



Room	8:30am-9:15am	9:30am-10:15am	10:30am-11:15am
DC 1302	Environmental Chemistry Symposium (organized by Ray Clement) Dave McLaughlin, Cotyledon Environmental Consulting, Toronto, ON Denis Corr, Corr Research, Toronto, ON Ray Clement, President, EnviroAnalysis, Toronto, ON (all speakers have spent 30+ years at the Ontario Ministry of the Environment)		
ESC 146 (LAB)	Glow-in-the-dark chemistry (Paid Workshop) Brian Rohrig, Jonathan Alder High School, OH		
C2 273 (LAB)	Solubility, precipitates and stoichiometry lab Angela Fuller, Greece Central Schools, NY		Mini Sessions 1. Diana Mason 2. Robyn Ford 3. Anna George
DC 1304	Chemistry outreach from 2 to 102 Al Hazari, University of Tennessee, TN	Misconceptions in chemistry (Paid Workshop) Al Hazari, University of Tennessee, TN	
MC 1085	Teaching ALL of the grade 12 curriculum Robert O'Connell, Toronto District School Board, ON	Solving problems through problem solving David Stone, University of Toronto, ON	
C2 361	Introduction to process oriented guided inquiry learning (POGIL) (Paid Workshop) Laura Trout, The POGIL Project, PA		New inquiry labs for AP Chemistry from Flinn Scientific (Exhibitor Workshop) Irene Cesa, Flinn Scientific, IL
QNC 1507	Beyond the atom Dave Fish, Perimeter Institute for Theoretical Physics, ON		Heisenberg's uncertainty principle Curtis Musser, Viewpoint School, CA
QNC 1506	Teaching chemistry with 1:1 iPads - A Reflection on Year 1 Jean Weaver, The Prairie School, WI	iLove teaching chemistry with iPads Amy Roediger, Mentor High School, OH	
QNC 2501	Why does chemistry become a mystery for students? Mani Srivastava, D.A.V. International School, India, with Manju Patel	Ethics in chemistry - "Do the right thing" Terry Obal, Maxxam Analytics, ON	Careers in chemistry Terry Obal, Maxxam Analytics, ON
MC 2066	Bubbly chemistry: the many uses and applications of surfactants Jean Duhamel, University of Waterloo, ON	Using Twitter to enhance communication and engagement in large enrollment classes Bill Power, University of Waterloo, ON	Choosing contexts and experiments that help students make connections in chemistry Brian Corry, Arrowhead High School, WI, with Alan Schwabacher
ESC 149 (LAB)		Chemistry for experienced Vernier users (Exhibitor Workshop) Melissa Hill, Vernier Software & Technology, OR, with Elaine Nam Maximum participants: 30	
C2 168 (LAB)		Exploring chemical reactions: Bringing chemistry to life Sharon Geyer, Pomfret School, CT Maximum participants: 30	
ESC 319 (LAB)		Exploring chemistry with NASA Todd Morstein, Glacier High School, MT, with Monica Trevathan	



Room	2:30pm-3:15pm	3:30pm-4:15pm	4:30pm-5:15pm
DC 1302		Discrepant Events Symposium Organized by Andy Cherkas Presenters: John Eix, Ken Lyle, Natalie Miller, Doug De La Matter, Andy Cherkas and Al Hazari	
ESC 146 (LAB)	AP Chemistry inquiry problem based laboratory experiments Jesse Bernstein, Miami Country Day School, FL with Jeffery Bracken and Paul Price		
ESC 149 (LAB)	Chemistry for beginner Vernier users (Exhibitor Workshop) Jack Randall, Vernier Software & Technology, OR, with Elaine Nam Maximum participants: 30	Inquiry-based chemistry with Vernier (Exhibitor Workshop) Jack Randall, Vernier Software & Technology, OR, with Melissa Hill Maximum participants: 30	
C2 168 (LAB)	Adding lustre to teaching about metals Chris Miedema, Ashbury College, ON	Carolina investigations for AP Chemistry (Exhibitor Workshop) Jen Black, Carolina Biological Supply Company, NC Maximum participants: 30	
ESC 319 (LAB)	Rockets, reactions and ratios Deborah Maloney, Hollis Brookline High School, NH, with Linda Saari Maximum participants: 30	Make safety a habit! Flinn Scientific safety workshop (Exhibitor Workshop) Irene Cesa, Flinn Scientific, IL	
DC 1304	Show me the (elements in) money! (Paid Workshop) Al Hazari, University of Tennessee, TN		
C2 361	Periodic nomenclature Edmund Escudero, Summit Country Day School, OH	Having fun with the routine: Lewis structures, oxidation states, nomenclature, and stoichiometry François Gauvin, Université de Saint-Boniface, MB	
EIT 2053	Using Brownian motion to estimate Avogadro's number Herb Deruyter, Waterloo Collegiate Institute (retired), ON	Chemical potential in focus - Osmosis and more Regina Rueffler, Job Foundation, University of Hamburg, Germany	Ideas for your grade 11 classes Michael Jansen, Crescent School, ON
QNC 1506	I have an iPad - Now what? Gregg Dodd, George Washington HS, WV	Use mobile learning devices to create a smart chemistry classroom Diane Krone, North Jersey ACS Teacher Affiliates, NJ, with Elizabeth Howson	
MC 1056	Demonstrations that promote wonder and inquiry Brian Rohrig, Jonathan Alder High School, OH		
B2 350	Five minute demos Betty Catelli, Southington High School (retired), CT	Easy and free - Two ways to liven up your presentations Amy Roediger, Mentor High School, OH	"Emergency lesson plans" for teaching chemistry across curricula Marta Gmurczyk, American Chemical Society, DC, with Keith Lindblom
QNC 1507			ChemGem 2013 Milan Sanader, Science Teachers' Association of Ontario (STAO), ON
QNC 2501			Get more activity out of the activity series Chris Miedema, Ashbury College, ON



Room	8:30am-9:15am	9:30am-10:15am	10:30am-11:15am
B1 266	Lab Safety Institute (LSI) (Ends at 12pm) Seminar James A. Kaufman, LSI President/CEO		
DC 1302	Student Centered Approaches to Teaching Chemistry Symposium Organized by Laura Trout Laura Trout, Lancaster Country Day School, PA Deborah Herrington, Grand Valley State University, MI Mare Sullivan, Bellevue Christian HS, WA Jim Ross, Ross Lattner Educational Consultants, ON		
ESC 146 (LAB)	Simple visible spectroscopy for introductory chemistry Sally Mitchell, East Syracuse Minoa Central High School, NY, with Gordon Bain Maximum participants: 24		
ESC 149 (LAB)	Teaching combustion in the high school chemistry classroom (Paid Workshop) Brian Rohrig, Jonathan Alder High School, OH		
C2 168 (LAB)		A microscale chemistry workshop Bob Worley, CLEAPSS, UK	
ESC 319 (LAB)		New investigations from the 6th edition of Chemistry in the Community Michael Mury, American Chemical Society, DC, with Pam Diaz, Cece Schwennsen, and Steve Long Maximum participants: 24	
DC 1304	Super chemistry connections (Paid Workshop) Al Hazari, University of Tennessee, TN		
C2 273 (LAB)	AP Chemistry activities with Ward's Science (Exhibitor Workshop) Paul Schneeberger, Ward's Science, NY		
QNC 1507	Hands-on stoichiometry Alice Dutton, McKinney High School, TX	Constructing stoichiometric understanding through LEGO Kenneth Hoffman, OISE/UT, ON, with Shirley Ng	
QNC 1502	Orbitals and chemistry Robert O'Connell, Toronto District School Board, ON	Beyond the Bohr model Dave Fish, Perimeter Institute for Theoretical Physics, ON	
QNC 1506	Using stories to teach science Patrice Pages, American Chemical Society, DC, with Marta Gmurczyk	Putting history back into chemistry Greg Patenaude, University of Lethbridge, AB	A matter of laws & theory Deborah Maloney, Hollis Brookline High School, NH
QNC 2501	Hands-on instead of worksheets Jamie Flint, Spring Woods High School, TX	Putting a bang into your teaching (Paid Workshop) Harvey Gendreau, Lab Safety Institute, MA, with Bette Bridges	
QNC 2502			AP Chemistry resources from the Journal of Chemical Education Deanna Cullen, JCE and Whitehall High School, MI, with Greg Rushton



