

| Room          | 8:30am-9:15am   | 9:30am-10:15am   | 10:30am-11:15am   |
|---------------|---|--|---|
| DC 1302       | <b>George R. Hague Jr AP Symposium</b><br>Organized by Harvey Gendreau<br>Presenters: Serena Magrogan, Jamie Benigna, Paul Price, Dennis Kliza, Terri Taylor, Diane Krone, Bettyann Howson, Michael Jansen, Roger Kugel |  |   |
| MC 2017       |   | <b>“Tales of the Unexpected”: How do UK schools cope with “Chemophobia” and “Chemophilia”?</b><br>Bob Worley, CLEAPSS, UK  |   |
| QNC 1502      | <b>Chemophilately: Chemistry and chemists on stamps</b><br>Harry Herzer,<br>Oklahoma State University, OK   | <b>Design on a dime for science rooms</b><br>Brenda Fickenscher,<br>Colorado science teacher, CO   | <b>Chemistry in comics</b><br>Al Hazari,<br>University of Tennessee, TN   |
| QNC 2502      | <b>Chemistry of hydroponics</b><br>Jeff Bracken,<br>Westerville North High School, OH, with Jessica Waites  | <b>Teaching thanatochemistry in a funeral service program</b><br>Wheeler Conover,<br>Southeast Kentucky CTC, KY  | <b>Chemistry applies to agriculture too!</b><br>Jeff Bracken, Westerville North High School, OH   |
| ESC 146 (LAB) | <b>“Test tube geology” and “Mining for metals” introduce a scientific writing heuristic</b><br>Kara Pezzi, Appleton East High School, WI<br><b>Maximum participants: 20</b>   |  |   |
| ESC 149 (LAB) |   | <b>“Erupting” with enthusiasm: Using a case study to guide inquiry in your classroom</b><br>Gina Morrison Barrier, The Science House, NC State University, NC<br><b>Maximum participants: 30</b> |   |
| QNC 1506      | <b>Chemistry in the Community 6th edition - Reinventing itself</b><br>Michael Mury,<br>American Chemical Society, DC, with Bonnie Bloom, Pam Diaz, and Cece Schwensen   | <b>Introducing the ChemMatters compilation project</b><br>Marta Gmurczyk,<br>American Chemical Society, DC, with Steve Long, Patrice Pages, and Susan Cooper                                     | <b>Inclusion of unit culminating projects in high school chemistry</b><br>Michael Mury,<br>American Chemical Society, DC, with Steve Long, Bonnie Bloom, and Pam Diaz     |
| QNC 1507      | <b>Experiment and presentation project as alternative assessment for 11 chemistry students in Singapore</b><br>Alfred Chan, Raffles Institution, Singapore, with Mei Yin Lee  | <b>Career moves: New classroom resource on essential skills and careers</b><br>Dave Fish,<br>Perimeter Institute for Theoretical Physics, ON   | <b>Strengthen chemical education with the ACS guidelines for teaching HS chemistry</b><br>Terri Taylor, American Chemical Society, DC, with Diane Krone & Bettyann Howson |
| C2 168 (LAB)  | <b>The gas laws....A new and exciting hands-on approach</b> (Paid Workshop)<br>(workshop repeated at 1:30pm)<br>Irwin Talesnick, Queen’s University, ON, with John Eix  |  |   |
| QNC 2501      | <b>Make and take: Construct an inexpensive calibrated spectroscope</b><br>Edmund Escudero, Summit Country Day School, OH<br><b>Maximum participants: 25</b>   |  | <b>DIY Chemistry</b><br>Alfredo Mateus, Universidade Federal de Minas Gerais, Brazil  |
| MC 1056       |   | <b>Sharing chemistry with the community</b><br>Ken Lyle, Duke University, NC,<br>with Sue Bober, Roxie Allen, Natalie Miller, and Jill Stirling<br><b>Maximum participants: 30</b>               |   |
| MC 2054       | <b>Kids, chemistry, and Band-Aids</b><br>Ann Fournier,<br>Springside Chestnut Hill Academy, PA,<br>with Jeanne Hillinck   |  | <b>Chemistry’s toilet solution</b><br>Jenn Pitt-Lainsbury,<br>University of Toronto Schools, ON,<br>with Danny Hickie   |
| MC 2035       |   | <b>“Solutions” for teaching solubility rules through inquiry to high school students</b><br>Kristen Hillert, Education Service Center, Region 13, TX   |   |



