Welcome to the 223rd 2YC₃ Conference

“Celebrate Partnerships and Innovation”

August 23rd – 24th, 2019

10440 Black Mountain Rd.
San Diego, CA 92126

2yc3miramar2019.org
223rd 2YC₃ Conference Planning Committee

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SAN DIEGO MIRAMAR COLLEGE
CHEMISTRY
Parking Information
A parking pass will be provided electronically, and this permit is valid in any regular staff or student space on campus (not in MTS parking). We encourage you to park in Lot 3 or the G-3 garage. Please note that a permit is not required on Saturday and all parking garages will be closed on Saturday.

Rideshare Information
Miramar College Transit Center should be entered as the destination for Rideshare trips to Miramar College. This drop off location should be near Lot 3.

Wi-Fi Information
The Wi-Fi on campus is Miramar Wireless and the password is miramarfall2019.
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| 9:15 - 10:00 am | Keynote Address 1 - Kalyn Owens  
Using an Investigative, Interdisciplinary and Equitable Framework to Make Science Learning Meaningful for all Students  S6-103 |
| 10:00 - 10:45 am| 2YC3 Membership Meeting  S6-103                                                         |
| 10:45 - 11:15 am| Refreshment Break and Exhibits  S6-110                                                  |
| 10:45 am - 12:15 pm| Thomas Wenzel and Scott Donnelly  
Active Learning in Chemistry Classroom and Laboratory Experiences  S5-106 |
| 11:15 - 11:45 am| Katherine Maloney  
Lessons from the S-STEM CS Program at PLNU  S6-103                                  |
|                 | Julie Ellefson  
Chemistry and Sustainability: From the Chicago Suburbs to the Costa Rican Rainforests  S6-107 |
| 12:00 - 12:30 pm| Melanie Harvey  
The Impact of a Course-Based Undergraduate Research Experience on Non-major Community College Chemistry Students  S6-103 |
|                 | Student Panel – Marielle Cooper, KathyJean Farnam, and Alisa Peshina  
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| 12:30 - 1:30 pm | Exhibits and Lunch Break  S6-110 and K1-107                                             |
| 1:30 - 3:00 pm  | Regis Komperda and Jack Barbera  
Assessing Assessments: Strategies to Identify and Evaluate Instruments for Classroom and Research Needs  S5-106 |
|                 | Ashley Donovan and Andrew Feig  
New Faculty Workshop: Identifying Future Community College Workshop Facilitators  S5-108 |
| 1:30 - 2:00 pm  | Jon Holmes and Scott Donnelly  
Chemical Education Xchange: An Interactive Hub for Chemistry Educators  S6-103 |
| 2:15 - 2:45 pm  | Deanna Cullen and Scott Donnelly  
Chemical Education Xchange: Helping to Shape the Future Landscape of Chemistry Education  S6-103 |
| 3:00 - 3:45 pm  | Refreshment Break and Exhibits  S6-110                                                  |
| 3:45 - 4:30 pm  | Keynote Address 2 - Kara Taylor  
Exploring Beer Chemistry and Methods of Analysis  S6-103                                |
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Keynote Speakers

“Using an Investigative, Interdisciplinary and Equitable Framework to Make Science Learning Meaningful for all Students” by Kalyn S. Owens

Dr. Owens is a Professor in the Department of Chemistry at North Seattle College. She obtained her Ph.D. from UC Davis and then conducted her postdoctoral research at the University of Washington, College of Education. Dr. Owens is passionate about designing innovative curriculum for early post-secondary STEM courses with emphasis on embedding interdisciplinary research and engaging students in social construction of new knowledge. Her research is centered on documenting the impact these methods have on student learning and faculty teaching practices. In addition, Kalyn has directed several NSF-funded research projects that serve to foster a sense of community as a means to increase persistence and participation in STEM. She is also the co-director of the undergraduate research program at North Seattle College, which has served as a national model for how to engage students in research early in the college experience. When not in the classroom or conducting educational research, Kalyn loves to spend time with her family and friends in the outdoors—hiking, camping, skiing, travelling and kicking the soccer ball around.

