



For all For now Forever

# Seattle

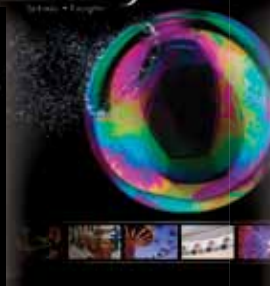
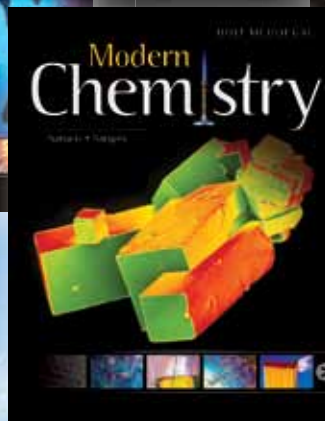
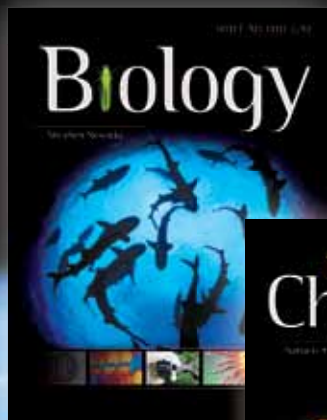
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NSTA 2011 Area Conference on Science Education



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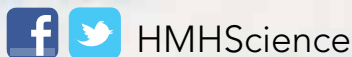
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## Tools for STEM Education for Elementary and Middle School Educators

The first NSTA STEM Forum & Expo will bring together nationally renowned STEM experts and practitioners and hands-on educators interested in learning about successful approaches and implementation of Science, Technology, Engineering, and Mathematics education into our schools and districts. STEM best practices, content, and integration processes are critical aspects for creating well-trained elementary and middle school educators who will need to radically increase student literacy in these STEM subjects. Join this very important discussion on STEM.

### Who Should Attend?

- K–8 educators who want to expand their understanding of STEM and learn how to integrate it into their own classrooms and schools.
- High school and college educators knowledgeable about what secondary and college-level students need to be successful in STEM course work.
- Stakeholders and administrators who must educate their teaching staff on the most current and successful STEM practices.

Register by  
**MARCH 23**  
and save.

For more information, visit  
[www.nsta.org/stemforum](http://www.nsta.org/stemforum)

**NSTA**





# NSTA 2011 Area Conference on Science Education

Seattle, Washington • December 8–10, 2011

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### Cover Photo

Middle school campers collect oceanographic data at Lake Washington with scientists from the University of Washington Joint Institute for the Study of the Atmosphere and Ocean (JISAO) at the 2007 NOAA Science Camp, a weeklong camp in Seattle. Photo courtesy of NOAA, Washington Sea Grant, and JISAO.

### National Science Teachers Association

1840 Wilson Blvd.  
Arlington, VA 22201-3000  
703-243-7100  
E-mail: [conferences@nsta.org](mailto:conferences@nsta.org)  
[www.nsta.org](http://www.nsta.org)

### NSTA Affiliates

Association for Multicultural Science Education (AMSE)  
Association for Science Teacher Education (ASTE)  
Association of Science-Technology Centers (ASTC)  
Council for Elementary Science International (CESI)  
Council of State Science Supervisors (CSSS)  
National Association for Research in Science Teaching (NARST)  
National Middle Level Science Teachers Association (NMLSTA)  
National Science Education Leadership Association (NSELA)  
Society for College Science Teachers (SCST)

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# Welcome to Seattle

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Mary McClellan Aronen



Craig Gabler



Dana Riley Black

- Effective Science Instruction for Diverse Learners
- Progressions in the Learning of Science
- STEM Connections: Fostering Life, Career, and College Readiness

The committee has planned a program filled with dynamic speakers, engaging presenters, and inspiring field trips. Whether a first-timer or veteran conference attendee, you will experience professional growth that will both rejuvenate and transform your science teaching. The opportunity to bring together a wealth of research, teaching strategies, and networking opportunities for our attendees has been driven by the need to attract a new generation of students to careers in science.

We are so glad you could join us in picturesque downtown Seattle for powerful, professional learning. Whether at the conference center or out in the region; whether listening to experts or connecting with colleagues—take advantage of this opportunity to grow.

2011 Seattle Conference Committee Leaders

Mary McClellan Aronen, Craig Gabler, and Dana Riley Black

The Seattle conference committee is delighted to welcome you to the Emerald City in the shadow of the Space Needle for what promises to be a fabulous NSTA conference.

Our keynote speaker, Leroy Hood, MD, PhD, president and co-founder of the Institute for Systems Biology in Seattle, and other renowned featured speakers will address selected topics related to the conference strands:

We at NSTA wish to express our heartfelt thanks to the members of the Washington Science Teachers Association for the many hours of time they volunteered in planning this conference.

## **Mary McClellan Aronen, NBCT**

Conference Chairperson  
Secondary Science Adjunct  
Faculty and Consultant  
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## **Dana Riley Black**

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Institute for Systems Biology  
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[dblack@systemsbiology.org](mailto:dblack@systemsbiology.org)

## Seattle Conference Committee

---

### **Program Committee**

#### ***Strand Leader: Effective Science Instruction for Diverse Learners***

Erin Jones  
Office of Superintendent for Public Instruction  
Olympia, WA

#### ***Strand Leader: Progressions in the Learning of Science***

Jim Minstrell  
FACET Innovations, LLC  
Seattle, WA

#### ***Strand Leader: STEM Connections: Fostering Life, Career, and College Readiness***

Carolyn Landel  
Washington STEM  
Seattle, WA

#### ***NSTA Director, District XVII***

Jennifer Thompson  
Juneau School District  
Juneau, AK

### **Local Arrangements Committee**

#### ***Exhibits Liaison***

Cheryl Lydon  
Puget Sound Educational Service District  
Seattle, WA

#### ***Field Trips Manager***

Sonia Siegel Vexler  
Pacific Science Center  
Seattle, WA

#### ***Guides Manager***

Scott McComb  
Aviation High School  
Des Moines, WA

#### ***Manager of Services for People with Disabilities***

Lyla Mae Crawford  
DO-IT Program  
University of Washington  
Seattle, WA

#### ***Publicity Manager***

Jeanne Ting Chowning  
Northwest Association for Biomedical Research  
Seattle, WA

#### ***Volunteers Manager***

Karen Madsen  
Educational Consultant  
Everett, WA

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- Plus *Picture-Perfect Science Lessons, Expanded 2nd Edition*, *Dig In!*, and *Outdoor Science* along with Class Packs containing all the materials necessary to conduct each lesson.
- T-shirts, polos, totes, mugs, pens, and other science gifts to take back to your classroom.
- One-on-one book signings with your favorite authors including Richard Konicek-Moran and Thomas Lord.
- All attendees get member pricing: 20% off all NSTA Press titles.
- Pick up the new Fall NSTA catalog!

## Store Hours

Wednesday	5:00 PM–7:00 PM
Thursday	7:00 AM–5:00 PM
Friday	7:00 AM–5:00 PM
Saturday	7:30 AM–Noon

Visit [www.nsta.org/store](http://www.nsta.org/store) to make a purchase today, or call 1-800-277-5300.

**NSTA** National  
Science  
Teachers  
Association



## President's Welcome

### Spirit, Opportunity, and Innovation: Science Education for a Smarter Planet



Welcome to the NSTA 2011 Seattle Area Conference on Science Education! This year, it has never been more critical to engage you in the dynamic professional conversation about outstanding science teaching. We are glad you could join us at this conference, one of the primary venues for communicating with all educators about the latest innova-

tions in science teaching, to deepen and strengthen our professional understanding of science pedagogy.

The conference team has built an outstanding program around the theme of *Science—For All, For Now, Forever*, with the strands of “Effective Science Instruction for Diverse Learners,” “Progressions in the Learning of Science,” and “STEM Connections: Fostering Life, Career, and College Readiness.” The theme and strands allow us to address questions such as:

- How can we model and implement the best research-based science teaching practices for all students?

- How can we reach ALL of our students with the spirit and passion for learning science and STEM connections (careers, college, and life)?
- How do we engage all science education stakeholders to make outstanding science teaching happen...that is, science education for a smarter planet?
- What role will *A Framework for K–12 Science Education* and the Next Generation Science Standards play in science teaching and learning?

As we pursue answers to these questions, I encourage you to take full advantage of this opportunity to network with new and current colleagues and your elected Board and Council members, see our featured speakers, explore the exhibit hall and exhibitor workshops, sign up for special ticketed events, and attend outstanding teacher workshops and presentations.

Again, I welcome you to the Seattle conference and look forward to meeting you. We must reach all of our students and ignite their spirit and creative energy in disciplines about which we are all passionate—science and science education forever!

Patricia Simmons  
2011–2012 NSTA President

## Contributors to the Seattle Conference

NSTA and the Seattle Planning Committee are extremely grateful to the following companies and associations for their generous contributions to the NSTA Seattle Area Conference on Science Education.

American Association of Physics Teachers  
American Chemical Society  
American Society for Engineering Education (ASEE)  
Carolina Biological Supply Co.  
Institute for Systems Biology  
Kendall Hunt Publishing Co.  
National Association of Biology Teachers (NABT)  
Southwest Airlines Co.  
Washington Science Teachers Association (WSTA)  
Washington STEM



The environment is important to science educators. These programs are recyclable and were printed on recycled paper.

## NSTA Conferences Go Green!

The National Science Teachers Association is committed to meeting today's environmental challenges by adopting eco-friendly practices both in our own day-to-day operations and at our conferences, workshops, and other events. In addition, we strongly encourage our contracted conference facilities to follow green practices as well. Here are some of the ways NSTA's conference department has worked to minimize our impact on the environment:

### Conference Previews

Gone are the days of bulky, newspaper-style advance programs. Brief conference previews allow us to be more focused in our conference content, since each preview is specific to a particular conference. As an added bonus, they are more environmentally friendly, as they dramatically reduce both our print and mailing requirements.

### Online Conference Information and Personal Scheduler

Most of your conference arrangements can now be accomplished online ([www.nsta.org/conferences](http://www.nsta.org/conferences)). Register and make your housing reservations on the web. Program details are available to you on our website using the Session Browser/Personal Scheduler. Scheduling information on our website is up to date and more complete than that available through a printed piece.

### Final Conference Programs by E-Mail

Conference registrants are now given the option of receiving an electronic version (PDF) of the final conference program by e-mail approximately two weeks prior to the conference, further reducing printing and shipping requirements.

### Recycled Paper and Sustainable Print Services

Conference previews and final conference programs are now printed on recycled paper. In addition, Walsworth Print Group, the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth Print Group works to reduce and recycle waste, use reduced or low-VOC chemicals, increase the recycled content of raw materials, and use soy- and/or vegetable-based inks. Walsworth Print Group has also obtained chain-of-custody certification for paper products to ensure they are being harvested from environmentally responsible sources.

### Green Initiatives at the Washington State Convention Center (WSSC)

An industry leader for more than two decades, the Washington State Convention Center's green practices have earned it awards for recycling and environmental conservation. This year, WSSC was named Best Green Event Venue in Washington by *Northwest Meetings + Events* magazine and is currently listed as one of Washington's Green 50 businesses by *Seattle Business* magazine.

- **Recycling:** The contents and packaging of WSSC's box lunches are 100 percent compostable. In addition, all disposable food service items provided to customers by the catering department are

compostable. This includes plates made of sustainable bamboo, wax-free coffee cups, and cutlery made from a corn-based resin. WSSC was named 2008 Recycler of the Year by Washington State Recycling Association.

- **Energy efficiency:** WSSC has invested in efficient lighting fixtures with a savings of more than 3,000,000 kilowatt-hours in electricity per year. Other conservation measures include replacing all incandescent exit signs with more efficient LED-type models. Water usage has been substantially reduced as well with the conversion of all plumbing fixtures to low-flow models.
- **Cleaning supplies:** Biodegradable, environmentally friendly chemicals are now in use to clean glass, fabric, and carpet, and clean and disinfect surfaces. All are Green Seal certified products and used for more than 80% of the building's maintenance needs. Paper towels and toilet rolls come from recycled sources.

### Eco-friendly Exhibition Practices

Our conference partner, Hargrove, Inc., offers many green product options and services in the production of our conference exhibitions, including 100% recyclable carpet and padding, recycled exhibit structures, a "reclaimer" that recycles 92% of all solvents the company uses in production of graphics, use of LP natural gas in 75–90% of show-site vehicles, and many biodegradable and recycled products such as trash bags and wastebaskets. Their green efforts are extended operationally with reductions in electricity, heating fuel, and water usage, as well as a move to 100% recyclable and biodegradable products.

### "Go Green" at the Seattle Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the Convention Center.
- Recycle or reuse your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- If you prefer to bring handouts to your session, use double-sided printing and/or recycled paper.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on the Session Browser/Personal Scheduler.
- Evaluate sessions attended via your smartphone or online.



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 [www.Facebook.com/ToshibaInnovation](http://www.Facebook.com/ToshibaInnovation)

 @ToshibaInnovate

—Photo courtesy of Tim Thompson, Seattle's Convention and Visitors Bureau



## Meeting Location and Times

The conference headquarters hotel is the Sheraton Seattle Hotel. Conference registration, the exhibits, NSTA Avenue, the Science Bookstore, and most sessions will be located at the Washington State Convention Center. Short courses and networking events will be held at the Sheraton. The conference will begin on Thursday, December 8, at 8:00 AM, and end on Saturday, December 10, at 12 Noon.

## Registration

Registration is required for participation in all conference activities and the exhibits. The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your “ticket of admission” to the Exhibit Hall and all conference activities except those for which a separate fee is stated (e.g., short courses, field trips, and networking events).

The NSTA Registration Area located in the South Lobby of the Convention Center will be open during the following hours:

Wed., Dec. 7	5:00–7:00 PM
Thu., Dec. 8	7:00 AM–5:00 PM
Fri., Dec. 9	7:00 AM–5:00 PM
Sat., Dec. 10	7:30 AM–12 Noon

If you misplace your badge or tickets, present your personal ID at the Badge Re-

print Counter in the Registration Area and you will be issued replacements. Only one replacement badge will be issued.

## Purchasing Ticketed Events

The Seattle Planning Committee has scheduled a variety of ticketed events. Each of these events requires a separate fee and ticket. You may purchase tickets for these events, space permitting, in the NSTA Registration Area. See the Conference Program section (starting on page 36) for details. Note that some events may have required advance registration.

## Ground Transportation to/from Airport

Sea-Tac International Airport (Sea-Tac) is less than 15 miles from downtown Seattle ([www.portseattle.org/sea-tac](http://www.portseattle.org/sea-tac)). Link Light Rail connects downtown Seattle to the airport with 11 stops in between. The ride takes 37 minutes from the airport to Westlake Center, which is three blocks from the Convention Center. Fare from the airport to the Westlake Center station is \$2.50 each way—Youth 6–18: \$2; Seniors 65+ and Disabled: 75 cents ([www.soundtransit.org](http://www.soundtransit.org)). Taxi fares to downtown hotels from the airport range from approximately \$35 to \$45 and a \$35 flat fee from downtown hotels to the airport.

## Getting Around Town

You’ll find lots of transportation options available to easily get around the city, including the Seattle Center Monorail. Across from the Space Needle, the nation’s first full-scale commercial monorail system provides a fun two-minute link from downtown Seattle to the Seattle Center daily ([www.seattlemonorail.com](http://www.seattlemonorail.com)). Seattle’s Convention and Visitors Bureau has a complete listing (<http://visitseattle.org>). Riding Metro buses is free in the downtown free-ride zone between 6:00 AM and 7:00 PM (<http://metro.kingcounty.gov>). The Seattle Waterfront Streetcar is served by Route 99. The route connects Seattle’s Elliott Bay waterfront, Pioneer Square Historic District, and International District ([www.seattlestreetcar.org](http://www.seattlestreetcar.org)). Interested in touring by water? Washington state ferries travel out of Seattle’s Pier 52 to nearby locations ([www.wsdot.wa.gov/ferries](http://www.wsdot.wa.gov/ferries)).

## Parking

Seattle has a handful of parking garages within walking distance of the Convention Center. For a list, visit [www.nsta.org/seattleparking](http://www.nsta.org/seattleparking).

## Airlines

The toll-free numbers to contact NSTA-designated airlines are as follows:

AirTran	866-683-8368	NSTA11*
American	800-433-1790	32DIAL <a href="http://www.aa.com">www.aa.com</a>
Continental	800-468-7022	ZJZE-606816** <a href="http://www.continental.com">www.continental.com</a>
Delta	800-328-1111	NM87Y
United	800-521-4041	510CK
Amtrak Rail	800-872-7245	X73F-921***

\*For AirTran phone reservations only

\*\*Continental has \$25 fee per ticket for phone reservations.

\*\*\*Amtrak offer not valid on Auto Train and Acela service. Phone reservations only.

## Discounted Rental Cars

The toll-free numbers to contact NSTA-designated car rental companies are as follows:

Enterprise	800-593-0505	32H7476
Hertz	800-654-2240	031C0016





Don't forget to visit the NSTA Science Bookstore. We offer a wide range of books as well as "I Love Science" product lines.



### NSTA Exhibits

NSTA exhibits are an essential feature of every NSTA conference. Here you will find the latest textbooks, computer hardware and software, laboratory equipment, industry-supported educational materials, summer opportunities, and many other exhibits that are designed to enhance your knowledge and teaching skills.

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission"

### Washington State Clock Hours

WSTA is a registered professional development "clock hour" provider in the State of Washington. For recertification and salary advancement, teachers are required to accrue advanced educational credits. Clock hours may be used to earn these necessary credits.

For a fee of \$20, WSTA will offer clock hours to Washington State teachers attending the Seattle conference. Simply stop by the Washington State Clock Hours booth with a completed conference scheduler (either the Professional Development Documentation Form following page 32 or a printout of your schedule using NSTA's Session Browser/Personal Scheduler.

WSTA will provide a 1:1 ratio of clock hours to hours attended.

to the Exhibit Hall and all conference activities. A complete list of exhibitors and contact information starts on page 127. A foldout map of the Exhibit Hall floor plan is available at Program Pickup.

**Exhibit Hall Hours.** Located in Hall 4B of the Convention Center, exhibits will be open for viewing during the following hours:

Thu., Dec. 8	11:00 AM–5:00 PM
Fri., Dec. 9	9:00 AM–5:00 PM
Sat., Dec. 10	9:00 AM–12 Noon

**Ribbon Cutting.** An opening ceremony is scheduled on Thursday at 11:00 AM at the entrance to the NSTA exhibits, Hall 4B.

**Leads Retrieval.** NSTA exhibitors use leads retrieval, a paperless tracking system that allows them to receive fast, accurate information about conference attendees who have visited their booths. With the leads retrieval system, an exhibitor scans your badge as you visit the booth. This allows exhibitors to send information to you while the conference is still fresh in your mind.

**Exhibitor Workshops.** Exhibitor-sponsored workshops for science teachers are offered throughout the conference. These workshops give you an opportunity to use a variety of commercial instructional materials. Attendance is on a first-come, first-served basis. See page 144 for a complete listing of exhibitor workshops.

### NSTA Avenue

Stop by NSTA Avenue and learn about NSTA's benefits, products, services, programs, and partners...and free gifts, too! Share with others, expand your knowledge, and earn rewards for you and your students. See page 139 for a complete list of NSTA services and programs.

### NSTA Science Bookstore

Award-winning, professional development titles; the newest books for 2011; and "I Love Science" T-shirts, mugs, and gifts galore stock the shelves in NSTA's bookstore.

Located in the Exhibit Hall, Hall 4A, you're invited to examine just-released *Science the "Write" Way*, *Learning and Teaching Scientific Inquiry*, and *Models-Based Science Teaching*, new books with a fresh perspective. For science educators looking for content knowledge, scientific methods, or a handbook on STEM, we carry the titles you've asked for. And topping it off, you can talk to many authors about their work and get a signature on your personal copy.

Don't forget—all conference attendees enjoy a 20% discount on NSTA Press® titles along with free shipping for online orders placed during the conference.

### Information Desk

Seattle's Convention and Visitors Bureau has an Information Desk located near the main entrance of the Convention Center that is available Monday–Friday, 9:00 AM–5:00 PM to assist with booking tours and making restaurant reservations.

### Housing Questions or Concerns?

If you have any questions or concerns about your housing, please contact the Seattle Housing Bureau toll-free at 888-877-0255.

### WSTA Booth

The **Washington Science Teachers Association (WSTA)** booth is located in the NSTA Registration Area. Stop by for information about Seattle and the state of Washington and the benefits of becoming a



member of WSTA. Membership forms and information on association activities will be available. Stop by the booth to update your information, renew your membership, or become a member. Find out what is happening in science education in Seattle and the state of Washington!

### Friday “Meet and Greet”

Be sure to stop by Friday from 11:00 AM to 12 Noon at the entrance to the Exhibit Hall for a special session. Come “meet and greet” with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!

### Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in and pick up your ribbon at

the Presenters/Presiders booth in the Registration Area after you have registered for the conference and received your name badge.

### Wi-Fi in Convention Center

Wireless internet is available in most “public spaces” of the ground level of the Convention Center. No code is required for access.

### NSTA Mobile Website

We invite you to visit the NSTA Mobile Website, [m.nsta.org](http://m.nsta.org), the best way to keep track of what’s happening at the conference from your phone. The mobile website features a slimmed-down version of our popular session browser tool, allowing you to view sessions by Date/Time, Session Format, Subject, and Keyword, and to evaluate those you have attended. The site also includes a map of Seattle with bookmarks for the conference hotels and Convention Center, a link to the

#nsta Twitter feed, NSTA news, and other important information. Please note that the site has been optimized for use with iPhone and Android devices.

If you have a barcode reader installed, point your phone’s camera at the image in the ad below to go directly to the NSTA mobile site.

We welcome your feedback about the conference mobile website. (*Note: This is not an app; it is a website optimized for viewing on phones.*)

### Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at [http://ecommerce.nsta.org/2011sea/conference\\_evaluation.asp](http://ecommerce.nsta.org/2011sea/conference_evaluation.asp).

### Lost and Found

All lost-and-found items will be turned in at the NSTA Exhibitor Registration counter at the Convention Center.

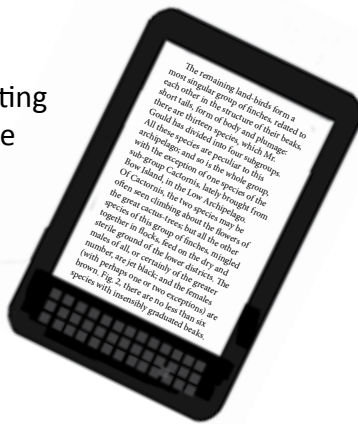
## Help us with your feedback...and get a chance for a free Kindle Fire

We’re giving you one more reason to evaluate conference sessions.

When you log on to [www.nsta.org/conferences/evaluations](http://www.nsta.org/conferences/evaluations) and fill out an evaluation, you get entered into a drawing for a chance to win a Kindle Fire, courtesy of the NSTA Conferences Department.

Your feedback helps us in creating the best conference experience for you and other attendees.

• **KINDLE FIRE GIVEAWAY**



## • MOBILE WEBSITE



- You can also evaluate sessions via your smartphone at [m.nsta.org](http://m.nsta.org).



**NSTA** National Science Teachers Association

## Conference Resources

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### Audiovisual Needs

NSTA will fulfill AV needs originally requested on the program proposals as long as the request is within the limits of equipment that NSTA provides (an LCD projector and screen). For any last-minute AV needs, presenters must arrange and pay for their own equipment. Technology Express, the designated AV company on-site, will be located in the following rooms:

- Room 601, Convention Center
- Fremont Room, Sheraton

### Message Center

A Message Center for conference attendees is available in the NSTA Registration Area. No messages, except extreme emergencies, can be broadcast over the public address system.

### First Aid Services

The First Aid room is located in the South Lobby immediately next to the entrance to Exhibit Hall 4A, across from Registration. For emergencies, contact Security at extension 5127 from an in-house phone, pick up any direct connect red phone, or call 206-694-5127.

### Business Services

FedEx Office (206-467-1767) is located on Level 1 of the Convention Center. Hours are 7:00 AM–9:00 PM Monday through Friday, and 9:00 AM–6:00 PM on Saturday and Sunday. Services include photocopies and laser prints (color and black/white), binding, faxes, PC rentals, network connections to both printers and the internet, and shipping services.

E-mail your documentation preparation requests right from your PC at [usa5161@fedex.com](mailto:usa5161@fedex.com).

The Sheraton has a FedEx Office Business Center (206-467-5885) that is located on the second floor on the west side of the Willow Room. Hours are 8:00 AM–5:00 PM Monday through Friday, and 9:00 AM–5:00 PM on Saturday and Sunday. Services include photocopies, faxes, binding, network connections to both printers and the internet, and shipping services. E-mail queries to [usa5539@fedex.com](mailto:usa5539@fedex.com). The center is accessible for self service with guestroom key.

---

## NEW! Online Session Evaluations and Tracking Professional Development

*All attendees can now evaluate sessions via their smartphones or online while simultaneously tracking their professional development certification (based on clock hours).*

Help NSTA's **GREEN** efforts by completing session evaluations online December 8–21, 2011, via your smartphone ([m.nsta.org](http://m.nsta.org)) while the session is fresh in your mind! Or attendees can visit [www.nsta.org/evaluations](http://www.nsta.org/evaluations) at a later time to complete a short online session evaluation for each session they attend. **And this year, we're giving away a Kindle Fire to one attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!**

Concurrent session presenters may also complete evaluation forms for their own sessions in order to track professional development credit.

To evaluate a session via [www.nsta.org/evaluations](http://www.nsta.org/evaluations):

- Enter your badge number (if you don't remember your badge number, click "help me find my badge number").
- Type the beginning of the session title in the "Lookup Session" field, scroll down to find the correct session, and click the "Submit Session" button. The session information will appear and you can begin to evaluate the session.
- When finished evaluating the session, click the "Submit Evaluation" button.
- Repeat this process for each session attended.

To evaluate a session via your smartphone, visit [m.nsta.org](http://m.nsta.org) and:

- Locate the appropriate session by schedule, format, subject, or keyword search from the home page and then click on the "Evaluate This Session" button.
- Enter your badge number at the top of the form and then answer the nine questions.

A Professional Development Documentation Form is included following page 32 to help attendees keep track of sessions/events attended that are NOT available for online session evaluation. This form can also be used to take notes on sessions attended that are available for online session evaluation.

Beginning January 5, 2012, an attendee can view his or her transcript at the NSTA Learning Center ([learningcenter.nsta.org](http://learningcenter.nsta.org)) by clicking on "My PD Record and Certificates." Attendees can also document credit for activities that are not being evaluated (e.g., short courses, Exhibit Hall visits, featured speakers, meetings, etc.). Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.



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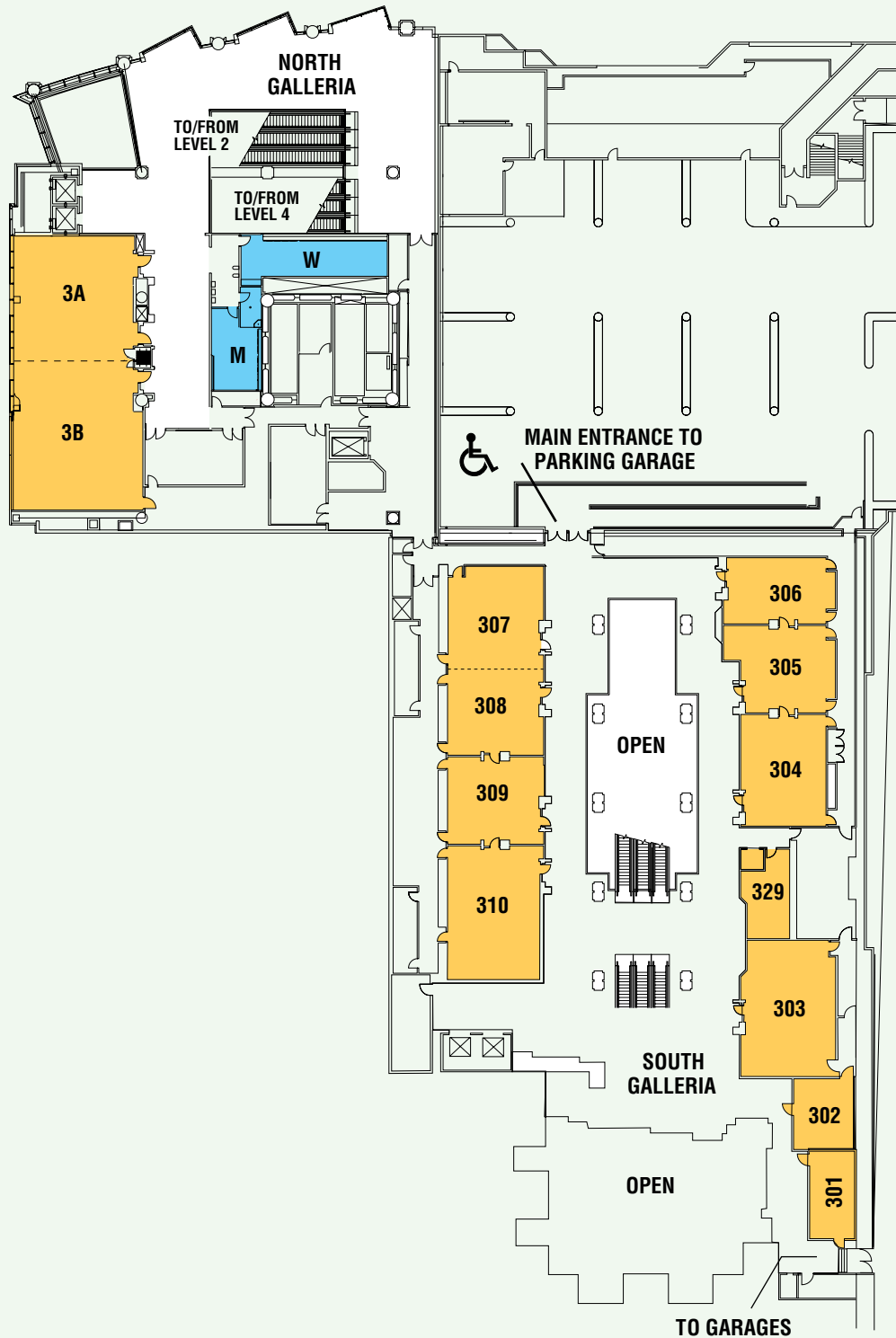
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# Washington State Convention Center

