry
Institution: University of Iowa
Institution Type: doctoral-granting

Renée Cole is an Associate Professor of Chemistry in the Department of Chemistry at the University of Iowa. She received a B.A. in Chemistry from Hendrix College and a M.S. and Ph.D. in Physical Chemistry from the University of Oklahoma. She joined the faculty at the University of Central Missouri in 2000 after completing a postdoctoral fellowship in Chemical Education at the University of Wisconsin-Madison.

She was active in both undergraduate education and teacher preparation at UCM. She has been active in the Division of Chemical Education from the beginning of her career, currently serving as a Councilor for the Division and as chair of the Chemistry Education Research Committee. Renee served on ACS Examinations Institute’s Exam Committees for the 2003 General Chemistry exam, the 2005 General Chemistry Blended Examination, and the 2012 Diagnostic of Undergraduate Chemistry Knowledge Exam. She has served on the Committee on Computers in Chemical Education and on the DivCHED Program Committee, co-chairing the DivChed meeting program for the ACS national meeting in Atlanta in 2006. Renee was active in the New Traditions project, facilitating workshops for both the New Traditions project itself, as well as for the Multi-Initiative Dissemination Project, and has continued to promote faculty professional development through the POGIL project.

She is an Associate Editor for the Journal of Chemical Education and serves as a member of the ACS Women Chemists Committee. She is committed to support the efforts of the Division of Chemical Education and the ACS to continue to improve chemistry education. As a councilor for DivChed she was part of a team that developed a travel award for division members to attend professional conferences. Her goals as Chair of the Division would be to continue to work to improve chemistry education at all levels.
Secretary/Councilor Candidates

Name: Dan King  
Title: Associate Professor of Chemistry  
Institution: Drexel University  
Institution Type: comprehensive university

I received a BA from the Johns Hopkins University and a PhD from the University of Miami, and am now an Associate Professor of Chemistry at Drexel University. I have been teaching chemistry at the undergraduate and graduate level for 14 years. My research area is chemistry education, focusing on the effectiveness of active learning techniques, specifically classroom technology and guided inquiry instruction. I have organized symposia at the BCCE and have presented my work at local, regional, national and international conferences. I have also facilitated workshops on the use of technology (e.g., clickers) and POGIL (Process Oriented Guided Inquiry Learning). I have been a member of the Division of Chemical Education as long as I have been a member of ACS. I have been a member of the New Member Committee since 2008, and currently serve as the Chair of that committee. I am the faculty advisor for the student ACS chapter at Drexel. From 2009-2011, I attended the ACS faculty peer review conference, serving on the advisory board for InChemistry Magazine during those years. I am also a member of the Philadelphia Section of the ACS and of the Division of Environmental Chemistry.

I feel that I have benefitted tremendously from my membership in the Division and would welcome the opportunity to give back to the Division by serving as Secretary.

Name: Dawn Del Carlo  
Position: Associate Professor of Chemistry Education  
Institution: University of Northern Iowa  
Institution Type: masters-granting 4-yr comprehensive

Dr. Dawn I. Del Carlo is currently an Associate Professor of Chemistry Education in the Department of Chemistry and Biochemistry at the University of Northern Iowa. She is also the graduate coordinator for the MA in Science Education which is a program targeted toward K12 science teacher practitioners. Dr. Del Carlo has been PI/Co-PI in several grants in her time at UNI. She is currently involved in two state-based MSP grant projects; one as the evaluator and the second as the co-PI. Both grants establish professional development programs for teachers interested in developing and integrating curriculum aligned with the Next Generation Science Education Standards (NGSS). Additionally, Dr. Del Carlo is active in DivCHED, was a member of the Committee on Chemical Education Research (CER) from 2004-2010, and regularly attends meetings of the committee when possible. She understands the value DivCHED, its committees, and task forces add to the national ACS organization and she very much looks forward to the opportunity to be a part of the Division administration.
Member-at-Large Candidates

Name: Deanna Cullen  
Title: see below  
Institution: Whitehall High School (MI)  
Institution Type: high school

For many years, I have looked for ways to offer informal support to the Division of Chemical Education. I have engaged in activities like attending committee meetings and working with ACS Exams Institute to write test questions, to not only support the mission of the Division, but to gain a deeper understanding of the dynamics involved among different constituents. My goal has been to explore the varied interests of this unique Division and make meaningful connections when possible. As a Member at Large, I would have a more formal opportunity to support the Division. My unique role with JCE & ChemEd X, along with my long high school teaching career and professional development experience give me a unique perspective that I hope will be a valuable addition to the board. My personal mission is to help to inform and advocate for (formal and informal) teachers of chemistry at every level, encourage collaborations and bridge the gap between research and practice.