“Exploring Beer Chemistry and Methods of Analysis” by Kara Taylor

Kara Taylor has been with White Labs since 2009. She became interested in fermentation science while homebrewing during her days at Loyola Marymount University. She received a B.S. in biology in 2009 and began employment at White Labs in San Diego as a yeast laboratory technician. Since November 2018, she functions as the Technical Laboratory Manager. She enjoys traveling the world judging beer and educating brewers about fermentation.

Panel Discussion: Partnerships with Two-Year Colleges in the San Diego Area

Dr. Edward Alexander is a Professor in the Chemistry Department at San Diego Mesa College. He is the principal investigator of the NIH funded Bridges to the Baccalaureate Program.

Dr. Jessica Bell is an Associate Professor in the Department of Chemistry and Biochemistry at the University of San Diego. She is involved in the Malate Dehydrogenase Course Based Undergraduate Research Experiences (CUREs) Community project, funded by a grant from the National Science Foundation.

Dr. Suzanne Hizer is the program coordinator for the California Institute for Regenerative Medicine (CIRM) Bridges to Stem Cell Research Program at California State University San Marcos.

Dr. Christal Sohl is an Assistant Professor in the Department of Chemistry and Biochemistry at San Diego State University. She has established a mentoring program, MINDSET (Maximizing INclusion and Diversity in Science, Engineering, and Technology), that strives to diversify the San Diego STEM workforce.

“Integrated Monitoring, Management, and Education in San Diego’s Coastal Wetlands” by Jeff Crooks

Dr. Crooks has been the Research Coordinator of the Tijuana River National Estuarine Research Reserve, a Marine Protected Area just north of the US/Mexico border, since 2002. Jeff runs the reserve’s research and monitoring program, which focuses on using sound science to adaptively manage urban marine ecosystems such as salt marshes and lagoons.
Presentations (Alphabetical by author’s last name)

Edward C. Alexander – “A Research Partnership that Enhances Student Transfer and Success: The Bridges to the Baccalaureate Program at San Diego Mesa College”
San Diego Mesa College – San Diego, CA
San Diego Mesa College is a leader in the transfer of students to four-year institutions. It has consistently ranked in the top 6% of all community colleges in the transfer of students in the STEM disciplines to the University of California. This success is largely due to strategies implemented by its chemistry department. While overall transfer rates of science students at the college have been consistently high, transfer in the sciences by students from under-represented minority groups (URM’s) has been low. In 2005, San Diego Mesa College received a three-year National Institutes of Health (NIH) Bridges to the Baccalaureate grant to establish a unique research alliance with the University of California at San Diego (UCSD). After implementation, transfer rates among URM students increased dramatically. Success of the Bridges to the Baccalaureate Program has resulted in additional NIH funding for two consecutive five-year cycles. This presentation discusses the Bridges to the Baccalaureate Program, and the strategies it uses to strengthen student transfer and achievement.

John Amend – “Removing Barriers to ‘Hands-on’ Electrochemistry”
Montana State University – Bozeman, MT
Electrochemistry is somewhat of a stepchild in the college chemistry curriculum. It usually appears late when time is short in both Introductory and General Chemistry courses. And it has a confusing way of setting up its standards that make it a prime candidate for memorization without understanding. But electrochemistry is important and is all around us. “Hands-on” electrochemistry deserves a place in the first-year college chemistry course.

There are several barriers to “hands-on” electrochemistry labs:
• Chemical cost, waste disposal, and prep time: Introductory electrochemistry experiments require samples of many different elements, and solutions of each of their ions at several different concentrations and temperatures.
• Delay between student collection of data and visualization: When students don’t initially see a concept, even a short delay between collection of electrochemical data and organizing and visualizing it can break their thought process. Educational research has shown that this delay should be less than a minute. Ordered data tables and graphs must be created quickly, preferably as the data arrives.
• Safety and sample availability: Demonstration of the wide range of electrochemical behavior present in nature can involve samples often judged too dangerous or expensive to use in a student lab.