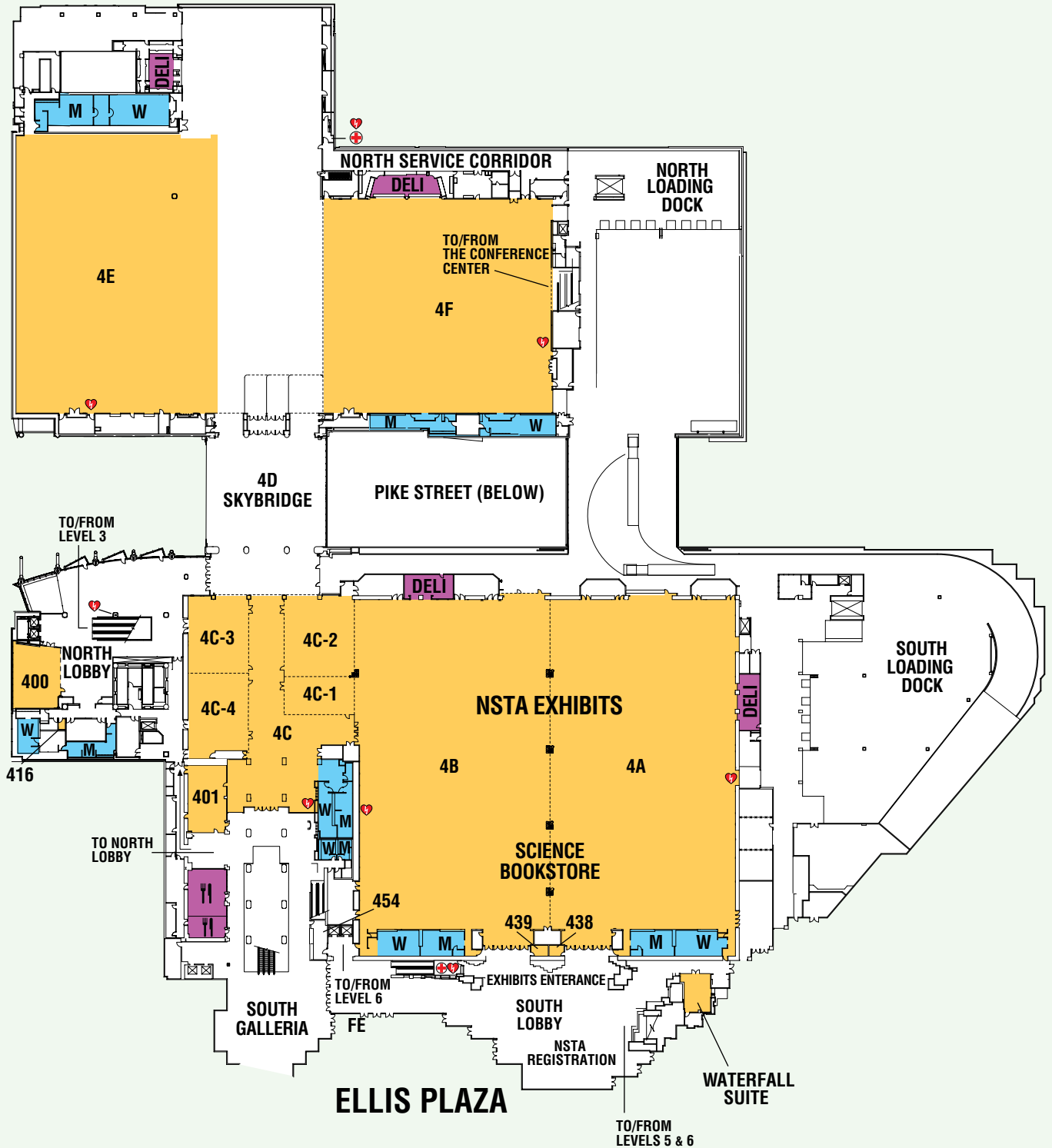
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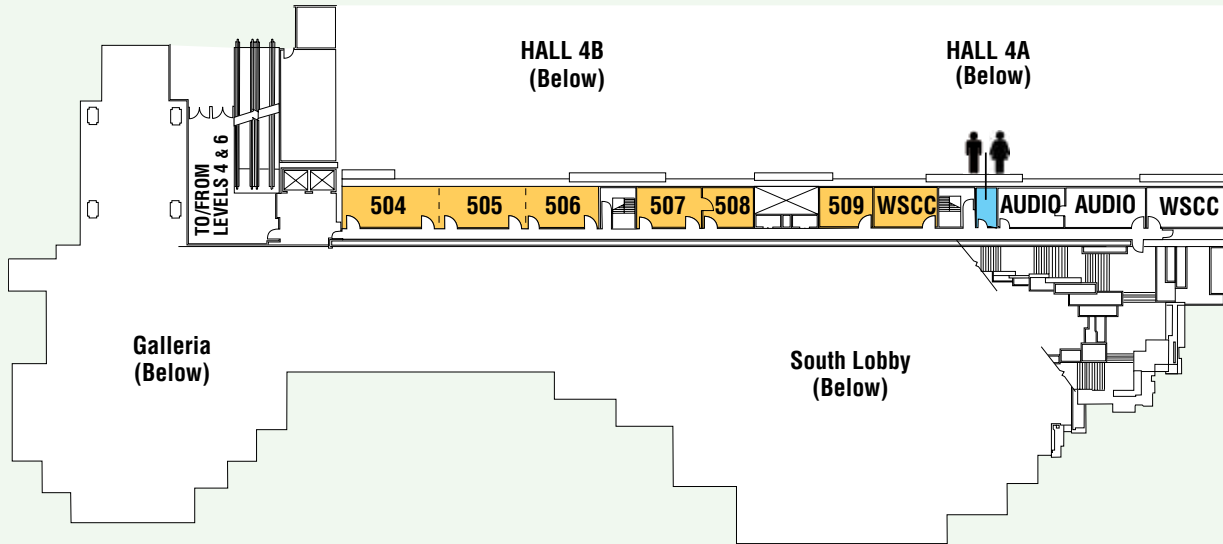
# Washington State Convention Center

## Level Four



# Washington State Convention Center

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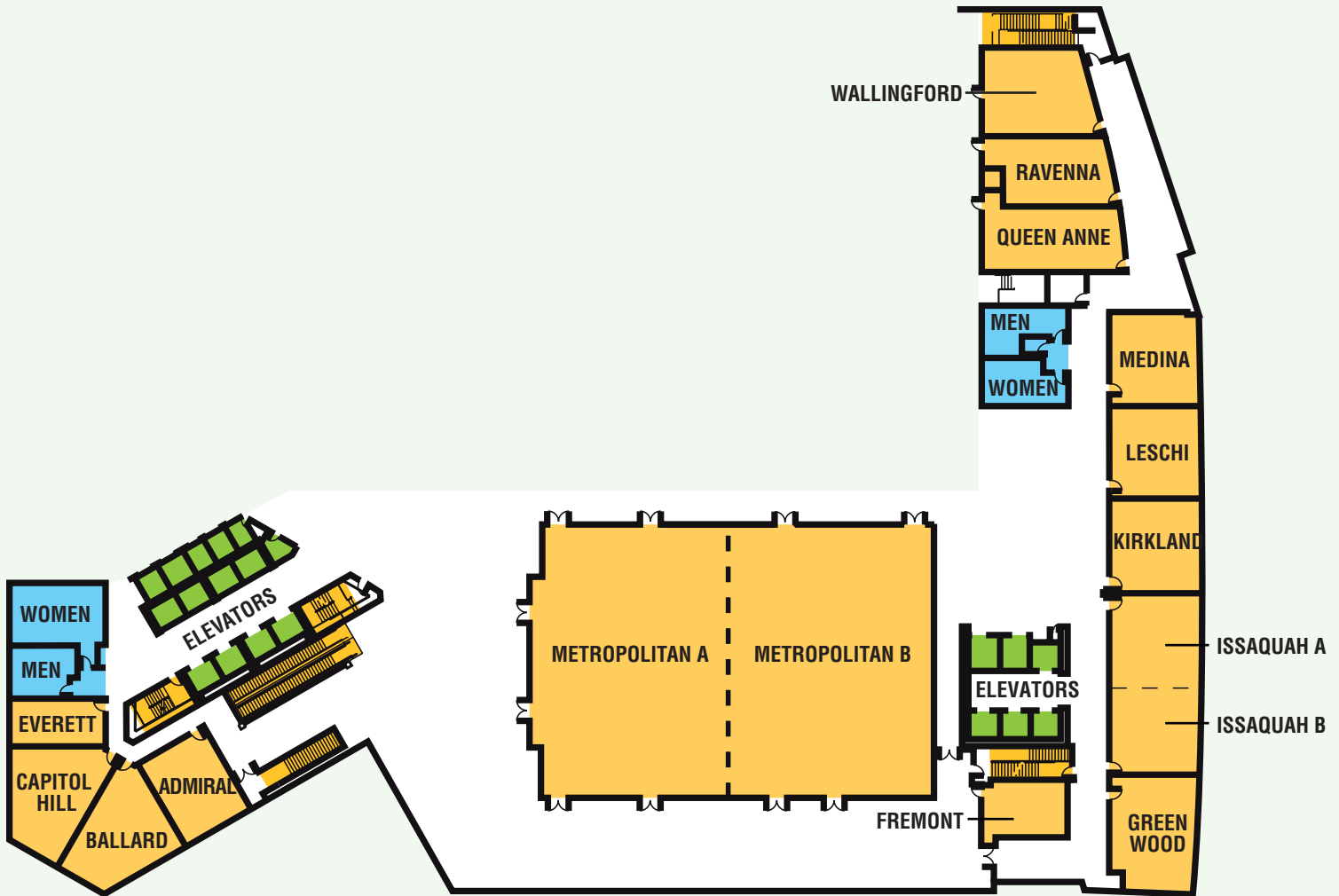


## Level Six



# Sheraton Seattle Hotel

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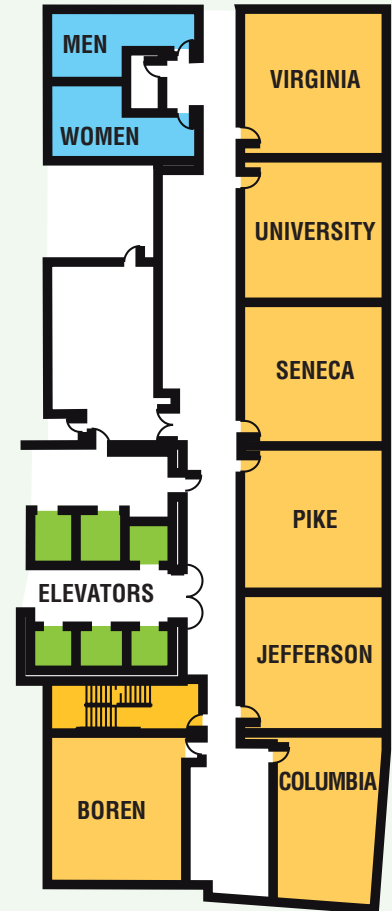




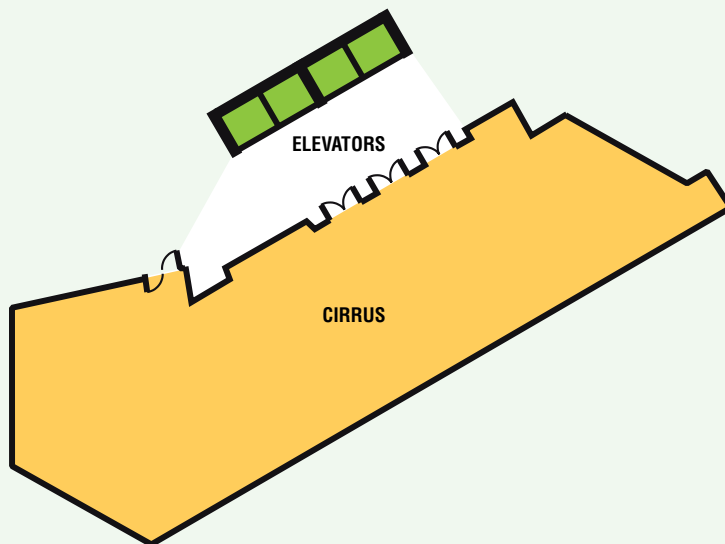
# Sheraton Seattle Hotel

## Level Four

## UNION STREET TOWER



## Level 35



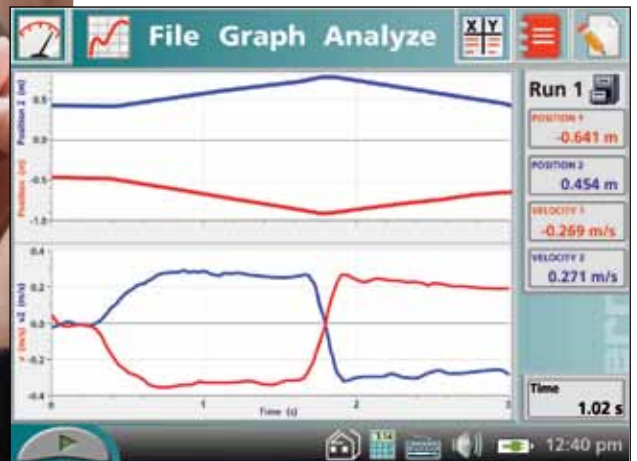


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### *NSTA Mission Statement*

The mission of NSTA is to promote excellence and innovation in science teaching and learning for all.

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Peter McLaren, CSSS  
Troy Sadler, NARST  
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Brenda Wojnowski, NSELA  
Brian Schmaefsky, SCST

*All cities are subject to change pending final negotiation.*

### National Conferences on Science Education

Indianapolis, Indiana  
March 29–April 1, 2012

San Antonio, Texas  
April 11–14, 2013

Boston, Massachusetts  
April 3–6, 2014

### 2012 STEM Forum & Expo

Atlantic City, New Jersey  
May 17–19

### Area Conferences on Science Education

#### 2012 Area Conferences

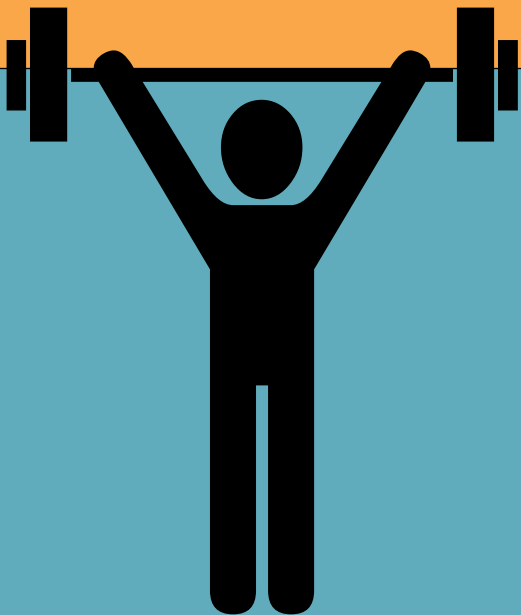
Louisville, Kentucky  
October 18–20

Atlanta, Georgia  
November 1–3

Phoenix, Arizona  
December 6–8

# EMPOWER OTHERS

## Submit a session proposal for an NSTA conference



#### 2012 Area Conferences on Science Education

Proposal Deadline: January 15, 2012

- Louisville, Kentucky: October 18–20, 2012
- Atlanta, Georgia: November 1–3, 2012
- Phoenix, Arizona: December 6–8, 2012

#### STEM Forum & Expo

Proposal Deadline: January 15, 2012

- Atlantic City, New Jersey: May 17–19, 2012

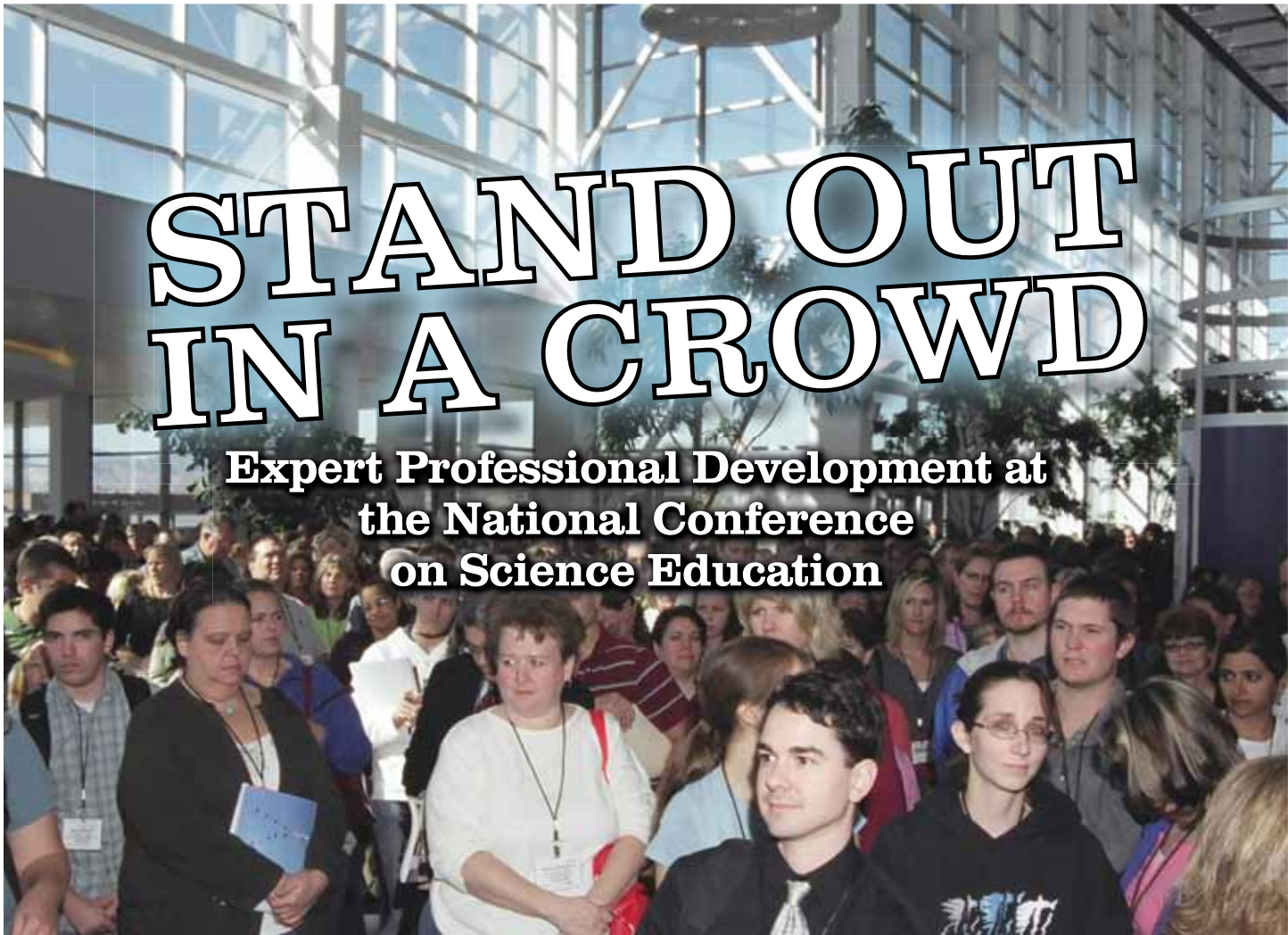
#### 2013 National Conference on Science Education

Proposal Deadline: April 15, 2012

- San Antonio, Texas: April 11–14, 2013

[www.nsta.org/conferences](http://www.nsta.org/conferences)

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# STAND OUT IN A CROWD

**Expert Professional Development at  
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on Science Education**

**Indianapolis, IN  
March 29 – April 1, 2012**

#### Professional Development Strands:

- Mapping Our Way to Success Through the New Core Standards
- Pathways to a Sustainable Planet
- Merging Inquiry, Creativity, and Innovation Through STEM
- Traveling New Instructional Roads Through Technology

#### Attendees can access:

- Content knowledge and ready-to-use teaching techniques.
- Presentations from inspirational science personalities.
- Student and teacher award and grant competitions.
- 2,000 sessions, workshops, field trips, and short courses for K–16 educators.
- Exhibit Hall featuring new products and giveaways from more than 400 exhibitors.
- NSTA Science Bookstore with 100s of professional development books; attendees receive a 20% discount.
- A networking community that nurtures your passion for science.

Visit [www.nsta.org](http://www.nsta.org) for updates  
or call 800.722.6782

**NSTA** National  
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Photo courtesy of Tim Thompson, Seattle's Convention and Visitors Bureau



## Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday from 8:00 to 9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! See page 50 for details.

## “Meet and Greet”

Be sure to stop by Friday from 11:00 AM to 12 Noon at the entrance to the Exhibit Hall to “meet and greet” with your elected NSTA officers on your way to the exhibits. See page 94 for details.

### Wednesday, December 7

8:30 AM–3:30 PM Picture-Perfect Science Preconference Workshop (C-1) . . . . . 45

### Thursday, December 8

8:00–9:00 AM First-Timers Conference Attendees’ Orientation . . . . . 50  
 8:00 AM–6:00 PM Engineering Day . . . . . 30  
 9:15–10:30 AM General Session: Leroy Hood . . . . . 53  
 11:00–11:05 AM Exhibits Opening/Ribbon Cutting Ceremony . . . . . 56  
 11:05 AM–5:00 PM Exhibits . . . . . 56  
 12:30–1:30 PM Featured Panel: Next Generation Science Standards . . . . . 58  
 2:00–3:00 PM Featured Speaker: Joseph Krajcik . . . . . 63  
 6:00–8:00 PM STEM Networking at Town Hall Reception (M-1) . . . . . 76

### Friday, December 9

8:00–10:00 AM CESI Breakfast (M-2) (Speaker: David T. Crowther). . . . . 84  
 8:00 AM–3:00 PM Biology Day . . . . . 33  
 8:00 AM–4:30 PM Chemistry Day . . . . . 32  
 8:00 AM–4:30 PM Physics Day . . . . . 33  
 9:00 AM–5:00 PM Exhibits . . . . . 86  
 9:30–10:30 AM Featured Speaker: Eric J. Jolly . . . . . 86  
 11:00 AM–12 Noon Featured Panel: Building Bridges Between In-School and Out-of-School STEM Learning . . . . . 93  
 11:00 AM–12 Noon “Meet and Greet” with the Presidents and Board/Council . . . . . 94  
 12 Noon–1:30 PM Preservice and New Teachers Luncheon (M-3) . . . . . 99  
 12:30–2:30 PM NSTA ESP Symposium . . . . . 103  
 3:30–5:00 PM Featured Panel: STEM Education for All: A Quixotic Quest or Well Within Reach? . . . . . 113

### Saturday, December 10

7:00–8:30 AM WSTA/OSTA Awards Breakfast (M-4) . . . . . 119  
 8:30–11:00 AM Science Matters Community Event . . . . . 122  
 9:00 AM–12 Noon Exhibits . . . . . 122

## Win a round-trip Southwest travel scholarship to the Indianapolis conference

Thanks to the generosity of Southwest Airlines, we’re giving away two Southwest Airline travel scholarships to the NSTA Indianapolis National Conference on Science Education, March 29–April 1!

The drawings will be held at 3:00 PM on Dec. 8 and Dec. 9 during the conference. The winners will be posted at the Development booth on the NSTA Avenue. Stop by their booth in the Exhibit Hall for all the details!



# NSTA Membership

## Become the Best Teacher You Can Be

Membership in NSTA delivers all the best professional development and resources a science educator needs.

- Members select one or more of the idea-packed, peer-reviewed journals designed for all grade levels. *Science and Children* (grades K–6); *Science Scope* (grades 6–9); *The Science Teacher* (grades 9–12), or *Journal of College Science Teaching*.
- NSTA National and Area Conferences are the world's largest gathering of science educators—an unparalleled professional development opportunity.
- The NSTA Learning Center offers year-round, face-to-face and online-learning opportunities with leading education providers.
- NSTA Listserv Email Subscriptions allow members to join any of 13 electronic lists to gain knowledge from industry professionals who gather online to share valuable information.
- Members save with discounts on insurance, Learning Center products, books, digital content and conference registration.
- And stay informed with our publications; *NSTA Reports*, *NSTA Book Beat*, *SciLinks* web content and our E-newsletters.



For more information or to become a member, visit [www.nsta.org/membership](http://www.nsta.org/membership) or call 1.800.722.6782

The Seattle Conference Committee has planned the conference around the following three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program.



### Effective Science Instruction for Diverse Learners

Our understanding and advancement of the world has been strengthened by the continued contributions of a diverse society. Students come to our classrooms with experiences unique to each, including native language, culture, abilities, and different learning modalities. Teachers need to honor students' diversity and have the knowledge and skills to be able to accurately assess each student's conceptual understanding, determine which research-based methods will help each student, and effectively implement differentiated instruction that leads to high-quality learning experiences. This strand will explore the diverse nature of learning styles and differentiated instructional strategies and tools for teachers to reach diverse learners.



### Progressions in the Learning of Science

Cognitive research (e.g., *How People Learn*; *Ready, Set, Science!*; *Brain Facts*) has provided important and relevant insights for classroom instruction, assessment, and learning progressions. In addition, newer science core standards emphasize the developmental progression of ideas a person has around a particular concept, providing insight on how and when instruction and assessment of ideas can be conducted in the classroom. This strand will focus on progressions in the learning of science from the earliest grades to higher education and beyond, leading to developmentally appropriate assessments of student understanding and informing policy decisions.



### STEM Connections: Fostering Life, Career, and College Readiness

The STEM (Science, Technology, Engineering, and Mathematics) acronym has emerged as a descriptor of educational policies and practices, workforce opportunities, and societal interactions touching our students in the 21st-century global community. Effective STEM education provides engaging learning opportunities, alignment and integration with other disciplines, and authentic relationships within the larger community. This strand explores the interdisciplinary nature of STEM education, STEM careers and opportunities, and effective STEM partnerships.

## Effective Science Instruction for Diverse Learners

### Thursday, December 8

#### 8:00–9:00 AM

Earth Shattering! Hands-On Earth Science Activities from the Department of Energy

#### 12:30–1:30 PM

Dare to Differentiate: Strategies and Various Teacher Tricks to Improve Science Instruction for ALL Learners

#### 2:00–3:00 PM

Dazzling Deceptions: Discrepant Events That Delight and Mystify!

#### 3:30–4:30 PM

Making Science Accessible for English Language Learners

#### 5:00–6:00 PM

Integrating Indigenous Knowledge and Science Education

### Friday, December 9

#### 9:30–10:30 AM

Featured Presentation: Connecting Community Experience and Science Learning (Speaker: Eric J. Jolly)

#### 11:00 AM–12 Noon

Equal Access to Science: Universal Design and Students with Disabilities

#### 12:30–1:30 PM

Enhancing Literacy Through Science Explorations

#### 12:30–3:30 PM

SC-6: Science for ELL: Vocabulary Instruction for Inquiry with English Language Learners (Tickets required: \$40)

#### 5:00–6:00 PM

Applying New Brain Research to Best Practices in Science: Reaching ALL Learners

### Saturday, December 10

#### 8:00–9:00 AM

Engaging English Language Learners and Striving Readers with Science Content Through Global Issues

#### 9:30–10:30 AM

Science and Writing: Documented Success in Increasing Achievement of Diverse Learners in Both Domains



## Progressions in the Learning of Science

### Thursday, December 8

#### 9:00 AM–12 Noon

SC-1: Assessments for Learning  
(Tickets required: \$27)

#### 12:30–1:30 PM

Applying Learning Progressions and Facet-based Approaches to Inform Curriculum and Assessment Design

#### 2:00–3:00 PM

Featured Presentation: Supporting Students' Integrated Understandings of Big Ideas and Scientific Practices Across Time  
(Speaker: Joseph Krajcik)

#### 2:00–3:00 PM

Using Learning Progressions to Support Formative Assessment Practices

Scaffolded Inquiry: Progressions in the Learning to Conduct Full Inquiry

#### 3:30–4:30 PM

Assessment for Learning and Learning Progressions

#### 5:00–6:00 PM

Making the Most of NSDL's Science Literacy Maps

### Friday, December 9

#### 8:00–9:00 AM

Teaching Systems as a Framework for Understanding

#### 9:00 AM–4:00 PM

SC-5: Teaching and Assessing Big Ideas Using Learning Progressions  
(Tickets required: \$44)

#### 9:30–10:30 AM

Learning Progressions: A Valuable Tool

#### 3:30–4:30 PM

Using Performance Assessments to Evaluate Readiness to Learn and Expose Misconceptions

#### 5:00–6:00 PM

What Are They Thinking? Formative Assessments Reveal Students' Thoughts

### Saturday, December 10

#### 9:30–10:30 AM

Science Learning Progressions: Good News and Cautions

#### 11:00 AM–12 Noon

A Learning Progression-based System for Promoting Understanding of Carbon-transforming Processes

## STEM Connections: Fostering Life, Career, and College Readiness

### Thursday, December 8

#### 8:00–9:00 AM

Successful Field Experiences Using Partnerships

#### 12 Noon–3:00 PM

SC-2: Teaching Electricity Through Hydropower  
(Tickets required: \$16)

#### 12:30–1:30 PM

Climate Data and Modeling

#### 2:00–3:00 PM

N2: The Layered Curriculum Development Model for Project-based STEM Education

#### 3:30–4:30 PM

Decoding Starlight—From Pixels to Images

#### 5:00–6:00 PM

Science, Stuff, and Sustainability: Engaging Students in Examining Systems, Resources, and Consumption

### Friday, December 9

#### 8:00–11:00 AM

SC-4: How to Move from Activity-based Science to STEM Project Based Learning  
(Tickets required: \$27)

#### 9:30–10:30 AM

Leveraging University K–12 Partnerships to Create Successful STEM Programs

#### 11:00 AM–12 Noon

Flights of Innovation: Ready Middle Schoolers for STEM Careers

#### 12:30–1:30 PM

Engineering Design: Constructing Ideas for Teachers

STEM and Problem-Based Learning (PBL) in a Comprehensive High School

#### 2:00–3:00 PM

Assessment and STEM Project Based Learning

#### 3:30–4:30 PM

STEM, SLCs, and Inquiry

#### 3:30–5:00 PM

Featured Panel: STEM Education for All: A Quixotic Quest or Well Within Reach?  
(Moderator: Julia Novy-Hildesley, Panelists: Brad Smith, Tyler Rice, NBCT, and Matthew Lyons)

#### 5:00–6:00 PM

Answering the Call to Innovate in STEM

### Saturday, December 10

#### 8:00–9:00 AM

Green Sustainable Design and Technology Courses for the 21st Century

#### 11:00 AM–12 Noon

Teach Science Content and Inspire STEM Careers with FREE Online Web Adventures

## Engineering Day at NSTA

*Sponsored by the American Society  
for Engineering Education*



*Thursday, December 8, 8:00 AM–6:00 PM  
Room 205, Convention Center*

The American Society for Engineering Education (ASEE) has put together a public/private partnership to develop ways of engaging elementary, middle, and high school students in engineering. Participants will learn about innovative, hands-on, project-based engineering activities, courses, curriculum options, events, outreach programs, and competitions that both encourage students to pursue engineering careers and enable teachers to learn about and experience engineering. Presenters will share lessons learned and examples of inquiry and design activities that have been developed in partnership with middle and high school science teachers for use in the classroom and in informal educational settings. The materials result from a collaboration of engineering educators and STEM professionals working with the U.S. Department of Defense, NASA, Robotics Education and Competition Foundation, and Autodesk.

8:00–9:00 AM	<b>eGFI: Engineering, Go For It!— Dream Up the Future</b> (p. 47)
11:00 AM–12 Noon	<b>UTeachEngineering: NASA Design Challenges</b> (p. 56)
12:30–1:30 PM	<b>Engineers in the Classroom, Oh My!</b> (p. 59)
2:00–3:00 PM	<b>VEX Robotics in the Classroom and in Competition</b> (p. 63)
3:30–4:30 PM	<b>NASA’s BEST Students (Beginning Engineering, Science, and Technology)</b> (p. 70)
5:00–6:00 PM	<b>eGFI: Engineering, Go For It!— Dream Up the Future</b> (p. 74)

## NSTA Exemplary Science Program (ESP)

*Science Education Reform*



*More Emphasis . . . Less Emphasis*

### Meeting the Reform Features Recommended in the National Science Education Standards

*Friday, December 9, 12:30–2:30 PM  
Room 3B, Convention Center*

The ESP series identifies people and places where the reforms recommended have emerged, including 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; and 7) Exemplary Science for Resolving Societal Challenges. The exemplars are discussed in ESP symposia at all NSTA conferences.

The series was conceived by Robert E. Yager (1982–1983 NSTA President), who continues ESP searches and ways of recognizing classroom successes while also encouraging more to try!

Symposium Participants:

*Coordinators: Herbert Brunkhorst, California State University, San Bernardino; Todd Campbell, Utah State University, Logan*

#### **Student Inquiry and Research (from ESP #5)**

Judith A. Schepler, Illinois Mathematics and Science Academy, Aurora

#### **Environment Inside and Outside the Classroom (from ESP #7)**

Oksana Bartosh, Directions Evidence and Policy Research Group, Vancouver, B.C., Canada

#### **“Why Wasn’t I Taught This Way?” (from ESP #5)**

Joseph I. Stepan, University of Wyoming, Laramie



# Hands-on, Eyes-on

Bring STEM education to every seat in the classroom with the **FlexCam® 2**

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### Chemistry Day at NSTA

#### Equilibrium, Le Chatelier, and Rate

For Grades 9–12

Friday, December 9, 8:00 AM–4:30 PM

4C-4, Convention Center

Sponsored by the American Chemical Society

Engage in activities, discussion, analyses, and assessment that help understanding of the relationships among equilibria, Le Chatelier’s principle, and rates and their roles in moving toward a more sustainable use of Earth’s resources.

Education research indicates a positive correlation between teacher content knowledge and student learning. The goals of this special program are to enhance and enrich secondary chemistry teachers’ knowledge of and interrelationships among equilibria, Le Chatelier, and rates through engagement in activities, discussion, and analyses that demonstrate how lessons on these concepts can be presented in a way that stimulates student thinking and prompts exploration of the complexity of the concepts as they relate to sustainability.