- Chemistry teacher @ Whitehall High School, Whitehall, MI
- Associate Editor Precollege Online, Journal of Chemical Education
- Editor, Chemical Education Xchange website (ChemEdX.org)
- 2015 Michigan Science Teacher Association High School Teacher of the Year
- ACS Exams Institute, High School Committee
- 2014 Michigan Modeling Instruction Training
- 2010 Grand Valley State University, Target Inquiry Program
- Member MSTA (Michigan Science Teacher Association), NSTA, ACS (DivChed & Western Michigan local chapter), AACT, AMTA
- Grand Valley State University Chemistry External Advisory Committee
- Michigan Science PLN
- Founding member MAISD Real Science Program (bringing real world equipment and laboratory experience to high school students)

Name: Scott Donnelly  
Title: Professor of Chemistry  
Institution: Arizona Western College (AWC = Two-Year College)

An ACS member for 23 years I am honored to be a candidate for the Member-At-Large office. A long-time participant in the chemistry education community, I recently served as national Chair of the ACS 2YC3 (Two-Year College Chemistry Consortium) organization and now as Past Chair serve as the 2YC3 Future (Conference) Sites Coordinator. I organized the 199th 2YC3 conference and am a co-organizer of the fall 215th conference. In addition, I served on the ACS Society Committee on Education (SOCED) Task Force on Two-Year College Activities, was an invited presenter at the 2009 Gordon Research Conference Chemical Education Research & Practice, have received three NSF grants, and have presented often at ACS meetings.

For over two decades I have preached with missionary zeal the “gospel” of chemistry at Arizona Western College, a two-year college in southwest Arizona. A practitioner of an interdisciplinary approach to teaching, this July I contributed to the inaugural workshop sponsored by the Kress Foundation to develop a cross-disciplinary syllabus for an undergraduate level curriculum in technical art history. I twice received an AWC Excellence in Assessment medallion for assessment of student learning in organic chemistry and have been a finalist for the AWC Teaching Excellence Award multiple times.

The Member-At-Large serves as a liaison, working with different people from different backgrounds. I have served in a variety of faculty and administrative positions which required communicating with people with a broad range of interests. As Lead Science Faculty, I was an advocate for science faculty about issues germane to curriculum and departmental budgets. As vice president-elect of the faculty senate, I worked with all faculty and the college president on issues specific to faculty and to the college’s general welfare. As past Director of the Center for Teaching Effectiveness, I assisted in assessment of courses and student learning outcomes, oversaw faculty professional development, developed an orientation program for new faculty, administered the Faculty Mentor-Mentee program, and helped implement the Faculty Course Appraisal/Evaluation software system.
Name: Patrick L. Daubenmire  
Position: Assistant Professor of Chemistry  
Institution: Loyola University Chicago  
Institution Type: private RU/H research

Patrick L. Daubenmire, Ph. D., began his work in chemistry education as high school teacher. Following graduate school, he began work at Loyola University Chicago, where he eventually became the first tenure track chemistry education research professor in Loyola’s Department of Chemistry and Biochemistry. He is currently fulfilling that role as an assistant professor with research interests in analyzing dynamics and effects of cooperative, inquiry-based instructional approaches (e.g. POGIL and SWH), building effective professional and leadership development programs for secondary school teachers, and seeking ways to blur the lines between formal and informal learning environments in order to educate the whole student. On the chemistry education practice side of his work, Patrick participates in fostering and developing innovative, research-based curricula, which includes acting as a co-author on the 9th edition of Chemistry in Context, and acting as co-author and implementation developer for Healing Earth, a free, online text that integrates key principles of environmental science with related issues in ethics and spirituality.