Room	2:30pm-3:15pm	3:30pm-4:15pm	4:30pm-5:15 pm
B1 266	Lab Safety Institute (LSI) (Ends at 6pm) Seminar (continued) James A. Kaufman, LSI President/CEO		
QNC 1502	Flipping with chemistry apps Doug Ragan, Hudsonville High School, MI	Flipping the chemistry classroom Nicholas Key, John F. Ross CVI, ON, with David Greisman	You CAN teach an old dog new tricks Kathy Kitzmann, Mercy High School, MI
ESC 146 (LAB)	Visible spectroscopy for advanced placement or second course chemistry lab Sally Mitchell, East Syracuse Minoa Central High School, NY, with Gordon Bain Maximum participants: 24		
ESC 149 (LAB)	Mix it up! (Paid Workshop) Brian Rohrig, Jonathan Alder High School, OH		
C2 168 (LAB)	AP Chemistry: Guided inquiry labs using probeware (Exhibitor Workshop) Thomas Loschiavo, PASCO scientific, CA Maximum participants: 30	Lab activities for high school chemistry using the Vernier SpectroVis Plus spectrophotometer Aisling O'Connor, Fitchburg State University, MA, with Nicholas Ludden	
ESC 319 (LAB)	Inquiry problem based laboratory experiments Jesse Bernstein, Miami Country Day School, FL with Jeffery Bracken and Paul Price Maximum participants: 32		
DC 1304	Nitinol: The brainy wire (Paid Workshop) Al Hazari, University of Tennessee, TN		
DC 1302	Some old, some new favorites Patricia Vance, Science Education consultant, MI	Generations Symposium - Mentoring and learning together Organized by Andy Cherkas Presenters: Andy Cherkas, Cathy Cherkas, Ken Lyle, Natalie Miller, Sue Bober, Jill Stirling, Doug De La Matter, Faye Twiddy, Kathleen Holley, John Eix, Glen Vance, Meg Young, Shelley Abernathy, Shannon McGee, and Melissa Jones	
MC 1056	Technology makes STEM instruction a snap Greg Dodd, George Washington High School, WV Maximum participants: 30	Student presentations - How to debrief students after experiments Kevin Kopack, Lane Tech CPHS, IL	
QNC 1506	Concept mapping for chemistry Susan Klemmer, Camden Hills Regional High School, ME	Student-centered activities to reach children in high school chemistry Jasodhara Bhattacharya, Science Education Consultant, ON, with Omar Solomah Maximum participants: 30	
QNC 2502		Virtual Researcher On Call (VROC) experts on demand – real-time connections with experts (Exhibitor Workshop) Zoe Letwin, VROC Outreach Coordinator, ON	In situ environmental analysis: See portable gas chromatography-mass spectrometry (GC-MS) at work Jonathan Grandy, University of Waterloo, ON, with Angel Rodriguez-Lafuente Maximum participants: 30
ESC 342 (LAB)	Mini-labware earrings (PW) Melissa Jones, retired, TX, with Meg Young and Shelley Abernathy	“Nanodization” of titanium jewelry Ricky Tjandra, Engineering Science Quest, University of Waterloo, ON	Prince Rupert’s Drops: Glass stronger than steel! Steve Long, Rogers High School, AR Maximum participants: 30
C2 160 (COM. LAB)	The 21st century learner in the chemistry classroom Mahfuza Rahman West Humber C.I., ON		The first e-textbook software approved by the College Board for A.P. Chem Ketan Trivedi, Trivedi Chemistry, VA

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



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



Room	8:30am-9:15am	9:30am-10:15am	
QNC 1501	Spiraling in first-year chemistry Jill Barker, Millbrook High School, VA	Are your students ready for first-year chemistry? Sue Stathopoulos and Rick Marta, University of Waterloo, ON	<h2 style="text-align: center;">Closing Ceremonies</h2> <p style="text-align: center;">HAGEY HALL</p> <p style="text-align: center;">“Serendipitous Chemistry”</p> <p style="text-align: center;">— Joe Schwarcz (10:30am - 12:00pm)</p>
ESC 342 (LAB)	Become a pharmaceutical chemist! Laura Ingram, University of Waterloo, ON		
B1 271	The farewell demonstrations Andy Cherkas, Stouffville DSS, ON		
MC 1056	Mini Sessions (no break, 8:30 to 10:15)		
	1. Moises Camacho 2. Moises Camacho 3. Oliver Grundmann 4. Christine Hermann	5. Nancy McKenzie 6. Rajeev Dabke 7. Karen Kaleuati with Marta Gmurczyk	
QNC 1506	Laboratory reports - Applied and university Robert O’Connell, Toronto District School Board, ON, with Brian Roche	At the edge of the curriculum; at the center of science Robert O’Connell, Toronto District School Board, ON, with Peter Bloch	
QNC 1507	Establish a biodiesel manufacturing club at your school! Allan Fluharty, Prosser Career Academy High School/Chicago Public Schools, IL	Science Olympiad 101 Jean Weaver, The Prairie School, WI	
QNC 2501	Motivate your students’ molecules! Al Hazari, University of Tennessee, TN	Survival skills for 1st-5th year HS chemistry teachers Doug Ragan, Hudsonville Public Schools, MI	
MC 2034	VSEPR, stoich and thermo: No fire without math Elizabeth Velikonja, Saint Ann’s School, NY, with Deborah Brock	Drawing Lewis dot structures - A student centered approach Kristen Hillert, Education Service Center, Region 13, TX Maximum participants: 30	
QNC 2502	Nanoscience & nanotechnology: Small materials with huge applications Jay Leitch, University of Guelph, ON	Nanotechnology engineering at the University of Waterloo Jenn Coggan, University of Waterloo, ON, with Howard Siu and Chris Backhouse	

8:30 AM - 11:15 AM

Symposium - Environmental Chemistry

Measuring our footprint: Examples of Ontario's Changing Environmental Landscape

Dave McLaughlin,
mclaughlin.environmental@gmail.com
Cotyledon Environmental Consulting,
ON

Is the quality of Ontario's air, water, and land changing for the better or worse? How will we know? A brief look at past environmental legacies and a peek into future challenges.

Presentation, single block - DC 1302

Fresh Air Kids

Denis Corr, dcorr@cogeco.ca
Corr Research, ON

Children are particularly sensitive to air pollution. This project has educated children about the Air Quality Health Index, monitored the air around schools, and developed the best commuting ways and routes to schools with student involvement.

Presentation, single block - DC 1302

How scientists measure environmental pollutants: A classroom activity that really works!

Ray Clement, ray.clement@rogers.com
EnviroAnalysis, ON

A classroom activity is described that teaches how scientists really measure chemicals in the environment. It has been successfully used in high school, college, and even for groups of teachers!

Presentation, single block - DC 1302

8:30 AM

Single block sessions - 45 min

Why does chemistry become a mystery for students?

Mani Srivastava, mane11in@yahoo.com
D.A.V. International School,
Maharashtra, India,
with Manju Patel

Chemistry! I am scared of it! Elements, compounds, chemical formulas, equations; spare me! But there is an entirely different side of the coin. Fear of chemistry arises from lack of understanding of the subject, which itself stems from following a random approach to learning it. Teaching as well as learning chemistry should follow a pattern, one which creates pieces that will eventually merge in the minds of students. As a chemistry educator, my role is to arouse interest and curiosity in youngsters.

Presentation, single block - QNC 2501

Teaching ALL of the grade 12 curriculum

Robert O'Connell,
robert.oconnell@utoronto.ca
Toronto District School Board, ON

An often heard complaint is that there is too much in the grade 12 chemistry curriculum to teach in one semester or semester equivalent, with labs. It will be shown that by using a variety of techniques it is possible to teach all of the curriculum, with at least 10 experiments/investigations, and include enhancements to help students going on into programs needing detailed chemistry.

Presentation, single block - MC 1085

Teaching chemistry with 1:1 iPads - A reflection on year one

Jean Weaver,
jweaver@prairieschool.com
The Prairie School, WI

What's it like teaching chemistry to students who are all equipped with an iPad? I'll share my experiences and thoughts on this hi-tech twist to the teaching/learning model.

Presentation, single block - QNC 1506

Chemistry outreach from 2 to 102

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

The University of Tennessee, Knoxville Department of Chemistry, is conducting several chemistry outreach programs for area students, teachers and for the public.

Presentation, single block - DC 1304

Bubbly chemistry: The many uses and applications of surfactants

Jean Duhamel,
jduhamel@uwaterloo.ca
University of Waterloo, ON

This presentation will review some of the important properties of surfactants and their applications. In particular, examples taken from the latest research will illustrate the need for chemists to design the next generation of surfactants that are both more efficient and environmentally friendly.

Presentation, single block - MC 2066

Double block sessions - 105 min

Introduction to process oriented guided inquiry learning (POGIL)

Laura Trout,
troutl@lancastercountryday.org
The POGIL Project, PA

Explore the benefits of using POGIL activities in your classroom. This student centered approach to learning encourages students to question, use models, analyze data, provide evidence and improve communication skills.