The content and structure of the program draws on several decades of experience the American Chemical Society has in activity-based curricula development that include incorporation of sustainability and Green Chemistry principles. Chemistry Day is a daylong series of lessons on equilibria, Le Chatelier’s principle, and rates—topics central to understanding the behavior of matter and chemical change. A complementary theme is incorporating activities as part of the assessment of student learning.

8:00–9:00 AM	<b>Equilibrium and Concentration</b> (p. 80)
9:30–10:30 AM	<b>Equilibrium and Energy</b> (p. 89)
11:00 AM–12 Noon	<b>Rate</b> (p. 95)
12:30–1:30 PM	<b>Catalysis</b> (p. 102)
2:00–3:00 PM	<b>Light as a Reactant and/or Product</b> (p. 106)
3:30–4:30 PM	<b>Half-Life</b> (p. 112)

### Middle School Chemistry Day

#### Big Ideas About the Very Small

Friday, December 9, 8:00 AM–4:30 PM

310, Convention Center

Sponsored by the American Chemical Society

Come to one, two, or as many sessions as you like during this full day of activities and information for teaching and learning middle school chemistry. Staff from the American Chemical Society (ACS) will introduce participants to the new free online resource *middleschoolchemistry.com*. Each of the six sessions will include hands-on activities and explanations from the website that participants can easily incorporate into their teaching to support their current textbook and curriculum. Handouts of the session activities will be available for all participants.

8:00–9:00 AM	<b>Solids, Liquids, and Gases: The Kinetic-molecular Theory of Matter</b> (p. 81)
9:30–10:30 AM	<b>Changes of State: Evaporation and Condensation</b> (p. 89)
11:00 AM–12 Noon	<b>Density: A Molecular View</b> (p. 96)
12:30–1:30 PM	<b>The Periodic Table, Energy Levels, and Bonding</b> (p. 102)
2:00–3:00 PM	<b>Polarity of the Water Molecule and Its Consequences</b> (p. 107)
3:30–4:30 PM	<b>Chemical Change: Breaking and Making Bonds</b> (p. 112)

*This form is for planning purposes only. Do NOT submit to NSTA.*

## NSTA 2011 Seattle Area Conference Professional Development Documentation Form

All attendees can evaluate concurrent teacher and exhibitor sessions online while simultaneously tracking professional development certification (based on clock hours) between December 8 and December 21, 2011. Use this form to keep track of all sessions/events attended during the Seattle conference. Sessions/events such as field trips, short courses, featured speakers, the General Session, meetings, and exhibit hall visits are not available for online evaluation. However, these events still qualify for professional development.

**Beginning January 5, 2012, Seattle transcripts can be accessed at the NSTA Learning Center ([learningcenter.nsta.org](http://learningcenter.nsta.org))** by logging on with your Seattle Badge ID# and then clicking on “My PD Record and Certificates.” Keep this form and use it to add the following activities to your Seattle transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee’s individual profile.

**First Name:** \_\_\_\_\_ **Last Name:** \_\_\_\_\_ **Badge ID#** \_\_\_\_\_

Visit [m.nsta.org](http://m.nsta.org) to evaluate sessions via your smartphone, or go to [www.nsta.org/evaluations](http://www.nsta.org/evaluations) to evaluate sessions (workshops, presentations, and exhibitor workshops) online. See page 14 of the conference program for instructions. **And don’t forget, the more sessions you attend and evaluate, the more chances you have to win a Kindle Fire!**

### Sample Questions:

- I. I selected this session:
  - a. for immediate classroom use.
  - b. based on the reputation of the speaker.
  - c. to improve my personal pedagogical knowledge/skill.
  - d. to improve my science content knowledge.
2. The session met my needs.
3. The information presented was clear and well organized.
4. Safe practices were employed.
5. The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press sessions).
6. The session should be repeated at another NSTA conference.

### Sample Responses:

1=Strongly Agree    2=Agree    3=Neutral    4=Disagree    5=Strongly Disagree

### Wednesday, December 7 8:30 AM–3:30 PM

Start Time    End Time    Activity/Event Title

Start Time	End Time	Activity/Event Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

***We’re giving a Kindle Fire to one lucky attendee who evaluates sessions that he or she attends. The more sessions you attend and evaluate, the more chances you have to win!***

**Thursday, December 8 8:00 AM–6:10 PM**

Start Time	End Time	Activity/Event Title
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**Friday, December 9 8:00 AM–10:00 PM**

Start Time	End Time	Activity/Event Title
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**Saturday, December 10 8:00 AM–3:00 PM**

Start Time	End Time	Activity/Event Title
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____



## Biology Day at NSTA

Sponsored by the National Association of Biology Teachers



Friday, December 9, 8:00 AM–3:00 PM  
2B, Convention Center

NABT is proud to present Biology Day. Join us for a day of sessions designed to give you the resources and tools you need to excel as a biology and life science teacher. Featuring informative speakers and hands-on workshops, Biology Day session topics include human evolution, biotechnology, and genetics, as well as a simulated Zombie plague. From free resources to expert tips, Biology Day provides relevant information and pedagogy for every biology teacher at every level. Enhance your teaching, engage your students, and enjoy NABT Biology Day in Seattle!

8:00–9:00 AM	<b>FREE Classroom Resources for Teaching Evolution</b> (p. 79)
9:30–10:30 AM	<b>FREE Resources from the Howard Hughes Medical Institute to Enhance Your Lessons on DNA and Biotechnology</b> (p. 87)
11:00 AM–12 Noon	<b>FREE Resources for Teaching Gene Expression and Gene Regulation</b> (p. 94)
12:30–1:30 PM	<b>STEMware: Zombie Plague</b> (p. 100)
2:00–3:00 PM	<b>Hands-On Activities and Demonstrations to Stimulate Inquiry in Biology</b> (p. 106)

## Physics Day at NSTA

Sponsored by the American Association of Physics Teachers (AAPT) and the Washington Section of AAPT



Friday, December 9, 8:00 AM–4:30 PM  
608, Convention Center

The American Association of Physics Teachers offers a full day of physics content at the Seattle area conference. Physics Day consists of presentations and interactive lecture demonstrations on physics topics of current interest. Participants will gain direct experience on instructional approaches using invention and inquiry through active learning. Physics Day in Seattle is being organized by the Washington Section of the American Association of Physics Teachers.

8:00–9:30 AM	<b>Invention Tasks That Promote Proportional Reasoning Skills in Physics and Physical Science</b> (p. 84)
9:30–10:30 AM	<b>Putting Student Energy to Use with a Bike Generator!</b> (p. 88)
11:00 AM–12:45 PM	<b>Physics by Inquiry: A Guided Inquiry Curriculum (AAPT/SCST Session)</b> (p. 98)
1:00–1:45 PM	<b>Engaging Independent Projects to Teach Energy</b> (p. 103)
2:00–3:30 PM	<b>Active Learning of Introductory Optics: Interactive Lecture Demonstrations and Optics Magic Tricks</b> (p. 109)
3:30–4:30 PM	<b>Interactive Lecture Demonstrations for Smaller Classrooms</b> (p. 112)

## NSTA Press Sessions

NSTA Press® offers new classroom ideas and standards-based strategies, from Earth science to nanoscience and from preK to college. Join NSTA Press authors for these sessions linked to the topics of their books.

### Thursday, December 8

- 8:00–9:00 AM      What Were They Thinking? (p. 47)
- 2:00–3:00 PM      A Framework and Tools to Make Tough  
Grades 3–5 Science Topics Approachable  
(p. 66)
- 3:30–4:30 PM      *Picture-Perfect Science Lessons, Grades 3–6* (p. 71)

### Friday, December 9

- 8:00–9:00 AM      *The Gourmet Lab* (p. 79)
- 11:00 AM–12 Noon    Implementing Research Projects as Part  
of the STEM Curriculum (p. 94)
- 12:30–1:30 PM      Bringing Outdoor Science into Your  
Classroom (p. 102)
- 2:00–3:00 PM      Team Teaching Science: You Can Do It!  
(p. 104)
- 3:30–4:30 PM      Putting the Science into PLCs (p. 110)

### Saturday, December 10

- 8:00–9:00 AM      *Picture-Perfect Science Lessons, Grades K–4*  
(p. 120)

## NSTA Avenue Sessions

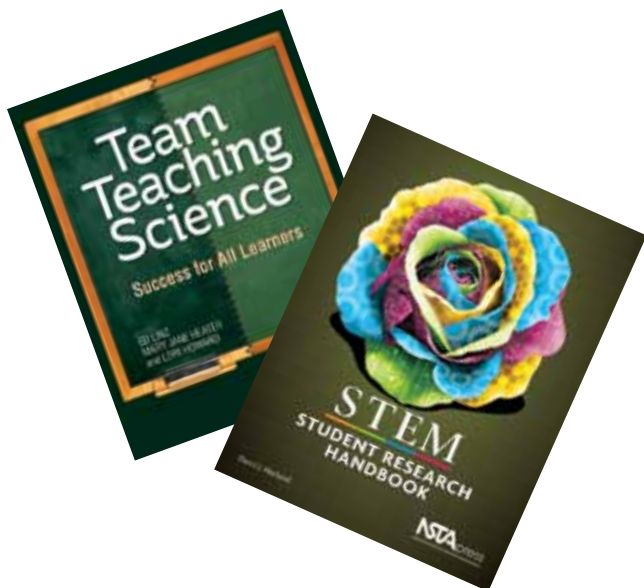
Visit the NSTA Avenue (Booth #209), our marketplace in the Exhibit Hall, to learn about NSTA's products and services. Meet staff, register for the NSTA Learning Center, or become a member. We're looking for connections to educators with a passion for science education, and we welcome you to our network.

### Thursday, December 8

- 3:30–4:30 PM      America's Home Energy Education Challenge  
(p. 69)

### Friday, December 9

- 8:00–9:00 AM      Disney's Planet Challenge: Project Based  
Learning and Service Learning–based  
Lesson Development and Funding  
(p. 80)
- 9:30–10:30 AM      Toshiba/NSTA ExploraVision (p. 87)
- 11:00 AM–12 Noon    Explore Mars: Using Mars Exploration to  
Inspire Students (p. 95)
- 2:00–3:00 PM      The NSTA Learning Center: Free  
Professional Development Resources and  
Opportunities for Educators (p. 106)
- 5:00–6:00 PM      America's Home Energy Education Challenge  
(p. 115)



**Thursday, December 8**

CESI Board Meeting  
By Invitation Only  
Greenwood, Sheraton ..... 3:00–6:00 PM

STEM Networking at Town Hall Reception  
(Tickets required: M-1; \$15)  
Off-site (Town Hall Seattle)..... 6:00–7:15 PM

**Friday, December 9**

CESI Breakfast  
(Tickets required: M-2; \$45)  
Speaker: David T. Crowther  
Issaquah, Sheraton..... 8:00–10:00 AM

Science Education in the Community Meeting  
Ballard, Sheraton .....9:00–11:00 AM

Preservice and New Teachers Luncheon  
(Tickets required: M-3; \$12)  
Sponsored by Kendall Hunt Publishing Co.  
Metropolitan B, Sheraton ..... 12 Noon–1:30 PM

ASTE-Northwest Regional Division Meeting  
Capitol Hill, Sheraton ..... 2:00–5:00 PM

WSTA Board Meeting  
Metropolitan A, Sheraton.....9:00–10:00 PM

**Saturday, December 10**

WSTA/OSTA Awards Breakfast  
(Tickets required: M-4; \$50)  
Cirrus Ballroom, Sheraton ..... 7:00–8:30 AM

Council of State Science Supervisors Regional Meeting  
By Invitation Only  
Alki Boardroom, Sheraton.....9:00 AM–3:00 PM

# TEACHERS IN GEOSCIENCES

Mississippi State University offers a unique and exciting M.S. degree program through distance learning— the **Teachers in Geosciences (TIG)** program. Students who successfully complete this two-year, 12-course, 36-hour curriculum are awarded an **M.S. degree in Geosciences**. The core courses in meteorology, geology, hydrology, oceanography, planetary science and environmental geoscience are taught via the internet. Over 300 students from across the country and around the world are enrolled.



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*Presented by Karen Ansberry and Emily Morgan, classroom veterans and award-winning authors of *Picture-Perfect Science Lessons, Expanded 2nd Edition, 3–6* and *More Picture-Perfect Science Lessons, K–4*, the *Picture-Perfect Science Preconference Workshop (C-1)*.*

*Tickets for this preconference workshop were available by preregistration only.*

### **Picture-Perfect Science Preconference Workshop (C-1)**

**Karen Ansberry** ([karen@pictureperfectscience.com](mailto:karen@pictureperfectscience.com)), Classroom Veteran and Award-winning Author of *Picture-Perfect Science Lessons, Expanded 2nd Edition, 3–6* and *More Picture-Perfect Science Lessons, K–4*, Mason, Ohio

**Emily R. Morgan** ([emily@pictureperfectscience.com](mailto:emily@pictureperfectscience.com)), Classroom Veteran and Award-winning Author of *Picture-Perfect Science Lessons, Expanded 2nd Edition, 3–6* and *More Picture-Perfect Science Lessons, K–4*, West Chester, Ohio

Level: Elementary

Date: Wednesday, December 7, 8:30 AM–3:30 PM

Location: Cirrus Ballroom, Sheraton

STEM education begins in elementary school, but it can be difficult for elementary teachers to fit science into the school day. Picture-Perfect Science integrates science and reading in a meaningful way, so you can teach both subjects at once. In this workshop, you will participate in model lessons that integrate science and reading, learn the benefits and cautions of using children's picture books in science, become familiar with the BSCS 5E model, and receive a bibliography of recommended science-related picture books. All attendees will also receive a copy of *Picture-Perfect Science Lessons, Expanded 2nd Edition, 3–6*, a \$36.95 value containing 20 classroom-ready lessons for grades 3–6. Come to this Picture-Perfect Science Workshop and rejuvenate elementary science instruction in your district or school!

—Photo courtesy of the NEED Project



Students assemble a make-and-take demonstration turbine at a NEED Project workshop (SC-2).



### Assessments for Learning (SC-1)

**George Nelson** ([george.nelson@wwu.edu](mailto:george.nelson@wwu.edu)) and **Dan Hanley** ([daniel.hanley@wwu.edu](mailto:daniel.hanley@wwu.edu)), Western Washington University, Bellingham

**Kristin White** ([kristin.white@evergreenps.org](mailto:kristin.white@evergreenps.org)), Evergreen Public Schools, Vancouver, Wash.

**Vicki Horton** ([vhorton@osd.wednet.edu](mailto:vhorton@osd.wednet.edu)), Olympia School District, Olympia, Wash.

**Sherry Schaaf** ([scitchr@centurytel.net](mailto:scitchr@centurytel.net)), Quillayute Valley School District, Forks, Wash.

Level: K–16

Date/Time: Thursday, December 8, 9:00 AM–12 Noon

Location: Ballard, Sheraton

Registration Fee: \$27

Join us as state-funded middle and high school science coaches deliver formative assessment strategies to answer three questions: Where are you going? Where are you now? How can you get there? With the first component—Where are you going?—participants will practice using tools for building learning targets and coherent learning topics. Discussion centers on providing students with a

clear and understandable vision of the learning targets to increase motivation and achievement. With the second component—Where are you now?—participants will explore assessment probes, specific protocols, and effective questioning, observing, and listening techniques as well as analyze examples of real student work. With the third component—How can you get there?—emphasis will be placed on designing lessons focused on one learning target to sharpen students’ focus and help them address their initial ideas and “get to” goal mastery. Helping students practice a skill or revise their work allows them to see learning targets as more achievable and manageable.

*Admission to NSTA short courses is by ticket only. Tickets, if still available, can be purchased at the Ticket Sales Counter in the NSTA Registration Area.*



### Teaching Electricity Through Hydropower (SC-2)

**Don Pruett** (*info@need.org*), The NEED Project, Manassas, Va.

Level: K–12

Date/Time: Thursday, December 8, 12 Noon–3:00 PM

Location: Issaquah, Sheraton

Registration Fee: \$16

In this short course, you will engage in hands-on activities while working cooperatively in small groups. Build and manipulate handmade turbines to explore how the number of turbine blades affects electrical output. Water reservoir setups and turbine assemblies will be provided for participants to conduct their explorations. The advantages and disadvantages of using hydropower as an energy resource will be discussed. Learn creative ideas to teach hydropower and electricity and walk away with a make-and-take demonstration model. Activities are correlated to national and state science standards.



### Developing a “Naturalistic” Approach in the Teaching of Science Concepts and Inquiry (SC-3)

**William J. Klein** (*wjmsklein@aol.com*), Western Iowa Tech Community College, Sioux Falls, SD

Level: General

Date/Time: Thursday, December 8, 12:30–3:30 PM

Location: Cirrus Ballroom, Sheraton

Registration Fee: \$12

Many of today’s students lack knowledge of the natural world with some educators labeling them “nature deficient.” Because they have never studied firsthand the most common organisms, students frequently have difficulty correlating concepts described in their texts with actual life cycles, and adaptations/behaviors of living organisms. This course describes hands-on inquiry activities and strategies, which research has validated as effective, to enhance comprehension of science concepts for all learners: visual, aural, tactile, and ELL. Students employ basic science process skills and experience concepts in the context of their meaning. The knowledge and skills gained through interaction with the natural world of lawns, gardens, water, and creatures will benefit students the rest of their lives. Hand-outs, teaching strategies, and a CD are provided.



### How to Move from Activity-based Science to STEM Project Based Learning (SC-4)

**Susan Wood-Megrey** (*woodmesj@hsd401.org*), Highline Public Schools, Burien, Wash.

**Leah Bricker** (*lbricker@u.washington.edu*), **Philip Bell**, and **Andrew Shouse**, (*katievh@u.washington.edu*)

Institute for Science and Mathematics Education, University of Washington, Seattle

**Stephanie Durrant**, Ballard High School, Seattle, Wash.

**Nikhil Joshi** (*nrjoshi@nrjoshi.info*), and **Garrett Shiroma** (*shiomgk@hsd401.org*), Aviation High School, Des Moines, Wash.

**Liz Savage** (*savageem@hsd401.org*), Health Sciences & Human Services High School, Seattle, Wash.

Level: Middle Level–High School

Date/Time: Friday, December 9, 8:00–11:00 AM

Location: Greenwood, Sheraton

Registration Fee: \$27

In this short course, emphasis will be placed on the differences between STEM Project Based Learning and activity-based inquiry science. As a group of teachers, university collaborators, and STEM professionals, we have been working together for more than a year to design and implement various STEM projects at the high school level and then study their implementation relative to both teacher and student learning. Teachers in our group who were not well practiced with Project Based Learning at the beginning of our work have identified resources and tools that they found particularly helpful in designing and implementing STEM projects in their classrooms. Learn about these resources and tools and engage in multiple activities that highlight the features of Project Based Learning as well as various STEM learning and teaching strategies embedded within. Walk away with resources and tools to help implement various types of STEM Project Based Learning in your classroom.



 **Teaching and Assessing Big Ideas Using Learning Progressions (SC-5)**

**Adrienne Somera** (*asomera@nwsed.org*), Northwest Educational Service District 189, Anacortes, Wash.

**Shannon M. Warren** (*shannon.warren@wwu.edu*), Western Washington University, Bellingham

**Karen S. Lippy** (*klippy@oesd.wednet.edu*), Olympic Educational Service District 114, Bremerton, Wash.

Level: General

Date/Time: Friday, December 9, 9:00 AM–4:00 PM

Location: Ravenna, Sheraton

Registration Fee: \$44

Build a learning progression around a science big idea from your curriculum that leads to formative assessment and supports differentiated instruction. Learning progressions are created by breaking down a big idea into its requisite building blocks and organizing those building blocks into a structurally defensible order. Learn to analyze the essential components of a big idea and create a learning progression based on your analysis. Critical junctures for formative assessment will be identified within each constructed learning progression. Participants will consider common student misconceptions as they design or identify formative assessment tasks for each building block idea and identify assessment techniques to gather information about student progress. The materials shared have been utilized and refined with many educators throughout Northwest Washington State.



**Science for ELL: Vocabulary Instruction for Inquiry with English Language Learners (SC-6)**

**David T. Crowther** (*crowther@unr.edu*), and **Elisa Storke** (*elisa@unr.edu*), University of Nevada, Reno

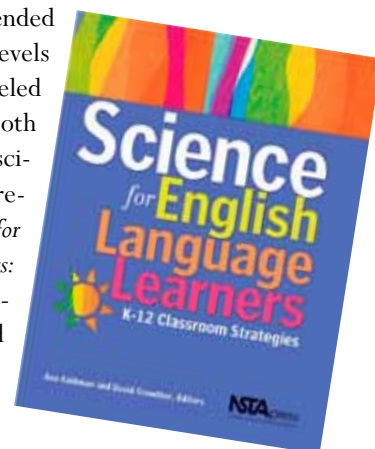
Level: K–12

Date/Time: Friday, December 9, 12:30–3:30 PM

Location: Cirrus Ballroom, Sheraton

Registration Fee: \$40

Using science education standards, core curriculum language arts and math standards (as related to science instruction in reading, writing, listening, speaking, and thinking), and ELL standards, participants will plan a learning cycle and develop background knowledge for inquiry instruction while still providing a context for learning and vocabulary instruction through Beck's (2002) three tiers of words as well as a blended approach. Different levels of inquiry will be modeled to align scaffolding of both inquiry and content science. Participants will receive a copy of *Science for English Language Learners: K–12 Classroom Strategies* (NSTA Press®) and handouts for activities.





—Photo courtesy of BioMed (T-3)

**Aviation High School**

**\$38**

#T-1 Thursday, Dec. 8 9:30 AM–12:45 PM

Join us for a tour of Aviation High School, one of Puget Sound’s premier high schools. Founded in 2004 on the belief that learning happens best when it engages students’ heads, hearts, and hands, Aviation High School combines the rigor of college-preparatory academics with the hands-on/minds-on nature of technical and vocational education. Experience how Project Based Learning sparks students’ imagination, see how the theme and partnerships move learning out of the classroom, and discover how personalization fosters connections and teamwork. Find out how this successful model could be replicated in your classroom or your school. Snack and beverage included.

**Glimpse into the Future**

**\$40**

#T-2 Thursday, Dec. 8 9:30 AM–4:30 PM

Explore the exciting field of video games by going on this interactive tour. We begin at DigiPen Institute of Technology ([www.digipen.edu](http://www.digipen.edu))—a world-renowned college that offers degree programs focused on video game programming, computer science, animation, and computer engineering. Within this tour, you’ll learn more about their

unique approach to education as well as their youth initiative, ProjectFUN, which uses video game programming, 3-D animation, game design, and robotics to teach students problem-solving skills and academic fundamentals like algebra, geometry, fine art, and physics. You can also program your own video game or experiment with 3-D animation. Lunch on own at DigiPen’s Bits & Bytes Café.

After lunch, we’ll leave the DigiPen campus to visit their high-tech neighbor, Microsoft Corporation. At the Microsoft Games campus, explore the how and why behind video games like Kinect Adventures and the World Wide Telescope Program. We’ll then travel to the Microsoft Home of the Future to learn the technology that may be embedded in our everyday lives in 5–10 years.

**Biomedical Research and Education: A Collaboration in Seattle**

**\$44**

#T-3 Thursday, Dec. 8 9:30 AM–5:00 PM

Biomedical research is continuously transforming our future. Through this field trip, you can be part of the revolution and bring this reality back to your students. Experience both personal and professional learning centered on awareness of current biomedical research efforts, the nature of scientific investigation, and the variety of career pathways

involved in scientific endeavors. The cornerstone of this field trip will be a tour of one of three biomedical research facilities and an extensive two-hour hands-on lab bench experience. The day will begin with an interactive panel discussion led by biomedical research experts from a variety of fields and exhibits by Puget Sound–area researchers on current, leading-edge scientific research. Don't miss this opportunity to get up to date on 21st-century biomedical research and on the skills and knowledge students will need to be part of this expanding endeavor. Catered buffet lunch included.

*Note:* Participants will need to wear long pants and closed-toed comfortable shoes. The facility is wheelchair and handicapped accessible. No food or drink allowed during lab experiences. Camera use may be limited by site location.

**Blue Origin**

**\$46**

#T-4 Thursday, Dec. 8 12:30–3:30 PM

It really is rocket science! We're excited to offer the chance for up to 10 conference attendees to tour Blue Origin ([www.blueorigin.com](http://www.blueorigin.com)), a privately funded aerospace company just south of Seattle. Blue Origin is committed to lowering the cost of spaceflight, thus allowing more people access to space. The company is focused on vertical takeoff and landing launch vehicles and has made successful flights to demonstrate that unique concept. During the tour of Blue Origin, you'll have a chance to visit the production/assembly floor and see where the next generation of launch vehicles is being developed. The tour is a rare opportunity that will definitely stir your imagination and be an experience you will never forget.

*Note:* All tour participants must be U.S. citizens and must be willing to sign a nondisclosure agreement. No cameras or camera phones are to be used at any time during the tour.

**Science on Fire: Tacoma's Museum of Glass** **\$37**

#T-5 Thursday, Dec. 8 1:00–6:10 PM

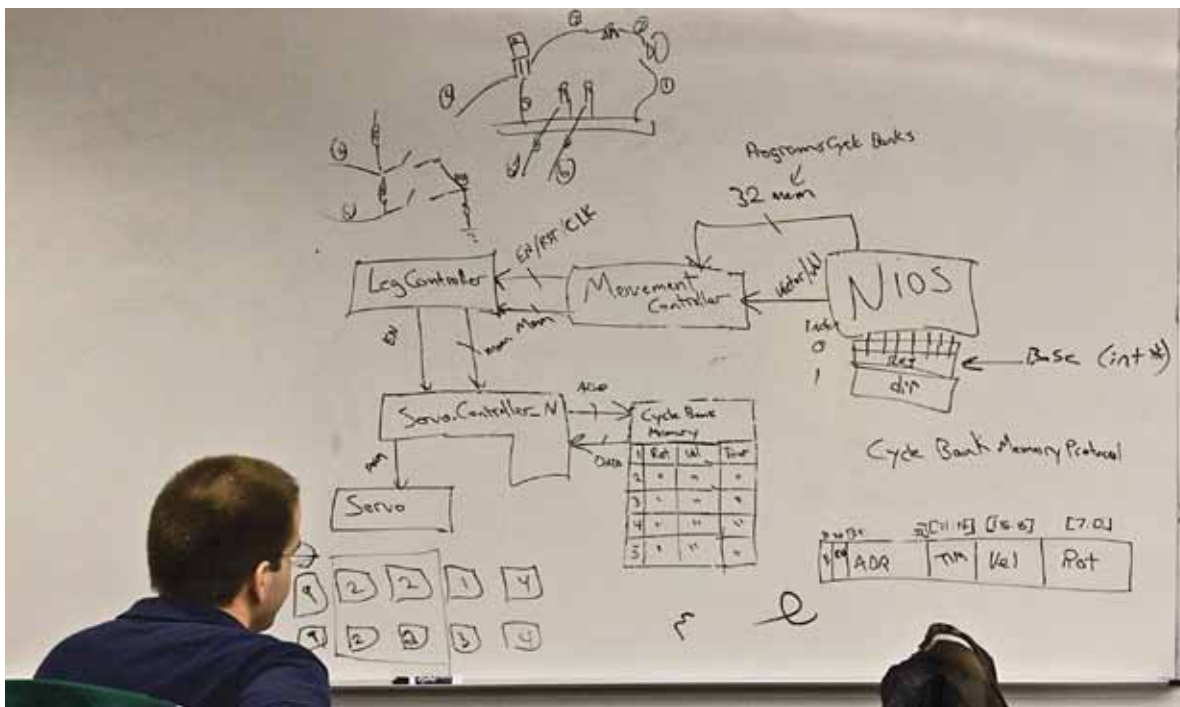
Come see the art and science of glassmaking at the Museum of Glass ([www.museumofglass.org](http://www.museumofglass.org)), located in Tacoma. Witness art making in action through live glassmaking demonstrations by the museum's resident team of artists—real artists engaged in real creative projects. Our museum guides will explain the process, the art, the science, and the history of glassmaking from around the world and nearby local artists. Be prepared to walk outside to see artwork on the plaza and the stunning Chihuly Bridge of Glass. There will be time to browse on your own through the gift shop, enjoy the Museum Café, or return to a favorite part of the museum.



—Photo courtesy of Terry Rishel, Museum of Glass. (T-5)

*Tickets for field trips may be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader at Convention Place on the first floor of the Convention Center (next to the Massage Bar) 15 minutes before departure time.*





—Photo courtesy of DigiPen Institute of Technology (T-2)

**Pacific Science Center—Mercer Slough Environmental Education Center** **\$28**

#F-1 Friday, Dec. 9 8:30 AM–12 Noon

Located on a biologically diverse 320-acre wetland nature park in the heart of urban Bellevue, the Mercer Slough Environmental Education Center is a collaboration between the City of Bellevue and the Pacific Science Center. Join us as we explore this learning center built with world-class, state-of-the-art, certified LEED technology. Discuss how collaboration can provide local access for students studying the environment. Gain an understanding of how students develop a sense of stewardship through wetland ecology, salmon stewards, and ecosystems explorers. Included is an hour-long hike through a wetland to understand how connections with a local park can be made to support classroom instruction.

*Note:* Participants should wear sturdy, waterproof shoes and dress appropriately for the weather. Wheelchairs can be accommodated most of the year, but specific weather conditions may preclude their use for the hike.

**Adventures in Cacao: A Tour of Seattle’s Own Theo Chocolate** **\$44**

#F-2 Friday, Dec. 9 10:15 AM–12:15 PM

Chocoholics take note. Indulge in the story of cacao, including the extraordinary transformation of the cacao fruit into what we know as chocolate and the social and environmental

issues relating to cacao and cacao farmers! Best of all, chocolate tasting will be part of the tour experience. Theo’s scientist in residence will guide you through the science behind the art of chocolate making. After the tour, make time to visit the retail store that’s brimming with chocolate surprises.

*Note:* Participants must wear closed-toed shoes. Hair nets will be supplied. Also, please refrain from using perfume or cologne the day of the tour.

**The Science of Flight at Boeing** **\$45**

#F-3 Friday, Dec. 9 9:10 AM–12:30 PM

Take advantage of the only opportunity to tour a commercial jet assembly plant in North America and go behind the scenes at Boeing where the 747, 767, 777, and 787 Dreamliner are assembled. See airplanes in various stages of flight test and manufacture in the world’s largest building. The tour includes a walk above the factory floor and a drive along the flight line where airplanes are tested. The planes you see today may be ones you are a passenger on tomorrow. *Note:* No personal items, food, or drink are allowed on the tour, including purses, backpacks, cameras, binoculars, and cell phones. Participants are asked to leave these items on the bus or in lockers available on-site for a small fee. Be prepared to walk 1/3 of a mile and climb 21 steep stairs as well as take an elevator up to 35 feet above the assembly floor. Tour is wheelchair accessible with advance notice. Children must be at least 4 feet tall to go on tour.