| Room                | 1:30pm-2:15pm  | 2:30pm-3:15pm  | 3:30pm-4:15pm   |
|---------------------|--|--|---|
| DC<br>1302          | <p style="text-align: center;"><b>George R. Hague Jr AP Symposium</b> (continued)<br/>Organized by Harvey Gendreau<br/>Presenters: Serena Magrogan, Jamie Benigna, Paul Price, Dennis Kliza, Terri Taylor, Diane Krone, Bettyann Howson, Michael Jansen, Roger Kugel</p> |  |   |
| MC<br>2017          | <p style="text-align: center;"><b>“Simple”y the best demos</b><br/>Bette Bridges,<br/>Lab Safety Institute, MA</p>   |  |   |
| ESC<br>146<br>(LAB) | <p style="text-align: center;"><b>Achievable inquiry in chemistry with SPARKvueHD</b><br/>(Exhibitor Workshop)<br/>Thomas Loschiavo, PASCO Scientific, CA<br/><b>Maximum participants: 30</b></p>  |  |   |
| ESC<br>149<br>(LAB) | <p style="text-align: center;"><b>Not your mother’s tie dye</b> (Paid Workshop)<br/>Melissa Jones (retired), TX, with Andy Cherkas, Meg Young, and Shelley Abernathy</p>   |  |   |
| QNC<br>1502         | <p style="text-align: center;"><b>Periodic fun</b><br/>Al Hazari,<br/>University of Tennessee, TN</p>  |  | <p style="text-align: center;"><b>Creating puzzles for the chemistry class</b><br/>Harry Herzer,<br/>Oklahoma State University, OK</p>  |
| QNC<br>2501         | <p style="text-align: center;"><b>Inquiry + Technology = Mastery</b><br/>Greg Dodd, George Washington High School, WV<br/><b>Maximum participants: 30</b></p>  |  | <p style="text-align: center;"><b>Wild chemistry</b><br/>Brian Rohrig,<br/>Jonathan Alder High School, OH</p>   |
| C2<br>168<br>(LAB)  | <p style="text-align: center;"><b>The gas laws.....A new and exciting hands-on approach</b> (Paid Workshop) (Workshop repeated)<br/>Irwin Talesnick, Queen’s University, ON, with John Eix</p>   |  |   |
| QNC<br>2502         | <p style="text-align: center;"><b>How to teach scientific facts, theory, and controversy: A philosopher’s view</b><br/>Heather Douglas,<br/>University of Waterloo, ON</p>   | <p style="text-align: center;"><b>How do scientists think?</b><br/>Dave Fish,<br/>Perimeter Institute for Theoretical Physics, ON</p>  |   |
| QNC<br>1507         | <p style="text-align: center;"><b>Disconnected: High school and post-secondary grades</b><br/>David Stone,<br/>University of Toronto Chemistry, ON</p>   | <p style="text-align: center;"><b>Supporting students in the high school to university transition</b><br/>Pippa Lock,<br/>McMaster University, ON,<br/>with Paul Hatala</p>  |   |
| QNC<br>1506         | <p style="text-align: center;"><b>The crosscutting concept of scale: Measuring scale literacy in undergraduate introductory chemistry</b><br/>Kristen Murphy, University of Wisconsin-Milwaukee, WI,<br/>with Jaclyn Trate, Anja Blecking,<br/>and Peter Geissinger</p>  | <p style="text-align: center;"><b>Using the Next Generation Science Standards in chemistry classes</b><br/>Michael Mury,<br/>American Chemical Society, DC,<br/>with Cece Schwennsen,<br/>Steve Long, and Bonnie Bloom</p> | <p style="text-align: center;"><b>Using modeling activities in the high school chemistry class</b><br/>Michael Mury,<br/>American Chemical Society, DC,<br/>with Steve Long, Bonnie Bloom,<br/>and Pam Diaz</p> |
| MC<br>1056          | <p style="text-align: center;"><b>Chemistry card and board games for all ages</b><br/>Julie Newdoll,<br/>Brush with Science, CA</p>  | <p style="text-align: center;"><b>Up and at ‘em</b><br/>Erica Taylor,<br/>Thornhill Secondary School, ON</p>   | <p style="text-align: center;"><b>Chemistry classroom resources from JCE</b><br/>Deanna Cullen, JCE and Whitehall High School, MI,<br/>with Greg Rushton</p>  |
| ESC<br>319<br>(LAB) |  | <p style="text-align: center;"><b>Inquiry-based redox and electrochemistry labs</b><br/>Steve Sogo, Laguna Beach High School, CA<br/><b>Maximum participants: 32</b></p>   |   |