Paid Workshop, double block - C2 361

Beyond the atom

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

Explore a new resource developed by Perimeter Institute and CERN to introduce the Standard Model to high school students. Join us on a journey that starts with Rutherford scattering and ends at the Large Hadron Collider (LHC).

Workshop, double block - QNC 1507

Solubility, precipitates and stoichiometry lab

Angela Fuller,
angela.fuller@greece.k12.ny.us
Greece Central Schools, NY

Solubility rules, making a precipitate, and using stoichiometry will be the main focus of this lab. Teachers will have hands on experience and will be able to present the material so that students will be able to design their own lab.

Workshop, double block - C2 273

Triple block sessions - 165 min

Glow-in-the-dark chemistry

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

Don't be left in the dark. Discover some new demos and activities involving light sticks, light bulbs, black lights, lasers, and more. All participants receive a bound manual, a black light, laser, and a plethora of other materials.

Paid Workshop, triple block - ESC 146

9:30 AM

Single block sessions - 45 min

Using Twitter to enhance communication and engagement in large enrollment classes

Bill Power, bill.power@uwaterloo.ca
University of Waterloo, ON

Email is no longer the primary medium of choice. Mediums such as text messaging and Twitter have replaced it as a more convenient and rapid choice for communication. I will present my experience using Twitter in large first and second year Chemistry classes at Waterloo over the last three years. I'll include my motivation, method of integration into the course, and how to most effectively engage students. Twitter is an excellent communication tool that can enhance the engagement of our students in an appropriate manner.

Presentation, single block - MC 2066

Ethics in chemistry - "Do the right thing"

Taras (Terry) Obal, tobal@maxxam.ca
Maxxam Analytics, ON

This presentation will provide a brief description of the Association of the Chemical Profession of Ontario and why it is important to have a self-regulated practice. The presentation will also emphasize that current and future professional chemists have a duty to safeguard the health and well-being of the public and the environment.

Presentation, single block - QNC 2501

Double block sessions - 105 min

Chemistry for experienced Vernier users

Melissa Hill, aharr@vernier.com
Vernier Software & Technology, OR,
with Elaine Nam

This workshop will highlight experiments for advanced high school, general, and organic chemistry courses. The workshop will feature our popular handheld data-collection solution, LabQuest 2.

Exhibitor Workshop, double block - ESC 149

Exploring chemical reactions: Bringing chemistry to life

Sharon Geyer,
sgeyer@pomfretschool.org
Pomfret School, CT

Chemical reactions are the most exciting part of chemistry class. Learn a hands-on and student-centered approach to sharing reactions with your students.

Workshop, double block - C2 168

Exploring chemistry with NASA

Todd Morstein,
morsteint@sd5.k12.mt.us
Glacier High School, MT,
with Monica Trevathan

Explore gas laws, stoichiometry and electrochemistry to solve some of the problems NASA has to deal with. Participants will realize the connection to everyday chemistry topics and relate them to NASA's problems of getting humans into space.

Workshop, double block - ESC 319

Misconceptions in chemistry

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

Students develop their own understanding of how nature works. These pre-concepts are brought to school and teachers have to reflect on them for better instruction. In addition, there are school-made misconceptions which originate from inappropriate curriculum and instructional materials. This workshop aims to help 6-16 teachers and professors diagnose and cure students' misconceptions.

Paid Workshop, double block - DC 1304

Solving problems through problem solving

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

This workshop will include hands-on activities using problem-solving to address common problems encountered with learning chemistry.

Workshop, double block - MC 1085

iLove teaching chemistry with iPads

Amy Roediger,
roediger@mentorschools.org
Mentor High School, OH

Participants will be exposed to a wealth of ways that iPads can be used to teach chemistry.

Presentation, double block - QNC 1506

10:30 AM

Single block sessions - 45 min

New inquiry labs for AP Chemistry from Flinn Scientific

Irene Cesa, djones@flinnsci.com
Flinn Scientific, IL

This interactive, hands-on workshop can help you implement the revised laboratory investigations and curriculum framework for AP Chemistry! Join Flinn Scientific as we present two new guided-inquiry chemistry experiments that support the integrated learning objectives and applied science practice skills your students need for success. Pre-lab preparation and preliminary activities for each investigation have been optimized so teachers can effectively guide students and provide maximum opportunities for inquiry. Handouts provided for all activities.

Exhibitor Workshop, single block - C2 361

Heisenberg's uncertainty principle

Curtis Musser, camusser@gmail.com
Viewpoint School, CA

A presentation of Heisenberg's classical explanation of his uncertainty principle: The Heisenberg Microscope.

Presentation, single block - QNC 1507

Careers in chemistry

Taras (Terry) Obal, tobal@maxxam.ca
Maxxam Analytics, ON

This presentation highlights the breadth and diversity of opportunities for careers in chemistry. It also underscores the need to instill and nurture not only an interest, but a passion for chemistry in high school students in order to replenish a shrinking resource pool of competent and experienced chemists to support the industries that rely on them.

Presentation, single block - QNC 2501

Choosing contexts and experiments that help students make connections in chemistry

Brian Corry,
corry@arrowheadschoools.org
Arrowhead High School, WI,
with Alan Schwabacher

A high school chemistry teacher and a professor of organic chemistry partnered to build a framework for designing experiments to help students make important connections in chemistry.

Presentation, single block - MC 2066

Mini sessions - 15 min

New curriculum mandates of a 4x4: Are improvements seen at the university level?

Diana Mason,
drdiana@alumni.utexas.net
University of North Texas, TX

Course success rates of freshmen/sophomores over four semesters in general chemistry (two prior to implementation of 4x4 high school curriculum and two after) are compared. Results indicate a positive swing.

Mini presentation - C2 273

Effects of class scheduling on student success in high school chemistry

Robyn Ford, robynford@my.unt.edu
University of North Texas, TX,
with Diana Mason

Changing curriculum, use of technology, and how to use resources efficiently are the major questions currently facing secondary schools. Yet the mantra of every educational decision is supposed to be "What is best for the student?" To this end, many secondary schools have experimented with class scheduling in an effort to maximize teacher expertise, student time, and access to courses. This study compared the effectiveness of two commercially available programs: a chemistry content drill program, Study Island and a Web-based brain-training program - Lumosity. The results will be presented.

Mini Presentation - C2 273

Influence of teacher content area certification on student success in high school science

Anna George, ageorge@uwlax.edu
University of Wisconsin, WI,
with Diana Mason

Teachers with specialized certifications have limited placement options while those with certifications to teach a broad range of courses may be asked to teach multiple courses within a year. Standardized testing is one of the predominant measures of the quality of instruction provided to students. Results indicate that schools with a higher percentage of teachers with some certification areas assigned to teach science classes tend to have a strong positive relationship with student success, while a large percentage of other certification areas tend to have negative relationship with student success. An overview of the impact of various science certification areas and recommendations for certification programs will be discussed.

Mini Presentation - C2 273

2:30 PMSingle block sessions - 45 min**Adding lustre to teaching about metals**

Chris Miedema,
cmiedema@ashbury.ca
Ashbury College, ON

A series of demonstrations and hands-on activities will be performed related to the oft-neglected topic of metals. These demonstrations can help teach new concepts directly or be bundled with other topics.

Workshop, single block - C2 168

Periodic nomenclature

Edmund Escudero,
escudero_e@summitcds.org
Summit Country Day School, OH

Give your students the choice of memorizing a long list of anions and cations or use the periodic table as a means of deriving the names and formulas for all but 13 ions.

Presentation, single block - C2 361

I have an iPad: Now what?

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

Recently, many schools have become one-to-one iPad schools, but teachers have received little or no training in how to use the iPad effectively for science instruction. The goal of this workshop is to demonstrate how to use the iPad and all its potential effectively in the science classroom.

Presentation, single block - QNC 1506

Using Brownian motion to estimate Avogadro's number

Herb Deruyter,
hderuyter@rogers.com
Waterloo Collegiate Institute (retired), ON

In 1905 Albert Einstein presented a theory of Brownian motion that suggested the experimental means to determine Avogadro's number, N . Jean Perrin reported an experimental value for N three years later. We recreate Perrin's experiment to estimate Avogadro's constant using dilutions of dairy milk and video projection. The method is readily adaptable to the high school or undergraduate chemistry and physics laboratory. The merits of the procedure are the unsurpassed ease of set up and data collection. Preliminary experimental work by the authors and high school students using this approach yield estimates of Avogadro's constant in good agreement with the accepted value.