These barriers combine to make affordable “hands-on” student laboratory experience with electrochemistry a challenge. We will demonstrate some new tools, software, and experiments to help minimize these problems.

• Small chemical samples improve safety and can significantly reduce your chemical and waste-disposal costs – often by a factor of ten. They will greatly reduce the time you spend on prep for electrochemistry demonstrations or student experiments.
• New software helps students organize and visualize data as it arrives. They quickly prepare graphs and identify trends and cause-and-effect relationships.
• A new Electronic Electrochemical Half-Cell module brings instant access to 194 electrochemical half-cells, including Standard Hydrogen and Ag/AgCl reference electrodes, for demonstration or laboratory. It provides a seamless transition from “wet” to electronically generated electrochemical cells, and makes possible safe, quick exploration of the electrochemical behavior of important elements often judged dangerous or expensive.
• Experiments involve forced and spontaneous electrochemical reactions – electroplating, the electrochemical series, exploration of Nernst Variables, and electrogravimetric determination of atomic mass, ionic charge, and Avogadro’s number.
Jessica Bell1, Joachim Latzer2, David Hecht2 – “Community College and University Partnerships Built Through a Collaborative CURE”

1University of San Diego – San Diego, CA
2Southwestern College – Chula Vista, CA

CUREs (Course-based Undergraduate Research Experiences) offer a means to engage a larger number of students with a high impact practice – research. Yet the divide between excellent pedagogical practice and implementation is often one of practicality. How can it be done efficiently, effectively, and budget-wise? We have implemented a protein-centric CURE in courses taught at multiple institutions, including community colleges, public and private PUI’s, and R1 institutions. The intentionally collaborative nature of the project has allowed faculty from institutions with limited resources to offer a high-level research experience to students at early to capstone levels. Shared resources and experiences were critical to successfully piloting and sustaining a CUREs course. For example, University of San Diego generated plasmids and bacterial stocks of wild type and mutant protein coding sequences that were then sent as bacterial pellets and/or purified proteins to Southwestern College. The shared materials have allowed a more sophisticated project to be undertaken by the community college students than the college’s facilities, time, and budget would typically have allowed. Despite geographical separation, faculty have set up real-time video collaborative meetings between students and faculty at participating institutions. These conferences have enhanced students’ sense that their work is important and that they are members of a larger scientific community. Faculty have shared teaching materials and met at summer conferences to share experiences, best practices, and technical expertise. The principal investigators have encouraged their collaborators to participate at the level that fits their situations, allowing for the partners to build slowly and explore what pieces and approaches are successful in their courses. At Southwestern College, the CURE has been implemented as a “modular” project for 5 weeks. In this presentation, we will share ideas, “boots on the ground” experiences, and encouragement for those wanting to initiate and implement a collaborative CURE which partners a community college with a 4-year institution.

Mark Blaser – “Open Learning Initiative General Chemistry Courseware”
Shasta College – Redding, CA