**8:30 AM - 4:15 PM**

## Day-long Symposium - George R. Hague Jr. AP Chemistry

**MORNING**

### Introduction to the Symposium and Welcome - 15 min

### Lessons learned from the 2013 AP Chemistry examination

Paul Price,  
pricep@trinityvalleyschool.org  
Trinity Valley School/College Board,  
TX, with Roger Kugel

Come join the Chief Reader of the AP Chemistry Examination to discuss the 2013 exam and learn how to use the information it provided to better teach AP Chemistry.

*Presentation - 75 min - DC 1302*

### AP Chemistry — Looking forward, looking back, reaching equilibrium

Paul Price,  
pricep@trinityvalleyschool.org  
Trinity Valley School/  
College Board, TX,  
with Jamie Benigna

Join members of the AP Chemistry Development Committee as they discuss aspects of the new curriculum framework in detail so that you feel comfortable implementing the new AP Chemistry curriculum.

*Presentation - 60 min - DC 1302*

### Open panel discussion - 15 min

**AFTERNOON**

### The new ACS guidelines and recommendations for the teaching of high school chemistry and AP Chemistry - A perfect fit

Terri Taylor, t\_taylor@acs.org  
American Chemical Society, DC.  
with Diane Krone and  
Bettyann Howson

Explore the ACS Guidelines and Recommendations for the Teaching of High School Chemistry as a tool for supporting the AP Chemistry program at your school.

*Mini presentation - 15 min - DC 1302*

### Introducing the new AP Chemistry Lab Manual

Serena Magrogan,  
smagrogan@collegeboard.org  
College Board, GA,  
with Jamie Benigna

Join a discussion with Serena Magrogan, Director of AP Science Curriculum and Content Development, about the pedagogy and content of the new College Board AP Chemistry Laboratory Manual.

*Presentation - 45 min - DC 1302*

### Buffers: Connecting graphs with calculations

Dennis Kliza, dennis.kliza@kinkaid.org  
The Kinkaid School, TX

Many students have difficulty connecting the concepts of buffers and incremental titration to pH titration curves and the subsequent calculations necessary to solve titration problems. This presentation (with handout) will help teachers and students understand and solve some of the more difficult concepts of acid-base theory.