## Association for Science Teacher Education (ASTE)

*President: Randy Bell*

### Friday, December 9

2:00–5:00 PM	ASTE-Northwest Regional Division Meeting	Capitol Hill, Sheraton
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## Council for Elementary Science International (CESI)

*President: Barbara Tharp*

### Thursday, December 8

12:30–1:30 PM	Council for Elementary Science International Share-a-Thon	Ballroom 6E, Convention Center
3:00–6:00 PM	CESI Board Meeting (By Invitation Only)	Greenwood, Sheraton

### Friday, December 9

8:00–10:00 AM	CESI Breakfast (Tickets required: M-2; \$45) Speaker: David T. Crowther, University of Nevada, Reno	Issaquah, Sheraton
3:30–4:30 PM	Council for Elementary Science International Presents Opportunities Galore	211, Convention Center

## Council of State Science Supervisors (CSSS)

*President: Peter McLaren*

### Saturday, December 10

9:00 AM–3:00 PM	Council of State Science Supervisors Regional Meeting (By Invitation Only)	Alki Boardroom, Sheraton
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## National Association for Research in Science Teaching (NARST)

*President: J. Randy McGinnis*

### Friday, December 9

8:00–9:00 AM	Science in the preK Classroom: Leveraging Children’s Everyday Experiences and Knowledge to Support Scientific Discourse  Integrating Linguistic Scaffolding into a Classroom Discourse to Shift ELL Student Engagement in a Secondary Science Classroom	213, Convention Center
9:30–10:30 AM	Critical Examinations of Media to Enhance Student Understandings of Science  Confirmation for Increased Attention to Four Core Areas of Evolution	213, Convention Center

## Conference Program • Affiliate Sessions

### National Science Education Leadership Association (NSELA)

President: Susan Koba

#### Friday, December 9

8:00–9:00 AM	Tools for Science Leaders	214, Convention Center
9:30–10:30 AM	Preservice Teachers and Science Leadership: Collaborating in Support of New Teachers to Support Student Learning	214, Convention Center

### Society for College Science Teachers (SCST)

President: Brian Shmaefsky

#### Friday, December 9

11:00 AM–12:45 PM	Physics by Inquiry: A Guided Inquiry Curriculum (AAPT/SCST Session)	608, Convention Center
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## MEET AND GREET YOUR FAVORITE AUTHOR AT THE SCIENCE BOOKSTORE

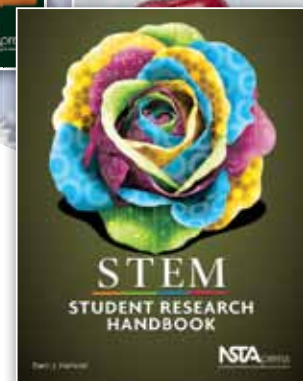
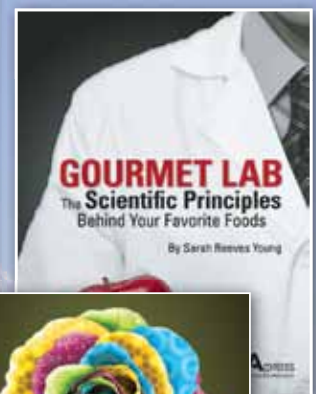
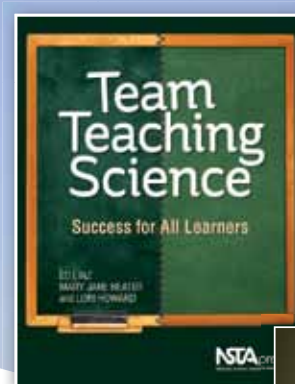
### Author Signings

#### Thursday, December 8\*

10:00–10:30 Sarah Young  
11:00–11:30 Steve Rich

#### Friday, December 9\*

10:00–10:30 Ed Linz/Mary Jane Heater  
11:30–12:00 Thomas Lord  
1:30–2:00 Darci Harland  
2:30–3:00 Susan Koba  
3:30–4:00 JoAnne Vasquez/Michael Comer



\*Times are tentative, check the NSTA Science Bookstore for more information.

**NSTA** National Science Teachers Association

**8:30 AM–3:30 PM Preconference Workshop**

**Picture-Perfect Science Preconference Workshop (C-1)**

*(Elementary)*

*Cirrus Ballroom, Sheraton*

**By Preregistration Only**

**Karen Ansberry** ([karen@pictureperfectscience.com](mailto:karen@pictureperfectscience.com)), Classroom Veteran and Award-winning Author of *Picture-Perfect Science Lessons, Expanded 2nd Edition, 3–6* and *More Picture-Perfect Science Lessons, K–4*, Mason, Ohio

**Emily R. Morgan** ([emily@pictureperfectscience.com](mailto:emily@pictureperfectscience.com)), Classroom Veteran and Award-winning Author of *Picture-Perfect Science Lessons, Expanded 2nd Edition, 3–6* and *More Picture-Perfect Science Lessons, K–4*, West Chester, Ohio

For description, see page 36.





—Photo courtesy of Tim Thompson, Seattle's Convention and Visitors Bureau



## 8:00–9:00 AM Presentations

### SESSION 1

#### Bring the Science of Cars into the Classroom (Chem)

(High School) 203, Convention Center

**Andrew G. Nydam** ([andrewnydam@hotmail.com](mailto:andrewnydam@hotmail.com)), Olympia High School, Olympia, Wash.

**Debbie Goodwin** ([nywin@hotmail.com](mailto:nywin@hotmail.com)), Chillicothe High School, Chillicothe, Mo.

Students love cars but dislike science? Here are some lessons using a car to teach major science concepts. Yes, even if you are mechanically challenged!

### SESSION 2



#### NSTA Press Session: What Were They Thinking?

(Gen)

(General) 204, Convention Center

**Page Keeley** ([pkeeley@mmsa.org](mailto:pkeeley@mmsa.org)), 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta  
Learn how formative assessment probes from the *Uncovering Student Ideas in Science* series can be used to reveal the preconceptions students bring to their learning and how you can use students' ideas as springboards to conceptual change.

### SESSION 3

#### ASEE Session: eGFI: Engineering, Go For It!—Dream Up the Future (Gen)

(General) 205, Convention Center

**Stacie Harrison** ([s.harrison@asee.org](mailto:s.harrison@asee.org)) and **Dennis Cummings** ([d.cummings@asee.org](mailto:d.cummings@asee.org)), American Society for Engineering Education, Washington, D.C.

Presider: **Michael J. Quinn** ([quinnm@seattleu.edu](mailto:quinnm@seattleu.edu)), Seattle University, Seattle, Wash.

The American Society for Engineering Education (ASEE) and university faculty will introduce participants to innovative ways to introduce engineering into the K–12 classroom.

### SESSION 4

#### Enhancing Elementary Science Teachers' and Students' Understanding of Science Through Systems Thinking (Bio)

(Elementary) 212, Convention Center

**Jon Pedersen** ([jep@unl.edu](mailto:jep@unl.edu)) and **Tiffany Heng-Moss**, University of Nebraska–Lincoln

**Greg Tebo** ([gtebo@lps.org](mailto:gtebo@lps.org)) and **Dwight C. Thiemann** ([dthiema@lps.org](mailto:dthiema@lps.org)), Maxey Elementary School, Lincoln, Neb.

**Nancy Dondlinger** ([ndond@lps.org](mailto:ndond@lps.org)), Lincoln Public Schools and University of Nebraska–Lincoln

Explore systems thinking using soybeans in an elementary classroom.

The ideas and opinions expressed in the conference sessions, and in any handout materials provided, are those of the presenter. They are not those of the National Science Teachers Association nor can any endorsement by NSTA be claimed.

## Science Area

A science area category is associated with each session. These categories are abbreviated in heavy type at the right immediately following the session title. On page 149, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

<b>(Bio)</b>	=	<b>Biology/Life Science</b>
<b>(Chem)</b>	=	<b>Chemistry/Physical Science</b>
<b>(Earth)</b>	=	<b>Earth/Space Science</b>
<b>(Env)</b>	=	<b>Environmental Science</b>
<b>(Gen)</b>	=	<b>Integrated/General Science</b>
<b>(Phys)</b>	=	<b>Physics/Physical Science</b>

## Strands

The Seattle Conference Committee has planned the conference around the following three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 28.



**Effective Science Instruction for Diverse Learners**



**Progressions in the Learning of Science**



**STEM Connections: Fostering Life, Career, and College Readiness**

## Other Icons

The following icons will be used throughout this program.



**NSTA Avenue Sessions**



**NSTA Press Sessions**

**SESSION 5**

**Science: The WRITE Way (Phys)**

(Middle Level) 213, Convention Center

**Nancy Gifford** ([ngiffordqrs@hotmail.com](mailto:ngiffordqrs@hotmail.com)), Harwich Middle School, Harwich, Mass.

**Carolyn W. Jacobs** ([carolyn\\_jacobs@wgbh.org](mailto:carolyn_jacobs@wgbh.org)), WGBH, Boston, Mass.

There *IS* something new under the Sun! Help your struggling readers and writers master science topics through interactive media and structured literacy activities.

**SESSION 6**

**Kindergarten Science Illustrations (Gen)**

(Preschool–Middle Level/Informal) 214, Convention Center

**Andrea Zdinak Andretta** ([aandretta5@optonline.net](mailto:aandretta5@optonline.net)), Jefferson Science Magnet School, Norwalk, Conn.

**Zackery Zdinak** ([wildlife@lifedraw.com](mailto:wildlife@lifedraw.com)), Life Drawing & Education, Flagstaff, Ariz.

Kindergartners are very observant. Learn how to help your

kindergartners draw scientifically by getting them to focus when observing and then recording what they see.

**SESSION 7**

**Introducing the Scientific and Social Practices of Scientists Through Video Interviews (Bio)**

(General) 304, Convention Center

**Katie Van Horne** ([katievh@uw.edu](mailto:katievh@uw.edu)), **Maureen M. Munn** ([mmunn@uw.edu](mailto:mmunn@uw.edu)), **Andrew W. Shouse**, and **Hiroki Oura** ([oura@uw.edu](mailto:oura@uw.edu)), University of Washington, Seattle

**Randy Knuth** ([randy@knuthresearch.com](mailto:randy@knuthresearch.com)), Knuth Research, Inc., Spokane, Wash.

President: Katie Van Horne

Incorporate into your classroom a curriculum focused on introducing high school students to scientific and social practices that scientists engage in daily.

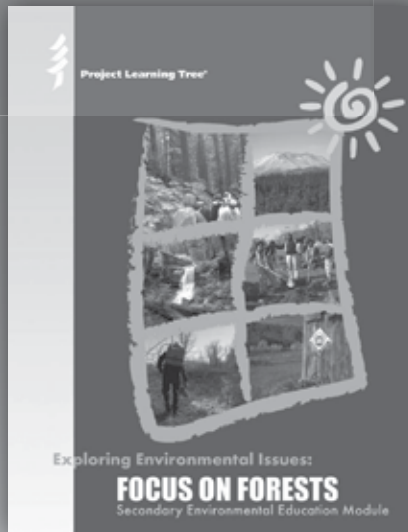
# Project Learning Tree

## Environmental education and service-learning resources for PreK-12.

Aligned to state and national science standards



Supported by:



## Get free PLT materials at NSTA

Visit Exhibit Booth 320

Participate in PLT sessions

- Forests, Carbon, and Climate Change – Thurs, Dec 8, 8-9am (Convention Center, Room 620)
- Global Connections: Forests of the World – Thurs, Dec 8, 12:30-1:30pm (Convention Center, Room 206)
- Early Childhood education – Thurs, Dec 8, 3:30-4:30pm (Convention Center, Room 620)
- *GreenSchools!* – Fri, Dec 9, 11am-12noon (Convention Center, Room 201)
- Focus on Forests: PLT's New Secondary Curriculum – Fri, Dec 9, 2-3pm (Convention Center, Room 206)

To get PLT materials in your state, attend a PLT workshop. Contact your state's PLT Coordinator for details.

[www.plt.org](http://www.plt.org)



**SESSION 8**

**Building Inquiry Skills with Online Seismic Data (Earth)**

(Middle Level–High School) 307, Convention Center  
**Dale Ingram** (*ingram\_d@ligo-wa.caltech.edu*), Laser Interferometer Gravitational-wave Observatory, Richland, Wash. The NSF-funded I2U2 Project (Investigations in Understanding the Universe) offers data from professional research facilities to students and teachers. Learn to use LIGO (the Laser Interferometer Gravitational-wave Observatory) I2U2 seismometer data for inquiry in Earth, space, physical, and integrated science.

**SESSION 9**



**Successful Field Experiences Using Partnerships (Gen)**

(Elementary) 616, Convention Center  
**Jami Ostby Marsh** (*jami.ostby-marsh@wvwd.org*), West Valley Outdoor Learning Center, Spokane, Wash.  
**Brook M. Beeler** (*brook.beeler@ecy.wa.gov*), Washington Dept. of Ecology, Spokane  
 Learn about inquiry-based science activities and field

experiences for the elementary classroom. Get students outside the classroom and excite them about science through effective partnerships.

**SESSION 10**



**Earth Shattering! Hands-On Earth Science Activities from the Department of Energy (Earth)**

(Elementary–Middle Level) 618, Convention Center  
**Sarah R. Young** (*sayoung@nsf.gov*), Einstein Fellow, National Science Foundation, Arlington, Va.  
 From mountains to oceans to space, this session provides participants with hands-on activities from the Department of Energy to model Earth systems.

**8:00–9:00 AM Workshops**

**Drop the Lecture and Let the Students Pick Up the Learning in AP Biology (Bio)**

(High School) 2B, Convention Center  
**Kristen R. Dotti** (*kristen\_dotti@yahoo.com*), Christ School, Arden, N.C.  
 Using a fast-paced group game to compare and contrast the cellular organelle of prokaryotes and eukaryotes—a team race to exemplify the separation of DNA fragments by PCR and a bacterial social event to elucidate the critical points of conjugation and transformation—this session will add several new activities to your bag of tricks for teaching in-depth AP biology topics in an engaging and memorable manner.

**Using Science as a Tool in Reading and Writing Instruction (Bio)**

(Elementary–Middle Level) 3A, Convention Center  
**Linda S. Linnen** (*lslinnen@aol.com*), Retired Educator, Highlands Ranch, Colo.  
 Find out how to simultaneously teach science and literacy to your students. True differentiation and individualization lessons will be used.

**The Physics of Supernovae (Phys)**

(High School) 201, Convention Center  
**Donna L. Young** (*donna@aavso.org*), Chandra E/PO Office, Cambridge, Mass.  
**Doug Lombardi** (*lombardi.doug@gmail.com*), Southern Nevada Regional Professional Development Program, North Las Vegas  
 Use analysis software, graphs, and basic physics gravitation and centripetal acceleration equations to determine if an object is a white dwarf or a neutron star.

**The Multilevel Classroom: Differentiation Strategies for Science (Gen)**

(Middle Level–High School) 206, Convention Center  
**D.J. West** (*djwest78@gmail.com*), Schoolcraft College, Livonia, Mich.  
 Invigorate your lessons with a variety of strategies that you can use effectively to impact students who are below level, on level, and above level.

**Ocean Science and Literacy (Bio)**  
(Elementary/Informal Ed) 211, Convention Center

**Mary E. Whaley** (*mwhaley@mbayaq.org*), Monterey Bay Aquarium, Monterey, Calif.

With educators from the Monterey Bay Aquarium, participants will experience hands-on activities to investigate animal adaptations, discover fun books, and practice literacy strategies.

**Point, Game, Set, Match: Science Wins with Tennis Ball Containers (Gen)**  
(General) 303, Convention Center

**David F. Mastie** (*mastie@umich.edu*), Retired Educator, Chelsea, Mich.

Used tennis ball containers—free, green, transparent, unbreakable, and infinitely adaptable—offer hands-on activities that make density, porosity, permeability, capillarity, core-sampling, and other elusive ideas visible.

**Oobleck, Slime, and Playdough: Materials Engineering for the Elementary Classroom (Chem)**  
(Elementary) 619, Convention Center

**Gail E. Gerdemann** (*gerdemag@science.oregonstate.edu*), Oregon State University, Corvallis

Explore the properties of materials, redesign their “recipes” to help a book character, make a fun toy, or create a quality control test. Hands-on fun!

**Forests, Carbon, and Climate Change (Env)**  
(Informal Education) 620, Convention Center

**Maria Ghiso** (*mghiso@ra.org*), Rainforest Alliance, New York, N.Y.

**Al Stenstrup** (*astenstrup@forestfoundation.org*), Project Learning Tree, Washington, D.C.

Rainforest Alliance and Project Learning Tree have created hands-on lessons to help students understand the carbon cycle and the role forests play in climate change.

**Is This Your First NSTA Conference? (Gen)**  
(General) Ballroom 6E, Convention Center

**NSTA Board and Council**

Feeling overwhelmed by all there is to see and do at an NSTA conference on science education? Join us for an interactive walk through the conference program. By the end of the session, we guarantee you’ll know just how to get the most from your conference participation. Refreshments courtesy of Carolina Biological Supply Company. Door prizes!

**8:00–9:15 AM Exhibitor Workshops**

**Integrating Math and Science Using Blood Spatter (Bio)**

(Grades 8–12) 4C-1, Convention Center

Sponsor: WARD’S Natural Science

**Kelly P. Cannon**, Washoe County School District, Reno, Nev.

By using simulated blood, participants will interpret and understand blood spatter. Learn how to determine if red splashes and spatter are blood; interpret blood drop patterns from different vertical heights and blood spatter on different surfaces; and interpret and measure blood drop patterns from an angled impact.

**Connecting to Chemistry: Igniting Student Motivation with STEM Examples and Ideas (Chem)**

(Grades 9–12) 4C-2, Convention Center

Sponsor: Houghton Mifflin Harcourt

**Michael DiSpezio**, Science Writer and Educational Consultant, North Falmouth, Mass.

Join Michael DiSpezio for this minds-on/hands-on overview of inspiring examples that integrate STEM into the chemistry curriculum. Learn ways to teach gas solubility based upon the bends and the building of the Brooklyn Bridge! Who is Synthia and is she proof positive that biochemists can create artificial life-forms? Will fuel cells propel us into the future? Find out how to hook your students on the STEM/Chem connection!

**STEM-focused Technology Activities Using Inquiry Investigations™ (Gen)**

(Grades 6–12) 604, Convention Center

Sponsor: Frey Scientific/School Specialty Science

**Terry Reed**, Consultant, Fishers, Ind.

Conduct a STEM-focused activity that links science concepts and new USB U-Log™ data-logging technology that demonstrates how to integrate technology and hands-on inquiry. Examine STEM-focused assets in this curriculum series and see how program software allows the integration of virtual labs, the preparation of web-based content, and includes investigative activities and individualized assessment.

**The Layered Earth! (Earth)**

(Grades 5–12) 605, Convention Center

Sponsor: Simulation Curriculum Corp.

**Herb Koller** (*hkoller@simcur.com*), Simulation Curriculum Corp., Aurora, Ont., Canada

Join us for an interactive Earth science curriculum designed for today’s classroom! What powers the internal processes



that produce volcanoes, earthquakes, and mountains? What is the rock cycle and how does it work? What really is an earthquake, and when and where will the next earthquake be? Exactly how are volcanoes formed? Come experience The Layered Earth, a 3-D interactive geology curriculum.

**Learning the Design Process—Experiment or Product? (Gen)**

(Grades K–6) 606, Convention Center

Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky.

**Tom Graika**, Consultant, Lemont, Ill.

Having trouble getting students ready for science fairs and STEM performances? Learn an effective method for teaching students to design experiments from simple investigations. The same process can help students crystallize engineering ideas. Learn about Delta products and take home resources.

**Inquiry in the Classroom (Gen)**

(Grades K–8) 609, Convention Center

Sponsor: Pearson

**Zipporah Miller**, Author, Bowie, Md.

More inquiry in more places! Whether you're lab oriented or textbook focused, Zipporah Miller will show you a variety of hands-on/minds-on inquiry options to keep all your students engaged.

**Dive into STEM with GEMS® Ocean Sciences Sequence (Gen)**

(Grades 3–5) 612, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Create STEM connections with the new Ocean Sciences Sequence for Grades 3–5 from GEMS and the Lawrence Hall of Science. Explore the connections between man, nature, and the ocean while enforcing key STEM concepts. Complete hands-on activities and leave with samples and lessons for your classroom.

**Is This Your First NSTA Conference?**



**First-Time Attendee Session**

**If your answer is "YES," then please join us at our conveniently offered session for first-time conference attendees where we'll walk through the program, and you'll learn how to get the most from your conference experience. Door prizes!**

Thursday, December 8  
8:00–9:00 AM  
*Ballroom 6E,  
Washington State  
Convention Center*



Refreshments courtesy of Carolina Biological Supply Company.



**Rapid Single Antibody–based ELISA (Bio)**

(Grades 7–College) 615, Convention Center

Sponsor: Edvotek

**Tom Cynkar** ([info@edvotek.com](mailto:info@edvotek.com)) and **Andrea Mangini** ([info@edvotek.com](mailto:info@edvotek.com)), Edvotek, Bethesda, Md.

Learn about the simple and foolproof single-antibody ELISA (Enzyme Linked Immunosorbent Assay) that can be completed in 40 minutes and analyzed by visual inspection or quantitatively using a microplate reader. This procedure is much more rapid than the traditional two-antibody ELISA.

**8:00–9:30 AM Exhibitor Workshop**

**Chemistry and the Atom: Fun with Atom Building Games! (Phys)**

(Grades 6–12) 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Patsy Eldridge**, CPO Science/School Specialty Science, Nashua, N.H.

Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop, you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

**8:00–10:30 AM Exhibitor Workshop**

**Using Science Notebooks with FOSS (Gen)**

(Grades K–8) 602/603, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

**Brian Campbell** and **Jessica Penchos**, Lawrence Hall of Science, University of California, Berkeley

**Ellen Mintz**, Charleston County Schools, Charleston, S.C.

**Virginia Reid**, Consultant, Olympia, Wash.

Learn essential components for implementing science notebooks in K–8 classrooms. Through active investigations using FOSS elementary and middle school program investigations, you'll explore how notebooks impact achievement by providing a tool for building students' conceptual understanding and for finding evidence of learning. Sample materials will be distributed.

**9:00 AM–12 Noon Short Course**



**Assessments for Learning (SC-1)**

(K–16)

Ballard, Sheraton

**Tickets Required: \$27**

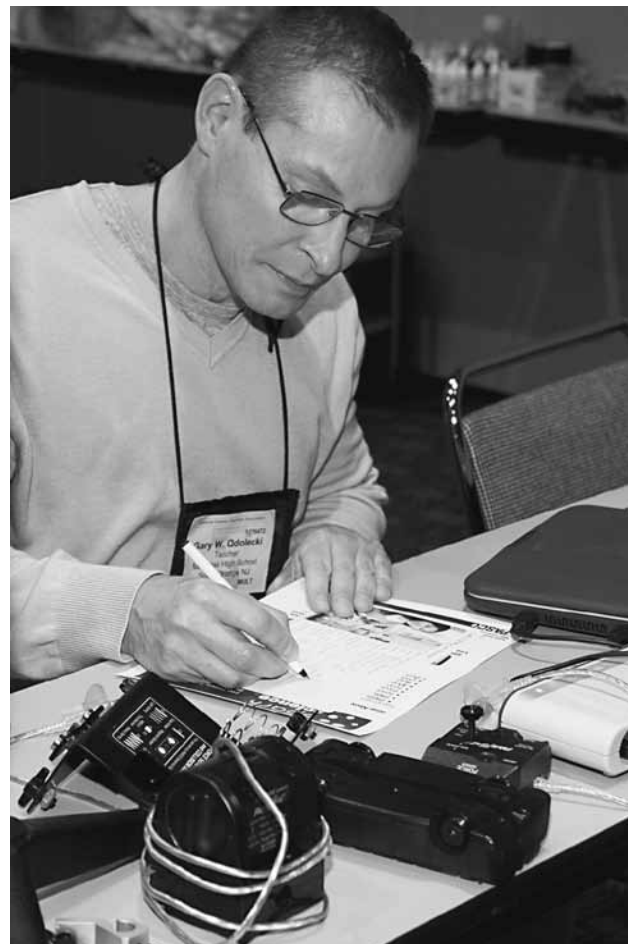
**George Nelson** ([george.nelson@wwu.edu](mailto:george.nelson@wwu.edu)) and **Dan Hanley** ([daniel.hanley@wwu.edu](mailto:daniel.hanley@wwu.edu)), Western Washington University, Bellingham

**Kristin L. White** ([kristin.white@evergreenps.org](mailto:kristin.white@evergreenps.org)), Evergreen Public Schools, Vancouver, Wash.

**Vicki Horton** ([vhorton@osd.wednet.edu](mailto:vhorton@osd.wednet.edu)), Olympia School District, Olympia, Wash.

**Sherry Schaaf** ([scitchr@centurytel.net](mailto:scitchr@centurytel.net)), Quillayute Valley School District, Forks, Wash.

For description, see page 37.



**9:15–10:30 AM General Session****The Emergence of Predictive Biology, Personalized Medicine, and Our Students' Future**

(General)

Ballroom 6 B/C, Convention Center



**Leroy Hood**, President, Institute for Systems Biology, Seattle, Wash.

Presider: Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

Introduction of Speaker: Daniel Gallagher, Seattle (Wash.) Public Schools

Platform Guests: Leroy Hood; Patricia Simmons; Daniel J. Gallagher; Alan J. McCormack, NSTA Retiring President, and San Diego State University, San Diego, Calif.; Karen L. Ostlund, NSTA President-Elect, and Retired Professor, The University of Texas at Austin; Marjorie Yergen, President, Washington Science Teachers Association (WSTA), Yakima; Jennifer Thompson, NSTA Director, District XVII, and Juneau (Alaska) School District; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Mary McClellan Aronen, Chairperson, NSTA Seattle Area Conference, and Science Educational Consultant, Federal Way, Wash.; Craig Gabler, Program Coordinator, NSTA Seattle Area Conference, and Educational Service District 113, Olympia, Wash.; Dana Riley Black, Local Arrangements Coordinator, NSTA Seattle Area Conference, and Center for Inquiry, Seattle, Wash.

Modern biology looks upon the sequencing of the Human Genome not as an endpoint, but as a starting place. The genome gives us the parts list that made a systems approach to disease—and the emergence of proactive (P4) medicine. This talk will overview systems biology as applied to advancements in medicine and its social implication, and will address the implications for the education of today's students.

*Leroy Hood, MD, PhD, president and cofounder of the Institute for Systems Biology in Seattle, is a pioneer in systems approaches to biology and medicine. Dr. Hood's research has focused on the study of molecular immunology, biotechnology, and genomics. His professional career began at Caltech, where he and his colleagues developed the DNA gene sequencer and synthesizer and the protein synthesizer and sequencer—four instruments that paved the way for the successful mapping of the human genome and led to his receiving this year's prestigious Russ Prize, awarded by the Academy of Engineering.*

**10:00–11:15 AM Exhibitor Workshops****Chemistry In-the-Bag Inquiry (Chem)**

(Grades 8–12)

4C-1, Convention Center

Sponsor: WARD'S Natural Science

**Lee Boyes and Susan Smith**, Petaluma High School, Petaluma, Calif.

Learn how to easily incorporate fun and exciting inquiry activities into your classroom using ScholAR's new In-the-Bag Inquiry Activity series. These easy-to-perform demonstrations are designed to engage students and then incorporate guided inquiry exercises so students can further explore and understand the concept.

**Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demos (Chem)**

(Grades 7–12)

4C-2, Convention Center

Sponsor: Flinn Scientific, Inc.

**Irene Cesa**, Flinn Scientific, Inc., Batavia, Ill.

Join us as we demonstrate the features and benefits of our new comprehensive Teaching Chemistry professional development program. Imagine the opportunity to learn best practices from 20 award-winning master teachers as they carry out their favorite experiments, demonstrations, and chemistry lab activities. The online *Flinn Scientific Teaching Chemistry eLearning* video series can help you build content knowledge and improve your pedagogical skills and confidence! Handouts!

**Master of Science Degree in Geosciences Available Online Through the Teachers in Geosciences Program (Earth)**

(Grades K–12)

4C-3, Convention Center

Sponsor: Mississippi State University

**John Gallagher** ([jgalla@wavecable.com](mailto:jgalla@wavecable.com)), Port Angeles High School, Port Angeles, Wash.

Discover how you can earn an MS degree via distance learning from Mississippi State University. The 12-course graduate program includes courses in meteorology, geology, astronomy, oceanography, hydrology, environmental geoscience, and a 10-day capstone field course. We have alumni in all 50 states, and all students qualify for in-state tuition rates.

**STEM-focused Forensics Activities Using Inquiry Investigations™ (Gen)**

(Grades 6–12) 604, Convention Center

Sponsor: Frey Scientific/School Specialty Science

**Terry Reed**, Consultant, Fishers, Ind.

Conduct a number of STEM-focused forensic activities that link the scientific method with analysis and investigative skills to solve multifaceted “cases” involving fingerprint, trace, DNA, and document evidence. Examine additional STEM-focused assets and see how the program software allows the integration of virtual labs, the preparation of web-based content, and includes investigative activities and individualized assessment.

**Starry Night Education! (Earth)**

(Grades 5–12) 605, Convention Center

Sponsor: Simulation Curriculum Corp.

**Herb Koller** (*hkoller@simcur.com*), Simulation Curriculum Corp., Aurora, Ont., Canada

Walk away with an interactive astronomy curriculum, lesson plans, and simulations for today’s classroom! Join us as we explore the center of the Milky Way and examine the Sun and our solar neighborhood. Using the Starry Night curriculum, we’ll examine star clusters and the black hole at the center of the Milky Way, and demonstrate the power of this amazing interactive curriculum.

**Delta Science Modules (DSM): Never Heard of It... Want to Know More? (Gen)**

(Grades K–8) 606, Convention Center

Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky.

**Tom Graika**, Consultant, Lemont, Ill.

This workshop will involve you with all parts of the DSM program, including hands-on activities, literacy connections, kit components, assessments, and ideas for building a K–8 standards-based curriculum. Receive literacy samples and activity resources.

**Stop Teaching and Start Coaching AP Chemistry (Chem)**

(Grades 9–12) 609, Convention Center

Sponsor: Pearson

**Ed Waterman**, Retired Educator, Fort Collins, Colo.

Make the transition from AP Chemistry teacher to coach and help students score well on the Advanced Placement Chemistry exam, even with limited time. Acquire rich resources, including an AP Test Prep book that gets results. This workshop is correlated to *Chemistry: The Central Science* by Brown and LeMay.

**Teaching Chemistry with Molecular-Level Visualization and Simulation Tools (Chem)**

(Grades 8–College) 610, Convention Center

Sponsor: Wavefunction, Inc.

**Jurgen Schnitker**, Wavefunction, Inc., Irvine, Calif.

Widely recognized as a powerful teaching tool, molecular modeling is now a common component of introductory chemistry classes at the college level. Join us for this hand-on workshop and learn how to integrate state-of-the-art modeling into the high school curriculum for both regular and AP chemistry. Bring your own laptop (Windows or Mac OS X) or use a laptop provided for the workshop.

**Autopsy: Forensic Dissection Featuring Carolina’s Perfect Solution® Pigs (Bio)**

(Grades 8–12) 611, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Are you ready for a cutting-edge forensic dissection activity? Engage students and revitalize your instruction of mammalian structure and function with a “real” classroom autopsy! Dissect a Carolina’s Perfect Solution pig by modeling the protocols of a forensic pathologist. Free materials and door prizes.

**New Tools for STEM Education from Carolina™ Curriculum (Gen)**

(Grades K–8) 612, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Explore new STEM resources, including STC–Secondary™, Building Blocks of Science® kindergarten units, and the elementary math intervention program, Math Out of the Box®. Complete hands-on activities from newly released materials and leave with samples and lessons to use in your classroom.

**Living By Chemistry: Create a Table (Chem)**

(Grades 9–12) 613/614, Convention Center

Sponsor: Key Curriculum Press

**Jeffrey Dowling** (*jdowling@keypress.com*), Key Curriculum Press, Emeryville, Calif.

Teach rigorous chemistry with guided inquiry! Let’s explore activities that introduce the periodic table and other core chemistry concepts through a historical context. Take home free sample lessons and materials from the *Living By Chemistry* curriculum.



**EDVOTEK Biotechnology—New! Achieve Successful PCR in One Lab Session (Bio)**

(Grades 7–College) 615, Convention Center

Sponsor: Edvotek

**Tom Cynkar** ([info@edvotek.com](mailto:info@edvotek.com)) and **Andrea Mangini** ([info@edvotek.com](mailto:info@edvotek.com)), Edvotek, Bethesda, Md.

Come learn about our new two-step PCR that is easy and can be completed in one lab session. Our user-friendly EdvoCycler makes PCR affordable for the classroom. Participants are automatically entered into a raffle for a free classroom electrophoresis setup or a credit toward the purchase of an EdvoCycler!

**10:00–11:30 AM Exhibitor Workshop**

**Genetics: Crazy Traits and Adaptation Survivor**

**(Phys)**

(Grades 6–12)

607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Patsy Eldridge**, CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they study genetics—such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit and study the resulting population.

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## 11:00–11:05 AM Exhibits Opening/Ribbon Cutting Ceremony

*South Lobby, Convention Center*

Presider: Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

Welcoming Remarks: Mary McClellan Aronen, Chairperson, NSTA Seattle Area Conference, and Science Educational Consultant, Federal Way, Wash.

Special Guests: Alan J. McCormack, NSTA Retiring President, and San Diego State University, San Diego, Calif.; Karen L. Ostlund, NSTA President-Elect, and Retired Professor, The University of Texas at Austin; Marjorie Yergen, President, Washington Science Teachers Association (WSTA), Yakima; Jennifer Thompson, NSTA Director, District XVII, and Juneau (Alaska) School District; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Craig Gabler, Program Coordinator, NSTA Seattle Area Conference, and Educational Service District 113, Olympia, Wash.; Dana Riley Black, Local Arrangements Coordinator, NSTA Seattle Area Conference, and Center for Inquiry, Seattle, Wash.; Rick Smith, NSTA Managing Director, Advertising, Exhibits, and Workshops, Arlington, Va.