The Open Learning Initiative (OLI) General Chemistry course is an Open Educational Resource (OER) that plays the role of both a textbook and online homework system. Adapted from the OpenStax Chemistry textbook, this course uses research-based best practices for instructional design to provide a fully integrated learning experience for the student. The OLI courseware includes informative text, guided practice, scaffolding, “learning by doing” activities, formative and summative assessment, and clear alignment between learning objectives, activities, and assessment. A wide range of media elements are used to provide an engaging and effective learning experience. These include images, interactives, simulations, videos, animations, and virtual labs. Almost all activities provide hints and targeted feedback to students as they work through the material. The system also collects detailed data on student interactions with and performance on the numerous activities woven throughout the course. This data is shared with the student and instructor via the Learning Dashboard, which summarizes progress on key concepts and learning objectives. This allows instructors to adapt their in-class instruction to student needs and to provide a richer and more effective learning experience. This comprehensive course can be used in multiple instructional contexts, including a flipped classroom. Lecture can be replaced with the students working through the courseware. With the data provided to the instructor, class time can be spent addressing specific areas where students are struggling. The data can also be used to help form productive groups for in-person, small-group problem solving during class time, where instructors are available to help students work through problems and students are encouraged to learn from one another. A 30-minute presentation will provide an overview of the features, design, and use of the OLI General Chemistry courseware. A 90-minute workshop will also allow participants to interact with the OLI courseware and discuss how it can be used effectively in a college level General Chemistry course. Access to the courseware will be available to those who wish to explore it further.
Stacey Lowery Bretz – “Measuring Students’ Understandings of Multiple Representations in Chemistry”  
Miami University – Oxford, OH  
Learning chemistry requires students to become fluent in the symbolic language of chemistry. Developing expertise requires that students move beyond manipulating symbols to create explanations using particulate models of matter for observations in the laboratory. Failure to accurately interpret and connect these multiple representations of matter creates challenges for students. Our research group has designed a suite of measurement tools to advance our understanding of how students interpret representations for a variety of core concepts. Our two most recent concept inventories measure students’ understandings of (1) the enthalpy and entropy changes that occur during solution formation and precipitation and (2) the electronic structure of the atom with regards to both probability and energy quantization. Results from these two inventories with undergraduate students enrolled in first-year college chemistry, physical chemistry, and biophysical chemistry courses will be presented.

Francis Burns – “Assessing Critical Thinking Skills Through Self and Peer Evaluation”  
University of South Carolina Salkehatchie – Walterboro, SC  
Critical thinking skills are valued both in academia and in the workplace; however, assessment of these skills can be challenging and complex. Standardized examinations provide limited information about students’ skills related to problem solving, evaluation, and creativity. In my research, I learned that the use of peer-evaluation and self-evaluation activities provide information about students’ critical thinking skills. I have developed an assessment method through the adaptation of Blackboard’s “Self and Peer Assessment’s tool”. My presentation will detail my process for assessing students’ critical thinking skills. I will discuss the promises and the problems discovered in my research conducted at both Ferris State University and the University of South Carolina Salkehatchie.

Deanna Cullen¹ and Scott Donnelly² – “Chemical Education Xchange: Helping to Shape the Future Landscape of Chemistry Education”  
¹Chem Ed X – Montague - MI  
²Arizona Western College – Yuma, AZ  
Chemical Education Xchange is an interactive professional learning community for chemistry educators. It aims to foster sharing of digital resources, information, and ideas among chemical educators. The authors of this presentation will provide insight into what ChemEd Xchange has to offer, and what role the editor’s play in shaping the contribution landscape and future goals for the ChemEd X high school and two-year college communities. The ChemEd X platform is always evolving; it’s a “virtual living organism”. The ChemEd X platform for the two-year college community component officially rolled out August 2019. In this presentation we would like to canvas your ideas and thoughts regarding how to make ChemEd Xchange the first choice option for you-the practitioners of chemistry education.

Jon Holmes¹ and Scott Donnelly² – “Chemical Education Xchange: An Interactive Hub for Chemistry Educators”  
¹University of Wisconsin-Madison – Madison, WI  
²Arizona Western College – Yuma, AZ  
The purpose of this presentation is to provide an overview to the two-year college (TYC) community of the ChemEd X online idea exchange platform for chemistry educators. In short, ChemEd X aims to foster sharing of digital resources, information, and ideas among chemical educators. Furthermore, a major emphasis of ChemEd X is to better serve TYC faculty by delivering in real time accessible, quality chemistry education content and ideas that can be used in TYC faculty classes and/or labs. ChemEd X offers TYC faculty the opportunity to collaborate with colleagues across the country, to share intellectual resources and classroom experiences, and, of course, to access content for learning, including activities/ideas that can be implemented in the classroom and/or lab. ChemEd X also provides an opportunity for TYC faculty to publish via the interactive platform for works in progress and collaborations while teachers work to transfer those researched practices into their own teaching curriculum.
Madison Edwards¹ and Pierre Goueth² – “Graduate Student-Faculty Collaboration in Support of Student-centered Instructional Reform at Two-year, Hispanic-serving Institutions”
¹University of California, San Diego – La Jolla, CA
²MiraCosta College – Oceanside, CA
Comparison of student performance in classrooms utilizing traditional (didactic) lecture versus student-centered instructional strategies in STEM courses has revealed that the latter reduce the number of failing students and increase average examination scores. Moreover, there is an increasing amount of evidence suggesting that active learning is especially beneficial for students who are underrepresented in their field of study. The NSF-funded project “Implementing Active Learning Strategies in Two-year Hispanic-serving Institutions (2Y-HSIs)” aims to promote the engagement and retention of diverse students in undergraduate STEM studies in San Diego and Imperial Counties. A defining component of this program involves the pairing of a graduate student from the University of California, San Diego with faculty from local 2Y-HSIs to achieve the program aims. This presentation will provide a graduate student and faculty perspective of this unique pilot program, along with the implementation and assessment of the course redesign.