To the potential role as Member-at-Large, Patrick brings a history of successful partnerships with others both inside and outside the field of chemistry education. He has been a member of the DivCHED Program Committee for the past two years and is slated to co-lead the technical program development in the Division for the 252nd and 256th ACS National Meetings. He welcomes the opportunity to serve the Division in a new capacity by communicating between and representing the Division as Member-at-Large.
Councilor/Alternate Councilor

Name: Amiee L. Modic
Title: PreAP and AP Chemistry Teacher
Institution: Katy High School
Institution Type: public high school

My interest in chemical education began during high school chemistry, leading to a B.S. in Chemistry from Michigan Tech in 1984 and an M.S. in Science Education from Montana State in 2011. Some days it’s hard for me to fathom the fact that I’ve been teaching chemistry in some form or another for thirty-two years, 31 of those years at Katy High School, in Katy, Texas.

In the early 1990s, a career changing program that encouraged the participants to present, as well as to engage in professional development, altered my path. Since then I have been active in content specific professional development opportunities including, the Convention for the Advancement of Science Teaching, Associated Chemistry Teachers of Texas (ACT2) Biennial conferences, ACS Southwest Regional meetings, College Board trainings, BCCE, and the Conference on Chemical Education (ChemEd).

In addition to teaching and networking with colleagues I’ve also been active in a service capacity; serving on the district AP Vertical Team for Science and on the chemistry curriculum team. Additionally, for ACT2, I served as President-elect/President/Past-President from 2008-2014 and am currently serving as Newsletter Editor; and from 2012-2014 I was honored to serve as the USNCO High School Mentor. Throughout my career I’ve been fortunate to be surrounded by helpful and supportive colleagues who felt as though my work was worthy of recognition; winning the ACT2 Teacher of the Year in 2006, the Thomas Aczel Award for Chemistry Education from the ACS-GHS in 2007, and the ACS Southwest Regional teacher of the year in 2008. In 2010 I was also awarded my local section's Salutes to Excellence Award for my hosting of the ACT2 Biennial conference and other activities related to promoting chemistry in the Greater Houston area.

Name: Iona Black
Position: Assistant Professor
Institution: James Madison University; Yale University School of Medicine (summers)
Institution Type: comprehensive university

I have served in the Division of Chemical Education on the Society on Chemical Education (SOCED) as a committee associate (2007-2012) and as a full committee member 2013-2018. In this capacity I have been a member of the subcommittees: Committee on Awards; Chem Luminary Award; and Committee on Visas. I have also been the SOCED representative to the Committee on Minority Affairs, serving on the ACS Scholars Selection Committee. I have also been on the Presidential Committee on Graduate Education 2014-2016.

My service on the Division of Chemical Education Program committee has been as poster session organizer and as co-chair for the Boston meeting, Fall 2015, and Spring meeting 2016 in San Diego. I am on the Strategic Planning Committee from 2014-2016. Additionally I am a member of the ACS Malta conference committee since 2009 and the Secretary of the MALTA Foundation since 2011.

My related activities, as an African American/Native American Physical and Organometallic Chemist has been on the Interstate Technology Regulatory Council (ITRC), as a member and document contributor on the DNAPL, Biofuel, Fractured Rock, and LNAPL teams. As a member of the American Indian Science and Engineering Society I have also served on the selection committee for Professional of the Year Committee for several years, as well as, a member of the Education committee. Some of my selected awards are: National Organization of Chemist and Chemical Engineers (NOBCChE) Proctor and Gamble Fellowship and Outstanding Teacher Award as a professional; National Academic Advising Association (NACADA) advising award; The Yale College Prize for Teaching excellence by a lector or lecturer; and Chemical Manufacturer Association Regional Award. My work in various communities individually and with students was recognized by Rotary International as a recipient of Rotary International Service Above Self Award. I have been an invited speaker nationally and internationally.
Name: Kara A. Pezzi  
Position: Chemistry Teacher, Science Department Chair, & STEM Coordinator  
Institution: Vermont Academy  
Institution Type: high school

I am honored to be nominated to run for the position of Councilor for the Division of Chemical Education. I have been an ACS member for 30 years and a DivCHED member for slightly less time. During my professional career I have always been an advocate for teachers and students. As Chair of the Northeast Wisconsin Local Section in 2001-2002, I made outreach to teachers a priority for our meetings. High school teachers were invited to presentations and field trips that directly related to the content in their classroom. One meeting involved a Q and A about electrochemistry from a local university professor followed by a tour of an electroplating company.