Musical Entertainment by Haida Heritage Foundation—Coastal Native American Singing and Dance Group.



## 11:00 AM–12 Noon Presentation

### SESSION 1

#### ASEE Session: UTeachEngineering: NASA Design Challenges (Gen)

*(High School)*

*205, Convention Center*

**Cheryl Farmer** (*cheryl.farmer@mail.utexas.edu*), The University of Texas at Austin

Presider: Michael J. Quinn (*quinnm@seattleu.edu*), Seattle University, Seattle, Wash.

Receive an overview of the UTeachEngineering high school course being piloted, including how the NASA design challenges are being incorporated. Participants will learn about future replication plans and associated professional development.

## 11:05 AM–5:00 PM Exhibits

*Hall 4B, Convention Center*

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

## 11:30 AM–1:00 PM Exhibitor Workshop

#### FOSS Program Evolution and the Next Generation Science Standards (Gen)

*(Grades K–6)*

*602/603, Convention Center*

Sponsor: Delta Education/School Specialty Science—FOSS  
**Brian Campbell, Linda De Lucchi, Kathy Long, and Larry Malone**, Lawrence Hall of Science, University of California, Berkeley

Learn about the latest developments in the FOSS Elementary Program to help schools address the Next Generation Science Standards. Focusing on the matter strand K–6, you will be introduced to the new FOSS—based on learning progressions—and discover how the program incorporates science-centered language development, outdoor experiences, notebooks, and formative assessments.

**12 Noon–1:15 PM Exhibitor Workshop**

**Incorporating Online Virtual Lab Solutions with Hands-On Science into Your Classroom (Gen)**

(Grades 6–12) 604, Convention Center

Sponsor: Frey Scientific/School Specialty Science

**Terry Reed**, Consultant, Fishers, Ind.

Integrate technology and hands-on inquiry by linking e-learning with inquiry using web-based STEM-focused tools and the curriculum content of iNeo/SCI™. Participate and compare a plant pigment chromatography virtual and bench-top laboratory experience! Be able to provide your students with valuable hands-on laboratory experiences and AP, biology, and chemistry content that is standard correlated and student directed.

**12 Noon–1:30 PM Exhibitor Workshop**

**Sound, Waves, and Music (Phys)**

(Grades 6–12) 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, N.H.

Come create and control beautiful standing wave patterns resonating on a vibrating string with CPO's wave machine. Use a synthesizer to explore the wave properties of sound. Play music on a set of PVC palm pipes and learn how to make sets of your own. We'll show you how.

**12 Noon–3:00 PM Short Course**



**Teaching Electricity Through Hydropower (SC-2)**

(K–12) Issaquah, Sheraton

Tickets Required: \$16

**Don Pruett** ([info@need.org](mailto:info@need.org)), The NEED Project, Manassas, Va.

For description, see page 38.



## UNI Overseas Recruiting Fair XXXVI

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Web site: [www.uni.edu/placement/overseas](http://www.uni.edu/placement/overseas)

**12:30–1:30 PM Featured Panel**

**Next Generation Science Standards**

*(General)*

**(Gen)**

*Ballroom 6A, Convention Center*



*Stephen L. Pruitt*



*Francis Q. Eberle*

**Panelists:**

**Stephen L. Pruitt** ([spruitt@achieve.org](mailto:spruitt@achieve.org)), Vice President for Content, Research, and Development, Achieve, Inc., Washington, D.C.

**Francis Q. Eberle** ([feberle@nsta.org](mailto:feberle@nsta.org)), NSTA Executive Director, Arlington, Va.

Presider: Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

Work is progressing to develop the Next Generation Science Standards. This informational session will provide an update on the development of these standards, including process and timeline for release of drafts and final documents, how science educators can be involved, and implications for science teaching.

With private funding from the Carnegie Corporation, the National Research Council (NRC) and Achieve—with support from NSTA and the American Association for the Advancement of Science (AAAS)—have embarked on a two-step cooperative process to develop the Next Generation Science Standards. The first step was to develop a conceptual framework that is grounded in current research on science and science learning and identifies the science all K–12 students should know. In July, NRC released *A Framework for K–12 Science Education*, which now serves as the foundation for new K–12 science education standards. The next step will be the development of the standards. That state-led process is being managed by Achieve and will involve scientists, science teachers, policy makers, industry, and other interested parties. The standards are expected to be completed in late 2012.

**Stephen Pruitt** was named vice president for Content, Research, and Development for Achieve, Inc., in November 2010. He joined Achieve as director of science in July 2010. In addition to his new role, he will continue to lead the development of the Next Generation Science Standards. Stephen began his career as a high school chemistry teacher in Georgia, where he taught for 12 years. In 2003, he joined the Georgia Department of Education as program manager for science. He served in that role for four years before becoming director of academic standards, where he oversaw the continued implementation of the Georgia Performance Standards in all content areas. In 2008, he became the associate superintendent of Assessment and Accountability, responsible for directing all state assessments and overseeing the No Child Left Behind accountability process.

**Francis Q. Eberle** is the executive director of the National Science Teachers Association, the world's largest professional organization representing science educators of all grade levels. Before joining the association's staff in September 2008, Dr. Eberle served as executive director of the Maine Mathematics and Science Alliance (MMSA), a 501(c)(3) nonprofit organization dedicated to improving mathematics and science education in that state. During his time there, he worked to develop state curriculum frameworks and provide professional development and resources to schools and teachers throughout Maine.



**12:30–1:30 PM Presentations****SESSION 1****Research Careers for Sustainability (Chem)***(High School–College)* 203, Convention Center**Shaun N. Taylor**, University of Washington, Seattle**Andrea M. Munro** (*munroam@plu.edu*), Pacific Lutheran University, Tacoma, Wash.

Learn about the exciting new technology of plastic solar cells and how to prepare for an interdisciplinary research career.

**SESSION 2****ASEE Session: Engineers in the Classroom, Oh My!****(Gen)***(General)* 205, Convention Center**Christina Deckard** (*chris.csanadi@navy.mil*) and **Janessa McDonald** (*janessa.mcdonald@navy.mil*), SPAWAR Systems Center Pacific, San Diego, Calif.Presider: **Michael J. Quinn** (*quinnm@seattleu.edu*), Seattle University, Seattle, Wash.

Department of Defense engineers will share lessons learned and examples of inquiry and design activities that have been developed in partnership with middle school science teachers for use in the classroom and in informal educational settings.

**SESSION 3****Teaching Science in the Context of Substance Abuse with FREE Online Web Adventures (Gen)***(Middle Level)* 212, Convention Center**Yvonne Klich** (*yvonne.klich@rice.edu*) and **Lynn Lauterbach** (*lynnlauterbach@gmail.com*), Rice University, Houston, Tex.

Web adventures provide virtual experiments and visualizations to teach about body systems, neuroscience, and the biological effects of substance abuse.

**SESSION 4****Impacting Teachers' Understanding and Implementation of Inquiry Science Teaching—What Works? (Gen)***(General)* 214, Convention Center**Judith A. Morrison** (*jmorrison@tricity.wsu.edu*), Washington State University Tri-Cities, Richland**Georgia Boatman** (*gboatman@esd123.org*), Educational Service District 123, Pasco, Wash.

Join us as we present the results and recommendations from a four-year project focused on immersing teachers in inquiry to improve their understanding and implementation of inquiry science.

**SESSION 5****Oregon Science Teachers Partnership (Gen)***(General)* 304, Convention Center**Heidi Kellar**, Oregon Science Teachers Partnership, Salem  
Learn about the findings of a math science partnership connecting elementary educators with online content learning resources and face-to-face Professional Learning Community (PLC) pedagogy meetings.**SESSION 6****iSTEM Summer Institute (Gen)***(General)* 307, Convention Center**Louis Nadelson** (*louisnadelson@boisestate.edu*), Boise State University, Boise, Idaho**Anne Seifert** (*anne.seifert@inl.gov*), Idaho National Laboratory, Idaho Falls

Receive details of the goals, structure, and research related to a statewide STEM K–12 teacher professional development project. Hands-on examples will make the presentation interactive.


**SESSION 7****STOP for Science! A Schoolwide Science Enrichment Program (Phys)***(Elementary–Middle Level/Informal)* 308, Convention Center**Patrick Slane** (*slane@cfa.harvard.edu*), Harvard-Smithsonian Center for Astrophysics, Cambridge, Mass.

Hear about how innovative materials and demonstrations on topics ranging from swinging a baseball bat to exploding stars will make your students STOP for Science!

**SESSION 8** **Applying Learning Progressions and Facet-based Approaches to Inform Curriculum and Assessment Design (Gen)***(Elementary–High School)* 616, Convention Center**William R. Penuel** (*william.penuel@colorado.edu*), University of Colorado, Boulder**Angela H. DeBarger** (*angela.haydel@sri.com*), SRI International, Menlo Park, Calif.

Join us for a discussion centered on comparing and contrasting the implications of using learning progressions and facet-based approaches to curriculum and assessment design and evidence-based instructional decision making.

SESSION 9

 **Dare to Differentiate: Strategies and Various Teacher Tricks to Improve Science Instruction for ALL Learners** (Gen)

(Elementary) 618, Convention Center

**Herminda J. Cargill**, Birmingham (Ala.) City Schools

Explore differentiated instruction as an effective science teaching practice in meeting the needs of diverse learners using music, poetry, literature, games, and skits.



**12:30–1:30 PM Workshops**

**Using Socratic Seminars in Science** (Gen)

(Middle Level–College) 2B, Convention Center

**Jeanne T. Chowning** ([jchowning@nwabr.org](mailto:jchowning@nwabr.org)), Northwest Association for Biomedical Research, Seattle, Wash.

**Jodie Spitze** ([jodie.spitze@kent.k12.wa.us](mailto:jodie.spitze@kent.k12.wa.us)), Kent-Meridian High School, Kent, Wash.

Socratic Seminars can be used to foster discussion of a challenging science-related text or to analyze scientific data. Come engage in an actual seminar.

**Seven Billion and Counting: Lessons for Our Planet's Future** (Env)

(Middle Level) 3A, Convention Center

**Joan Griswold** ([griswold115@msn.com](mailto:griswold115@msn.com)), Population Connection, Washington, D.C.

Engage in innovative activities to explore connections between human population growth, resource consumption, and the changing face of our planet. Free CD-ROM of activities.

**Evolution and Medicine: A New Approach to a Central Topic in High School Biology** (Bio)

(High School–College) 3B, Convention Center

**Dave Vannier** ([vannierd@od.nih.gov](mailto:vannierd@od.nih.gov)), National Institutes of Health, Rockville, Md.

Experience inquiry-based activities that use modern medical examples to engage students in the study of evolution and its relevance in their lives.

**Wind Power** (Phys)

(Middle Level–High School) 201, Convention Center

**Jacklyn Bonneau** ([bonneau@wpi.edu](mailto:bonneau@wpi.edu)), Massachusetts Academy of Math & Science, Worcester

Charge up your lessons on energy and power with a STEM-focused, creative, and authentic activity using wind power.

**Global Connections: Forests of the World** (Env)

(General) 206, Convention Center

**Al Stenstrup** ([astenstrup@forestfoundation.org](mailto:astenstrup@forestfoundation.org)) and **Jackie Stallard** ([jstallard@forestfoundation.org](mailto:jstallard@forestfoundation.org)), Project Learning Tree, Washington, D.C.

The forests of the world are changing. Project Learning Tree's new secondary module, *Global Connections: Forests of the World*, explores this vital component of Earth's natural systems. Take home an activity module and poster sets.

**Polymers 1B: Squeeze Them into General Chemistry** (Chem)

(Middle Level–College) 211, Convention Center

**Lynn W. Higgins** ([lynhiggins@sbcglobal.net](mailto:lynhiggins@sbcglobal.net)), Polymer Ambassadors, St. Louis, Mo.

Join me for the FUNDamentals of polymeric materials (plastics, rubber, paints, fibers, and natural materials from DNA to cellulose). Try simple strategies for labs, demonstrations, lectures, and environmental learning and receive free samples and a CD.



**Climate Data and Modeling** (Env)

(High School) 617, Convention Center

**Brandon Gillette** ([bgillette@ku.edu](mailto:bgillette@ku.edu)), The University of Kansas, Lawrence

**Cynita R. Jones**, Riverton High School, Riverton, Kans. Pack up the polar gear and don't forget your gloves—we're taking a field trip to the polar regions to collect climate data! Laptops recommended, but not required.

**Ramps and Pathways: An Inquiry-based Approach to Physical Science in Early Childhood (Phys)**

*(Preschool–Elementary)* 619, Convention Center

**Sonia Akiko Yoshizawa** ([akiko.yoshizawa@uni.edu](mailto:akiko.yoshizawa@uni.edu)), University of Northern Iowa, Cedar Falls

Engage in active experimentation with ramps and pathways and learn how to support young children’s learning about force and motion as well as inquiry.

**NASA’s Seven Ways a Black Hole Can Kill You (Earth)**

*(Middle Level–College)* 620, Convention Center

**Pamela Whiffen** ([pwpwr@aol.com](mailto:pwpwr@aol.com)), NASA Educator Ambassador, Phoenix, Ariz.

What’s a black hole? What if you “fell” into one? Learn

answers to these and other “FAQs” in this light-hearted presentation. Free NASA materials!

**CESI Session: Council for Elementary Science International Share-a-Thon (Gen)**

*(Preschool–Middle Level)* Ballroom 6E, Convention Center

**Barbara Z. Tharp** ([btharp@bcm.edu](mailto:btharp@bcm.edu)), CESI President, and Baylor College of Medicine, Houston, Tex.

Join CESI as we share a wealth of ready-to-use, classroom-tested hands-on activities created just for the K–8 teacher. Handouts and website links!

**12:30–1:45 PM Exhibitor Workshops**

**Chemistry In-the-Bag Inquiry (Chem)**

*(Grades 8–12)* 4C-1, Convention Center

Sponsor: WARD’S Natural Science

**Lee Boyes** and **Susan Smith**, Petaluma High School, Petaluma, Calif.

Learn how to easily incorporate fun and exciting inquiry activities into your classrooms using ScholAR’s new In-the-Bag Inquiry Activity series. These easy-to-perform demonstrations are designed to engage students and then incorporate guided inquiry exercises so students can further explore and understand the concept.

**Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8 Science (Gen)**

*(Grades K–8)* 4C-2, Convention Center

Sponsor: Houghton Mifflin Harcourt

**Michael DiSpezio**, Science Writer and Educational Consultant, North Falmouth, Mass.

Join Houghton Mifflin Harcourt author Michael DiSpezio for an entertaining and eye-opening survey of common misconceptions in science. Expand your awareness of common science myths through game show–style interactions and engage in a variety of easy-to-repeat and inexpensive activities that effectively correct students’ misunderstandings.

**Natural Differentiation Using Foldables® (Gen)**

*(Grades K–12)* 4C-3, Convention Center

Sponsor: Dinah-Might Adventures, LP

**Nancy Wisker** ([nancy@dinah.com](mailto:nancy@dinah.com)), Dinah Zike Academy, San Antonio, Tex.

Differentiation occurs naturally with Foldables as each student works at his or her level. Learn while transforming basic classroom materials into 3-D interactive learning and assessment tools. Take home material packets.

**Online Learning Exchange, Powered by Pearson—Our Content, Your Content (Gen)**

*(Grades K–12)* 609, Convention Center

Sponsor: Pearson

**Chuck McMillan**, Curriculum Specialist, Huron, Mich.

Visit an environment where high-quality content combined with tools enable you to exchange ideas, collaborate, and improve your teaching and your students’ learning experience. Join us to learn how to build lessons easily, share your latest masterpiece, and discuss your areas of interest with others. Online Learning Exchange puts our content and your content all in one place!

**Keeping a Balance: Homeostasis and Negative Feedback (Bio)**

(Grades 6–College) 610, Convention Center

Sponsor: Science Take-Out

**Susan Holt** (contact@sciencetakeout.com), Science Take-Out, Pittsford, N.Y.

This hands-on Science Take-Out activity introduces students to concepts involved in homeostasis and negative feedback. Perform a simple hands-on laboratory activity to investigate how “Cupples” (a simulated organism) maintain homeostasis. Use a graphic organizer to illustrate other feedback control mechanisms, including regulation of body temperature and blood glucose metabolism.

**Amplify Your Genetics Teaching Skills with Carolina’s Inquiries in Science® Biology Kits (Bio)**

(Grades 9–12) 611, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Want to help your students solve the mystery of genetics? Using a guided inquiry approach can improve student understanding of difficult concepts such as nucleic acids, genetic inheritance, and biotechnology. Inquiries in Science biology kits provide hands-on activities that make challenging topics effortless to teach. Free teacher materials and door prizes.

**Implementing STEM in Your Classroom with Carolina™ Curriculum and the Smithsonian Institution (Gen)**

(Grades K–10) 612, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Take away free material to implement K–10 STEM initiatives in your classroom. Learn to incorporate STEM standards

using research-based programs developed by Carolina Curriculum and the Smithsonian Institution. Receive tools to develop skills necessary to prepare students for careers in the 21st-century global marketplace.

**Taking a Human Approach to Biology Education (Bio)**

(Grades 9–12) 613/614, Convention Center

Sponsor: Kendall Hunt Publishing Co.

**Cyndi Long**, Kendall Hunt Publishing Co., Dubuque, Iowa

Learn about the new *BSCS Biology: A Human Approach*, 4th ed., a fully interactive, activity-driven digital biology curriculum by a renowned author team. It uses human examples to present fundamental biology concepts and engages students through meaningful investigations that present biology in a way that unifies life and is relevant to students’ lives.

**I Can See Clearly Now...Digital Projection Techniques for Better Demonstration Visibility (Gen)**

(Grades 9–12) 615, Convention Center

Sponsor: Ken-A-Vision Manufacturing Co., Inc.

**Brian P. Wright**, Olympia High School, Olympia, Wash.

Learn how to take advantage of flexible neck cameras, portable digital microscopes, and digital projectors to inspire your students. This workshop will demonstrate techniques for observing microscale chemical reactions that happen in real time. Capturing chemical reactions that take place over extended time using time-lapse recording will be demonstrated as well. Techniques for teaching measurement and significant figures will also be illustrated and discussed.



**1:00–2:30 PM Exhibitor Workshop**

**What’s Going On in There? Inquiry Science for Supervisors, Trainers, and Teachers (Gen)**

(Grades K–8) 606, Convention Center


Sponsor: Delta Education/School Specialty Science

**John Cafarella**, Consultant, Canadensis, Pa.

Come learn how to support and evaluate an inquiry-based science lesson/program. What should you look for while observing a science lesson? During this session, we’ll define inquiry and look at the use of process skills, standards-based content and materials, notebooking, and assessment while engaging in interactive inquiry-based activities.



## 2:00–3:00 PM Featured Presentation


**Supporting Students' Integrated Understandings of Big Ideas and Scientific Practices Across Time (Gen)**

(General)

Ballroom 6A, Convention Center



**Joseph Krajcik** ([krajcik@msu.edu](mailto:krajcik@msu.edu)), Director, Institute for Research in Mathematics and Science Education, and Professor of Science Education, Michigan State University, East Lansing

President: Stamatis Vokos, Seattle Pacific University, Seattle, Wash.

How can we prepare students to be responsible citizens of the 21st century who are capable of making informed decisions? Over the last 15 years, learning and cognitive scientists have made tremendous breakthroughs in understanding how students learn science. One important breakthrough focuses on systematically building understanding of big ideas across time. As a learner has more sequenced and appropriate learning experiences, he or she develops successively more complex ways of thinking about core science ideas and scientific practices. This key idea is foundational to the National Research Council's *A Framework for K–12 Science Education* and for the Next Generation Science Standards.

*Joseph Krajcik is director of the Institute for Research in Mathematics and Science Education and professor of science education in the College of Education at Michigan State University. Prior to joining the faculty at Michigan State University, he was a professor of science education at the University of Michigan for 21 years. During his career at the university, he focused on working with science teachers to reform science education teaching practices to promote students' engagement in and learning of science.*

*Dr. Krajcik has authored and co-authored curriculum materials, books, software, and more than 100 manuscripts, and makes frequent presentations at international, national, and regional conferences.*

*Currently in collaboration with colleagues from Northwestern University and the Weizmann Institute of Science, Dr. Krajcik is wrapping up a 10-year effort in which he served as principle investigator on a National Science Foundation materials development project that aims to design, develop, and test the next generation of middle school curriculum materials to engage students in obtaining deep understandings of science content and practices. He is currently serving as the head of the Physical Science Design Team to develop the Next Generation Science Standards.*

## 2:00–3:00 PM Presentations

## SESSION 1

**Solids: The Neglected “State” of Chemistry (Chem)**  
(High School) 203, Convention Center

**Andrew G. Nydam** ([andrewnydam@hotmail.com](mailto:andrewnydam@hotmail.com)), Olympia High School, Olympia, Wash.

**Debbie Goodwin** ([nywin@hotmail.com](mailto:nywin@hotmail.com)), Chillicothe High School, Chillicothe, Mo.

Use the “stuff” of the everyday world to make science relevant. Hands-on activities using solid materials (ceramics, metals, and polymers) make concepts easier to teach and learn. Handouts!

## SESSION 2

**ASEE Session: VEX Robotics in the Classroom and in Competition (Gen)**  
(General) 205, Convention Center

**Jason Morrella** ([jason\\_morrella@roboticseducation.org](mailto:jason_morrella@roboticseducation.org)), Robotics Education and Competition Foundation, Campbell, Calif.

President: Michael J. Quinn ([quinnm@seattleu.edu](mailto:quinnm@seattleu.edu)), Seattle University, Seattle, Wash.

Engage students in STEM in the classroom and in competition with the VEX Robotics Platform. Students in more than 4,000 schools and 200 plus competitions learn and play with VEX Robotics. Find out how to incorporate VEX Robotics in your classroom.

## SESSION 3

**Packing Science Home: Connecting School and Home Science (Gen)**  
(Elementary) 211, Convention Center

**Elyse Litvack** ([ejlitvack@seattleschools.org](mailto:ejlitvack@seattleschools.org)), Maple Elementary School, Seattle, Wash.

**Carrie Tzou** ([tzouct@uw.edu](mailto:tzouct@uw.edu)), University of Washington, Bothell

Join us as we share the successes of a hands-on, inquiry-based take-home science backpack program designed to help students connect school science learning with science learning at home as well as increase their view of science as part of their daily lives.

SESSION 4

**American Chemical Society (ACS) Guidelines and Recommendations for Teaching High School Chemistry: A Resource for High School Chemistry Teaching** (Chem)

(High School—College/Supervision) 212, Convention Center  
**Deborah H. Cook** (*deborahcook72@gmail.com*), American Chemical Society, Washington, D.C.

Join an interactive discussion on the revised ACS Guidelines and Recommendations on Teaching High School Chemistry and learn how they can be used to enhance your program activities and leverage for resources.

SESSION 5

**From Neurons to Robots—Exploring Free Online Neuroscience and Robotics Virtual Labs** (Gen)

(Middle Level—College) 214, Convention Center  
**Darci J. Harland** (*djharland@ilstu.edu*), Illinois State University, Normal

Students role-play as researchers or MDs to solve real-life issues by making diagnostic decisions and performing medical procedures while learning cutting-edge science.

SESSION 6

**Teaching and Learning in the Digital Age: Chemistry Resources Teachers and Students Can Rely On** (Chem)

(General) 304, Convention Center  
**Linda Fanis** (*Infanis@wisc.edu*), University of Wisconsin, Madison

**Marta Gmurczyk** (*m\_gmurczyk@gmail.com*), American Chemical Society, Washington, D.C.

Discover the Chemical Education Digital Library's (ChemEd DL) innovative collection of reliable and free digital resources for high school teachers, including Models 360, ChemTeacher, and the award-winning Periodic Table Live!

SESSION 7

**School and Community Gardens: A Model for Effective Science Learning** (Gen)

(General) 307, Convention Center  
**Gilda K. Wheeler** (*gilda.wheeler@k12.wa.us*), Office of Superintendent of Public Instruction, Olympia, Wash.

This interactive session focuses on a community-based strategy

(Asset Based Community Development) and environmental sustainability learning standards connecting students to the community and environment.


SESSION 8

**Polymers 1A: They're Everywhere! Kitchen, Classroom, Cars, and Clothing** (Chem)

(Middle Level—High School/Informal) 308, Convention Center  
**Lynn W. Higgins** (*lynhiggins@sbcglobal.net*), Polymer Ambassadors, St. Louis, Mo.

We'll use cars, food, toys, and clothing in a fast-paced tour of a "superstore" to illustrate examples of polymer science, history, and engineering. All are linked to web pages and activities.


SESSION 9

 **Using Learning Progressions to Support Formative Assessment Practices** (Gen)

(General) 616, Convention Center  
**Alicia C. Alonzo** (*alonzo@msu.edu*), Michigan State University, East Lansing

Explore the use of learning progressions to support teachers' formative assessment practices—from eliciting and interpreting student performances to responding with feedback and instruction.

SESSION 10

 **Dazzling Deceptions: Discrepant Events That Delight and Mystify!** (Gen)

(General) 618, Convention Center  
**Alan J. McCormack** (*amccorma@mail.sdsu.edu*), NSTA Retiring President, and San Diego State University, San Diego, Calif.

Science experiences that seem contrary to "common sense" are great motivators! Pique children's interest and imagination, and build creative and logical-thinking skills with discrepant events.

**2:00–3:00 PM Workshops**

**Helping High School Students Write Their Own Scientific Experiments (Bio)**

(High School) 2B, Convention Center

**Kristen R. Dotti** (*kristen\_dotti@yahoo.com*), Christ School, Arden, N.C.

Writing lab experiments can be a huge leap for students accustomed to cookbook-style labs. Try it yourself during this session and you will see where the pitfalls occur and where the critical thinking begins. Take away lesson plans for a simple technique that can be used to guide your students through the process of developing high-quality scientific experiments in a step-by-step manner.

**Human Population Explosion (Bio)**

(Middle Level–High School) 3A, Convention Center

**David R. Stronck** (*david.stronck@csueastbay.edu*), California State University–East Bay, Hayward

Do activities provided by The Population Connection. Take home a CD with these activities showing international trends and problems from the current human population explosion.

**Lost in Translation: Exploring Protein Synthesis with Interactive Physical Models (Bio)**

(High School–College) 3B, Convention Center

**Tim Herman** (*herman@msoe.edu*) and **Shannon Colton** (*colton@msoe.edu*), Milwaukee School of Engineering, Center for BioMolecular Modeling, Milwaukee, Wis.

Discover the translation process from mRNA to protein using hands-on innovative physical models of the insulin gene and protein.

**NASA’s Pi in the Sky: Meaningful Math in Your Astronomy Lessons (Earth)**

(Middle Level–High School) 201, Convention Center

**Pamela Whiffen** (*pwpwr@aol.com*), NASA Educator Ambassador, Phoenix, Ariz.

How big is that supernova? How far is that galaxy? How do we know? Use mathematics to investigate scientific phenomena in astronomy. Free NASA materials!

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 **NSTA Press Session: A Framework and Tools to Make Tough Grades 3–5 Science Topics Approachable**

(Gen)

(Elementary/Supervision) 204, Convention Center

**Susan B. Koba** (*skoba@cox.net*), NSELA President, Omaha, Neb.

Use the NSTA Press book, *Hard-to-Teach Science Concepts: A Framework to Support Learners, Grades 3–5*, to enhance lessons on tough topics and improve learning.

**Inquiry Lessons: Life on Earth and Elsewhere?**

(Gen)

(Middle Level–High School) 206, Convention Center

**Pamela K. Harman** (*pharman@seti.org*), SETI Institute, Mountain View, Calif.

Are we alone? Scientists in astrobiology work across disciplines looking for signs of life beyond Earth. Practice with inquiry-based lesson plans and pick up free NASA resources.

**Constructivist Activities for Teaching Physical Geology**

(Earth)

(Elementary–High School) 213, Convention Center

**John Gallagher** (*jpgalla@wavecable.com*), Port Angeles High School, Port Angeles, Wash.

Join us as graduates of Mississippi State University’s Teachers in Geosciences Masters program share constructivist activities to improve student understanding of rock and mineral classification and the rock cycle.

**What Is Your Cosmic Connection to the Elements?**

(Chem)

(Middle Level–High School) 303, Convention Center

**Cheryl Niemela**, Bonney Lake High School, Bonney Lake, Wash.

Walk away with activities and curricula from NASA that help discover the origin of the periodic elements. Take home a workbook, poster, and *Imagine the Universe* CD.



**N2: The Layered Curriculum Development Model for Project-based STEM Education**

(Env)

(Middle Level–High School) 617, Convention Center

**Deborah North** (*dnorth@fwps.org*) and **Dave Neese**, TAF Academy, Kent, Wash.

Experience a proven approach to creating an interdisciplinary, technology-rich, standards-based project that is based on STEM-focused issues relating to sustainability and systems thinking.



**Scaffolded Inquiry: Progressions in the Learning to Conduct Full Inquiry**

(Gen)

(Supervision/Administration) 619, Convention Center

**Karen L. Ostlund** (*klostlund@mail.utexas.edu*), NSTA President-Elect, and Retired Professor, The University of Texas at Austin

Find out how scaffolded inquiry (directed to guided to full) provides a model of learning progressions designed to develop skills to conduct full inquiry.

**CREsis Pieces: Supplemental Polar Science Activities**

(Phys)

(Elementary–Middle Level) 620, Convention Center

**Cheri L. Hamilton** (*chamilton@cresis.ku.edu*) and **Brandon Gillette** (*bgillette@ku.edu*), The University of Kansas, Lawrence

**Teri Fulton** (*tefulto@kckps.org*), Whittier Elementary School, Kansas City, Kans.

Developed by the Center for Remote Sensing of Ice Sheets (CREsis), an NSF-funded science and technology center headquartered at The University of Kansas, these activities have been tested by diverse students and approved by scientists. These short hands-on activities integrate polar science into the classroom science program. So simple, all students succeed! Set of 5x7 cards included.



**2:00–3:00 PM Exhibitor Workshop****33 Ways to Integrate Science (Gen)***(Grades 2–4) 604, Convention Center*

Sponsor: Delta Education/School Specialty Science—Seeds  
**Jonathan Curley** and **Traci Wierman**, Lawrence Hall of Science, University of California, Berkeley

Discover how to increase reading comprehension and science knowledge simultaneously for ALL students. Take away 33 ready-to-use strategies for incorporating science trade books into your classroom. Learn integration strategies that provide... a better way to teach science, a better way to teach literacy. Free classroom materials!

**2:00–3:30 PM Exhibitor Workshop****Light and Optics: A Series of EnLIGHTening Experiments! (Phys)***(Grades 6–12) 607, Convention Center*

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, N.H.

Experience CPO's Optics with Light and Color kit complete with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine different spectra. Shine a laser through a prism and see for yourself the phenomenon of total internal reflection. We make studying light exciting!

**2:00–4:00 PM Exhibitor Workshop****Taking Science Outdoors with FOSS K–8 (Gen)***(Grades K–8) 602/603, Convention Center*

Sponsor: Delta Education/School Specialty Science—FOSS  
**Joanna P. Snyder** and **Erica Beck Spencer**, Lawrence Hall of Science, University of California, Berkeley

Experience exciting new outdoor initiatives from FOSS that can expand your classroom walls and help you and your students embrace the school-yard environment. Learn about helpful outdoor teaching techniques, proven outdoor investigations, and lessons learned from other successful school-yard initiatives. We'll go outside to experience outdoor activities.

**2:15–3:30 PM Exhibitor Workshops****Integrating Math and Science Using Blood Spatter (Bio)***(Grades 7–12) 4C-1, Convention Center*

Sponsor: WARD'S Natural Science

**Kelly P. Cannon**, Washoe County School District, Reno, Nev.

By using simulated blood, participants will interpret and understand blood spatter. Learn how to determine if red splashes and spatter are blood; interpret blood drop patterns from different vertical heights and blood spatter on different surfaces; and interpret and measure blood drop patterns from an angled impact.

**Engaging Students and Enhancing Learning Outcomes with Project-based Videos (Bio)***(Grades 9–12) 4C-2, Convention Center*

Sponsor: Houghton Mifflin Harcourt

**Michael Heithaus**, Florida International University, North Miami

Grab students' attention with the cutting-edge research and fast-paced, high-quality production of *That's Amazing* project-based videos. Starting with a question about the bizarre, the cool, and the exciting, Mike Heithaus takes students on a scientific investigation with the experts...but it is up to the students to work with the data collected to solve the mystery or debate its merits! Learn more about this exciting teaching tool.