Presentation, single block - EIT 2053

Five minute demos

Betty Catelli, bcatelli@sbcglobal.net
Southington High School (retired), CT

A number of short demonstrations will be shown, along with suggestions as to where they fit in the curriculum. Many use only household chemicals. All are easy to set up and require little special equipment.

Presentation, single block - B2 350

Double block sessions - 105 min**Chemistry for beginning Vernier users**

Jack Randall, aharr@vernier.com
Vernier Software & Technology, OR,
with Elaine Nam

If you're new to the world of data collection with Vernier, or would like a basic refresher, this workshop is for you. Join us for hands-on practice using LabQuest 2- an enormously popular stand-alone device.

Exhibitor Workshop, double block - ESC 149

Rockets, reactions and ratios

Deborah Maloney,
deborah.maloney@sau41.org
Hollis Brookline High School, NH,
with Linda Saari

All students become interested when you take a common reaction to new heights by incorporating restrictions and challenges in this exciting inquiry based competition. Reactions, stoichiometry, gas laws and more!

Workshop, double block - ESC 319

Show me the (elements in) money!

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

Come and do interesting and simple experiments with coins and paper money that show how chemistry impacts our daily lives.

Paid Workshop, double block - DC 1304

Demonstrations that promote wonder and inquiry

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

About two dozen demonstrations will be performed that engage the student and foster critical thinking. Most involve minimal costs and set-up. Topics include light, microwaves, density, pressure, reactions, combustion and much more.

Presentation, double block - MC 1056

Triple block sessions - 165 min**AP Chemistry inquiry problem based laboratory experiments**

Jesse Bernstein,
bernsteinj@miamicountryday.org
Miami Country Day School, FL,
with Jeffrey Bracken and Paul Price

Here is an AP lab workshop that will satisfy virtually all of your desires: over thirty-five inquiry and forensic based lab activities that parallel those now recommended (or required) by the College Board. The available manual contains detailed teacher notes, pictures of setups and sample data.

Workshop, triple block - ESC 146



3:30 PM – 5:15 PM

Symposium – Discrepant Events

Pressure power tower

John Eix, jeix@sympatico.ca
Upper Canada College (retired), ON

This discrepant event is used to review concepts related to the pressure exerted by a column of fluid.

Mini presentation - DC 1302

Entropic rubber band

Ken Lyle, kenneth.lyle@duke.edu
Duke University, NC,
with Natalie Miller

A rubber band is suspended on a metal rod and stretched using about 1.5 kg of mass. The band is then heated. Does the rubber band get longer or shorter?

Mini presentation - DC 1302

BBQ lighter gun

Doug De La Matter,
doug@dougdelamatter.com
(retired), ON

A BBQ lighter gun can be made from simple materials and is both safe and useful to the classroom teacher in many ways. Students are always interested in explosions but seldom appreciate the power that chemicals exert during such an event. This device shows the surprising speed and forces that result from the ignition of a single drop of alcohol. Often students fail to appreciate the importance of wearing safety glasses when doing labs. They are focused only on their equipment, not that of their neighbours. This is also useful when discussing combustion, rate of reaction, exothermic reactions and activation energies.

Mini presentation - DC 1302

Avogadro's hypothesis tested

Andy Cherkas, cherkas@sympatico.ca
Stouffville District Secondary School,
ON

Acetylene [ethyne] gas is generated and mixed according to Avogadro's hypothesis and ignited. What the students predict does not happen! Why and what should the correct prediction be?

Mini presentation - DC 1302

The gray and white block: A critical thinking activity

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

Check out this intriguing activity that could be used to talk about the various science disciplines and about the scientific method. Alternately, it can be used when discussing light, transparency, translucency, opacity, shadows, clouds, weather, etc.

Mini presentation - DC 1302

3:30 PM

Single block sessions - 45 min

Chemical potential in focus – Osmosis and more

Regina Rueffler,
Regina.Rueffler@job-stiftung.de
Job Foundation, University of
Hamburg, Institute of Physical
Chemistry, Germany

An easy access to the chemical potential μ will be presented as well as its application to phenomena such as osmosis. Find out among other things how to construct your own "osmometer" by use of a carrot.

Presentation, single block - EIT 2053

Easy and free – Two ways to liven up your presentations

Amy Roediger,
roediger@mentorschools.org
Mentor High School, OH

Participants will experience Nearpod and Socrative, two free services that allow for interactive presentations and assessment.

Presentation, single block - B2 350

Double block sessions - 105 min

Having fun with the routine: Lewis structures, oxidation states, nomenclature, and stoichiometry

François Gauvin,
fgauvin@ustboniface.ca
Université de Saint-Boniface, MB

Come and share simple strategies and tricks that make drawing Lewis structures, finding oxidation states, naming compounds, and carrying out stoichiometric calculations simple and fun! This session will include discussions and exercises.

Workshop, double block - C2 361

Carolina investigations for AP Chemistry

Jen Black,
Jen.Black@carolina.com
Carolina Biological Supply Company,
NC

Bring inquiry to your classroom with new Carolina chemistry activities and see your classroom come alive. Carolina's new labs help students develop essential chemistry practices, understand core chemistry concepts, and learn chemistry through inquiry per the new AP Chemistry curriculum. Experience three different activities in this hands-on workshop. Handouts/ free giveaways.

Exhibitor Workshop, double block - C2 168

Use mobile learning devices to create your smart chemistry classroom

Diane Krone, kroned@comcast.net
North Jersey ACS Teacher Affiliates,
NJ, with Elizabeth Howson

Discover how free apps for smartphones and netbooks can help improve classroom organization, increase productivity, support individualized learning, and make your students more independent learners in this hands-on presentation.

Presentation, double block - QNC 1506

4:30 PM

*Single block sessions - 45 min***Make safety a habit! Flinn Scientific safety workshop**Irene Cesa, djones@flinnsci.com
Flinn Scientific, IL

Join us for simple, practical, and effective solutions to increase safety awareness and improve safety in the science classroom! If you have questions about how to get students to comply with safety rules - or how to get action from your administration - this workshop will help you solve your safety problems. Issues to be discussed include right-to-know laws and teacher liability; lab ventilation; purchase, storage and disposal of chemicals; chemical inventory; spill control; and more!

*Exhibitor Workshop, single block - ESC 319***Inquiry-based chemistry with Vernier**Jack Randall, aharr@vernier.com
Vernier Software & Technology, OR,
with Melissa Hill

Do you need to add inquiry labs to your chemistry course? In this hands-on workshop, you will learn how to conduct a chemistry inquiry investigation using sensors with our LabQuest 2.

*Exhibitor Workshop, single block - ESC 149***ChemGem 2013**Milan Sanader, msanader@cogeco.ca
STAO, ON

Enrich your high school chemistry class with demos recently published in the chemical literature. You will learn how to do these demos safely with new insights into how they work.

*Presentation, single block - QNC 1507***Get more activity out of the activity series**Chris Miedema,
cmiedema@ashbury.ca
Ashbury College, ON

This presentation will introduce a series of demonstrations, laboratories and concepts that apply the activity series to art, metallurgy and corrosion to help students explore their world.

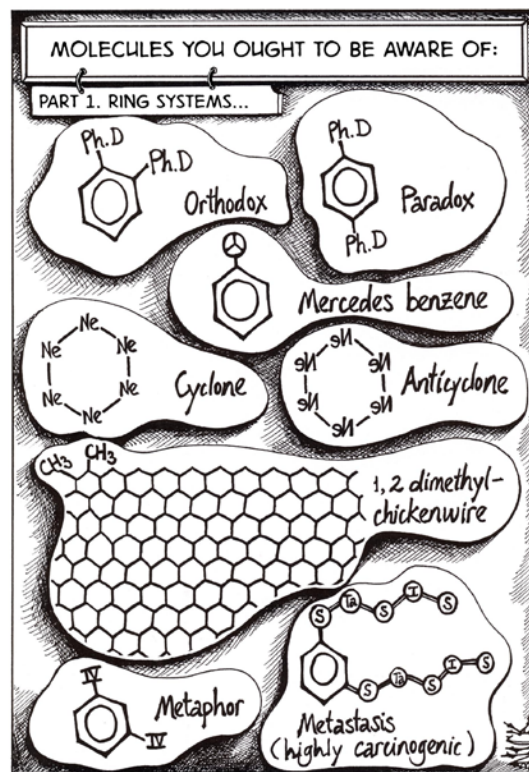
*Presentation, single block - QNC 2501***“Emergency Lesson Plans” for teaching chemistry across curricula**Marta Gmurczyk,
m_gmurczyk@acs.org
American Chemical Society, DC,
with Keith Lindblom

A variety of free “emergency lesson plans” are available from the American Chemical Society (ACS). They have been designed to supplement high school chemistry courses.