From 2006-2008, I was a mentor for the United States National Chemistry Olympiad where I worked with other high school teachers and college professors to prepare our best and brightest chemistry students to compete in the International Chemistry Olympiad. Following that experience I assumed leadership of the local section’s USNCO program and more than doubled the number of participating schools and students during the six years I was coordinator.

I resigned as USNCO coordinator to travel to Washington, DC as an Albert Einstein Distinguished Educator Fellow placed at the Department of Energy, Office of Science in 2014-2015. In this role, I worked on the National Science Bowl and also researched barriers to STEM for underrepresented minorities. The Fellowship opened up a new world to me so when my year was over, I left Wisconsin and moved to Vermont to develop and lead Vermont Academy’s STEM program.

In my current position, I am working with teachers and students from all disciplines to improve STEM education for all students. As councilor, I will bring my passion for chemistry and teaching to DivCHED and help lead the membership into the future.

Name: Marilyne Stains  
Position: Assistant Professor  
Institution: University of Nebraska-Lincoln  
Institution Type: Doctoral Universities, Highest Research Activity

My awareness of and involvement in chemical education research started when I entered graduate school at the University of Arizona. From this institution and under the supervision of Vicente Talanquer, I received a Ph.D. in Chemistry with a research emphasis in chemistry education. After three years of postdoctoral work with Hannah Sevian at the University of Massachusetts Boston, I started my position as assistant professor in the Department of Chemistry at the University of Nebraska-Lincoln (UNL).

My research program focuses on exploring various facets of the gap between instructional practices in chemistry courses in higher education and the results of chemical education research. I see chemistry faculty as significant players in closing this gap. I am thus particularly interested in characterizing faculty’s instructional practices and ways of thinking about teaching as well as identifying individual, departmental, and institutional factors that influence their instructional decisions. I am also conducting studies characterizing the impact of different types of pedagogical professional development programs.

I am actively working on closing the gap from a practical perspective as well. I have received funding from the National Science Foundation to develop, implement, and institutionalize pedagogical professional development programs for STEM faculty at UNL. These programs have been in place since spring 2013 and have educated over 70 STEM faculty.

My engagement with DivCHED consists of serving two terms on the Chemical Education Research committee. Within this committee, I have worked on the sub-committee on web site redesign and the sub-committee behind the New and Noteworthy Symposium that has taken place at ACS and Biennial Conference in Chemical Education (BCCE) meetings. I have also organized and facilitated chemical education research symposia at regional and national ACS meetings. I would be honored to represent and further the work of the Division by serving as a Councilor.
Name: Paul D. Price  
Position: Science Department Chairman  
Institution: Trinity Valley School  
Institution Type: high school

Paul D. Price is the Science Department Chairman at Trinity Valley School in Fort Worth, Texas, where he has taught chemistry, AP Chemistry, physics, and AP Physics since 1998. He earned a B.S. in Chemistry and Mathematics from Southwestern University in Georgetown, Texas and an M.S. in Chemistry from the University of Wisconsin-Madison. In 2004 the Dallas-Fort Worth Section of the American Chemical Society honored Paul with the Werner Schulz Award for Outstanding High School Chemistry Teaching. He has also been awarded the ACS Southwest Region Teacher of the Year in 2005.