**What the Hands Do, the Brain Does: Lasting Understanding Using Notebook Foldables® (Gen)***(Grades K–12) 4C-3, Convention Center*

Sponsor: Dinah-Might Adventures, LP

**Nancy Wisker** ([nancy@dinah.com](mailto:nancy@dinah.com)), Dinah Zike Academy, San Antonio, Tex.

Add dimensionality to student notebooks and transform them into brain-smart tools with Notebook Foldables. Make learning and assessment tools that can revolutionize your classroom, and take home material packets.

**Using the OHAUS Harvard Junior as a STEM-focused Skill Program (Gen)**

(Grades 2–6) 605, Convention Center

Sponsor: Ohaus Corp. and Frey Scientific

**Frey Scientific and Neo/SCI**

Have an opportunity to learn about STEM education and how to integrate the OHAUS Harvard Junior balance in building a critical STEM-focused skill like measuring! Learn how to use STEM-based virtual labs and bench activities to enhance student learning! By performing a STEM-focused activity, participants learn how to integrate STEM-focused measuring, balance theory, and data analysis skills into their curriculum. All participants receive a FREE OHAUS Harvard Junior sampler containing STEM activities and one person will receive a FREE OHAUS Harvard Junior balance.

**The Next Generation of Science Virtual Labs for the Entire Science Curriculum—No Cleanup! (Gen)**

(Grades 9–12) 609, Convention Center

Sponsor: Pearson

**Brian Woodfield**, Brigham Young University, Provo, Utah  
Brian Woodfield, author and creator of Pearson's Virtual Lab series, will demo some of his latest eye-popping virtual labs that are so visually realistic you have to see them to believe them. Whether you are short on time or short on lab materials, virtual labs gives students the opportunity to experiment numerous times with various materials with no cleanup.

**Genetic Testing for Huntington's Disease (Bio)**

(Grades 6–College) 610, Convention Center

Sponsor: Science Take-Out

**Susan Holt** ([contact@sciencetakeout.com](mailto:contact@sciencetakeout.com)), Science Take-Out, Pittsford, N.Y.

Should a young woman with a family history of Huntington's

disease have genetic testing? What are the benefits and risks of genetic testing? This hands-on Science Take-Out kit uses models, Punnett squares, pedigrees, and simulated DNA testing for the gene involved in Huntington's disease. Information provided about related activities.

**Hands-On Science with Classroom Critters (Bio)**

(Grades K–12) 611, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Animals broaden inquiry-based explorations and student interest in science. Through fun, simple hands-on activities, participants learn about termites and insect pheromones; how isopods are great for teaching evolution, adaptation, and behavior; and experiments that incorporate measuring into beetle activities. Session includes care and handling information, free samples, and literature.

**EcoTeach: Biodiversity of Costa Rica (Env)**

(Grades 5–College) 615, Convention Center

Sponsor: EcoTeach

**Greg Enright** ([greg@ecoteach.com](mailto:greg@ecoteach.com)), EcoTeach, Poulsbo, Wash.

Come meet an EcoTeach trip leader and hear how she raised \$40,000 for students to travel to Costa Rica, motivated students to raise funds for their trip, created positive visibility for their school, and changed the lives of her students forever! Founded by a teacher in 1994, EcoTeach provides hands-on conservation and ecology-oriented expeditions for students and teachers from middle school through college years.

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**2:15–4:30 PM Exhibitor Workshop**

**Stream Assessment: An Active, Integrated Approach to Science Learning (Env)**

(Grades 6–12) 613/614, Convention Center

Sponsor: Water Environment Federation

**Gretchen Hayslip** and **Lillian Herger**, U.S. EPA Region 10, Seattle, Wash.

Engage in a hands-on simulation of chemical, biological, and geophysical assessment of stream water quality during this workshop, hosted by the Water Environment Federation. Take home resources, including a World Water Monitoring Day™ test kit.

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**2:15–5:15 PM Exhibitor Workshop**

**Science and Writing: Documented Success in Increasing Achievement in Both Domains (Gen)**

(Grades K–6) 612, Convention Center

Sponsor: Carolina Biological Supply Co.

**Betsy Rupp Fulwiler**, Seattle (Wash.) Public Schools

Through video, mini-lessons, and discussion, learn how to scaffold inquiry-based science and writing instruction by strategically using word banks, graphic organizers, language structures, and writing frames to teach your students how to think and write scientifically. Research shows this approach is effective in increasing achievement in both science and writing.

**3:00–4:30 PM Exhibitor Workshop**

**Science Gnus: Scientists Famous and Forgotten... and Their Process Skills (Gen)**

(Grades K–8) 606, Convention Center

Sponsor: Delta Education/School Specialty Science

**John Cafarella**, Consultant, Canadensis, Pa.

Hear about fascinating and dramatic stories of scientists, their discoveries, and the process skills used. Plus, the sometimes fine line between being famous or being forgotten by history. We'll replicate notable activities, too. The stories in science are high interest for both teachers and students. Liberal doses of Science Gnus humor, too.

**3:00–6:00 PM Meeting**

**CESI Board Meeting**

(By Invitation Only)

Greenwood, Sheraton

For information, please visit <http://cesiscience.org>.

**3:30–4:30 PM Presentations**

**SESSION 1**

**NSTA NSTA Avenue Session: America's Home Energy Education Challenge (Env)**

(Elementary–Middle Level)

203, Convention Center

**Ray Ann Havasy**, Center for Science Teaching and Learning, Rockville Centre, N.Y.

Sponsored by the U.S. Department of Energy and administered by NSTA, the America's Home Energy Education Challenge is designed to educate grades 3–8 students about energy usage and energy efficiency and engage students and their families in a save energy, save money campaign. Learn about energy-efficiency resources available to schools, teachers, students, and families and find out how your students can earn an Energy Fitness Award from the U.S. Secretary of Energy.

Students Making a Difference

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for Health

[www.gpsa.org](http://www.gpsa.org)

educational  
collaborators



What can your students do with four weeks of summer  
Improve health care for hundreds of children.

Make a difference.



The summer starts on the FGCU campus, learning about the community they will be helping, learning about the work they'll be doing. They'll get to know the MIT and FGCU faculty and the rest of the team before everyone departs for the developing world.

Once there, they'll live and work in a community. They'll spend the afternoons in language and technical training with extraordinary faculty. Every morning, they'll put the training to the test, working in a clinic or community. They might be vaccinating against polio one day, training mothers on hygiene the next, witnessing a birth or helping the clinic expand its facilities the following day. Every day they'll have a chance to help MIT and FGCU faculty conduct research that will have long term, sustained impact.

### SESSION 2

#### **ASEE Session: NASA's BEST Students (Beginning Engineering, Science, and Technology) (Gen)**

(Elementary–High School) 205, Convention Center

**Michelle Graf** (*shellygraf@gmail.com*), University of Maryland, Baltimore County, Baltimore

Presider: Michael J. Quinn (*quinnm@seattleu.edu*), Seattle University, Seattle, Wash.

“Nice Ride!” Children are natural engineers. Learn to capture the excitement of space exploration and engineering by designing and building an Exploration Buggy. Zoom! Zoom!

### SESSION 3

#### **The Reflective Assessment Technique: 15 Minutes to Improved Instruction (Gen)**

(Elementary–Middle Level) 212, Convention Center

**Cathleen A. Kennedy** (*cathy@kacgroup.com*), KAC Group, San Carlos, Calif.

**Kathy Long** (*klong@berkeley.edu*), Lawrence Hall of Science, University of California, Berkeley

**Arthur Camins**, Stevens Institute of Technology, Hoboken, N.J.

Learn a quick assessment technique that pinpoints what students need to learn next—without giving a quiz. See how this technique improved student performance and teacher effectiveness in a national study.

### SESSION 4

#### **NASA CERES S'COOL Project: Be a S'COOL Cloud Observer! (Earth)**

(Elementary–High School) 213, Convention Center

**Denise Thompson** (*thompsond@orting.wednet.edu*), NASA Ambassador and Solar System Exploration Educator, Orting, Wash.

Engage your students in making real-world cloud and weather observations for NASA. Become a S'COOL cloud observer! Plenty of handouts!

### SESSION 5

#### **Making the Global Local: State-specific Climate Curriculum Workshop Lessons by Teachers for Teachers (Env)**

(General) 214, Convention Center

**Deborah Morrison** (*deborah.morrison@colorado.edu*), University of Colorado at Boulder

As an example of local climate change education, I'll share our Colorado climate science inquiry lessons developed by teachers and our novel curriculum development process.

### SESSION 6

#### **Give Science a Voice! Digital Storytelling in the Science Classroom (Gen)**

(Elementary–High School) 304, Convention Center

**Roger D. Pence** (*rogpence@yahoo.com*), Benicia Middle School, Benicia, Calif.

Engage students in science by having them write, compile, produce, and share digital stories. Digital storytelling encourages research, creativity, visual literacy, and concise writing. Join me as I share pedagogy, technical aspects, classroom tips, and resources required to teach science via this exciting strategy.

### SESSION 7

#### **Career Currents: Energy Careers (Gen)**

(General) 307, Convention Center

**Rebecca Lamb** (*rlamb@need.org*), The NEED Project, Manassas, Va.

Help your students develop the right skills for up and coming jobs. Learn about careers in energy and the career pathways to reach those careers.

### SESSION 8

#### **LEGO® Robotics Middle School STEM Class (Gen)**

(Middle Level/Supervision) 308, Convention Center

**Joy C. Giovanini, Carol Rivera** (*riverac@psd401.net*), and **Shira Stark**, Peninsula School District, Gig Harbor, Wash.

Build a districtwide middle school LEGO Robotics STEM program that hooks students and encourages community partnerships.

### SESSION 9

#### **Assessment for Learning and Learning Progressions (Gen)**

(General) 616, Convention Center

**Karen S. Lippy** (*klippy@oesd.wednet.edu*), Olympic Educational Service District, Bremerton, Wash.

Gain an understanding of the key characteristics of assessment for learning and the role of learning progressions in an assessment system.

### SESSION 10

#### **Making Science Accessible for English Language Learners (Gen)**

(Preschool–Elementary/Supervision) 618, Convention Center

**Virginia Nelson** (*vnelson@ttsd.k12.or.us*), Tigard-Tualatin School District, Tigard, Ore.

Learn specific, easy-to-implement procedures to get your English language learners involved and active in your science lessons. These steps make science accessible for students learning English.

**3:30–4:30 PM Workshops****It's Not a Discrepant Event if They Don't Know What to Expect (Gen)***(General)* 2A, Convention Center**Mary Jean Lynch** (*mlynch@noctrl.edu*) and **John J. Zenchak** (*jjzenchak@noctrl.edu*), North Central College, Naperville

Experience our unique two-setup approach to discrepant events that puts students on a level playing field and increases the effectiveness of using discrepant events.

**Secrets of Sea Horses (Bio)***(Preschool–Middle Level/Informal)* 2B, Convention Center**Mary E. Whaley** (*mwhaley@mbayaq.org*), Monterey Bay Aquarium, Monterey, Calif.

Explore three hands-on activities about the specific habitats, adaptations, and life cycles of these fascinating fish while learning why they are threatened.

**Amazing Things Cells Can Do (Bio)***(Middle Level–High School)* 3A, Convention Center**Molly A. Malone**, The University of Utah, Salt Lake City  
Bring your cell unit to life with a 3-D movie and interactive animations! Online and classroom activities explore organelles, cell communication, size, and scale. Visit <http://learn.genetics.utah.edu> for free activities.**Integrating Bioinformatics into Introductory Biology Courses (Bio)***(High School–College)* 3B, Convention Center**Jeanne T. Chowning** (*jchowning@nwabr.org*) and **Dina Kovarik** (*dkovarik@nwabr.org*), Northwest Association for Biomedical Research, Seattle, Wash.

Learn how to integrate basic bioinformatics concepts and tools into introductory biology classrooms using a case study about genetic testing for breast cancer.

**A Different Look at an Old Model: Modeling the Spectrum (Phys)***(Middle Level–High School)* 201, Convention Center**Christine A. Royce** (*caroyce@aol.com*), NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

Using materials from the Chandra mission, we will examine two different views of the electromagnetic spectrum model as well as pre- and post-activities in a unit.

**NSTA Press Session: Picture-Perfect Science Lessons, Grades 3–6 (Gen)***(Elementary)* 204, Convention Center**Emily R. Morgan** (*emily@pictureperfectscience.com*), Picture-Perfect Science, West Chester, Ohio**Karen Ansberry** (*karen@pictureperfectscience.com*), Mason (Ohio) City Schools

Learn how to use picture books to guide inquiry in the upper elementary classroom.

**JetStream: An Online School for Weather (Earth)***(Informal Education)* 206, Convention Center**Dennis R. Cain** (*dennis.cain@noaa.gov*), National Weather Service, Fort Worth, Tex.

Receive an overview of a National Weather Service online resource for learning the basic how's and why's of weather. JetStream includes lesson plans and activities for the classroom.

**Fun Activities with Gel Polymers to Enhance Any Science Class (Gen)***(General)* 211, Convention Center**Cora S. Salumbides** (*cora\_salumbides@yahoo.com*), Jefferson Union High School District, Daly City, Calif.

Captivate your classroom with activities that use common household materials to spark curiosity as well as creativity in your students. The activities integrate reading and writing skills.

**Inquiry-based Hands-On Activities and Demonstrations (Chem)***(Middle Level–High School)* 303, Convention Center**John W. Fedors** (*jfedors@wavecable.com*), Science Activities, Lincoln, Calif.

Explore energy, magnetism, diffusion, passive transport, cell organelles, heat transfer, hydrophilic/hydrophobic materials, and forensic potentials.

**What's So "Next Generation" About the Next Generation Science Standards? (Gen)***(General)* 608, Convention Center**Stephen L. Pruitt**, Achieve, Inc., Washington, D.C.

Walk away with the latest information about the Next Generation Science Standards as the organizers and writers guide you through the latest draft of the standards. Discussions will focus on what the standards may look like and how to prepare for this exciting enhancement to science education in the United States.





**Decoding Starlight—From Pixels to Images (Earth)**  
(Middle Level–High School) 617, Convention Center

**Doug Lombardi** ([lombardi.doug@gmail.com](mailto:lombardi.doug@gmail.com)), Southern Nevada Regional Professional Development Program, North Las Vegas

**Donna L. Young** ([donna@aavso.org](mailto:donna@aavso.org)), Chandra E/PO Office, Cambridge, Mass.

Use models, activities, and image analysis software to construct images and investigate how electromagnetic radiation from stars is translated from photons to pixels to images.

**NASA: Dynamic Solar System Models for the Classroom (Earth)**

(Middle Level) 619, Convention Center

**Pamela K. Harman** ([pharman@seti.org](mailto:pharman@seti.org)), SETI Institute, Mountain View, Calif.

**Dana E. Backman** ([dbackman@sofia.usra.edu](mailto:dbackman@sofia.usra.edu)), SOFIA/SETI Institute, Moffett Field, Calif.

The Human Orrery demonstrates planetary motion with a timescale. Use that understanding to build a model of extra-solar planet detection from classroom materials.

**Facilitating Early Childhood Education with Project Learning Tree (Env)**

(General) 620, Convention Center

**Al Stenstrup** ([astenstrup@forestfoundation.org](mailto:astenstrup@forestfoundation.org)) and **Jackie Stallard** ([jstallard@forestfoundation.org](mailto:jstallard@forestfoundation.org)), Project Learning Tree, Washington, D.C.

Learn about and experience effective hands-on activities to introduce science concepts to young children using PLT's new early childhood curriculum. Each participant will receive PLT's Environmental Experiences for Early Childhood activity guide and accompanying music CD.



**3:30–4:30 PM Exhibitor Workshop**

**The Four “It’s” of Science (Gen)**

(Grades 2–4) 604, Convention Center

Sponsor: Delta Education/School Specialty Science—Seeds **Jonathan Curley** and **Traci Wierman**, Lawrence Hall of Science, University of California, Berkeley

Do it. Talk it. Read it. Write it. Experience how Seeds of Science/Roots of Reading® provides teachers with systematic, explicit instruction and students with engaging materials for hands-on and resource-based investigations. A better way to teach science; a better way to teach literacy—proven results in both!

**4:00–5:15 PM Exhibitor Workshops**

**Cool Tech Tools for Chemistry: Really Easy Data Collectors (Chem)**

(Grades 7–12) 4C-1, Convention Center

Sponsor: Science Kit & Boreal Laboratories

**Lee Boyes** and **Susan Smith**, Petaluma High School, Petaluma, Calif.

Join us for a fast-paced workshop that goes far beyond how to use Really Easy Data (RED) units and focuses on how to integrate RED technology into the classroom or laboratory. Engage in hands-on activities examining concepts such as ant-acid comparisons (using the pH probe), reduction potentials measurement (using the voltage sensor), and vapor pressure (using the pressure probe and temperature probe).

**Ecology Adventures: Motivating Students Through Project Based Learning (Gen)**

(Grades 3–8) 4C-2, Convention Center

Sponsor: Houghton Mifflin Harcourt

**Michael Heithaus**, Florida International University, North Miami

Join Houghton Mifflin Harcourt author Mike Heithaus to learn about exciting new video-based lessons that take your class on scientific adventures! Videos of real scientists studying sharks, sea turtles, dolphins, and more guide students through all the steps of the scientific method. Challenge your students to develop hypotheses, join research teams as they collect data, and then conduct their own data collection and analysis.

**Going Green: Economical and Environmentally Friendly Inquiry in Chemistry (Chem)**

(Grades 9–12) 609, Convention Center

Sponsor: Pearson

**Ed Waterman**, Retired Educator, Fort Collins, Colo.

Learn how to implement safe, simple, easy-to-set-up, material-conserving, time-efficient, and effective inquiry activities in chemistry with safety and differentiation built in. Each activity teaches core content and fosters problem solving, creativity, and invention. Encourage students to design and carry out original experiments not possible with traditional methods.

**Enzymes and Lactose Intolerance (Bio)**

(Grades 6–College) 610, Convention Center

Sponsor: Science Take-Out

**Susan Holt** ([contact@sciencetakeout.com](mailto:contact@sciencetakeout.com)), Science Take-Out, Pittsford, N.Y.

This hands-on Science Take-Out kit investigates how enzymes help people with lactose intolerance. Model the action of the enzyme lactase and conduct tests to determine whether the enzyme supplement Lactaid digests lactose. Then, design and conduct an experiment to determine if acid interferes with the enzyme in Lactaid.

**Introduction to Electrophoresis (Bio)**

(Grades 9–12) 611, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Explore the basics of electrophoresis as you load your own gels and perform electrophoresis, separating brightly colored dyes on agarose gels to determine which dyes are present in an unknown mix. Gels are run using economical, sturdy gel boxes that can be powered by inexpensive power supplies or batteries.

**New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (Bio)**

(Grades 9–College) 615, Convention Center

Sponsor: Swift Optical Instruments, Inc.

**David Doty** ([david@swiftoptical.com](mailto:david@swiftoptical.com)) and **Cynthia Syverson-Mercer** ([cynthia@swiftoptical.com](mailto:cynthia@swiftoptical.com)), Swift Optical Instruments, Inc., San Antonio, Tex.

The future of science classrooms and workplaces is digital technology. Prepare your students for this future by incorporating Motic software, Swift digital cameras, and microscopes into your STEM curriculum. Learn how to integrate digital technology and assessment into your current teaching. Get students involved digitally!

**4:00–5:30 PM Exhibitor Workshop**

**Genetics: Crazy Traits and Adaptation Survivor (Phys)**

(Grades 6–12) 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Patsy Eldridge**, CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they study genetics—such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit and study the resulting population.

**5:00–5:30 PM Presentation**

**SESSION 1**

**Infusing Sustainability into Teacher Preparation Programs at a Large State University (Gen)**

(General) 308, Convention Center

**Grinell Smith** ([grinell@gmail.com](mailto:grinell@gmail.com)), San Jose State University, San Jose, Calif.

Join me for an overview behind the development of a college of education sustainability plan and how it articulates with the larger university plan. Attention will be paid to activities and processes that can be applicable to colleges of education in general.

## 5:00–6:00 PM Presentations

### SESSION 1

#### Ready for Primary Time: Adapting Engineering Curricula for the K–2 Classroom (Gen)

(Elementary/Supervision) 203, Convention Center

**Gail E. Gerdemann** ([gerdemag@science.oregonstate.edu](mailto:gerdemag@science.oregonstate.edu)), Oregon State University, Corvallis

Walk away with tips and principles for adapting grades 3–6 engineering lessons for K–2 classrooms. Three units will be featured as examples—bridges, walls, and air toys.

### SESSION 2

#### ASEE Session: eGFI: Engineering, Go For It!—Dream Up the Future (Gen)

(General) 205, Convention Center

**Stacie Harrison** ([s.harrison@asee.org](mailto:s.harrison@asee.org)) and **Dennis Cummings** ([d.cummings@asee.org](mailto:d.cummings@asee.org)), American Society for Engineering Education, Washington, D.C.

President: Michael J. Quinn ([quinnm@seattleu.edu](mailto:quinnm@seattleu.edu)), Seattle University, Seattle, Wash.

The American Society for Engineering Education (ASEE) and university faculty will introduce participants to innovative ways to introduce engineering into the K–12 classroom.

### SESSION 3

#### Learning Trajectories in Mathematics Tied to Diagnostics (Gen)

(Middle Level) 212, Convention Center

**Kenny Nguyen** ([khnguye2@ncsu.edu](mailto:khnguye2@ncsu.edu)), North Carolina State University, Raleigh

Let's discuss the ongoing work to build learning trajec-

ries for rational number reasoning and related assessments delivered via smartphones.

### SESSION 4

#### Go Beyond the Scientific Method to Experimental Design (Gen)

(Middle Level) 213, Convention Center

**Lynn Lauterbach** ([lynnlauterbach@gmail.com](mailto:lynnlauterbach@gmail.com)) and **Kristi G. Bowling** ([kmg4@rice.edu](mailto:kmg4@rice.edu)), Rice University, Houston, Tex.

Designing experiments is where students experience the “ah-ha” science moment. Using a graphic organizer tool and a free online website, learn how you can share this experience with your students. Handouts.

### SESSION 5

#### Inquiry-based Science in Seattle Preschools (Gen)

(General) 214, Convention Center

**Kirsten Nesholm** ([kanesholm@seattleschools.org](mailto:kanesholm@seattleschools.org)) and **Chantel Anderson** ([ceanderson1@seattleschools.org](mailto:ceanderson1@seattleschools.org)), Seattle (Wash.) Public Schools

Learn how Seattle preschool students are engaged in meaningful scientific exploration through the use of inquiry-based science units and science notebooks.

### SESSION 6

#### Making the Most of NSDL's Science Literacy Maps (Gen)

(Elementary–High School) 616, Convention Center

**Ted Willard** ([twillard@aaas.org](mailto:twillard@aaas.org)), AAAS Project 2061, Washington, D.C.

Learn how to interpret the Science Literacy Maps from the National Science Digital Library (NSDL) and how to get the most for you and your students by using them.

### SESSION 7

#### Integrating Indigenous Knowledge and Science Education (Gen)

(Informal Education) 618, Convention Center

**Ray Barnhardt** ([rjbarnhardt@alaska.edu](mailto:rjbarnhardt@alaska.edu)), University of Alaska, Fairbanks

Join me as I demonstrate culturally and place-based teaching strategies and resources illustrating how indigenous and local knowledge can enrich the science curriculum for all students.



**5:00–6:00 PM Workshops****Meaningful Assessment in Science That Impacts Learning (Gen)***(Middle Level–College)* 2A, Convention Center**D.J. West** (*djwest78@gmail.com*), Schoolcraft College, Livonia, Mich.

Attention will be paid to how Understanding by Design (UbD) Continuum of Assessment can function throughout the instructional cycle to provide important information about student understanding and mastery of the big ideas of science.

**The Science and Ethics of Animal Research (Bio)***(High School)* 2B, Convention Center**Joan Griswold** (*jgriswold@nwabr.org*) and **Jeanne T. Chowning** (*jchowning@nwabr.org*), Northwest Association for Biomedical Research, Seattle, Wash.**Dawn Brown** (*dabrown@fwps.org*), Truman High School, Federal Way, Wash.

Why do scientists use animals? What are the ethical considerations? Engage in practical lessons that bring this challenging issue into the science classroom. Take home a CD.

**Building Phylogenetic Trees by Modeling Change Through Time (Bio)***(High School–College)* 3B, Convention Center**Sarah L. Eddy** (*eddys@science.oregonstate.edu*), **Chris Friese**, and **Kari L. van Zee** (*vanzeek@science.oregonstate.edu*), Oregon State University, Corvallis

Develop an intuitive understanding of how to construct and interpret phylogenies by mimicking the process of descent with modification through a hands-on activity. Lessons provided.

**Forensics Science Can Turn Every Science into a Relevant Science (Gen)***(Middle Level–High School)* 206, Convention Center**Jacklyn Bonneau** (*bonneau@wpi.edu*), Massachusetts Academy of Math & Science, Worcester

Using forensic activities in your science classroom makes science relevant and fun. Complete an activity requiring minimal technology. Handouts!

**Addressing Student Misconceptions of the Earth-Sun-Moon System: Seasons (Earth)***(Elementary–High School)* 211, Convention Center**John Gallagher** (*jgalla@wavecable.com*), Port Angeles High School, Port Angeles, Wash.

This Washington Science Teachers Association workshop will deepen content knowledge and provide constructivist techniques to help your students truly understand seasons and the Earth-Sun-Moon system.

**Technology Makes STEM Instruction Easy (Chem)***(Middle Level–High School)* 303, Convention Center**Gregory B. Dodd** (*gbdodd@gmail.com*), Kanawha County Schools, Charleston, W.Va.

Learn how the use of appropriate technology in the classroom can integrate science, math, and engineering concepts making STEM instruction a snap.

**Science, Stuff, and Sustainability: Engaging Students in Examining Systems, Resources, and Consumption (Gen)***(General)* 617, Convention Center**Dave Wilton** (*dave@facingthefuture.org*), Facing the Future, Seattle, Wash.**Jessica C. Levine** (*ms.green.levine@gmail.com*), Eckstein Middle School, Seattle, Wash.

Engage students in an exploration of the materials economy, the system of extraction, production, and consumption. Examine its major systems, analyze their sustainability, and improve those systems in ways that benefit people, economies, and environments. Free curriculum!

**Polydensity Tube: Make—Learn—Take. Serious Fun with a Dense Subject (Chem)***(Informal Education)* 619, Convention Center**Lynn W. Higgins** (*lynhiggins@sbcglobal.net*), Polymer Ambassadors, St. Louis, Mo.

Make a bottle with solids floating or sinking in two immiscible liquids. No oil, so layers separate cleanly and quickly. Activities use grocery-store materials and free supplies.

**O.C.T.O.P.U.S. (Oceanography Concepts and Technology Objectives for Pupils in an Urban Setting) (Earth)**

(Elementary–Middle Level) 620, Convention Center

**Gregory A. Byrne** ([gbyrne@u-city.k12.mo.us](mailto:gbyrne@u-city.k12.mo.us)), Flynn Park School, University City, Mo.

Presider: Catherine Garnier, Flynn Park School, University City, Mo.

Delve into teaching oceanography in an urban classroom in which many of the students have never been near an ocean. Discussion will also include how oceans influence micro/macro climate studies.



**6:00–7:15 PM Networking Opportunity**

**STEM Networking at Town Hall Reception (M-1)**

(Tickets Required: \$15) Off-site (Town Hall Seattle)

Join us at Seattle’s historic Town Hall to network and socialize with conference attendees and science education advocates from the STEM research and business community while enjoying appetizers and drinks.

*Note:* If you’re interested in learning more while at Town Hall, the Institute for Systems Biology is offering “ISB/ Science in Society: Preparing Students for STEM Careers” from 7:30 to 9:00 PM. This panel of thought leaders from the business, academia, and K–12 education communities will discuss their vision for the future in the fields of science, technology, engineering, and mathematics (STEM), as well as how to prepare students for these needs and opportunities—and how science educators can help them succeed. The panel, moderated by Pat Wasley, chief academic officer of the Teaching Channel and former dean of the University of Washington College of Education, includes Leroy Hood, Institute for Systems Biology President; Francis Q. Eberle, NSTA Executive Director; Matt O’Donnell, Dean of University of Washington College of Engineering; and Seattle Pacific University Professor Stamatis Vokos. Presented as part of Science in Society, a collaboration of the Institute for Systems Biology and Town Hall, this series is supported by Microsoft and media sponsorship is provided by KPLU.

This event is partially sponsored by the Institute for Systems Biology.

*Note:* It’s an easy walk to Town Hall Seattle (1119 Eighth Avenue) from the Convention Center. Go southwest on Convention Place toward Union Street. Turn left onto walkway and proceed south. Turn left onto Seneca Street and right onto Eighth Avenue (Town Hall Seattle is on the right).

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 12 Noon on Thursday.





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—Photo courtesy of Tim Thompson, Seattle's Convention and Visitors Bureau

## 8:00–9:00 AM Presentations

### SESSION 1

#### **NABT Session: FREE Classroom Resources for Teaching Evolution (Bio)**

(Informal Education) 2B, Convention Center

**Dennis Liu** ([brickenj@hhmi.org](mailto:brickenj@hhmi.org)) and **Jennifer Bricken** ([brickenj@hhmi.org](mailto:brickenj@hhmi.org)), Howard Hughes Medical Institute, Chevy Chase, Md.

Learn about free classroom-ready lessons, hands-on activities, animations, and video clips to help you teach central topics in evolution, such as selection, phylogenetic trees, and biodiversity.

### SESSION 2

#### **A Framework for K–12 Science Education (Gen)**

(General) 4C-1, Convention Center

**Brett Moulding**, Utah Partnership for Effective Science Teaching and Learning, Ogden

Presider: Francis Q. Eberle, NSTA Executive Director, Arlington, Va.

In July 2011, the National Research Council (NRC) released *A Framework for K–12 Science Education: Practices, Crosscutting Concepts, and Core Ideas* that identifies the key scientific ideas and practices all students should learn by the end of high school. These expectations will inform the development of new standards for K–12 science education and, subsequently, revisions to curriculum, instruction, assessment, and professional development for educators. This session will explore the vision, goals, structure, and implications of the framework.

### SESSION 3

#### **Maximizing Excel's Potential in the Science Classroom (Chem)**

(General) 203, Convention Center

**Mike J. Stratton** ([mstratton@centralia.wednet.edu](mailto:mstratton@centralia.wednet.edu)), Centralia High School, Centralia, Wash.

Enhance your science teaching with tools to monitor and diagnose student achievement using Excel. Walk away with more than 50 free Excel templates that can be used to track student performance, organize curricula, summarize data from labs, grade performance-based labs, and more.

### SESSION 4



#### **NSTA Press Session: The Gourmet Lab (Gen)**

(Elementary–High School) 204, Convention Center

**Sarah R. Young** ([sayoung@nsf.gov](mailto:sayoung@nsf.gov)), Einstein Fellow, National Science Foundation, Arlington, Va.

NSTA Press author Sarah Young will show how her text, *The Gourmet Lab*, teaches students physical science through edible labs.

### SESSION 5

#### **Doing Inquiry in a Standards World: Have Your Cake and Eat It, Too! (Phys)**

(Middle Level–High School) 212, Convention Center

**David P. Heller** ([dheller@nkcsd.k12.mo.us](mailto:dheller@nkcsd.k12.mo.us)), North Kansas City High School, North Kansas City, Mo.

See examples of open-ended labs from a physics classroom that address state inquiry standards and Depth of Knowledge (DOK) Level 4. See how far students will go if allowed the freedom to inquire.

### SESSION 6 (two presentations)

(General) 213, Convention Center

#### **NARST Session: Science in the preK Classroom: Leveraging Children's Everyday Experiences and Knowledge to Support Scientific Discourse (Gen)**

**Tiffany R. Lee** ([tlee13@uw.edu](mailto:tlee13@uw.edu)), University of Washington, Seattle

**Jenny Cummins**, Epiphany School, Seattle, Wash.

We will demonstrate young children's use of everyday knowledge to engage in scientific reasoning, as well as reflect on the teacher's role in this setting.