Some of these lesson plans explore relationships between chemical and historical subjects and teach scientific concepts in a historical context. Others focus on demystifying everyday chemistry. These emergency lesson plans feature reading material, videos, and a variety of activities (available online) that can be used in combination or separately, and are easily implemented by a substitute teacher.

*Presentation, single block - B2 350***Ideas for your grade 11 classes**Michael Jansen,
mjansen@crescentschool.org
Crescent School, ON

Come and get some useful resources - handouts, labs, etc - to enhance the learning of your grade 11 students.

Presentation, single block - EIT 2053*Cartoon by: Nick Kim (Nearing Zero)*



8:30 AM - 11:15 AM

Symposium - Student Centered Approaches to Teaching Chemistry

What is POGIL?

Laura Trout,
troutl@lanastercountryday.org
Lancaster Country Day School, PA

In this session we will provide some history of The POGIL Project, examples of POGIL activities, and show you where you can find out more about this great teaching pedagogy.

Presentation, single block - DC 1302

Target inquiry: Chemistry activities that actively engage students

Deborah Herrington,
herringd@gvsu.edu
Grand Valley State University, MI

Learn about several of the teacher designed and tested chemistry activities currently available through the Target Inquiry (TI) program and how to access all of the TI materials for free!

Mini presentation - DC 1302

Managing emotions: The key to success in a high school POGIL course?

Mare Sullivan, msullivan@bcsmail.org
Bellevue Christian High School, WA

There are simple proactive interventions a POGIL facilitator can use to help students manage their fear and anxiety. We learned these the hard way and now share them with you.

Presentation, single block - DC 1302

A model of cognitive chemistry

Jim Ross, jim@rosslattner.ca
Ross Lattner Educational Consultants, ON

Is there a pedagogical model of the atom? Each model we use responds to an experimental or conceptual challenge. Teachers need a model that provides: ease of learning, explanatory power, capacity to predict chemical behavior and durability over many years. The Ross Model of the atom fulfills this mission. Come prepared to contain your energy!

Workshop, double block - DC 1302

8:30 AM

Single block sessions - 45 min

Hands on stoichiometry

Alice Dutton, alicedutton@gmail.com
McKinney High School, TX

Learn to make and use an interactive manipulation (or technique) to help students learn mole and stoichiometry conversions.

Presentation, single block - QNC 1507

Orbitals and chemistry

Robert O'Connell,
robert.oconnell@utoronto.ca
Toronto District School Board, ON

It will be shown how wave theory explains the deficiencies of the Bohr model, how earlier models (Valence Bond Theory and the VSEPR model) are approximations of correct solutions, and how molecular orbitals from the wave theory account for chemical properties, which can be predicted by calculation. This presentation demonstrates how this can be accomplished using resources from within the class room.

Presentation, single block - QNC 1502

Using stories to teach science

Patrice Pages,
p_pages@acs.org
American Chemical Society, DC,
with Marta Gmurczyk

The Common Core State Standards recommend teaching literacy across the curriculum. For science teachers, developing scientific literacy and enhancing basic literacy can be accomplished by integrating science stories into classroom instruction. Science stories may also stimulate students' interest in the science behind everyday life and, as a result, increase their scientific knowledge. ChemMatters, a magazine for high school students published by the American Chemical Society, provides many free resources to support scientific literacy and student reading, enhance reading comprehension, and promote inquiry.

Presentation, single block - QNC 1506

Hands-on instead of worksheets

Jamie Flint,
jamie.flint@springbranchisd.com
Spring Woods High School, TX

Come see interactive activities that can be substituted for worksheets. The manipulatives cover a wide range of topics such as matter, buffers, thermo, bonding and organic to name a few. The activities will cover all levels of chemistry.

Workshop, single block - QNC 2501

Double block sessions - 105 min

Super chemistry connections

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

In this workshop for K-16 teachers and professors, participants will do exciting hands-on chemistry activities that are suitable for K-8 (elementary and middle school) students. The activities are from the Institute for Chemical Education's guidebooks entitled, "Super Science Connections" and "Fun with Chemistry" (Volumes 1 and 2).

Paid Workshop, double block - DC 1304



AP Chemistry activities with Ward's Science

Paul Schneeberger,
noel.vache@vwr.com
Ward's Science, NY

Concerned about the new standards requirements coming to your AP Chemistry course? Ward's Science is here to help you make a seamless transition. Join us in this hands-on workshop to discover 16 all-new Ward's AP Chemistry Investigations that are aligned with new College Board requirements for AP Chemistry released in February 2013, and ready to use right out of the box. Not an AP Chemistry teacher? Stop by to see how these kits can also help you save time in your general chemistry class. Ward's chemistry experts will guide you step-by-step and answer your toughest questions.

Exhibitor Workshop, double block - C2 273

Triple block sessions - 165 min

Simple visible spectroscopy for introductory chemistry

Sally Mitchell,
sbmitchell2@gmail.com
East Syracuse Minoa Central High School, NY,
with Gordon Bain

Get hands on experience with two simple lab experiments designed to help your students learn using a low cost scanning spectrophotometer.

1. Qualitative analysis – examine pure dyes as standards and then identify those same dyes in foodstuffs.
2. Quantitative analysis – use standard solutions to make a Beer's Law plot and determine the concentration of dye in a sports drink.

All teacher and student materials are supplied for you to take away and copy for your use.

Workshop, triple block - ESC 146

Teaching combustion in the high school classroom

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

Discover how to develop a combustion unit for the high school classroom and safely perform a variety of dramatic combustion reactions. Each participant receives a bound manual and supplies.

Paid Workshop, triple block - ESC 149

9:30 AM

Single block sessions - 45 min

Putting history back into chemistry

Greg Patenaude,
greg.patenaude@uleth.ca
University of Lethbridge, AB

History of chemistry courses are uncommon if not rare in Canada. This talk will focus on the design, delivery, and details of this course along with a brief summary on the successes and failures encountered thus far.

Presentation, single block - QNC 1506

Double block sessions - 105 min

A microscale chemistry workshop

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

Prepare to be amazed by Bob from the UK with practical chemistry and some demonstrations illustrating basic chemical reactions, electrolysis, electrode potentials, titrations and mole calculations.

Workshop, double block - C2 168

New investigations from the 6th edition of *Chemistry in the Community*

Michael Mury, m_mury@acs.org
American Chemical Society, DC,
with Pam Diaz, Cece Schwennsen, and Steve Long

The newest edition of *Chemistry in the Community* includes many changes including reorganization of the lab investigations. Here, you will complete several of the new lab investigations.

Workshop, double block - ESC 319

Constructing stoichiometric understanding through LEGO

Kenneth Hoffman,
ken.hoffman@mail.utoronto.ca
OISE/UT, ON,
with Shirley Ng

This workshop will present five hands-on activities leveraging student fluency with LEGO® bricks to improve student learning of stoichiometry. The rationale for using LEGO® bricks will also be addressed.

Workshop, double block - QNC 1507

Beyond the Bohr model

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

The Bohr-Rutherford model of the atom is useful but wrong. Let your students develop a quantum model of the atom through a series of simple demonstrations exploring different models of the atom.

Workshop, double block - QNC 1502



Putting a bang into your teaching

Harvey Gendreau,
hgendreau@rcn.com
Lab Safety Institute, MA,
with Bette Bridges

This is a hands-on make-and-take workshop where the participants will create: 1) a piezo sparker for remote ignition, 2) a potato gun for illustrating Boyle's Law, 3) a small sock cannon to demonstrate combustion reactions and other topics. With safety as a prime consideration, this will put excitement in your demos!

Paid Workshop, double block - QNC 2501

10:30 AM

Single block sessions - 45 min

A matter of laws and theory

Deborah Maloney,
deborah.maloney@sau41.org
Hollis Brookline High School, NH

Explore the laws supporting atomic theory. Using only mass relationships, without knowledge of formulas, follow the steps of early scientists in answering the question: how do we know atoms exist?

Presentation, single block - QNC 1506

AP Chemistry resources from the *Journal of Chemical Education*

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

The *Journal of Chemical Education* provides a wealth of resources for AP Chemistry teachers. We will share some of those resources, aligned to the new Framework, including materials from JCE's recent thematic issue: Editor-Selected Articles for the High School AP Chemistry Classroom.

Presentation, single block - QNC 2502

2:30 PM

Single block sessions - 45 min

Flipping with chemistry apps

Doug Ragan, dragan@hpseagles.net
Hudsonville High School, MI

Allow me to demonstrate the capabilities of some Chemistry iPad apps and their use in my flipped classroom.