Julie Ellefson – “Chemistry and Sustainability: From the Chicago Suburbs to the Costa Rican Rainforests”
Harper College – Palatine, IL
Students in chemistry classes at Harper College list climate change, water issues, food waste, and plastics in the ocean among the issues our society must currently address. From the opportunity to develop a study abroad chemistry course for the honors program at Harper, Chemistry and Sustainability emerged to give students hands-on exposure to solutions to these pressing global issues. This liberal arts laboratory course culminated in a nine-day trip to Rancho Mastatal, a sustainability education center in Mastatal, Costa Rica. An overview of the course, the collaboration between the course instructor and the team at the ranch, the student experience, and future plans will be discussed.

Melanie Harvey – “The Impact of a Course-Based Undergraduate Research Experience on Non-major Community College Chemistry Students”
Johnson County Community College – Overland Park, KS
Course-based undergraduate research experiences (CUREs) are being championed as scalable ways of involving more undergraduates in meaningful research. There are many advantages and benefits for both the students and faculty to conducting authentic research as part of a regular laboratory course. An interdisciplinary partnership between the students and faculty in a microbiology lab course and an introductory organic and biochemistry lab course was developed. This research with a focus on crowd-sourcing the search for new antibiotics using CURE’s in two different lab courses will be discussed. Students in the chemistry course were asked to evaluate this CURE for elements of discovery, iteration, and collaboration. The students were also given a pre- and post-surveys to measure any gains in their understanding of the nature of science and scientific research after participating in this authentic research experience. The results of these surveys will be discussed.

Katherine Maloney – “Lessons from the S-STEM CS Program at PLNU”
Point Loma Nazarene University – San Diego, CA
Increasingly, big problems in STEM require the collaborative work of interdisciplinary teams employing computational methods, yet formal coursework in computational techniques is relatively rare in science programs. The S-STEM CS Scholars program at Point Loma Nazarene University, funded by the NSF in 2015, provides scholarships for academically talented students with high financial need who are majoring in a STEM discipline and minoring in computational science. In this presentation, I’ll provide institutional context, program details, and some preliminary results from our S-STEM program at PLNU. For those who are considering applying for an S-STEM grant, I’ll also share some of what I’ve learned from reviewing S-STEM proposals for the NSF, including recent changes to the program.
Gino Romeo – “Relieve Your Anxiety About Meeting Quality Matter© (QM) Standards for Your Online Course”
Yavapai College – Prescott, AZ
Getting your online (or hybrid) course to meet the QM Essential Standards© is less of a challenge than you may think. It’s likely you are almost there! Join me to discover just how close you are to meeting the standards that will support you in designing a quality online course created with your students’ success in mind. This presentation will begin with a brief overview of my Fundamental Chemistry, CHM130 online course. I will then share with you how I redesigned various course components so they better support my students through meeting QM Standards. The course was developed using Canvas.