#### **NARST Session: Integrating Linguistic Scaffolding into a Classroom Discourse to Shift ELL Student Engagement in a Secondary Science Classroom (Phys)**

**Traci S. Baizer** ([baizet@uw.edu](mailto:baizet@uw.edu)), University of Washington, Seattle

Hear about results from an action research study that examined the use of student-generated questions as a means to improve learning for mainstream and ELL students in a secondary science classroom.

### SESSION 7

#### **NSELA Session: Tools for Science Leaders (Gen)**

(Supervision/Administration) 214, Convention Center

**Susan B. Koba** ([skoba@cox.net](mailto:skoba@cox.net)), NSELA President, Omaha, Neb.

**Elizabeth Allan** ([eallan@uco.edu](mailto:eallan@uco.edu)), University of Central Oklahoma, Edmond

**Jon E. Pedersen** ([jep@unl.edu](mailto:jep@unl.edu)), University of Nebraska–Lincoln

**Jerry D. Valadez** ([jdvscience@yahoo.com](mailto:jdvscience@yahoo.com)), California State University, Fresno

**William Veal** ([vealw@cofc.edu](mailto:vealw@cofc.edu)), College of Charleston, S.C.

**Ted Willard** ([twillard@aaas.org](mailto:twillard@aaas.org)), AAAS Project 2061, Washington, D.C.

Join us as science leaders share various tools and strategies that support them in their work to enhance teaching and learning in their context.

SESSION 8

**NSTA** NSTA Avenue Session: **Disney’s Planet Challenge: Project Based Learning and Service Learning–based Lesson Development and Funding** (Env)

(Elementary–Middle Level) 304, Convention Center

**Charlotte Kelly** ([charlotte.kelly@oceanbeachschools.org](mailto:charlotte.kelly@oceanbeachschools.org)), Ilwaco Middle/High School, Ilwaco, Wash.

Learn about Project Based Learning (PBL) opportunities from previous Disney’s Planet Challenge participating teachers as they discuss their winning projects, provide tips for successfully engaging students, and offer advice on how to secure grants and funding for your own classroom projects. Presenters will share how they have raised significant dollars in classroom funding and give insight into their experience in creating engaging and successful PBL and environmental service lessons. Join the discussion and learn what you can do to help your classroom!

SESSION 9

**NASA INSPIRE Project** (Earth)

(Middle Level–High School) 307, Convention Center

**Beth A. White** ([beth.a.white@nasa.gov](mailto:beth.a.white@nasa.gov)), Oklahoma State University NASA Education Projects, Palmdale, Calif.

Walk away with many ideas for encouraging the next generation of explorers from grades 9–12 to pursue an education and career in STEM fields.

SESSION 10

**Homeostasis as a Unifying Theme** (Bio)

(Middle Level–College) 308, Convention Center

**Tammie N. Campbell** ([tacampbell@ken.herzing.edu](mailto:tacampbell@ken.herzing.edu)), Herzog University, Kenosha, Wis.

Using homeostasis and all living bodies’ desire to maintain homeostasis as a unifying theme, return to your classroom with lessons, assessments, and a renewed vigor!

SESSION 11

**Teaching Systems as a Framework for Understanding** (Gen)

(Middle Level) 618, Convention Center



**Vicky Smoot** ([victoria.smoot@ksd.org](mailto:victoria.smoot@ksd.org)), Horse Heaven Hills Middle School, Kennewick, Wash.

**Martha Mather** ([martha.mather@ksd.org](mailto:martha.mather@ksd.org)), Highlands Middle School, Kennewick, Wash.

This presentation shares a supplemental unit to introduce the concept of systems to middle school students. The unit provides a framework to help students understand systems in the context of all science curricula.

**8:00–9:00 AM Workshops**

**Let’s Get Helical: Exploring DNA Structure/Function with Interactive Physical Models** (Bio)

(High School–College) 2A, Convention Center

**Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)) and **Shannon Colton** ([colton@msoe.edu](mailto:colton@msoe.edu)), Milwaukee School of Engineering, Center for BioMolecular Modeling, Milwaukee, Wis.

Explore DNA structure and information storage with an interactive, magnetic DNA model and a paper bioinformatics exercise focusing on the beta subunit of hemoglobin.

**ACS Session One: Equilibrium and Concentration** (Chem)

(High School) 4C-4, Convention Center

**Jerry A. Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), American Chemical Society, Washington, D.C.

Visualizing the dynamic nature of equilibria is sometimes difficult for students. Putting the concepts in textbooks to work explaining observations from activities makes the Le Chatelier concept more tangible. Extension to quantitative studies further deepens understanding of equilibria. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

**Incorporating Current Scientific Research into Grades 7–12 Science Lessons (Gen)**

*(Middle Level–College) 201, Convention Center*

**Paul J. Allan** (*pallan@uidaho.edu*), University of Idaho, Moscow

**Jerine Pegg** (*jerine.pegg@ualberta.ca*), University of Alberta, Edmonton, Canada

After a brief overview of University of Idaho’s GK–12 program funded by NSF, two STEM graduate research scientists will share classroom lessons that focus on some aspect of their research.

**EarthKAM: Taking Pictures of Earth from Space (Earth)**

*(Middle Level) 206, Convention Center*

**Leesa Hubbard** (*astropoet@aol.com*), Sally Ride Science, San Diego, Calif.

**Julie Miller** (*jmillerirc@olatheschools.com*), Olathe (Kans.) Public Schools USD 233

Your students can take pictures of Earth from space with NASA and EarthKAM (Earth Knowledge Acquired by Middle School Students)! Learn how to get your students involved while participating in engaging hands-on activities.

**ACS Middle Level Session: Solids, Liquids, and Gases: The Kinetic-molecular Theory of Matter (Chem)**

*(Middle Level) 310, Convention Center*

**James H. Kessler** (*jhkessler@acs.org*), American Chemical Society, Washington, D.C.

Explore solids, liquids, and gases on the molecular level to discover how heating and cooling affect matter.

Starting an NSTA Student Chapter: Faculty & Student Perspectives

Would you like to get your preservice teachers more involved in the profession? Don't miss this must-see panel discussion of NSTA student chapter advisors and student leaders on the advantages of starting a student chapter at your college or university!

**Friday, December 9**  
**2:00–3:00 PM**

**Washington State Convention Center Room 205**

**NSTA** National Science Teachers Association



**Our Solar System Through the Eyes of Scientists** (Earth)

(Elementary) 619, Convention Center  
**Rachel Zimmerman-Brachman** (*rachel.zimmerman-brachman@jpl.nasa.gov*), NASA Jet Propulsion Laboratory, Pasadena, Calif.

Explore NASA's new science and language arts curriculum that uses biographies, science notebooks, hands-on activities, and demonstrations. Learn about ice, volcanoes, moons, and more.

**The Time for Inquiry Is Now!** (Gen)

(Middle Level–High School) 620, Convention Center  
**Gregory B. Dodd** (*gbdodd@gmail.com*), Kanawha County Schools, Charleston, W.Va.

Join me for a hands-on inquiry activity using probes to discover the properties of ingredients in some common beverages.



**Let's Get Well Grounded!** (Earth)

(General) Ballroom 6E, Convention Center  
**Parker O. Pennington IV** (*p.o.pennington@gmail.com*), Retired Earth Science Teacher, Ann Arbor, Mich.

**Richard M. Jones** (*rmjones7@hawaii.edu*), University of Hawaii–West Oahu, Pearl City

This NESTA workshop presents multiple exemplary activities for the geology classroom that bring fundamental concepts in Earth science to life for students. Handouts!

**8:00–9:00 AM Exhibitor Workshops**

**Project-Based Inquiry Science: PBIS™/STEM Solution—Earth, Life, and Physical Science in Middle School** (Gen)

(Grades 6–8) 4C-3, Convention Center

Sponsor: It's About Time

**Gary Curts**, Dublin (Ohio) Public Schools

Confused on what a STEM course is? Our PBIS presenter will clarify the confusion over what engineering means in STEM and show you the benefits of Project Based Learning for you and your students.

**Bio-Rad—Genes in a Bottle™ Kit** (Bio)

(Grades 6–College) 610, Convention Center

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*biotechnology\_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

How do you fit a person in a bottle? Your DNA contains all of the information that makes you who you are. Isolate your own DNA and capture your unique essence in a stylish glass necklace!

**Biology: Cell Respiration in Germinating Peas** (Bio)

(Grades 9–12) 612, Convention Center

Sponsor: PASCO Scientific

**Kelcey Burris**, PASCO Scientific, Roseville, Calif.

This hands-on workshop applies PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of biological investigations—cell respiration. Participate in standards-based probeware lab activities from PASCO's new biology curriculum. Be one of the first to experience how the SPARK Science Learning System can enhance your teaching practice and improve student understanding of core topics.

**8:00–9:15 AM Exhibitor Workshops****Effective STEM Challenges for the Classroom (Gen)***(Grades 3–8)**4C-2, Convention Center*

Sponsor: Houghton Mifflin Harcourt

**Michael DiSpezio**, Science Writer and Educational Consultant, North Falmouth, Mass.

Join Michael DiSpezio for this high-energy, entertaining workshop that explores effective and realistic STEM construction challenges. Experience how a bit of guidance can direct student experience toward addressing specific content standards in science and math. Engineer and test models of air bag–cushioned Mars Landers. Engineer catapults and test your design against others. Join in the fun and leave with new ideas.

**The Layered Earth! (Earth)***(Grades 5–12)**605, Convention Center*

Sponsor: Simulation Curriculum Corp.

**Herb Koller** (*hkoller@simcur.com*), Simulation Curriculum Corp., Aurora, Ont., Canada

Join us for an interactive Earth science curriculum designed for today's classroom! What powers the internal processes that produce volcanoes, earthquakes, and mountains? What is the rock cycle and how does it work? What really is an earthquake, and when and where will the next earthquake be? Exactly how are volcanoes formed? Come experience The Layered Earth, a 3-D interactive geology curriculum.

**Inquiring Minds Provide Spark for Science Lessons****(Gen)***(Grades 2–8)**606, Convention Center*

Sponsor: Delta Education/School Specialty Science

**Tom Graika**, Consultant, Lemont, Ill.**Johanna Strange**, Consultant, Richmond, Ky.

Inquiry is at the heart of science teaching. Using topics from magnetism to electricity, learn how inquiry strategies can provide a variety of learning opportunities for students. Participants will be involved in guided, challenge, and open inquiries. Take home a resource packet.

**Marine Science: The Dynamic Ocean: A New High School STEM Offering (Earth)***(Grades 9–12)**609, Convention Center*

Sponsor: Pearson

**Glen Schuster** and **Meghan Marrero**, U.S. Satellite Laboratory, Inc., Rye, N.Y.

Meet the authors and learn how STEM pedagogical strategies help students understand integrated science content

in the context of the ocean. This new course blends life, Earth, and physical science as well as presents Earth's greatest resource—our ocean. Discover it in the context of tracking marine animals and socio-scientific issues.

**Introducing Inquiry into the Chemistry Lab****(Chem)***(Grades 9–12)**611, Convention Center*

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Gain hands-on 5E (engage, explore, explain, elaborate, and evaluate) learning cycle experience to help your high school students master abstract concepts. Convert a cookbook lab into an inquiry in science experience! Also, learn more about Carolina's Inquiries in Science® lab series. Free door prizes.

**Interdisciplinary Science That Meets STEM Goals****(Bio)***(Grades 9–12)**613/614, Convention Center*

Sponsor: Kendall Hunt Publishing Co.

**Kari Hollandsworth**, Kendall Hunt Publishing Co., Dubuque, Iowa

Foster student interest in a variety of science and technology disciplines and address STEM education objectives with *BSCS Science: An Inquiry Approach*. Learn how this rigorous, standards-based curriculum can be used as a complete three-year program and how its third-year modules can also be used as supplements that support STEM initiatives.

**Teaching About Batteries****(Chem)***(Grades 6–12)**615, Convention Center*

Sponsor: Lab-Aids, Inc.

**Mark Koker**, Lab-Aids, Inc., Ronkonkoma, N.Y.

Although they live a battery-powered lifestyle, most middle school and high school students have no idea how batteries work. In this hands-on workshop, participants will make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries in the waste stream. Activities offer strong inquiry and state standard connections. Free handouts and materials!

**Formative Assessment Probes: Supporting an Idea-centered Classroom (Gen)**

(Grades K–12) Ballroom 6C, Convention Center

Sponsor: McGraw-Hill School Education Group

**Page Keeley**, 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta

Learn how formative assessment probes are used in McGraw-Hill's iScience program to make students' thinking visible and support a classroom community where everyone's ideas matter. Everyone gets free samples and a chance to win door prizes!

**8:00–9:30 AM Workshop**

**AAPT Session: Invention Tasks That Promote Proportional Reasoning Skills in Physics and Physical Science (Phys)**

(Middle Level–College) 608, Convention Center

**Andrew Boudreaux** ([andrew.boudreaux@wwu.edu](mailto:andrew.boudreaux@wwu.edu)), Western Washington University, Bellingham

Receive a brief overview and then work through a sequence of invention tasks that provides an illustration of the approach.

**8:00–9:30 AM Exhibitor Workshops**

**K–8 Science with Vernier (Gen)**

(Grades K–8) 604, Convention Center

Sponsor: Vernier Software & Technology

**Clarence Bakken** ([info@vernier.com](mailto:info@vernier.com)) and **Elaine Nam** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, you will learn how easy it is for your students to use Vernier probeware to explore temperature, heart rate, magnetic fields, and more. Try experiments from two of our popular lab books, *Elementary Science with Vernier* and *Middle School Science with Vernier*. Learn the advantages of using the Vernier LabQuest™ handheld or our low-cost line of Go! products.

**Genetics: Crazy Traits and Adaptation Survivor (Phys)**

(Grades 6–12) 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Patsy Eldridge**, CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they study genetics—such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit and study the resulting population.

**8:00–10:00 AM CESI Breakfast**

**Developing Vocabulary for English Language Learners Through Inquiry Science (M–2)**

(Tickets Required; \$45)

Issaquah, Sheraton



**David T. Crowther** ([crowther@unr.edu](mailto:crowther@unr.edu)), Professor of Science Education, University of Nevada, Reno

Enjoy a delicious breakfast and a motivating presentation by David Crowther on the Blended/Tiered Approach. Most ELL programs promote a front-loading approach to teaching science-specific vocabulary, which

takes away from the process of science inquiry. David will propose an alternative vocabulary strategy, the Blended/Tiered Approach, which is dependent upon inquiry and scaffolds vocabulary in a deliberate way to promote inquiry learning and language development for all learners.

*Dr. David T. Crowther is a professor of science education at the University of Nevada, Reno (UNR). David has five years of experience teaching at the elementary/middle level as well as 18 years of teaching experience at the university level. Dr. Crowther was the runner-up for the university-wide F. Donald Tibbitts Distinguished Teacher Award in 2007 and he received the Outstanding Undergraduate Mentor Award from the College of Education at UNR in 2009. Dr. Crowther is the co-author/editor of Science for English Language Learners from NSTA Press® and he is currently consulting on a children's science book series dealing with science content for ELL from Heinemann-Raintree.*

*Dr. Crowther is a past president of the Council of Elementary Science International (CESI) and former NSTA council member. Until recently, he was an editor of two professional journals in science education—CESI Science, which is the journal for the Council for Elementary Science International, and associate editor of the Electronic Journal of Science Education (EJSE), which is the longest running and first online journal of its kind.*

*Dr. Crowther's current research interests involve teaching science through inquiry to develop English language acquisition for English language learners (ELL), inquiry content instruction within general biology at the university level, and general methods of inquiry science teaching at the graduate and undergraduate levels.*

**Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 12 Noon on Thursday.**

**8:00–10:30 AM Exhibitor Workshop**

**Using Student Science Notebooks to Assess Learning (Experienced Users) (Gen)**

(Grades 2–8) 602/603, Convention Center

Sponsor: Delta Education/School Specialty Science—FOSS  
**Ellen Mintz**, Charleston County Schools, Charleston, S.C.

**Brian Campbell** and **Jessica Penchos**, Lawrence Hall of Science, University of California, Berkeley

**Virginia Reid**, Consultant, Olympia, Wash.

Already using student science notebooks? What more can you do with notebooks? We will use materials from the FOSS Variables Module to look for evidence of student learning that will inform instruction, and we'll explore strategies for providing feedback to students. Sample FOSS materials will be distributed.

**8:00–11:00 AM Short Course**

**How to Move from Activity-based Science to STEM Project Based Learning (SC-4)**

(Middle Level–High School) Greenwood, Sheraton

**Tickets Required: \$27**

**Susan Wood-Megrey** ([woodmesj@hsd401.org](mailto:woodmesj@hsd401.org)), Highline Public Schools, Burien, Wash.


**Leah A. Bricker** ([lbricker@u.washington.edu](mailto:lbricker@u.washington.edu)), **Katie Van Horne** ([katievh@u.washington.edu](mailto:katievh@u.washington.edu)), **Philip Bell**, and **Andrew W. Shouse**, Institute for Science and Mathematics Education, University of Washington, Seattle

**Stephanie Durrant**, Ballard High School, Seattle, Wash.

**Nikhil Joshi** ([nrjoshi@nrjoshi.info](mailto:nrjoshi@nrjoshi.info)), and **Garrett Shiroma** ([shromgk@hsd401.org](mailto:shromgk@hsd401.org)), Aviation High School, Des Moines, Wash.

**Liz Savage** ([savageem@hsd401.org](mailto:savageem@hsd401.org)), Health Sciences & Human Services High School, Seattle, Wash.

For description, see page 38.




Visit Our Booth

## Engage Students With Hands-On Science Programs

CPO Science's complete, coordinated Teaching and Learning Systems, hands-on equipment, and supplemental curriculum provide all the essential components for an inquiry-based science program.

Be sure to visit our booth to learn more about CPO Science's innovative curriculum and equipment.



**Investigations** Lab Manual

**Physical, Earth, & Space Science** Student Textbook

**Physical, Earth, & Space Science** Integrated Technology

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**Physical, Earth, & Space Science** Teacher Resources and Professional Development


**Foundations of Physical Science**

**Physics A First Course**

**Foundations of Physics**

[www.cpoScience.com](http://www.cpoScience.com)

800-932-5227



## 9:00–11:00 AM Meeting

### Science Education in the Community Meeting

*Ballard, Sheraton*

Science education happens in many places. It happens in museums, zoos, and aquariums; in magazines; in community-based programs; and on the web and on TV. Those of us who design, deliver, and research out-of-school science teaching/learning want to connect with schools and classroom teachers to present high-quality science education throughout our lives. Please join us as we discuss ways to make a connection between all types of science education.

## 9:00 AM–4:00 PM Short Course

### Teaching and Assessing Big Ideas Using Learning Progressions (SC-5)

*(General)*

*Ravenna, Sheraton*

**Tickets Required: \$44**

**Adrienne Somera** (*asomera@nwsed.org*), Northwest Educational Service District 189, Anacortes, Wash.

**Shannon M. Warren** (*shannon.warren@wwu.edu*), Western Washington University, Bellingham

**Karen S. Lippy** (*klippy@oesd.wednet.edu*), Olympic Educational Service District 114, Bremerton, Wash.

For description, see page 39.

## 9:00 AM–5:00 PM Exhibits

*Hall 4B, Convention Center*

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

## 9:30–10:30 AM Featured Presentation

### Connecting Community Experience and Science Learning

*(General)*

*Ballroom 6A, Convention Center*



**Eric J. Jolly** (*eric.jolly@smm.org*), President, Science Museum of Minnesota, St. Paul

Presider: Erin Jones, Office of Superintendent of Public Instruction, Olympia, Wash.

Dr. Jolly will examine themes of cultures, science, and storytelling to illustrate how formal and informal education can better work together to advance a student's engagement and achievement in STEM learning.

*Dr. Eric J. Jolly is president of the Science Museum of Minnesota. He is known for his personal passion for STEM (Science, Technology, Engineering, and Mathematics) education and for working to identify solutions that address our country's achievement gap. Dr. Jolly is widely recognized for his contributions to mathematics and science education, frequently working with such groups as the American Association for the Advancement of Science, National Action Council for Minorities in Engineering, National Council for Teachers of Mathematics, and the National Science Teachers Association. Dr. Jolly's work with youth, families, and communities includes diverse organizations such as YouthALIVE!, The Innovation Center, American Youth Policy Forum, the American Museum of Natural History, the Open Society Institutes' Youth Media Programs, and the AAAS Healthy Families 2010 project. Dr. Jolly was a founding partner to the national "Collaboration for Equity" project and co-director of "Access by Design," a technology project of the National Science Foundation. In 1994 he founded the National Institute of Affirmative Action. He serves on numerous national and local advisory boards and has published many scholarly articles. One publication, "Engagement, Capacity, and Continuity: A Trilogy for Student Success," analyzes why successful individual reform efforts have not led to broader increases in students achieving at high levels nor entering careers in science and math. He is the author of numerous books, articles, and curricula for students and teachers, including Bridging Homes and Schools (a comprehensive resource for teachers of Limited English Proficiency students) and Beyond Blame: Reacting to the Terrorist Attack.*



**9:30–10:30 AM Presentations****SESSION 1****NABT Session: FREE Resources from the Howard Hughes Medical Institute to Enhance Your Lessons on DNA and Biotechnology (Bio)***(Middle Level–College)**2B, Convention Center***Ann Brokaw** (*abrokaw44@gmail.com*), Rocky River High School, Rocky River, Ohio

Receive teacher-generated ideas from HHMI resources to enhance your classroom instruction of biotechnology and DNA structure and function.

**SESSION 2****Exploring the Science Framework (Gen)***(General)**4C-1, Convention Center***Francis Q. Eberle**, NSTA Executive Director, Arlington, Va.**Harold Pratt** (*hspratt@comcast.com*), NSTA Parliamentarian, 2001–2002 NSTA President, and Educational Consultants, Inc., Littleton, Colo.

Presider: Patricia Simmons, NSTA President, and North Carolina State University, Raleigh

In July the National Research Council released *A Framework for K–12 Science Education* that identifies the key scientific ideas and practices all students should learn by the end of high school. The framework now serves as the foundation for new K–12 science education standards, but also stands alone as a useful tool for many in the science education community. Join us as we explore different instructional implications of the framework for science teaching, such as science and engineering practices, cross-cutting concepts, the inclusion of engineering, and more.

**SESSION 3****Engaging Students in Chemistry Outside the Classroom: A Look at ChemClub (Chem)***(High School/Supervision)**203, Convention Center***Michael T. Mury** (*m\_mury@acs.org*), American Chemical Society, Washington, D.C.

Chemistry students are provided enrichment through various activities in ChemClub. Come learn about this free, exciting program. Hear from club leaders.

**SESSION 4****NSTA NSTA Avenue Session: Toshiba/NSTA ExploraVision (Gen)***(General)**205, Convention Center***Brian P. Short** (*exploravision@nsta.org*), Assistant Director, Science Education Competitions, NSTA, Arlington, Va.

ExploraVision is a K–12 competition that motivates students and challenges them to think creatively about scientific innovation 20 years into the future. Discover how students can win up to \$240,000 in savings bonds for envisioning new technologies. Learn how ExploraVision supports classroom goals; illustrates connections between science and technology; and offers recognition, computers, and other prizes for schools, students, teachers, and mentors. Session participants have a chance to win a Toshiba product!

**SESSION 5****Integration in High School? (Gen)***(Middle Level–High School)**212, Convention Center***Mary Beth Tilson** (*marybeth.tilson@thedeltahighschool.com*) and **Deborah Burke** (*deborah.burke@thedeltahighschool.com*), Delta High School, Richland, Wash.

Join us as we discuss a multidiscipline project-based approach that connects science, technology, math, and humanities standards. We'll describe the process used to create and implement integrated projects across multiple classes.

**SESSION 6 (two presentations)***(General)**213, Convention Center***NARST Session: Critical Examinations of Media to Enhance Student Understandings of Science (Gen)****Michelle L. Klosterman** (*klosteml@wfu.edu*), Wake Forest University, Winston-Salem, N.C.

Join me as I highlight research on classroom use of mass media and its uses as an instructional tool.

**NARST Session: Confirmation for Increased Attention to Four Core Areas of Evolution (Bio)****Margaret M. Lucero** (*mmlucero@mail.utexas.edu*), The University of Texas at Austin

Using findings from cognitive research and student artifacts, this presentation will address the need for educators to revisit the core concepts of variation, selection, inheritance, and deep time so that students may better understand evolution.

**SESSION 7**

**NSELA Session: Preservice Teachers and Science Leadership: Collaborating in Support of New Teachers to Support Student Learning (Gen)**

(Supervision/Administration) 214, Convention Center

**Susan B. Koba** (*skoba@cox.net*), NSELA President, Omaha, Neb.

**Elizabeth Allan** (*eallan@uco.edu*), University of Central Oklahoma, Edmond

**Jon E. Pedersen** (*jep@unl.edu*), University of Nebraska–Lincoln

**William Veal** (*vealw@cofc.edu*), College of Charleston, S.C. This session examines what new teachers are supposed to know and do and what can be done to improve their skills and their students' performance.

**SESSION 8**

**Video Club: A Collaborative Inquiry Professional Development (Env)**

(Middle Level–High School) 304, Convention Center

**Susan M. Swan** (*smswan@seattleschools.org*), Seattle (Wash.) Public Schools

Learn how science teachers are collaborating to improve student understanding of scientific phenomena through evidence-based explanations captured on video and in written student work.

**SESSION 9**

**Leading the Salmon Home: A Healthy Dose of Indigenous Realism (Earth)**

(Elementary–High School) 307, Convention Center

**Alanna Shevak** (*ajshevak@pbs.org*), PBS, Arlington, Va.

**Sherry Schaaf** (*scitchrs@centurytel.net*), PBS Teacherline, Forks, Wash.

Hear how American Indian traditions of storytelling have inspired a NASA project documenting tribal perspectives on climate change.

**SESSION 10**

**Make Social Media and Web Tools Work for You (Gen)**

(General) 308, Convention Center

**Ann F. Wright-Mockler** (*ann.wrightmockler@pnl.gov*), Pacific Northwest National Laboratory, Richland, Wash.

Come learn how to use social media and other web tools to keep up to date and engage your students. Laptops and smart phones welcome.

**SESSION 11**

**AAPT Session: Putting Student Energy to Use with a Bike Generator! (Phys)**

(Middle Level–College) 608, Convention Center

**Cecilia Tung** (*cecilia.tung@northwestschool.org*), The Northwest School, Seattle, Wash.

Join me for a new spin on teaching electricity. Using a stationary bike and generator to produce electricity, students feel the difference between powering appliances and, for example, energy-efficient light bulbs.

**SESSION 12**



**Leveraging University K–12 Partnerships to Create Successful STEM Programs (Bio)**

(High School–College) 616, Convention Center

**Sylvia A. Oliver** (*olivers@wsu.edu*), Washington State University, Spokane

Learn about programs developed by Washington State University Spokane and K–12 partners that integrate STEM education to help prepare students for postsecondary education and high-demand careers.

**SESSION 13**



**Learning Progressions: A Valuable Tool (Gen)**

(General) 618, Convention Center

**Joseph Krajcik** (*krajcik@msu.edu*), Michigan State University, East Lansing

What are learning progressions and what value do they hold for improving science teaching and learning? Emphasis will be placed on how they can guide instruction and assist in the development of curriculum materials and assessments.

**9:30–10:30 AM Workshops****Bioethics 101: Laying a Foundation in Bioethics in a Biology Course (Bio)***(Middle Level–College)*

2A, Convention Center

**Jeanne T. Chowning** ([jchowning@nwabr.org](mailto:jchowning@nwabr.org)) and **Joan Griswold** ([jgriswold@nwabr.org](mailto:jgriswold@nwabr.org)), Northwest Association for Biomedical Research, Seattle, Wash.

Engage students in thinking about ethical dimensions of scientific research using engaging and practical lessons developed by experienced teachers. Receive extensive bioethics resources.

**Dive In with Physical Models: Impact of Water on Protein Structure (Bio)***(High School–College)*

3A, Convention Center

**Shannon Colton** ([colton@msoe.edu](mailto:colton@msoe.edu)) and **Tim Herman** ([herman@msoe.edu](mailto:herman@msoe.edu)), Milwaukee School of Engineering, Center for BioMolecular Modeling, Milwaukee, Wis.

Discover the physical and chemical properties of water using magnetic water molecules. Explore how these chemical principles of water influence protein structure using physical models.

**Science Facilities 101: Safe and Sustainable Facilities (Gen)***(General)*

3B, Convention Center

**LaMoine L. Motz** ([llmotz@comcast.net](mailto:llmotz@comcast.net)), 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.

**Juliana Texley** ([jtexley@att.net](mailto:jtexley@att.net)), Palm Beach State College, Boca Raton, Fla.

**Sandra West Moody** ([sw04@txstate.edu](mailto:sw04@txstate.edu)), Texas State University, San Marcos

**James T. Biehle** ([biehlej@sbcglobal.net](mailto:biehlej@sbcglobal.net)), Inside/Out Architecture, Inc., Kirkwood, Mo.

Presider: LaMoine L. Motz

So you want new facilities. Does your curriculum define your science teaching facility? Hear from experts on planning and designing safe, sustainable, and flexible facilities for inquiry/project-based science. Join the authors of *NSTA Guide to Planning School Science Facilities*, 2nd ed. and learn the “basics” of science facility planning, designing, and budgeting. (See page 95 for Science Facilities 102.)

**ACS Session Two: Equilibrium and Energy (Chem)***(High School)*

4C-4, Convention Center

**Jerry A. Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), American Chemical Society, Washington, D.C.

Some chemical reactions produce energy and others require

energy to proceed. Are energy and equilibrium related? How do we find out? Under what conditions can the energetics of a chemical system be changed and what are the consequences? Bring your USB flash drive and take away the presentation and the activities to use in your classes.

**Migration: Math and Movement (Gen)***(General)*

201, Convention Center

**Josephina Chang-Order** ([jchang-order@crowcanyon.org](mailto:jchang-order@crowcanyon.org)), Crow Canyon Archaeological Center, Cortez, Colo.

Explore the migration of the ancestral Pueblo people. I'll get you moving and figuring out how long it takes to walk to a new home.

**Global Sustainability Science Connections: Engaging Lessons for the Primary Grades (Gen)***(Elementary)*

206, Convention Center

**Dave Wilton** ([dave@facingthefuture.org](mailto:dave@facingthefuture.org)), Facing the Future, Seattle, Wash.

Global sustainability is an engaging context for elementary science content and literacy skills. Experience hands-on lessons about food and environment, systems, and biodiversity. Free curriculum guide!

**Making Sense of SCIENCE: A Professional Development Curriculum for K–8 Teachers (Gen)***(General)*

211, Convention Center

**Kirsten Daehler** ([kdaehle@wested.org](mailto:kdaehle@wested.org)) and **Cailean Cooke** ([ccooke@wested.org](mailto:ccooke@wested.org)), WestEd, Redwood City, Calif.

Explore the Making Sense of SCIENCE materials for teacher learning. As you experience a sample investigation, learn how this professional development capitalizes on the intersection between science, literacy, and teaching.

**ACS Middle Level Session: Changes of State: Evaporation and Condensation (Chem)***(Middle Level)*

310, Convention Center

**James H. Kessler** ([jhkessler@acs.org](mailto:jhkessler@acs.org)), American Chemical Society, Washington, D.C.

Explore evaporation and condensation on the molecular level to discover how heating and cooling affect the rate of these processes.

**Density-driven Ocean Circulation (Earth)**

(Middle Level) 619, Convention Center

**Carol A. Kraft** (*carol\_kraft@comcast.net*), Rockford Environmental Science Academy, Rockford, Ill.

**Kevin Tambara** (*ktambara@etusd.org*), Bert Lynn Middle School, Torrance, Calif.

Investigate density-driven circulation by using a set of temperature and salinity measurements from simulated shipboard water samples taken in the Atlantic Ocean.

**NASA's Evidence for Dark Matter (Earth)**

(High School–College) 620, Convention Center

**Pamela Whiffen** (*pwpwr@aol.com*), NASA Educator Ambassador, Phoenix, Ariz.

Explore dark matter through mathematical reasoning! Inves-

tigate evidence that it exists and learn what we know (and don't know) about it. Free NASA materials!

**Climate Change Classroom Tool Kit (Earth)**

(General) Ballroom 6E, Convention Center

**Roberta Johnson** (*rmjohnsn@nestanet.org*), National Earth Science Teachers Association, Boulder, Colo.

Explore the scientific foundations of what we know about climate change, greenhouse gases, and energy consumption through hands-on and data-rich classroom activities. Handouts!