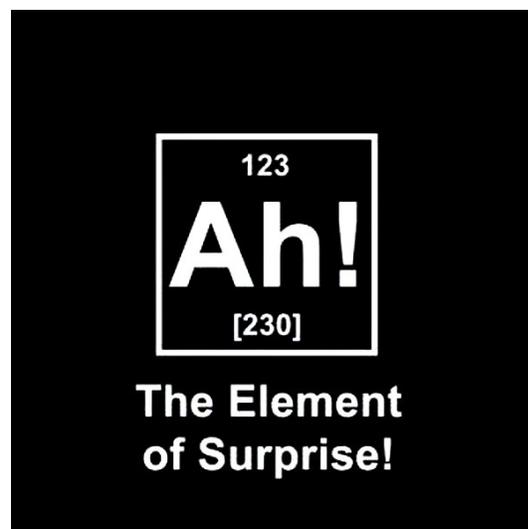
*Presentation - 45 min - DC 1302*

### Some ideas for your AP classes

Michael Jansen,  
mjansen@crescentschool.org  
Crescent School, ON

Come and get some useful resources — handouts, labs, etc — to enhance the learning of your AP students.

*Presentation - 45 min - DC 1302*





## 8:30 AM

*Single block sessions - 45 min*

### Chemophilately: Chemistry and chemists on stamps

Harry Herzer, herzer@charter.net  
Oklahoma State University  
(Professor Emeritus), OK

Stories on postage stamps related to chemistry and chemists can add an interesting sidebar to the class. If the instructor uses PowerPoint, everyone can see the details clearly. Presented by Lew Brubacher.

*Presentation, single block - QNC 1502*

### Chemistry of hydroponics

Jeff Bracken, brackenj@wcohs.org  
Westerville North High School, OH,  
with Jessica Waites

Come see how we have created a self-funded hydroponics program that grows herbs, fruits and vegetables in places all around our school building.

*Presentation, single block - QNC 2502*

### Experiment and presentation project as alternative assessment for average to high ability grade 11 chemistry students in Singapore

Alfred Chan, alfred.chan@ri.edu.sg  
Raffles Institution, Singapore,  
with Mei Yin Lee

Students conducted research and real-life experiments, which aroused their interest in chemistry and promoted self-directed learning. Group presentations served as alternative assessment and a platform for peer and collaborative learning.

*Presentation, single block - QNC 1507*

### Chemistry in the Community 6th Edition - Reinventing itself

Michael Mury, m\_mury@acs.org  
American Chemical Society, DC,  
with Bonnie Bloom, Pam Diaz,  
and Cece Schwensen

The newest edition of *Chemistry in the Community* has undergone a makeover including unit reorganization, investigation changes, explicit inquiry callouts, and concept check inclusion. Join us to discuss these changes.

*Presentation, single block - QNC 1506*

*Double block sessions - 105 min*

### Make and take: Construct an inexpensive calibrated spectroscope

Edmund Escudero,  
escudero\_e@summitcds.org  
Summit Country Day School, OH

Construct a spectroscope that allows measurement of spectral emission lines within 1% of the accepted values. All materials needed are readily available and will be supplied at the workshop.

*Workshop, double block - QNC 2501*

### Kids, chemistry, and Band-Aids

Ann Fournier, afournier@sch.org  
Springside Chestnut Hill Academy, PA,  
with Jeanne Hillinck

Participants will experience the design thinking process (Stanford Design School model) as part of a project that involves students applying their knowledge and understanding of intermolecular forces and bonding.

*Presentation, double block - MC 2054*

*Triple block sessions - 165 min*

### “Test Tube Geology” and “Mining for Metals” introduce a scientific writing heuristic

Kara Pezzi, pezzikara@asds.k12.wi.us  
Appleton East High School, WI

Interesting and complex chemistry can be done early in the school year! Participate in two experiments that engage students and use a specific writing format to deepen chemistry conceptual understanding. Please bring goggles.

*Workshop, triple block - ESC 146*

### The gas laws.....A new and exciting hands-on approach

Irwin Talesnick, irwin@s17science.com  
Queen's University  
(Professor Emeritus), ON,  
with John Eix

Use pressure gauges, digital thermometers, mason jars to discover Boyle's, Charles', Gay-Lussac's, Dalton's, Avogadro's Laws, vapour pressure, dynamic equilibrium. Workshop Kit includes more than \$200 of equipment and special gifts. This session is repeated at 1:30pm.