Presentation, single block - QNC 1502

Some old, some new favorites

Patricia Vance, pat@vance.com
Sci Ed consultant, MI

A look back at a retired chemistry teacher's favorite activities and labs, along with some new "tricks" she has learned while training and observing teachers.

Presentation, single block - DC 1302

Mini-labware earrings

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

Participants will be given the opportunity to make earrings from mini-gas collecting bottles, Erlenmeyer flask, or flat bottomed-test tubes. Opportunities to also make shrink-a-ding earrings will be available.

Paid Workshop, single block - ESC 342

The 21st century learner in the chemistry classroom

Mahfuza Rahman,
mahfuza.rahman@gmail.com
West Humber Collegiate Institute, ON

Colleagues will gain an understanding of digital natives and digital immigrants and how to incorporate this understanding into the chemistry classroom. Ideas for incorporating technology into the chemistry classroom will be shared (i.e., Gizmos, Chem Collective, TedEd, Comic Strip, etc.) along with sample student-made films and resources that can be used in their own classrooms.

Workshop, single block - C2 160

Double block sessions - 105 min

AP Chemistry: Guided inquiry labs using probeware

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

Explore a guided-inquiry lab for AP Chemistry based on the POGIL approach. Discover how your students can meet AP requirements while gaining a deeper understanding of the chemistry content.

Exhibitor Workshop, double block - C2 168

Nitinol: The brainy wire

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

Come and learn about Nitinol, an interesting nickel-titanium alloy wire that's got memory, and its several everyday life applications.

Paid Workshop, double block - DC 1304

Technology makes STEM instruction a snap

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

The Next Generation Science Standards emphasize the need for the integration of STEM instruction in the science classroom. The goal of this hands-on workshop is to make STEM Instruction cross-curricular through the use of technology.

Workshop, double block - MC 1056

Concept mapping for chemistry

Susan Klemmer,
sue_klemmer@fivetowns.net
Camden Hills Regional High School, ME

This presentation offers a "how to" on teaching students to make and edit concept maps, ways to use maps for formative assessment and improved reading comprehension, and map technology. See student maps and make your own!

Workshop, double block - QNC 1506



Triple block sessions - 165 min

Visible spectroscopy for advanced placement or second course chemistry lab

Sally Mitchell, sbmitchell2@gmail.com
East Syracuse Minoa Central High School, NY,
with Gordon Bain

Use your spectrophotometer to monitor concentrations over time to study kinetics, and equilibrium as a function of temperature. The experiments will be described for both modern array-detector instruments and older SPEC 20 style units. All teacher and student materials are supplied for you to take away and copy for your use.

Workshop, triple block - ESC 146

Mix it up!

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

Discover new and innovative ways to teach about solutions, suspensions, colloids, polarity, detergents and acids/bases. The use of polymers to teach mixtures will also be included. Participants will receive a manual and supplies.

Paid Workshop, triple block - ESC 149

Inquiry problem based laboratory experiments

Jesse Bernstein,
bernsteinj@miamicountryday.org
Miami Country Day School, FL,
with Jeffrey Bracken and Paul Price

Here's a lab manual that expects students to think before they experiment! No more "what is the right answer" questions. Our lab manual is NOT a cookbook. This workshop allows you to experience a number of labs. In addition, the manual (available for purchase) contains detailed teacher notes, setup pictures, and a fully editable manual on CD.

Workshop, triple block - ESC 319

3:30 PM - 5:15 PM

Symposium - Generations

Is the beaker full?

Andy Cherkas,
cherkas@sympatico.ca
Stouffville District Secondary School,
ON, with Cathy Cherkas

Demonstrations to help show that there are spaces between particles as proposed by the particle [entity] theory of matter.

Mini presentation - DC 1302

Redox reactions

John Eix, jeix@sympatico.ca
Upper Canada College (retired), ON,
with Glen Vance

Electrolysis of copper(II) chloride and LED Christmas lights.

Mini presentation - DC 1302

Star Wars

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

We will do a series of demonstrations to the music from one of the Star Wars movies.

Mini presentation - DC 1302

A Mentos-free fountain

Doug De La Matter,
doug@dougdelamatter.com
(retired), ON

A fountain demo (no toxic ingredients) done with or without UV light shining on the presenter.

Mini presentation - DC 1302

Mentoring the next generation of pyros

Kathleen Holley,
kkholley@yahoo.com
M. B. Lamar High School, TX,
with Shannon McGee

Meet a member of the next generation of pyrotechnics-loving (and VERY safety-conscious) outstanding chemistry demonstrators!

Mini presentation - DC 1302

Safety with grease fires

Faye Twiddy,
faye.twiddy@yrdsb.edu.on.ca
York Region District School Board,
ON, with Andy Cherkas

I will melt candle wax onto a tin can and heat it until the wax has melted. I will then squirt water onto the wax. This shows what happens when water is used to put out a fire made of something that does not mix with water.

Mini presentation - DC 1302

Playing with fire

Glen Vance, gvance@ucc.on.ca
Upper Canada College, ON,
with John Eix

Brought to you by the Energy Liberation Front (ELF): Various mechanisms for the liberation of energy from bondage.

Mini presentation - DC 1302

Fire up for chemistry

Meg Young, megyoung@gmail.com
(retired), TX. with Melissa Jones
and Shelley Abernathy

This is a demonstration using a 50% alcohol/water solution and a cotton handkerchief that is soaked in the solution. Holding the handkerchief with tongs, it will be lit on fire. The handkerchief survives unharmed. Audience performs a cheer with demo.

Mini presentation - DC 1302



3:30 PM

Single block sessions - 45 min

Flipping the chemistry classroom

Nicholas Key,
nicholas.key@ugdsb.on.ca
John F Ross CVI, ON,
with David Greisman

Follow us through our first year of implementing a flipped classroom model of teaching. We will discuss the ups, downs, tech requirements and reflections on teaching with this method.

Presentation, single block - QNC 1502

Virtual Researcher On Call (VROC) experts on demand – real time connections with chemistry experts

Zoe Letwin, sjoyce@pirweb.org
VROC, ON

Looking for an inexpensive (or free!) way to connect your classroom with Chemistry researchers and professionals? With Virtual Researcher On Call (VROC), your students can get their questions answered by these experts in real-time. This session will show you what it's like to connect through online video with VROC's Chemistry experts. Although it's not necessary, you can bring your own tablet/laptop/phone to start exploring VROC's network of experts. Together, we can provide your students with a unique, interactive experience!

Exhibitor Workshop, single block - QNC 2502

“Nanodization” titanium jewelry

Ricky Tjandra, satellite@esqcamp.ca
University of Waterloo, ON

Participants will engage in the process of titanium anodizing to display the various uses of nanotechnology in our everyday lives. Participants will create an object out of titanium and change its colour by anodizing it in a homemade anodizing tank.

Workshop, single block - ESC 342

4:30 PM

Single block sessions - 45 min

You CAN teach an old dog new tricks

Kathy Kitzmann, kathyk@sefmd.org
Mercy High School, MI

The presenter will share a few of her tried and true favorite classroom and lab activities, but will also share some of the new things she has been learning about ... the flipped classroom, iPad use, on-line homework, guided inquiry, and more!

Presentation, single block - QNC 1502

Lab activities for high school chemistry using the Vernier SpectroVis Plus spectrophotometer

Aisling O'Connor,
aoconn13@fitchburgstate.edu
Fitchburg State University, MA,
with Nicholas Ludden

Labs illustrating spectrophotometry and other principles appropriate to grade 9-12 chemistry students will be discussed. These include qualitative and quantitative techniques such as establishing a standard calibration curve to find the concentration of unknowns, comparing absorption/emission spectra and kinetics experiments.

Presentation, single block - C2 168

Student-centred activities to reach more children in high school chemistry

Jasodhara Bhattacharya,
jasodhara.alchemistress@gmail.com
Science Education Consultant, ON,
with Omar Solomah

Representations, concept attainment, concept-maps, problem-solving maps and global issues: experience and take away multiple small-group activities for grade 9 through 12 chemistry classrooms to impact student understanding, participation and achievement.

Workshop, single block - QNC 1506

In situ environmental analysis: See portable gas chromatography-mass spectrometry (GC-MS) at work

Jonathan Grandy,
jgrandy@uwaterloo.ca
University of Waterloo, ON,
with Angel Rodriguez-Lafuente

During this workshop we will be demonstrating the capabilities of portable gas chromatography-mass spectrometry instrumentation. Solid phase microextraction will be used to extract environmental pollutants from a previously contaminated water sample. Participants will be given an opportunity to perform an analysis themselves, after a demonstration has been performed.