Veronica Wheaton – “‘Speed Studying’ & ‘Can U..?’ Lecture Activities”
American River College – Sacramento, CA
I used to begin each lecture with a quiz in an effort to check student understanding of the previous lecture material before moving forward. My thought in doing so was that I was helping students with knowledge acquisition; in reality, I found that I was actually assessing their ability to memorize what happened in the previous lecture knowing that a quiz was imminent while increasing my grading pile. I adopted my “Speed Studying” and “Can U?” techniques as a way of having students interact more during lecture, practice presenting scientific information, and assess the ability to apply the information from multiple topics through discussion. The “Speed Studying” follows the introduction to the periodic table where I have students adopt an element to use during the remainder of the course. Students interact with each other on the topic given using only their knowledge and their periodic tables in timed rotations throughout the room. The “Can U?” portion is then a follow-up written exercise where students answer a prompt from me about something they learned during their interactions. This workshop will demonstrate the techniques, give an opportunity for participants to try out the techniques, and then leave time for questions and feedback. While there is nothing fancy or technologically advanced about the techniques the students seem to benefit from the practice of speaking their scientific knowledge one on one, and beginning lecture with more activity seems to help focus throughout the remainder of the lecture.

Workshops (Alphabetical by author's last name)

Regis Komperda¹ and Jack Barbera² – “Assessing Assessments: Strategies to Identify and Evaluate Instruments for Classroom and Research Needs”
¹San Diego State University – San Diego, CA
²Portland State University – Portland, OR
Collaborators: Jordan Harshman (Auburn University) & Thomas Pentecost (Grand Valley State University)
Understanding student learning in chemistry courses requires accurate and precise measurement of variables including content knowledge, student attitudes, and the learning environment itself. Making high-quality measurements of these variables requires the utilization of appropriate assessment instruments for specific contexts and student populations. Chemistry educators and chemistry education researchers have many options available when selecting instruments; they can 1) utilize a published instrument from the literature, 2) modify an existing instrument to better fit their requirements, or 3) create their own instrument. While utilizing an existing instrument is often easier than creating a new one, it can be difficult to navigate the literature to identify an appropriate instrument and then interpret the research data to understand if the instrument is suitable for a specific situation.
This workshop will focus on strategies to support option 1. To aid participants in navigating the often jargon-heavy literature on assessment instruments, this workshop will discuss the practices used to provide evidence of validity and reliability for assessment instrument data. As a result, participants will gain experience in the review and selection of a published instrument. The majority of the workshop time will be spent discussing and evaluating available evidence using examples of instruments already available in the chemistry education literature. Participants will be invited to discuss their own assessment needs so that the sources of evidence and instruments explored during the workshop are relevant to participants’ own teaching and research goals.
Mark Blaser – “Open Learning Initiative General Chemistry Courseware” (Laptop recommended for workshop)
Shasta College – Redding, CA

The Open Learning Initiative (OLI) General Chemistry course is an Open Educational Resource (OER) that plays the role of both a textbook and online homework system. Adapted from the OpenStax Chemistry textbook, this course uses research-based best practices for instructional design to provide a fully integrated learning experience for the student. The OLI courseware includes informative text, guided practice, scaffolding, "learning by doing" activities, formative and summative assessment, and clear alignment between learning objectives, activities, and assessment. A wide range of media elements are used to provide an engaging and effective learning experience. These include images, interactives, simulations, videos, animations, and virtual labs. Almost all activities provide hints and targeted feedback to students as they work through the material. The system also collects detailed data on student interactions with and performance on the numerous activities woven throughout the course. This data is shared with the student and instructor via the Learning Dashboard, which summarizes progress on key concepts and learning objectives. This allows instructors to adapt their in-class instruction to student needs and to provide a richer and more effective learning experience. This comprehensive course can be used in multiple instructional contexts, including a flipped classroom. Lecture can be replaced with the students working through the courseware. With the data provided to the instructor, class time can be spent addressing specific areas where students are struggling. The data can also be used to help form productive groups for in-person, small-group problem solving during class time, where instructors are available to help students work through problems and students are encouraged to learn from one another. A 30-minute presentation will provide an overview of the features, design, and use of the OLI General Chemistry courseware. A 90-minute workshop will also allow participants to interact with the OLI courseware and discuss how it can be used effectively in a college level General Chemistry course. Access to the courseware will be available to those who wish to explore it further.