Paul is a co-author of two chemistry laboratory manuals, a paper in the Journal of Chemical Education, and is a frequent presenter at regional and national conferences, often discussing techniques to improve and to assess molecular-level problem solving skills. Paul also has worked in creating and reading national assessments in chemistry. Paul is a question leader at the annual AP Chemistry reading and currently serves as the co-chair of the AP Chemistry Test Development Committee. Responsibilities on the Committee include overseeing the curriculum of the AP Chemistry program, as well as writing and reviewing test items and developing rubrics for the Advanced Placement Chemistry Examination. An ACS member since graduate school, Paul has worked with the DFW section of ACS in planning and executing National Chemistry Week activities. He has also been funded as part of a team to present inquiry laboratory workshops to teachers in the South Florida section for the past three years.

Paul’s interactions with numerous high school and college educators throughout the country have allowed him to understand the challenges chemistry education faces at both levels. He is excited to have the opportunity to continue to aid the Division as a Councilor.
Congratulations to the DivCHED members who have been recognized as 2016 ACS Fellows

The American Chemical Society has named the following DivCHED members as ACS Fellows for outstanding achievements in and contributions to science, the profession, and ACS. The new fellows will be feted at the society's fall national meeting in Philadelphia later this month. Congratulations!

Mary K. Carroll, Union College
Micheal W. Fultz, West Virginia State University
Scott R. Goode, University of South Carolina
Thomas B. Higgins, Harold Washington College
Judith Iriarte-Gross, Middle Tennessee State University
Barbara A. Reisner, James Madison University
Joan M. Sabourin, Delta College (Emeritus)
Ellen J. Yezierski, Miami University

2016 Award for Outstanding Service to the Division

The 2016 recipient of the 2016 Award for Outstanding Service to the Division is Arlyne (Mickey) Sarquis. The award will be presented at the Division's Sunday Reception on August 20, 2016 at the National ACS meeting in Philadelphia.

The following is from the nomination letter.

Mickey is an outstanding member of our chemical education community, our society, and our Division. Mickey not only epitomizes the best of the chemistry education profession but also demonstrates exemplary practices of service to our organization. Having been an ACS and CHED member for more than 37 years, Mickey has distinguished herself as an advocate for excellence in chemistry education, a tireless worker, and a true leader. She has helped to guide the path and growth of our Division through challenging times, helped to embrace the efforts and abilities of those at the precollege levels and worked to open opportunities for both our new and existing members.

Mickey was the first editor of the Secondary School Chemistry Section of the Journal of Chemical Education, a post she held for 17 years. During her term, with the approval of Editor Joe Lagowski and the Board of Publications, she established numerous avenues for precollege professionals and those with scholarly activities in these areas to publish and impact our profession in new and exciting ways. Division membership, the subscribership, and active involvement of precollege colleagues including myself, soared to record levels.

As our elected ACS Counselor for 5 years (2004–2009) and alternate counselor (1989–1991), Mickey not only represented CHED but also helped to formulate ACS policy assuring our voice was heard and included. During her terms on Nominations and Elections (elected council committee 2008–2010) and Membership Affairs Committee (council committee 2005–2008) she helped to set the pathway for our membership to be heard and stay involved.

Mickey served as our Division’s Chair in 2002 with pre/post succession responsibilities spanning the years before and after. She also has served on a myriad of committees including the Program, Publicity, Recognition, Long-range planning, Two Year College, and Biennial Conference on Chemistry Education committees. She also was an appointed member of the Society Committee on Chemical Education for 3 years. Mickey has been a presenter and symposium organizer at numerous BCCE and ACS Regional and National meetings. Additionally, she served as Program Co-Chair for the 19th BCCE held at Purdue University in 2006.

One of the most important contributions that Mickey has made to CHED, our profession, and the general public has been her outreach activities. Recognizing the importance of such efforts before it was in vogue, Mickey worked to improve the public recognition, perception, and appreciation of the contributions of chemistry. Over the course of her career, she has tirelessly been engaged in developing outreach activities, holding events, and mentoring her colleagues in the “how to” of successful outreach for the public. Through her encouragement and coaching, many Division members participate in outreach activities providing a far greater impact promoting a positive perception of chemistry. Mickey also served on the National Chemistry Week National Development Subcommittee and as NCW Advisor. Her efforts were rewarded in 2008 when she received the Helen Free Award for Public Outreach.
ACS Division of Chemical Education

International Travel Award

The Division of Chemical Education funds a Travel Award each year in support of a division member who presents and fully participates in an international chemical education conference held outside the U.S. The awardee will have the responsibility to communicate information and insights gained at the conference to the membership through available CHED publications and by postings on the DivCHED Website.