Workshop, single block - QNC 2502

Student presentations – How to debrief students after experiments to improve content understanding

Kevin Kopack, yogtofu@gmail.com
Lane Tech College Prep High School, IL

This presentation will demonstrate how to implement student presentations in order to assess students' understanding of laboratory assignments. This session will highlight how student-led summaries of laboratory experiences cement understanding and improve public speaking/presentation skills.

Presentation, single block - MC 1056



The first e-textbook software approved by the College Board for AP Chemistry

Ketan Trivedi,
Ketan@TrivediChemistry.com
Trivedi Chemistry, VA

Approved by the College Board as the first Electronic Software text, this multimedia, interactive software teaches college chemistry. It is current to the 2013/14 AP Chemistry curriculum. It is the only software available on a flash drive.

Presentation, single block - C2 160

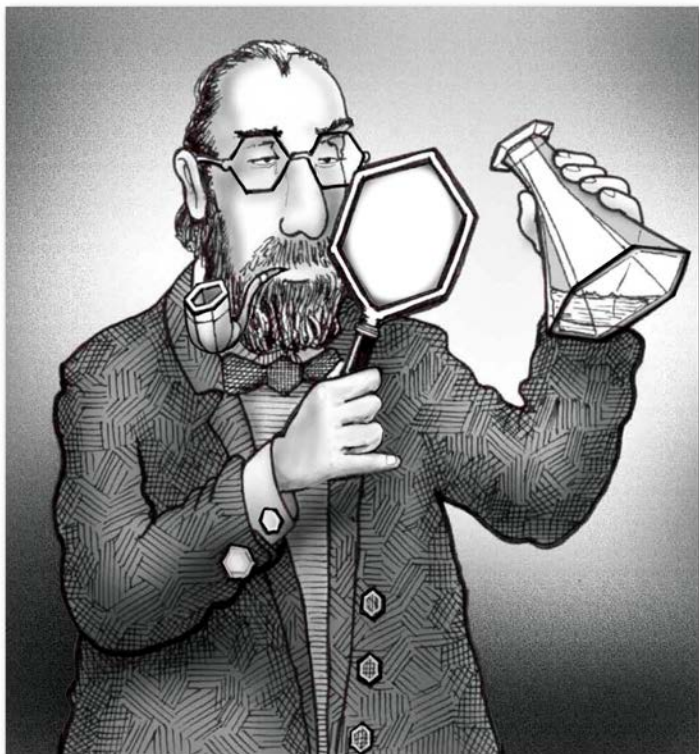
Prince Rupert's Drops: Glass stronger than steel!

Steve Long, stevejlong@gmail.com
Rogers High School, AR

What are Prince Rupert's Drops, and are they really stronger than steel? Find out as we look at a brief history of the drops — how they are made, why they behave as they do (magicians call them Dragon's Tears), and how they fit into your curriculum. The drops will be demonstrated and they are amazing. Some participants will have an opportunity to make and test their own Prince Rupert's Drops.

Presentation/Workshop, single block - ESC 342

GREAT EVENTS IN CHEMISTRY



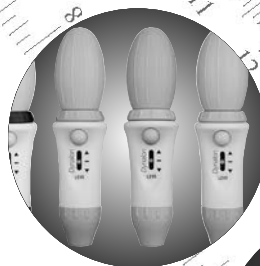
1865: Kekulé, moments before his brilliant insight into the structure of benzene.

Cartoon by: Nick Kim (Nearing Zero)

Measure success with

Dynalon
Labware

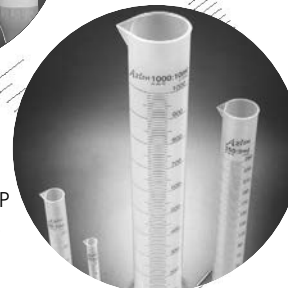
quality . value . service



Levo Bulb
Pipettor



MiniFix
Micropipette



Printed PP
Cylinders



Graduated
Bottles

For over 50 years,
Dynalon products
have provided:

- Safety
- Economy
- Accuracy
- Convenience
- Chemical Resistance

Order from your distributor of choice or contact Dynalon for information.

Tel 800-334-7585 | Fax 585-334-0241 | www.dynalon.com



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

123
Ah!
[230]

**The Element
of Surprise!**



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.

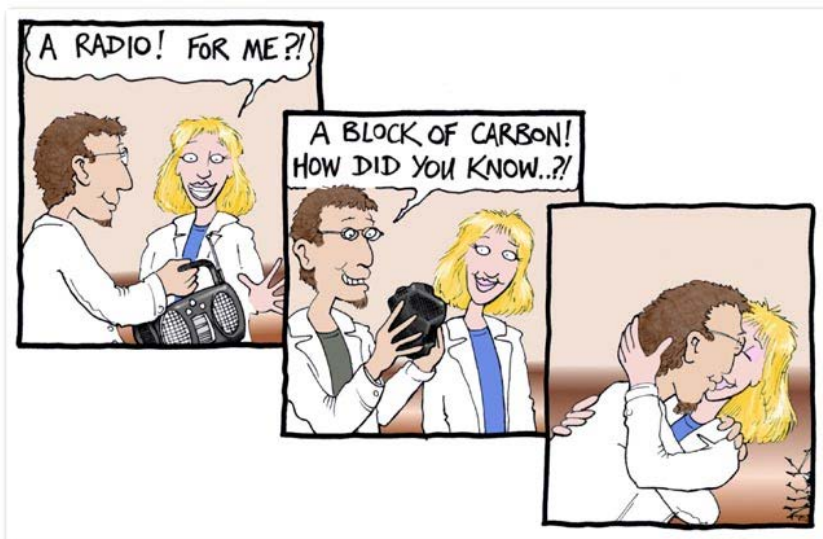
Presentation, single block - QNC 2501

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)



8:30 AM

Single block sessions - 45 min

Spiraling in first-year chemistry

Jill Barker, barkerj@frederick.k12.va.us
Millbrook High School, VA

This session will explore the process, challenges, and outcomes of changing from a thematic-centered to a spiral-centered approach to teaching chemistry.

Presentation, single block - QNC 1501

Laboratory reports - Applied and university

Robert O'Connell,
robert.oconnell@utoronto.ca
Toronto District School Board, ON,
with Brian Roche

This presentation will demonstrate how the expectations of the curriculum and labs in many universities are met by using a modified lab format and reporting process. This model, originally developed six years ago with Barb Nixon, has since been implemented in grade 9 -10 science labs (applied and academic streams) and with senior chemistry labs.

Presentation, single block - QNC 1506

Establish a biodiesel manufacturing club at your school!

Allan Fluharty, afluharty@cps.edu
Prosser Career Academy High School/
Chicago Public Schools, IL

Explore how easy it is to create at your school a biodiesel manufacturing facility that helps students learn about chemistry, engineering, and an environmentally friendly alternative to fossil fuel.

Presentation, single block - QNC 1507

Motivate your students' molecules!

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

As educators, it is our task to do our best to provide many opportunities that motivate and encourage student curiosity and enjoyment of the science of chemistry. Excellent everyday teaching, enthusiasm about the subject, and interest in students are but a few characteristics that are desirable and that are sure to enhance students' motivation. The presentation will include several ideas and strategies as well as a few simple hands-on activities.

Presentation, single block - QNC 2501

VSEPR, stoichiometry and thermo: No fire without math

Elizabeth Velikonja,
evelikonja@saintannsny.org
Saint Ann's School, NY,
with Deborah Brock

We'll present ideas for making VSEPR shapes come alive as well as chemical demonstrations that dramatically illustrate stoichiometry and thermodynamics.

Presentation, single block - MC 2034

Nanoscience and nanotechnology: small materials with huge applications

Jay Leitch, leitchj@uoguelph.ca
University of Guelph, ON

Nanotechnology is one of the fastest growing technological fields and is beginning to have an impact on numerous industries. Nanoscience is a multidisciplinary field that focuses on the unique physical/chemical properties of nanomaterials. So how can we teach this discipline to senior high school science students when these materials are too small to see by eye? This session will provide an overview of typical nanomaterials and their properties along with demonstrations and that would be appropriate for a senior biology, chemistry, or physics classroom in order to explain nanoscience.

Presentation, single block - QNC 2502

Double block sessions - 105 min

Become a pharmaceutical chemist!

Laura Ingram,
laura.ingram@uwaterloo.ca
University of Waterloo, ON

Tylenol is a widely used over-the-counter medicine because it is a powerful analgesic (relieves pain) and antipyretic (reduces fever). You will learn about the chemistry behind different over-the-counter medications, and will get a chance to synthesize and purify the chemical compound acetaminophen, the active pharmaceutical ingredient in Tylenol.