*Paid Workshop, triple block - C2 168*



**9:30 AM**

*Single block sessions - 45 min*

## **Career Moves: New Classroom Resource on Essential Skills and Careers**

Dave Fish, dfish@pitp.ca  
Perimeter Institute for Theoretical Physics, ON

This session introduces a new activity-rich classroom resource, centred on the essential skills and attributes that are key to a successful STEM career for your students. It highlights connections between these skills, today's highly technological world, entrepreneurialism, and the importance of science courses. This resource will effectively highlight the benefits of having advanced problem-solving and logical-thinking skills, and help high school science teachers share the wealth of career opportunities available through STEM education.

*Workshop, single block - QNC 1507*

## **Design on a dime for science rooms**

Brenda Fickenscher,  
fickenscher@hotmail.com  
Colorado science teacher  
(retired), CO

How a simple makeover in your classroom will bring you disciplinary and academic dividends. Learn strategies and techniques designed to: improve student focus, reduce problem behavior and increase instruction time.

*Presentation, single block - QNC 1502*

## **Teaching thanatochemistry in a funeral service program**

Wheeler Conover,  
wheeler.conover@kctcs.edu  
Southeast Kentucky CTC, KY

The presenter teaches thanatochemistry in his college's new funeral service program. He will discuss the requirements of the course, the challenges, and results.

*Presentation, single block - QNC 2502*

## **Introducing the ChemMatters compilation project**

Marta Gmurczyk,  
m\_gmurczyk@acs.org  
American Chemical Society, DC,  
with Susan Cooper, Patrice Pages,  
and Steve Long

Are you looking for free of charge, high-quality, engaging reading materials and activities to integrate reading and chemistry? Come learn about this new resource from the American Chemical Society (ACS)! In this session we will present the new ChemMatters compilation project including past articles from ChemMatters with inquiry-based lesson plans. Directions include links to podcasts, ideas for student writing, and other creative projects. The lessons may be modified to address a wide range of student abilities and interests, from introductory physical science through AP Chemistry. The goal of this project is to help students think critically as they use engaging content to learn important chemistry concepts.

*Presentation, single block - QNC 1506*

*Double block sessions - 105 min*

## **“Tales of the Unexpected”: How do UK schools cope with “Chemophobia” and “Chemophilia”?**

Bob Worley, bobworley4@gmail.com  
CLEAPSS, Hanwell, UK

Chemical reactions bring out the worst in both the “terrified” and “cavalier”. This is an illustrated talk on how UK schools deal with chemical safety in lessons and prep rooms.

*Presentation, double block - MC 2017*

## **“Erupting” with enthusiasm: Using a case study to guide inquiry in your classroom.**

Gina Morrison Barrier,  
gina\_barrier@ncsu.edu  
The Science House,  
NC State University, NC

A “killer” adventure awaits using inquiry to investigate limnic eruptions. Explore the effects of carbon dioxide in lakes using dry ice. Assessments included with graphic organizers.

*Workshop, double block - ESC 149*

## **Sharing chemistry with the community**

Ken Lyle, kenneth.lyle@duke.edu  
Duke University, NC,  
with Sue Bober, Roxie Allen,  
Natalie Miller, and Jill Stirling

This hands-on workshop allows you the opportunity to try out several chemistry activities appropriate for the classroom or chemistry outreach presentations.

*Workshop, double block - MC 1056*

## **“Solutions” for teaching solubility rules through inquiry to high school students**

Kristen Hillert,  
kristen.choate@gmail.com  
Education Service Center,  
Region 13, TX

How can students “discover” solubility rules? Can inquiry really be used in high school chemistry? Come and participate in quick, effective ways to teach solubility rules through student centered approaches.