At the New Orleans meeting, the Executive Committee adopted guidelines developed by the International Activities Committee (IAC); these are described below. Questions as well as completed applications can be sent electronically on or before November 30, 2016, to Butch Atwood, the co-current chair of CHED IAC. He can be reached at chatwood@chem.utah.edu

Eligibility:
The applicant must be a member of the Division of Chemical Education and be a full-time college, university, or high school faculty member. Preference will be given to junior and/or under-represented faculty members who have not had the opportunity to attend an international meeting in chemical education.

Selection Process:
1. An announcement about the availability of this Award for the following year will be submitted for publication in the Fall CHED Newsletter, appropriate issues of JCE, and to C&EN News. The announcement will also be posted on the CHED website.
2. The application package is due November 30 each year. It should be sent to the Chair of CHED-IAC. The award, presently $2000.00, is made for the following year.
3. CHED-IAC members serving on the Awards sub-committee appointed by the CHED-IAC Chair will review the applications.
4. The selected applicant will be announced by January 15 each year. An alternate will be selected in case the original awardee is not able to attend.

Application Package (Electronic applications are preferred):
There is no formal application form. However, the application package must include:

- Description of the conference - provide the pertinent URL.
- Description of proposed participation in the conference.
- Statement of how attendance at the conference relates to professional responsibilities.
- Plan for dissemination of information from the conference to CHED members, including submission of a report to the CHED IAC Chair within three months of attendance at the conference. The report should be suitable for publication in the CHED Newsletter and for posting on the CHED website.
- Applicant’s Curriculum Vitae (no more than three pages).
- One letter of endorsement from a supervisor (for example: department chair, dean, principal, headmaster).
- An itemized estimate of expenses giving the amount of aid requested and sources of all supplemental funds.

The Dorothy and Moses Passer Education Fund,
Deadline September 1, 2016

Applications Being Accepted for The Dorothy and Moses Passer Education Fund.

This Fund was established by a generous donation of Dorothy and Moses Passer. Moses (Mike) Passer was for many years the head of the ACS Education Division. The Fund grants for teachers at two- and four-year colleges or universities that do not have any advanced degree programs in the chemical sciences.

The awards support continuing education activities that must be directly related to the applicant’s teaching and must take them away from their campus.

The applicant must be a full time faculty member at his or her institution. The applications are reviewed by a committee. There is no application form but the application must include a description of the proposed activity and how it relates to his/her teaching with dates, locations, titles and contacts; a brief description of the applicant’s institution and department; a short curriculum vita; an itemized estimate of expenses, amount of aid requested and sources of all supplemental funds. No support will be given for general attendance at national, regional or local ACS meetings or for any sabbatical support.

Closing dates are three times each year: January 1, April 1, and September 1. Applications may be submitted online http://www.divched.org/content/passer-education-grant-application-form or emailed in pdf format to the Chair of the Passer Education Grant Review Committee, Catherine MacGowan, catherine.macgowan@armstrong.edu.

Division of Chemical Education Travel Award,
Application Deadline is September 15, 2016

DivCHED provides this service to members to grant financial support for travel to meetings. Up to 12 members will receive the award each year. The DivCHED Travel Award provides up to 80% of travel expenses for one meeting with a limit of $1,000 for the BCCE or Spring National ACS Meeting. To be considered for this award, you must be in at least your third year as a member of the Division of Chemical Education at the time of application. The award application deadline is September 15, 2016. Visit http://divched.org/content/division-chemical-education-travel-award-application for more information and to apply.
Division of Chemical Education Travel Award
Deadline is September 15, 2016

DivCHED provides this service to members to grant financial support for travel to meetings. Up to 12 members receive the award each year. The DivCHED Travel Award provides up to 80% of travel expenses for one meeting with a limit of $1,000 for the Spring National ACS Meeting. To be considered for this award, you must be in at least your third year as a member of the Division of Chemical Education at the time of application.