Workshop, double block - ESC 342

The farewell demonstrations

Andy Cherkas, cherkas@sympatico.ca
Stouffville DSS, ON

I will be retiring this year, so I will demonstrate 20 of my favourite demos and labs picked up from ChemEd and STAO conferences as well as those that I designed myself. All chemistry strands will be covered.

Presentation, double block - B1 271

*Mini sessions - 15 min
(8:30am-10:15am)*

Performance of college science majors on a categorizing grid of general chemistry compounds

Moises Camacho,
m_camacho_2001@yahoo.com
University of Puerto Rico, Puerto Rico

The categorizing grid is a classification technique in which concepts given randomly are categorized. The sample consisted of 100 students who had finished 8-24 credit hours of chemistry. It was expected that the group with 24 credit hours of chemistry would perform better than the group with 12 credit hours. There was no significant difference between the mean scores. Science education should promote genuine understanding beyond rote memorization.

Mini presentation - MC 1056



Performance of college science majors on the construction of conceptual map of matter

Moises Camacho,
m_camacho_2001@yahoo.com
University of Puerto Rico - Mayaguez Campus, Puerto Rico

The conceptual map is an assessment technique which consists of drawing the classes in which a macro concept given can be divided into its constituent subclasses until reaching the smallest indivisible subunits. This framework was given to a sample of about 60 subjects. The results were analyzed for two groups: those that had completed 16 hours of college chemistry and those which had completed 32 hours or more of college chemistry. There was no significant statistical difference between the mean scores of the two groups. About 90% of the students did not understand the nature of compounds and subclasses. Science should promote general understanding rather than memorization.

Mini presentation - MC 1056

Distance learning in graduate courses – Applications and tools in pharmaceutical chemistry

Oliver Grundmann, grundman@ufl.edu
University of Florida, FL

Several graduate programs have ventured into the realm of distance education with advancements in technology and content delivery. This presentation introduces the integration of virtual tools in this setting.

Mini presentation - MC 1056

Algorithmic questions for organic chemistry online assignments

Christine Hermann,
chermann@radford.edu
Radford University, VA

The writing of fill-in-the blank reactions, naming structures, and short answer questions as algorithmic Questions in WebAssign will be described.

Mini presentation - MC 1056

An integrated natural product extraction lab that promotes engagement and gives students ownership of their project

Nancy McKenzie,
nmckenzie@mcmaster.ca
McMaster University, ON

Students choose a natural product source (e.g., black pepper, daffodil bulbs) to extract. Their goal is to isolate a compound that may inhibit acetylcholinesterase, an enzyme involved in Alzheimer's disease.

Mini presentation - MC 1056

Combining chemistry with art: Employing acid-base indicators to illustrate the electrolysis of water

Rajeev Dabke,
dabke_rajeev@columbusstate.edu
Columbus State University, GA

An undergraduate classroom activity for illustrating electrolysis of water will be presented. The activity involves acid-base indicators and an electrolysis cell patterned on a vegetable-cutting board.

Mini presentation - MC 1056

Engaging students in chemistry outside the classroom: A look at the ChemClub

Karen Kaleuati, k_kaleuati@acs.org
American Chemical Society, DC,
with Marta Gmurczyk

The American Chemical Society (ACS) ChemClub is a high school chemistry club that provides students with a unique opportunity to experience chemistry beyond the classroom. Students from over 500 clubs learn every-day chemistry through hands-on activities, get involved in community projects, learn about chemistry careers, and enjoy social events, all while having fun. Join us to learn about this free and fast-growing program, and how you can easily start your own chemistry club with support and free resources from ACS.

Mini presentation - MC 1056

9:30 AM

Single block sessions - 45 min

Are your students ready for first-year chemistry?

Sue Stathopoulos and Rick Marta,
sckramer@uwaterloo.ca;
ramarta@uwaterloo.ca
University of Waterloo, ON

The transition from high school to university can be challenging for many students. As first year chemistry instructors we want to make this transition easier by providing our future students with knowledge and skills that will increase the possibility for success in university chemistry courses. In this interactive presentation we will highlight several important issues that we believe senior high school students should be made aware of before taking their first university chemistry course and lab.

Presentation, single block - QNC 1501

At the edge of the curriculum; At the center of science

Robert O'Connell,
robert.oconnell@utoronto.ca
Toronto District School Board, ON,
with Peter Bloch

This presentation covers the top 10 aspects of science research that our science teaching should include.

Presentation, single block - QNC 1506

Science Olympiad 101

Jean Weaver,
jweaver@prairieschool.com
The Prairie School, WI

Science Olympiad is an extracurricular science activity with events geared toward all sorts of students. Learn how contests are run and how even small schools can develop a strong program.

Presentation, single block - QNC 1507



Survival skills for 1st-5th year high school chemistry teachers

Doug Ragan, dragan@hpseagles.net
Hudsonville Public Schools, MI

Materials such as favorite lessons, labs, and other tricks of the trade will be shared with 1-5 yr high school chemistry teachers.

Presentation, single block - QNC 2501

Drawing Lewis dot structures – A student centered approach

Kristen Hillert,
kristen.hillert@esc13.txed.net
Education Service Center, Region 13, TX

Lead students to construct an understanding of Lewis dot structures by providing models and asking scaffolding questions. The student centered approach develops confidence and mastery of this foundational concept!

Workshop, single block - MC 2034

Nanotechnology engineering at the University of Waterloo

Jenn Coggan, jcoggan@uwaterloo.ca
University of Waterloo, ON,
with Howard Siu and Chris Backhouse

Nanotechnology Engineering is a multi-disciplinary engineering field that draws from and benefits areas such as materials science, engineering, chemistry, physics, biology, and medicine. Waterloo's Nanotechnology Engineering degree program is unique, and first-of-its-kind in North America. An introduction to nanotechnology will be presented along with an overview of the program. Emphasis will be placed on descriptions of the labs that are taught to the undergraduate students. To end, a tour of the new Mike and Ophelia Lazaridis Quantum-Nano Centre will be given.

Presentation, single block - QNC 2502

10:30 AM

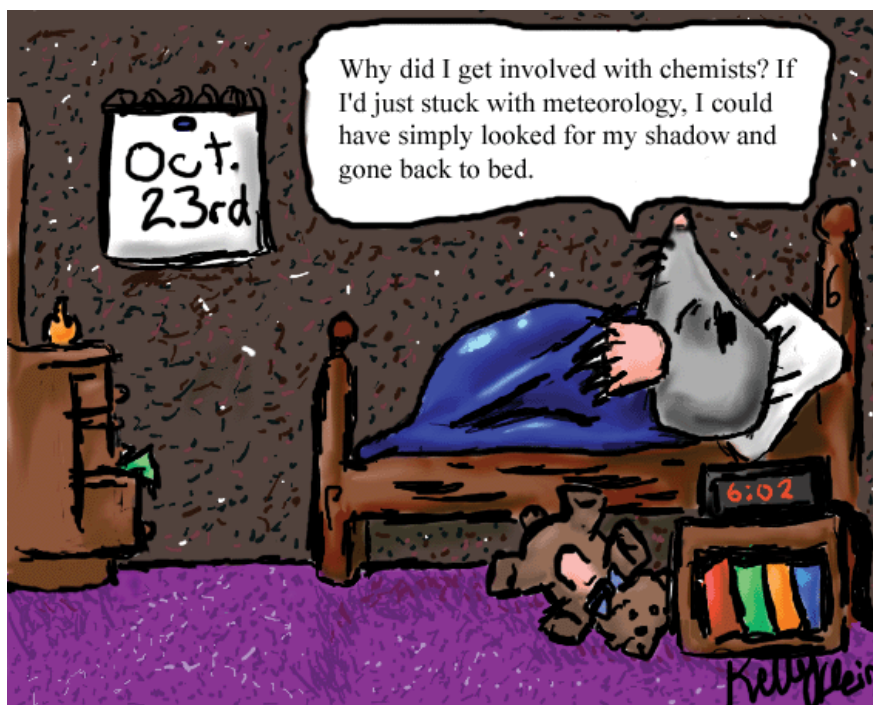
Closing Ceremonies

Serendipitous Chemistry

Joe Schwarcz, joe.schwarcz@mcgill.ca
McGill University, QC

Although many chemical discoveries have been the result of goal oriented research, there are a good number that have come about serendipitously. But as Louis Pasteur stated, "chance favours the prepared mind." William Perkin's chance discovery of synthetic dyes, Fleming's discovery of penicillin, Craven's discovery of aspirin's anti-clotting effect and the discovery of artificial sweeteners are just some of the examples to be explored.

Closing Ceremonies presentation - Hagey Hall



Illustrated by Kelly Hein, a grade 11 student at South Carleton High School in Richmond ON; idea by J.Hein