*Presentation, double block - MC 2035*



## 10:30 AM

*Single block sessions - 45 min*

### Chemistry in comics

Al Hazari, ahazari@utk.edu  
University of Tennessee, TN

A variety of chemistry comics will be presented, and the learning situations into which they best fit will be discussed.

*Presentation, single block - QNC 1502*

### Chemistry applies to agriculture too!

Jeff Bracken, brackenj@wcohs.org  
Westerville North High School, OH

This session will focus on how our suburban high school has developed a successful large-scale raised bed gardening program that features composting, worm composting, and hoop houses. Over 12,000 carrot seeds were planted in August and then harvested throughout the winter. The key to successful farming lies in the applications of chemistry!

*Presentation, single block - QNC 2502*

### Inclusion of unit culminating projects in high school chemistry

Michael Mury, m\_mury@acs.org  
American Chemical Society, DC,  
with Steve Long, Bonnie Bloom, and Pam Diaz

Why are we learning this? If this sounds familiar, come to this session to learn about ways to tie together units to keep student interest.

*Workshop, single block - QNC 1506*

### Strengthen chemical education with the ACS guidelines and recommendations for the teaching of high school chemistry

Terri Taylor, t\_taylor@acs.org  
American Chemical Society, DC,  
with Diane Krone and Bettyann Howson

Discover how the ACS Guidelines and Recommendations for the Teaching of High School Chemistry can be used to strengthen chemical education at your school.

*Presentation, single block - QNC 1507*

### DIY chemistry

Alfredo Mateus, almateus@gmail.com  
UFMG Universidade Federal de Minas Gerais, Brazil

We will present several activities that use chemistry to engage students in building things. Make your own soda bottle molecular model, hydrophobic labyrinth game, carved can lantern and many more.

*Presentation, single block - QNC 2501*

### Chemistry's toilet solution

Jenny Pitt-Lainsbury,  
jpittlainsbury@utschools.ca  
University of Toronto Schools, ON,  
with Danny Hickie

Practical, curriculum-based ideas, demonstrations, and activities that lead up to a chemical design project encouraging students to tackle one of the world's biggest problems: 2.6 billion people do not have access to basic sanitation.

*Presentation, single block - MC 2054*

## 1:30 PM

### \*Day-long Symposium - George R. Hague Jr. AP Chemistry continued from 1:30pm-4:15pm (DC 1302)

*Single block sessions - 45 min*

### Chemistry card and board games for all ages

Julie Newdoll,  
julie@brushwithscience.com  
Brush with Science, CA

Board games, card games and rubber stamps designed by a scientifically inspired artist provide a tactile aesthetic approach to learning the basics of an atom and bonding. The design of the games incorporates fundamental concepts of the atom. The first forty attendees to arrive at the presentation will receive a free box set of Electronimoies round cards for playing games centered around how atoms bond together.

*Presentation, single block - MC 1056*

### How to teach scientific facts, theory, and controversy: A philosopher's view

Heather Douglas,  
hdouglas@uwaterloo.ca  
University of Waterloo, ON

In teaching science, we often focus on well-established scientific facts. But does this serve our students well when science is contested and/or changing? This talk presents a philosophical framework for dealing with both established and contested science.

*Presentation, single block - QNC 2502*

### Disconnected: High school and post-secondary grades

David Stone,  
dstone@chem.utoronto.ca  
University of Toronto Chemistry, ON

A short summary of 100 years of educational research into why post-secondary chemistry grades are not connected with high school grades, and what we can do about it.

*Presentation, single block - QNC 1507*



## The crosscutting concept of scale: Measuring scale literacy of students in undergraduate introductory chemistry

Kristen Murphy, kmurphy@uwm.edu  
University of Wisconsin-Milwaukee, WI, with Jaclyn Trate, Anja Blecking, and Peter Geissinger

“Scale, Proportion, and Quantity” is one of seven crosscutting concepts. This session will delve into measuring scale literacy and present ideas for incorporating scale as a theme into instruction.