From the 2014 Awardees....

“I got a good feel of DivCHED governance procedures by attending several DivCHED committee meetings... By attending these committee meetings, I got a good sense of where I might best fit in a leadership role. That inspired me to nominate myself for a committee position”

“My goals and expected outcomes were largely split into three areas: service, networking, and academic/professional growth in chemistry education research (CER). At the Denver meeting, my expectations for all three areas were met and exceeded thanks to the support of the Division of Chemical Education.”

“By attending the Spring ACS conference I was able to attend a committee meeting, preside over two symposia, give a talk, and meet with a number of other attendees one-on-one.”

“I was fortunate to not only attend a variety of talks and poster presentations in chemical education, organic chemistry and medicinal chemistry, but to engage in conversations and exchange information with people in all three fields.”

“As a result of this award I was able to attend my second ACS National Meeting and attended lectures, symposia, and Plenary Sessions and present a paper on my own work.”

Visit http://divched.org/content/division-chemical-education-travel-award-application for more information and to apply.
Committee on Computers in Chemical Education
Hosts Spring 2017 OLCC:

Cheminformatics: Introduction to the World of Chemical Data

In today's emerging world of big data and Interconnected science it is critical for tomorrow’s chemists to develop skills in the handling of data. You are invited to participate in the Spring 2017 Cheminformatics OLCC, a multi-campus collaborative taught course sponsored by the ACS CHED and CINF.

- This course is conducted using blended learning involving online guest lecturers and resident faculty facilitators.
- Students and faculty interact with experts in the field of cheminformatics.
- No programming skills are required to participate.
- Students will gain experience in basic programming and accessing public chemical databases programmatically.
- Student projects provide opportunities to collaborate across multiple institutions, both academic and nonacademic.

For 20 years OLCCs have provided chemistry instructors the opportunity to offer new courses outside their area of expertise.

For further information contact
Bob Belford (rebelford@ualr.edu) or
Jennifer Muzyka (jennifer.muzyka@centre.edu)
**Nomination Form for CHED Committees & Elected Positions**

Below are listed the various committees or elected positions of the CHED Division. If you are interested in serving, or if you know of division members who are willing to become involved please fill out this form. For more information, please visit the Division of Chemical Education website at <www.acs.org> or contact the individuals listed below.

**Committees**
- Biennial Conference Committee (BCC)
- Chemistry Education Research Committee (CER)
- Chemistry in the Two Year College (COCTYC)
- Computers in Chemical Education (CCCE)
- Finance (FC)
- High School Chemistry (HSCC)
- International Activities (CIA)
- Long-Range Planning (LRPC)
- New Member (NMC)
- Passer Portfolio (PPC)
- Personnel & Nominations (CPN)
- Program (PC)
- Recognition (RC)
- Regional Meetings (RMC)
- Safety (SC)
- Younger Chemistry Education Scholars (YCES)

**Elected Positions (3 year terms)**
- Chair-Elect (Chair, Immediate Past Chair)
- Secretary/Councilor
- Treasurer
- Member-at-Large (3 positions)
- Alternate Councilor (4 positions)

**Boards**
- Board of Publications (J. Chem. Ed.)
- Board of Trustees (Exams Institute)

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**Jennifer Lewis, Chair, Personnel & Nominations**
University of South Florida
Department of Chemistry/
Department of Women’s & Gender Studies
4202 East Fowler Avenue FAO 011
Tampa, Florida 33620
[jennifer@usf.edu](mailto:jennifer@usf.edu)

**Catherine Middlecamp, 2016 Executive Committee Chair**
University of Wisconsin-Madison
Department of Chemistry
550 N Park St.
Madison, WI 53706-1404
[chmiddle@wisc.edu](mailto:chmiddle@wisc.edu)
**Division of Chemical Education Teaching Excellence Endowment**

Why are you a chemist? Many of us would agree with Eli Pearce, Past President of the American Chemical Society (ACS), when he said “my excellent high school teacher was definitely responsible for my choosing chemistry as a career.” And now you can join the effort to ensure that the great teachers who launch so many scientific careers are recognized and rewarded by their professional society!