Erin Brocker and Kristin Clark – “What General Chemistry Topics Do You Cover?”
Ventura College – Ventura, CA

Based on previous work presented at a local chemistry consortium and a 2YC3 Newsletter, we would like to find the topics we love to teach and need to teach to build more successful courses. Have you ever struggled to cover every topic in General Chemistry? Are you racing through chapters covering topic after topic struggling to keep up? Let’s get together and generate a list of topics ranked by: Cover It, Cut It, Revise It. We will split into General Chemistry I and General Chemistry II topics and informally survey participants with ZipGrade Questionnaires that will show the response of each participant’s answer by quickly scanning their forms with an app. We can discuss and determine how to build more meaningful courses that cover the course outline of record without overwhelming students and jumping from topic to topic. Dr. Dee Dee Allen, Vincent Mark Cristomo and colleagues began an inquiry into what topics have become more of a focal point in our classroom and what topics we have decided have become less important. Come join us and add to the conversation about what you feel are topics that help students only in one sequence or stay and answer the survey for the year-long sequence of General Chemistry. We can quickly scan the forms and share the output as an aggregate of data and find common ground to better our courses.

Shayna Burchett\textsuperscript{1} and Jack Lee Hayes\textsuperscript{2} – “Innovations and Partnerships Through the ACS: A Resources for Excellence Workshop”
\textsuperscript{1}Missouri Southern State University – Sedalia, MO
\textsuperscript{2}State Fair Community College – Sedalia, MO

Being a chemistry educator at a community college is a rewarding adventure filled with obstacles and challenges. How do you gain or maintain articulation with receiving institutions? How do you maintain proper safety standards? How do you balance pedagogical rigor with administrative desires to be online? Is undergraduate research possible and what assistance is available to support your efforts? Do your stakeholders want a technical program? We will help you explore the free resources on the ACS website, Chemical Education in Two-Year Colleges. In this session, we invite you to share your experiences with your colleagues and explore applications for your needs.
Ashley Donovan¹ and Andrew Feig² – "New Faculty Workshop: Identifying Future Community College Workshop Facilitators"
¹American Chemical Society – Washington, DC
²Research Corporation for Science Advancement – Tucson, AZ

The New Faculty Workshop (NFW) focuses on developing essential skills that faculty need to successfully navigate the early years of their academic careers, with a particular emphasis on implementing active learning techniques in the classroom. The goal of the proposed Miramar 2YC3 Conference workshop is to identify potential facilitators for a future NFW that will be modified to meet the unique demands of community college chemistry faculty. The proposed workshop will give interested faculty an opportunity to consider the current format of the NFW, select an NFW session of interest, and then develop and present a 30-minute version of the session to other workshop attendees. Participation in the proposed workshop is not a guarantee of invitation to facilitate a future NFW, but chemistry faculty with demonstrated experience utilizing active learning strategies in their classrooms are strongly encouraged to attend.

Thomas Wenzel¹ and Scott Donnelly² – “Active Learning in Chemistry Classroom and Laboratory Experiences”
¹Bates College – Lewiston, ME
²Arizona Western College – Yuma, AZ

Traditional methods of teaching chemistry have emphasized the coverage of content areas. Laboratory experiments are often designed to reinforce material covered in the lecture and develop competency at hands-on activities. Many skills that are important for success in employment opportunities (e.g., oral and written communication, ability to work with others, problem-solving, use of the primary literature) are not emphasized in traditional teaching methods. Recent reports on science education emphasize the value of inquiry-based, problem-based and cooperative learning in undergraduate courses as a way of promoting skill development. Incorporation of these pedagogies into the chemistry classroom and laboratory experience has its challenges. This workshop will focus on strategies for including active learning in the classroom and laboratory. While the facilitators will focus on classes with an analytical chemistry focus including forensics and environmental chemistry and resources available through the Analytical Sciences Digital Library (http://community.asdlib.org/activelearningmaterials/) under the Creative Commons Copyright, the general approaches and strategies being discussed will be relevant for all chemistry courses.
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