*Workshop, single block - QNC 1506*

## Periodic fun

Al Hazari, ahazari@utk.edu  
University of Tennessee, TN

This talk will focus on a fun and educational display and discussion of at least 50 different periodic tables of the chemical elements.

*Presentation, single block - QNC 1502*

## Double block sessions - 105 min

## “Simple”y the best demos

Bette Bridges,  
babridges@comcast.net  
LSI, MA

Excite your classes with these one-concept, easy to set-up/take-down demos using common everyday substances and materials.

*Presentation, double block - MC 2017*

## Achievable inquiry in chemistry with SPARKvueHD

Thomas Loschiavo,  
loschiavo@pasco.com  
PASCO scientific, CA

Experience PASCO's sensor-based app, SPARKvueHD for tablets. Explore guided-inquiry digital labs with PASCO's MultiMeasure Chemistry Sensors and the intuitive SPARKvueHD software. Data collection has never been more meaningful.

*Exhibitor Workshop, double block - ESC 146*

## Inquiry + Technology = Mastery

Greg Dodd, gbdodd@gmail.com  
George Washington High School, WV

Participants will learn strategies for teaching a model inquiry-based activity called “Endothermic or Exothermic?” In this hands-on presentation, participants will use a temperature probe to investigate the Next Generation Science Standards Core Idea-Temperature and Heat.

*Workshop, double block - QNC 2501*

## Triple block sessions - 165 min

## Not your mother's tie dye

Melissa Jones, mdjchem@yahoo.com (retired), TX,  
with Andy Cherkas, Meg Young, and Shelley Abernathy

Tie dye resist techniques have been practiced around the world for centuries. We will show you how to prepare a white cotton or silk garment for tie dye. Participants will have an opportunity to learn different techniques and experience one dyeing technique with an article they bring or purchase. Traditional, shibori, and foam methods will be demonstrated along with dyeing silk in a microwave. In addition to tie dyeing, we will also show you how to use tie dye in the curriculum. The workshop is come and go.

*Paid Workshop, triple block - ESC 149*

## The gas laws.....A new and exciting hands-on approach

Irwin Talesnick, irwin@s17science.com  
Queen's University  
(Professor Emeritus), ON,  
with John Eix

Use pressure gauges, digital thermometers, mason jars to discover Boyle's, Charles', Gay-Lussac's, Dalton's, Avogadro's Laws, vapour pressure, dynamic equilibrium. Workshop Kit includes more than \$200 of equipment and special gifts. This session is also run in the morning.

*Paid Workshop, triple block - C2 168*

## 2:30 PM

## Single block sessions - 45 min

## Using the Next Generation Science Standards in chemistry classes

Michael Mury, m\_mury@acs.org  
with Cece Schwensen, Steve Long, and Bonnie Bloom  
American Chemical Society, DC

With the development of the Next Generation Science Standards, including connections amongst the sciences is even more vital. Attend this session for suggestions on including aspects of the standards in your chemistry class.

*Workshop, single block - QNC 1506*

## Up and at 'em

Erica Taylor,  
erica.taylor@yrdsb.edu.on.ca  
Thornhill Secondary School, ON

Activities that can be used to get your class up and out of their seats and thinking about chemistry will be presented. A variety of activities will be shared that can be used to introduce, teach and review topics in grades 11 and 12.

*Presentation, single block - MC 1056*



*Double block sessions - 105 min*

### How do scientists think?

Dave Fish, dfish@pitp.ca  
Perimeter Institute for Theoretical Physics, ON

What is so special about the way scientists think? We will explore a classroom resource that gives your students insights into the creative, collaborative enterprise called Science.