The ACS Division of Chemical Education has stepped forward to establish an endowment that will support awards for high school science teachers in every Region of the ACS. By establishing an effort to solicit funds for the Division of Chemical Education Teaching Excellence Endowment, the Division is making a firm financial commitment to high school science teaching, ACS Regions, and the profession of chemistry. But the project will not be successful without your help.

Our goal is not just a financial one; we are anxious to assemble a lengthy list of donors containing names, of both individuals and collective entities, that will demonstrate to the secondary education community that there is a large number of science professionals who appreciate the value of good science teaching in the Nation's high schools and who are willing to reward it.

Join other individuals and organizations that have already contributed to the. Most of all join what will be thousands of people who know, without that special teacher, their future would look very different.

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**DivCHED Publications**

Division Members are involved in a wide variety of activities that lead to publications in the area of chemical education.

The Journal of Chemical Education is the main publication outlet for the division.

DivCHED is also responsible for the publication of the ACS Exams via the Examinations Institute.

Other journals in which Members publish scholarly articles include:

- The Chemical Educator
- Education in Chemistry
- Science Education
- Journal of Research in Science Teaching
- International Journal of Science Education
- Journal of College Science Teaching
- The Science Teacher
- ChemMatters
- Chemistry Education Research and Practice
I want to help ensure that our great teachers are recognized and rewarded!

I am donating $________________ to the Endowment.

Select category:

- Lead up to $99
- Tin $100-249
- Iron $250-499
- Nickel $500-999
- Copper $1000-2499
- Silver $2500-4999
- Gold $5000-9999
- Platinum $10000 or more

NAME(S) to appear on donor's list: ____________________________________________________________
(PLEASE PRINT)

Address ___________________________________________________________________________________
__________________________________________________________________________________
(city)     (state)   (zip)

Phone ___________________________________ Email ______________________________________

Date ___________________________________

____ My gift is given in honor of ____________________________________________________________

____ My gift is given in memory of __________________________________________________________

Select method of payment:

____ Check:
Payable to: The American Chemical Society Division of Chemical Education Teaching Excellence Endowment

____ Credit card (select one):
     ___ Visa     ___ MasterCard     ___ American Express

     Card number ___________________________________________ Expiration date ______________
     Cardholder name ________________________________________
     Signature _____________________________________________

____ Stock transfer (call 800-227-5558 ext. 8092 for instructions)

Mail to:  The Department of Meetings and Expositions Services/CHED HS Fund
                 American Chemical Society
                 1155 16th Street NW
                 Washington, DC  20036

Thank you for your contribution. All gifts of $250 or more will be acknowledged in writing. Acknowledgment will be sent to others upon request.
Membership Form

Introduce a friend, colleague, or student to the Division of Chemical Education!

I wish to join DivCHED: _____ as a Member, $20/year (for ACS members only)
_____ as an Affiliate, $20/year (for non-ACS members).

Affiliates have all membership privileges except voting for
CHED Councilors and holding elective office.

New members will receive information about CHED in general and about its major activities such as the
Exams Institute, the Journal of Chemical Education/JCE Software/JCE Online, and 2YC3.

General Information
Your Name: _____________________________________________

Home Address: ☐ Send mailings here
Work Address: ☐ Send mailings here

email: _____________________________ email: _____________________________

☐ Send me an ACS Membership Application Form—this form is also available online:
https://center.acs.org/applications/acsmembership/join.cfm

Did anyone encourage you to become a DivCHED member? ☐ Yes ☐ No
If yes, who? _______________________________

Payment Information
Payment ($20) must be made in U.S. funds on a U.S. bank—by draft or credit card. Purchase orders not
accepted. There is a $30 charge for all returned checks.

☐ Check or money order enclosed, payable to Division of Chemical Education, Inc.
☐ MasterCard ☐ VISA ☐ American Express ☐ Discover

Credit Card Number
Expiration Date Month: _____ Year: _____

Signature of Card Holder: _______________________________

Return This Form
Anna Wilson
Treasurer, ACS Division of Chemical Education 765/474-6553
2225 S. Earl Avenue wilson@purdue.edu
Lafayette, IN 47905