*Workshop, double block - QNC 2502*

### Supporting students in the high school to university transition

Pippa Lock, lockpe@mcmaster.ca  
McMaster University, ON,  
with Paul Hatala

This session will explore strategies used in Year 1 chemistry at McMaster University to support students in the high school to university transition, including multiple evaluation frameworks, lecture capture, flipped classroom models, and problem-solving strategies.

*Workshop, double block - QNC 1507*

### Inquiry-based redox and electrochemistry labs

Steve Sogo, ssogo@lbusd.org  
Laguna Beach High School, CA

Three exciting redox and electrochemistry labs, suitable for honors and AP chemistry classes, will be presented. The presenter is a winner of an NSTA award for inquiry-based science teaching.

*Workshop, double block - ESC 319*

**3:30 PM**

*Single block sessions - 45 min*

### Chemistry classroom resources from the *Journal of Chemical Education*

Deanna Cullen, dcullen@jce.acs.org  
*Journal of Chemical Education*,  
Whitehall High School, MI,  
with Greg Rushton

JCE provides a wealth of resources for the high school chemistry teacher. We will share many of them, including labs, classroom activities, online resources that address the new NGSS disciplinary core ideas and crosscutting concepts using a modeling approach at the particulate level to explain macroscopic observations of various phenomena.

*Presentation, single block - MC 1056*

### Using modeling activities in the high school chemistry class

Michael Mury, m\_mury@acs.org  
American Chemical Society, DC,  
with Steve Long, Bonnie Bloom,  
and Pam Diaz

Visualization is difficult for many students. Join us as we discuss and demonstrate several modeling activities you can use in your chemistry class.

*Workshop, single block - QNC 1506*

### Wild chemistry

Brian Rohrig,  
brohrig@columbus.rr.com  
Jonathan Alder High School, OH

Make your teaching literally come alive by using natural examples of chemistry in action from plants and animals. Learn how to add depth and richness to any chemistry course by incorporating examples of chemistry from the natural world.

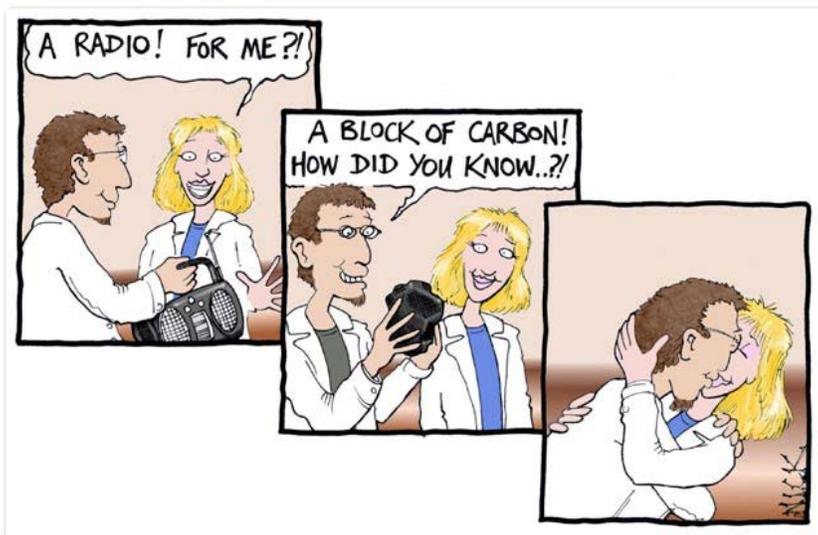
*Presentation, single block - QNC 2501*

### Creating puzzles for the chemistry class

Harry Herzer, herzer@charter.net  
Oklahoma State University, OK

Chemistry may be puzzling for students, but word puzzles as directed study or evaluation can be fun. Creating these puzzles can even be more fun and a great review. Presented by Lew Brubacher.

*Presentation, single block - QNC 1502*



The radiocarbon dating technique.

Cartoon by: Nick Kim (Nearing Zero)