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**9:30–10:30 AM Exhibitor Workshops**

**STEM Solutions for Middle School and High School Classrooms (Gen)**

(Grades 6–12) 4C-3, Convention Center

Sponsor: It's About Time

**Kevin Schroeder**, It's About Time, Armonk, N.Y.

It's About Time and Fourier Systems have teamed up to help you seamlessly integrate STEM into your science programs. Using a physics project-based curriculum as the example, you will learn how you can implement probes, data logging, and analysis seamlessly with your students. Walk away with several examples of how to build your STEM classroom.

**Physics and Physical Science: Investigating Motion (Phys)**

(Grades 6–12) 612, Convention Center

Sponsor: PASCO Scientific

**Brett Sackett**, PASCO Scientific, Roseville, Calif.

Explore the differences between speed and velocity in this hands-on, probeware-based workshop featuring PASCO carts and the new PASTrack. Your hands-on experience will include use of one of PASCO's standards-based SPARKlabs to improve student understanding of motion, a foundation topic in the study of physics and physical science. Additional activities will be demonstrated.

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**9:30–11:30 AM Exhibitor Workshop**

**Bio-Rad—Forensic DNA Fingerprinting Kit (AP Biology Lab 6) (Bio)**

(Grades 8–12) 610, Convention Center

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*biotechnology\_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Use molecular scissors to create a DNA fingerprint. Restriction enzyme digestion and DNA gel electrophoresis help determine which suspect committed the crime. In this workshop, you will get hands-on experience with micropipettes and DNA gel electrophoresis equipment. Extend this kit with a plasmid mapping activity using the plasmid DNA restriction patterns from the experiment.

**10:00–11:15 AM Exhibitor Workshops****Hands-On Integrated Science Activities for Middle School (Gen)***(Grades 6–8) 4C-2, Convention Center*

Sponsor: Flinn Scientific, Inc.

**Janet Hoekenga**, Flinn Scientific, Inc., Batavia, Ill.

Hands-on science leads to minds-on learning! Flinn Scientific presents relevant and age-appropriate activities for middle school that integrate life, Earth, and physical science topics. Perform and observe experiments designed to capture the curiosity and engage the energy of adolescent students. Handouts.

**Molecular Modeling in Middle School and High School Science Classrooms: Engage Your Students! (Chem)***(Grades 8–College) 605, Convention Center*

Sponsor: Wavefunction, Inc.

**Jurgen Schnitker**, Wavefunction, Inc., Irvine, Calif.

Do you see your students struggle with the key concepts of

molecular science? Would you like to teach more effectively with the help of molecular simulations that are scientifically sound? Attend this hands-on workshop and learn how to truly engage your students. Bring your own laptop (Windows or Mac OS X) or use a laptop provided for the workshop.

**Integrating Science and Literacy: Grades 1–6 (Gen)***(Grades 1–6) 606, Convention Center*

Sponsor: Delta Education/School Specialty Science

**Johanna Strange**, Consultant, Richmond, Ky.**Tom Graika**, Consultant, Lemont, Ill.

We'll show you various strategies and Delta products that you can use to integrate reading and language arts into your science programs. Learn how your students can experience the enjoyment of learning science with Delta Science Modules and make the literacy connection. Receive a workshop packet and related Delta materials.

## PRESERVICE & NEW TEACHERS LUNCHEON

Are you new to the profession? Join us as we share ideas and techniques for the classroom, how to get the most out of your conference experience, and learn about NSTA resources.



FRIDAY, DECEMBER 9  
12 NOON–1:30 PM  
SHERATON SEATTLE  
METROPOLITAN B

Tickets Required (M-3: \$12 on-site) and, if still available, must be purchased at the NSTA Registration Area by 12 Noon on **Thursday, December 8.**

*This event is generously sponsored by Kendall Hunt Publishing Company.*

**Kendall Hunt**  
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**NSTA**  
National  
Science  
Teachers  
Association



**Preparing Your Students to Become Tomorrow's Innovators with STEM Education (Gen)**

(Grades K–12) 609, Convention Center

Sponsor: Pearson

**Anne Rice**, Pearson, Boston, Mass.

STEM education strives to encourage and interest students in STEM fields as well as develop a competitive workforce and increase science literacy. Learn how to integrate the four areas of STEM around a central question in your science classroom using project-based activities, and help prepare your students for 21st-century careers.

**Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (Bio)**

(Grades 6–12) 611, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Explore animal diversity by comparing and contrasting anatomical adaptations of the pig, rat, perch, and frog. Use hands-on dissection to identify characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring our very best Carolina's Perfect Solution specimens. Free dissection supplies and great door prizes.

**Dealing with Density 1.0: Activities to Support STEM in the Classroom (Gen)**

(General) 613/614, Convention Center

Sponsor: Educational Innovations, Inc.

**David T. Crowther**, University of Nevada, Reno

Students too dense for density? Use nontraditional tools to

engage students using discrepant events, household materials, and even toys! Leave with lessons you can use next week. Door prizes and freebies!

**Teaching About Gene Expression (Bio)**

(Grades 6–12) 615, Convention Center

Sponsor: Lab-Aids, Inc.

**Mark Koker**, Lab-Aids, Inc., Ronkonkoma, N.Y.

SGI Biology is the new high school biology course from Science Education for Public Understanding Program (SEPUP). Developed with NSF support, the course has five units: sustainability, ecology, cell biology, genetics, and evolution. In this workshop from the genetics unit, participants will use model chromosomes to explore how genes are “turned off and on” by transcription factors.

**Fun, Fabulous Foldables® (Gen)**

(Grades K–8) Ballroom 6C, Convention Center

Sponsor: McGraw-Hill School Education Group

**Dinah Zike**, Dinah-Might Adventures, LP, San Antonio, Tex.

Experience how these 3-D graphic organizers can transform your science lesson into an engaging, interactive learning experience. These interactive tools offer endless possibilities for collecting data, building understanding, and assessing student comprehension.

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**10:00–11:30 AM Exhibitor Workshops**

**Exploring Science with Vernier (Gen)**

(Grades 7–College) 604, Convention Center

Sponsor: Vernier Software & Technology

**Clarence Bakken** ([info@vernier.com](mailto:info@vernier.com)) and **Elaine Nam** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Use sensors and software to graph and analyze scientific data with state-of-the-art technology for your science classroom. In this hands-on session, you'll learn from master teachers and technology experts about Vernier LabQuest™ handheld and Logger Pro software. Explore how probeware can help you teach core topics in physics, chemistry, biology, Earth science, and environmental science.

**Chemistry and the Atom: Fun with Atom Building Games! (Phys)**

(Grades 6–12) 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Patsy Eldridge**, CPO Science/School Specialty Science, Nashua, N.H.

Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop, you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

**11:00 AM–12 Noon Featured Panel****Building Bridges Between In-School and Out-of-School STEM Learning****(Gen)***(General)*

Ballroom 6A, Convention Center



Dennis Schatz



Theresa Britschgi



Karen Baker



Jamie Creola



Ben Klasky

**Panelists:**

**Theresa Britschgi** (*theresa.britschgi@seattlebiomed.org*), Director of BioQuest, Seattle BioMed, Seattle, Wash.

**Karen Baker** (*karen@washingtonstemeducation.org*), Executive Director, Washington State STEM Foundation, Richland

**Jamie Creola** (*jamie.creola@zoo.org*), Vice President of Education, Woodland Park Zoo, Seattle, Wash.

**Ben Klasky**, Executive Director, IslandWood, Bainbridge Island, Wash.

Moderator: **Dennis Schatz** (*dschatz@nsf.gov*), Senior Vice President for Strategic Programs, Pacific Science Center, and Program Officer, National Science Foundation, Arlington, Va.

We all know that STEM learning occurs everywhere—in school, at home, in after-school community-based programs, and while watching television or connecting to the web. Come participate in a discussion regarding effective strategies to bridge in-school and out-of-school STEM learning. Ample time will be provided for questions and comments from the audience.

Moderator **Dennis Schatz** is senior vice president for Strategic Programs at Pacific Science Center in Seattle, Washington, and currently on temporary assignment as a program director at the National Science Foundation. At Pacific Science Center, he provided leadership to several of its major initiatives. He co-directed Washington State LASER (Leadership and Assistance for Science Education Reform) and he was principal investigator for Portal to the Public.

**Theresa Britschgi** is in her seventh year as the director of the BioQuest program at the Seattle Biomedical Research Institute. Theresa shares her passion for inquiry and her prior experience as a 12-year veteran of the life science industry with teachers and teens. Through BioQuest and numerous Washington State science education and vocational organizations, Theresa seeks to hasten the pace that scientific discovery mobilizes student imagination, engages public dialogue, and inspires educator instruction.

**Karen Baker** is executive director of the Washington State STEM Education Foundation. The foundation's vision is to be a national model for generating passionate support for Science, Technology, Engineering, and Math (STEM) in Public Education—for every kid every day. Karen has more than 20 years of experience in corporate planning, educational reform, and building public/private community partnerships.

**Jamie Creola** joined the Woodland Park Zoo as vice president of Education in February 2011 and now oversees the zoo's diverse educational offerings, which serve as vital resources in inquiry-based science education and conservation learning for more than 80,000 students and teachers and 700,000 visitors each year. Before joining the zoo, Jamie served as director of Education and Visitor Services at the Florida Museum of Natural History and as an adjunct professor in the Museum Studies graduate program at the University of Florida.

**Ben Klasky** is executive director of IslandWood, a unique 250-acre outdoor learning center located on Bainbridge Island, Washington. Prior to joining IslandWood, Ben served as executive director of Net Impact, a global network of thousands of MBAs committed to using the power of business to address social and environmental issues. Ben is the co-founder of Camp Galileo, a for-profit camp in the Bay Area that serves 28,000 children each summer.

### 11:00 AM–12 Noon Special Session

#### Meet the Presidents and Board/Council (Gen)

(General) *Exhibit Hall Entrance, Convention Center*  
Come “meet and greet” with your elected NSTA officers. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference! Stop by and join us for a cup of coffee and good conversation on your way to the exhibits.



### 11:00 AM–12 Noon Presentations

#### SESSION 1

#### NABT Session: FREE Resources for Teaching Gene Expression and Gene Regulation (Bio)

(Middle Level—College) *2B, Convention Center*

**Ann Brokaw** ([abrokaw44@gmail.com](mailto:abrokaw44@gmail.com)), Rocky River High School, Rocky River, Ohio

Come learn about and receive free classroom resources for teaching gene expression, RNA processing, regulation, the p53 gene, genetic switches, operons, toolkit genes, and molecular cascades.

#### SESSION 2

#### K–6 Science Instruction for All Students to Achieve Success (Gen)

(General) *4C-1, Convention Center*

**Donna L. Knoell** ([dknoell@sbcglobal.net](mailto:dknoell@sbcglobal.net)), Educational Consultant, Shawnee Mission, Kans.

Maximize student participation and learning in the K–6 science classroom. Learn ways of differentiating instruction to enable all students to inquire, explore, participate, and achieve success. Handouts.

#### SESSION 3

#### Focusing On Instruction: An Introduction to the Elements of Effective Science Instruction (Gen)

(General) *203, Convention Center*

**Michael Brown** ([mike.brown@esd105.org](mailto:mike.brown@esd105.org)), Educational Service District 105, Yakima, Wash.

**Georgia Boatman** ([gboatman@esd123.org](mailto:gboatman@esd123.org)), Educational Service District 123, Pasco, Wash.

Presider: Mechelle LaLanne, North Central Educational District, Wenatchee, Wash.

Engage with us in the four Elements of Effective Science Instruction (EESI) and see how they can enhance the teaching and learning of science.

#### SESSION 4



#### NSTA Press Session: Implementing Research Projects as Part of the STEM Curriculum (Gen)

(General) *204, Convention Center*

**Darci J. Harland** ([djharland@ilstu.edu](mailto:djharland@ilstu.edu)), Illinois State University, Normal

Come get implementation ideas for organizing students with deadlines, providing encouraging and challenging feedback, and teaching the literacy aspects of a science-focused research project.

#### SESSION 5

#### Write for NSTA’s Journals (Gen)

(General) *205, Convention Center*

**Ken Roberts** ([kroberts@nsta.org](mailto:kroberts@nsta.org)), Assistant Executive Director, Journals, NSTA, Arlington, Va.

Meet with the editors of NSTA’s award-winning journals to learn how to prepare and submit a manuscript for publication. Editors will be available to discuss and critique your article ideas.

#### SESSION 6

#### The Organized Binder: Best Practices in Action (Gen)

(Middle Level—College/Supervision) *212, Convention Center*

**Mitch Weathers** ([organizedbinder@yahoo.com](mailto:organizedbinder@yahoo.com)), Sequoia High School, Redwood City, Calif.

Learn about a tangible hands-on system designed to increase student success by providing structure, including a starting routine, goal setting, review of the previous day’s standards, a quiet written reflection to end class, and much more.

## SESSION 7

**Get the FACTs!** (Gen)

(General) 213, Convention Center  
**Page Keeley** ([pkeeley@mmsa.org](mailto:pkeeley@mmsa.org)), 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta Experience formative assessment classroom techniques (FACTs) you can use right away from the best-seller *Science Formative Assessment: 75 Practical Strategies for Linking Assessment, Instruction, and Learning*.

## SESSION 8

**Big World, Small Planet: Climate Science Literacy with Digital Media** (Env)

(General) 214, Convention Center  
**Christina DeYoung** ([christina\\_deyoung@wgbh.org](mailto:christina_deyoung@wgbh.org)), WGBH, Boston, Mass.

Investigate the causes and impacts of climate change and other climate science topics with open educational resources, including short clips from public media programs.

## SESSION 9

**NSTA Avenue Session: Explore Mars: Using Mars Exploration to Inspire Students** (Earth)

(General) 307, Convention Center  
**Chris Carberry** ([carberry@exploremars.org](mailto:carberry@exploremars.org)), Explore Mars, Inc., Beverly, Mass.

Explore Mars will describe their education programs and brainstorm with participants on the best ways to use Mars exploration to excite and inspire students.

## SESSION 10

**Raise Your Students' IQ—Come Learn How to Do That!** (Gen)

(General) 308, Convention Center  
**Fred Goerisch** ([fgoerisch@yahoo.com](mailto:fgoerisch@yahoo.com)), Fred Goerisch Consulting, Lady Lake, Fla.

Let's work through the learning process so that you can, in fact, teach your students how to learn and how to raise their IQ. Learn strategies that can increase learning in your classroom and in your life.

## SESSION 11

 **Flights of Innovation: Readyng Middle Schoolers for STEM Careers** (Gen)

(Middle Level/Informal Education) 616, Convention Center  
**Amanda C. Goertz** ([amanda@futureofflight.org](mailto:amanda@futureofflight.org)), Future of Flight Foundation, Mukilteo, Wash.

Learn about a unique informal education program that teaches problem solving and innovative thinking to middle school students to raise their interest in STEM-related careers.

## 11:00 AM–12 Noon Workshops

**Keeping Pests Out of the Garden: Designing Simple Inquiries with Household Spices** (Bio)

(Elementary–Middle Level) 2A, Convention Center

**Helen A. Buttemer** ([helenb@u.washington.edu](mailto:helenb@u.washington.edu)), University of Washington, Seattle

Learn how to design experiments to test effective barriers for keeping snails out of the garden. Materials are simple and classroom tested.

**Science Facilities 102: The Architects Have Started Without Me—What Do I Do Now?** (Gen)

(General) 3B, Convention Center

**LaMoine L. Motz** ([llmotz@comcast.net](mailto:llmotz@comcast.net)), 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.

**Juliana Texley**, Palm Beach State College, Boca Raton, Fla.

**Sandra West Moody** ([sw04@txstate.edu](mailto:sw04@txstate.edu)), Texas State University, San Marcos

**James T. Biehle** ([biehlej@sbcglobal.net](mailto:biehlej@sbcglobal.net)), Inside/Out Architecture, Inc., Kirkwood, Mo.

Presider: LaMoine L. Motz

Is your district planning/designing new science facilities? Learn about budgeting, working with the architect, space requirements, technology, flexibility, safety, new types of spaces, and special adjacencies. In an advanced course (an extension of Science Facilities 101 session, page 89), the NSTA author team for *NSTA Guide to Planning School Science Facilities*, 2nd ed. will present more detailed information and examples of functional, flexible science facilities for inquiry/project-based science. Resource packet available.

**ACS Session Three: Rate** (Chem)

(High School) 4C-4, Convention Center

**Jerry A. Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), American Chemical Society, Washington, D.C.

Chemistry is about change. Some chemical changes are very slow and others are very fast. How are the rates (speeds) of chemical reactions measured? What are the factors that affect the rates? Are these factors the same as those that are responsible for changes in equilibria? Bring your USB flash drive and take away the presentation and the activities to use in your classes.

**GreenSchools! (Env)**

(Informal Education) 201, Convention Center

**Al Stenstrup** ([astenstrup@forestfoundation.org](mailto:astenstrup@forestfoundation.org)), **Jackie Stallard** ([jstallard@forestfoundation.org](mailto:jstallard@forestfoundation.org)), Project Learning Tree, Washington, D.C.

Project Learning Tree's (PLT) GreenSchools! program connects PLT classroom activities and environmental service-learning projects. Join us to learn more about the program, how to organize a GreenSchools! training, and how to get free access to PLT GreenSchools! resources and materials online.

**Creating a Cohesive Lesson to Meet the Needs of All Learners (Gen)**

(Middle Level–High School) 206, Convention Center

**Brook N. MacMillan**, University of California, Riverside  
Walk away with ideas on how to create cohesive lessons that meet the learning needs of all students. Using a simple and effective lesson tool, learn how to incorporate a warm-up, reading activity, class notes, breakout group activities, class activity, and comprehension check—all in one 55-minute lesson! Discover ways to effectively transition as well as use simple class materials and organizational tools. Handouts!

**ACS Middle Level Session: Density: A Molecular View (Chem)**

(Middle Level) 310, Convention Center

**James H. Kessler** ([jhkessler@acs.org](mailto:jhkessler@acs.org)), American Chemical Society, Washington, D.C.

Explore the density of different materials to understand how atoms and molecules affect the density of different substances.

 **Equal Access to Science: Universal Design and Students with Disabilities (Gen)**

(Middle Level) 617, Convention Center

**Lyla M. Crawford**, University of Washington, Spokane  
Full inclusion of students with disabilities in STEM involves both accommodation strategies for students and universal design of instruction that enhances learning for all students.

**If at First You Don't Succeed, Get New Batteries! Spark Student Interest with Informal Science Activities (Gen)**

(Elementary) 619, Convention Center

**Catherine S. Valentino** ([thinkalot@aol.com](mailto:thinkalot@aol.com)), Curriculum Advisor, Kingston, R.I.

Informal science activities can increase student interest and comprehension in science class. Increasing time for science instruction is an ongoing challenge for overworked teachers. Learn how after-school informal science events and projects can build a strong foundation for lifelong learning.

**Ice Core Records—From Volcanoes to Stars (Earth)**

(High School–College/Informal) 620, Convention Center

**Donna L. Young** ([donna@aaavso.org](mailto:donna@aaavso.org)), Chandra E/PO Office, Cambridge, Mass.

**Doug Lombardi** ([lombardi.doug@gmail.com](mailto:lombardi.doug@gmail.com)), Southern Nevada Regional Professional Development Program, North Las Vegas

Use absolute and relative dating techniques with high-resolution ice core data and historic volcanic eruptions to correlate and date supernovae events from nitrate anomalies.

**Activities from Across the Earth System (Earth)**

(General) Ballroom 6E, Convention Center

**David F. Mastie** ([mastie@umich.edu](mailto:mastie@umich.edu)), Retired Educator, Chelsea, Mich.

**Parker O. Pennington IV** ([p.o.pennington@gmail.com](mailto:p.o.pennington@gmail.com)), Retired Earth Science Teacher, Ann Arbor, Mich.

**Richard M. Jones** ([rmjones7@hawaii.edu](mailto:rmjones7@hawaii.edu)), University of Hawaii–West Oahu, Pearl City

In this fast-paced workshop, educators and scientists share their repertoire of hands-on, inquiry-based activities spanning the five “spheres” of Earth system science. Handouts!



**11:00 AM–12 Noon Exhibitor Workshops**

**EarthComm—New Edition: Meeting Your STEM Needs (Earth)**

(Grades 8–12) 4C-3, Convention Center

Sponsor: It's About Time

**Gary Curts**, Dublin (Ohio) Public Schools

Introducing the newest edition of American Geological Institute's *EarthComm*. Discover the new features—including the Engineering Design Cycle and more—from one of the most successful project-based Earth science programs available. Development by AGI education professionals ensures that the content is not only accurate but also based on the latest research.

**Investigating Earthquakes in Middle School: Bringing Science and Technology Together (Phys)**

(Grades 6–8) 612, Convention Center

Sponsor: PASCO Scientific

**Jason Lovell**, PASCO Scientific, Roseville, Calif.

Experience authentic STEM learning! Integrate technology in real science investigations as you explore plate tectonics, earthquakes, and force. Everyday materials, SPARK science technology, and Sally Ride Science SPARKlabs are used to develop a deeper understanding of STEM concepts and solve real-life problems.

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### 11:00 AM–12:45 PM Workshop

#### **AAPT/SCST Session: Physics by Inquiry: A Guided Inquiry Curriculum (Phys)**

(Middle Level–College) 608, Convention Center

**Donna Messina**, University of Washington, Seattle

Developed by the Physics Education Group at the University of Washington, Physics by Inquiry (PbI) is a guided inquiry curriculum. Experience the power of semi-Socratic dialogues as a means of assessment and discuss ways in which these strategies can be implemented in your classroom.

### 11:30 AM–1:30 PM Exhibitor Workshop

#### **FOSS Planetary Science for Middle School (Gen)**

(Grades 5–8) 602/603, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

**Larry Malone, Alan D. Gould, and Jessica Penchos**,

Lawrence Hall of Science, University of California, Berkeley

How have we come to understand the solar system? How many other planetary systems are there and how can we find and explore them? Students engage these questions in the new FOSS Planetary Science Course. This introduction of the new edition will highlight new features, strategies, and content of this course.



### 12 Noon–1:15 PM Exhibitor Workshops

#### **Sparkling Interest and Learning with Chemistry: A Part 1 Experience (Chem)**

(Grades 9–12) 4C-2, Convention Center

Sponsor: Houghton Mifflin Harcourt

**Jerry Sarquis**, Professor Emeritus, Miami University, Oxford, Ohio

**Mickey Sarquis**, Terrific Science, Healdsburg, Calif.

Join Jerry and Mickey Sarquis, recognized leaders in chemistry education and authors of *Modern Chemistry*, for a session full of hands-on activities and engaging demos using inexpensive and readily available materials. Learn how to spark imagination and interest in chemistry with simple but powerful tricks and tips! (The Part 2 Experience, page 107, will include a unique set of activities.)

#### **Whose DNA Was Left Behind? Are You Ready to Teach 30-Minute Forensics Experiments? (Bio)**

(Grades 7–College) 605, Convention Center

Sponsor: Edvotek

**Andrea Mangini** ([info@edvotek.com](mailto:info@edvotek.com)) and **Tom Cynkar** ([info@edvotek.com](mailto:info@edvotek.com)), Edvotek, Bethesda, Md.

The first part of this workshop focuses on procedures used in DNA fingerprinting as crime scene Ready-to-Load™ samples are compared against suspect samples. The second experiment covers principles and practice of blood type–based screening for suspects who may have been present at the crime scene. Your students can solve a crime!

#### **Science Under Siege? Teaching Evolution in a Climate of Controversy (Bio)**

(Grades 9–12) 609, Convention Center

Sponsor: Pearson

**Kenneth R. Miller**, Brown University, Providence, R.I.

Eighty-five years after the Scopes trial, evolution remains a controversial topic. The nationwide struggle over the place of evolution in the biology curriculum continues. As lead witness in the 2005 Dover “Intelligent Design” trial, I will discuss the continuing controversy and suggest how educators can deal with it successfully. We will review some of the commonly held misconceptions about the process as well as answers to some of the widely used arguments against evolution. Participants will be presented with resources to respond to challenges commonly faced in the classroom and community when teaching evolution.

**Strawberry DNA and Molecular Models (Bio)***(Grades 6–12)* 611, Convention Center

Sponsor: Carolina Biological Supply Co.

**Carolina Teaching Partner**

Remove your students' abstract notion of DNA structure and function through hands-on techniques. Follow a simple laboratory procedure to extract and visualize actual DNA from fresh strawberries. Then use models to show DNA structure. These kits will quickly make the fascinating world of DNA approachable and tangible in your classroom.

**The Private Eye®: Hands-On Inquiry for an Interdisciplinary Mind—Science, Writing, and Art****(Gen)***(General)* 613/614, Convention Center

Sponsor: Educational Innovations, Inc.

**Kerry Ruef and David Melody**, The Private Eye Project, Lyle, Wash.

Dandelions! Crickets! Eyeballs! Use a jeweler's loupe, everyday objects, simple questions, and thinking by analogy to go REALLY close up—and develop the essential skills of scientist, writer, and artist in all your students. Explore this acclaimed program for creativity and critical thinking across subjects, K–16 through life. Free loupes, specimens, and lessons!

**Teaching About Gas Exchange (Bio)***(Grades 6–12)* 615, Convention Center

Sponsor: Lab-Aids, Inc.

**Mark Koker**, Lab-Aids, Inc., Ronkonkoma, N.Y.

Don't hold your breath, but many students have misconceptions about respiration, a key life process and important science content. In this hands-on workshop, participants learn about gas exchange in the lungs and determine how much CO<sub>2</sub> is in their exhaled breath. Suitable for middle school and high school levels with free handouts and materials.

**Fun, Fabulous Foldables® (Gen)***(Grades K–8)* Ballroom 6C, Convention Center

Sponsor: McGraw-Hill School Education Group

**Dinah Zike**, Dinah-Might Adventures, LP, San Antonio, Tex.

Experience how these 3-D graphic organizers can transform your science lesson into an engaging, interactive learning experience. These interactive tools offer endless possibilities for collecting data, building understanding, and assessing student comprehension.

**12 Noon–1:30 PM Luncheon****Preservice and New Teachers Luncheon (M-3)***(Tickets Required; \$12)* Metropolitan B, Sheraton*Sponsored by Kendall Hunt Publishing Co.*

Join us for this lively function where you'll learn about resources from NSTA for your science classroom and career. Enjoy lunch (generously sponsored by Kendall Hunt Publishing Company).

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 12 Noon on Thursday.

*Note:* Tickets will be provided only to preservice teachers or teachers with up to five years of teaching experience.

**12 Noon–1:30 PM Exhibitor Workshops****Exploring Science with Vernier (Gen)***(Grades 7–College)* 604, Convention Center

Sponsor: Vernier Software &amp; Technology

**Clarence Bakken** (*info@vernier.com*) and **Elaine Nam** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Use sensors and software to graph and analyze scientific data with state-of-the-art technology for your science classroom. In this hands-on session, you'll learn from master teachers and technology experts about Vernier LabQuest™ handheld and Logger Pro software. Explore how probeware can help you teach core topics in physics, chemistry, biology, Earth science, and environmental science.

**Light and Optics: A Series of EnLIGHTening Experiments! (Phys)***(Grades 6–12)* 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, N.H.

Experience CPO's Optics with Light and Color kit complete with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine different spectra. Shine a laser through a prism and see for yourself the phenomenon of total internal reflection. We make studying light exciting!

## 12:30–1:30 PM Presentations

### SESSION 1

#### **NABT Session: STEMware: Zombie Plague (Bio)**

(Middle Level–College) 2B, Convention Center

**Barbara Emberson Soots** ([besoots@ucdavis.edu](mailto:besoots@ucdavis.edu)), University of California, Davis

Immerse yourself in a virtual world! Discover the micro-organism causing a deadly zombie outbreak. Implement a cure, save the town, and learn important modern biology concepts.

### SESSION 2

#### **Spreadsheets for Student Self-checking of Lab Work (Chem)**

(Middle Level–College) 203, Convention Center

**Donald S. McQuarrie** ([mcquarrrd@comcast.net](mailto:mcquarrrd@comcast.net)), Lynden High School, Lynden, Wash.

Students will sometimes turn in lab work in which calculated values are incorrect, causing them to miss the focus of the lab activity. Find out you can prepare a spreadsheet “checksheets” that allows students to evaluate their answers based on their own data.

### SESSION 3

#### **Teach STEM? NASA Explorer Schools Can Help! (Gen)**

(General) 205, Convention Center

**Rob LaSalvia**, NASA Glenn Research Center, Cleveland, Ohio

Presider: Jodie Rozzell, Director, NASA Explorer Schools, NSTA, Arlington, Va.

NASA Explorer Schools (NES) has searched thousands of materials on the NASA website to provide a comprehensive set of free STEM concepts teaching materials for grades 4–12.

### SESSION 4

#### **Using Computer Models for Guided Inquiry: A Case Study of Biological and Physical Interactions in Estuaries (Gen)**

(High School–College) 212, Convention Center

**Kit Yu Karen Chan** ([kychan@uw.edu](mailto:kychan@uw.edu)) and **Sylvia Yang** ([sy3@uw.edu](mailto:sy3@uw.edu)), University of Washington, Seattle

**Marta C. Branch** ([mbranch@orcas.k12.wa.us](mailto:mbranch@orcas.k12.wa.us)), Orcas Island School District, Eastsound, Wash.

Experience a field-tested lesson in which students collaboratively conduct experiments using a computer model to explore how circulation patterns affect organisms in estuaries.

### SESSION 5

#### **Credit Recovery: Energy as a Theme for Credit Recovery Success (Gen)**

(General) 213, Convention Center

**Don Pruett**, The NEED Project, Manassas, Va.

Engage students with meaningful credit recovery topics. Students that may struggle in traditional classrooms enjoy the tangible nature of energy-related projects.

### SESSION 6

#### **Matching Science Concepts to Student Video Projects for Enhanced Assessment (Gen)**

(Middle Level–High School/Informal) 214, Convention Center

**Kristina Peterson** ([kristina.peterson@lakesideschool.org](mailto:kristina.peterson@lakesideschool.org)),

**Antonio Hopson** ([antonio.hopson@lakesideschool.org](mailto:antonio.hopson@lakesideschool.org)),

**Nancy Canino** ([nancy.canino@lakesideschool.org](mailto:nancy.canino@lakesideschool.org)), and

**Matt M. Huston** ([matt.huston@lakesideschool.org](mailto:matt.huston@lakesideschool.org)), Lakeside School, Seattle, Wash.

Geared toward science and Curriculum Studies and Teacher Education (CTE) teachers, participants will gain an introduction to digital storytelling and to the ways to assess video of students doing experiments. Learn about projects integrating video assessment of science concepts that range from student-made videos to videos of students.

### SESSION 7

#### **STEM Education Strategies of the Alaska Marine Science and Fisheries Career Coalition (Env)**

(Elementary–High School) 304, Convention Center

**Marilyn J. Sigman** ([msigman@alaska.edu](mailto:msigman@alaska.edu)) and **Ray**

**Barnhardt** ([rjbarnhardt@alaska.edu](mailto:rjbarnhardt@alaska.edu)), University of Alaska, Fairbanks

Learn how the Centers for Ocean Sciences Education Excellence (COSEE) Alaska facilitate place-based ocean science fairs and scientist-teacher partnerships among other STEM strategies of the Alaska Marine Science and Fisheries Coalition.

**SESSION 8****Promoting Authentic Learning with Problem-Based Learning Units (Earth)***(Elementary–High School)* 307, Convention Center**Barney Peterson** (*bpeterson@everettsd.org*), James Monroe Elementary School, Everett, Wash.**Gary Popiolkowski** (*garypoprr33@gmail.com*), Chartiers-Houston Junior/Senior High School, Houston, Pa.

Learn to plan and develop Problem-Based Learning units that let students use basic science understandings and research skills to solve real-world problems.

**SESSION 9****From Beginning to End: The Steps for a Successful Overseas Educational Field Trip (Bio)***(High School)* 308, Convention Center**Ilene Gabel** (*igabel@hewlett-woodmere.net*) and **Martin Kilkenny** (*mkilkenny@hewlett-woodmere.net*), G.W. Hewlett High School, Hewlett, N.Y.

Discover how to plan an overseas trip (Galápagos) for students and faculty at the high school level. All aspects of planning such a trip will be discussed.

**SESSION 10****Engineering Design: Constructing Ideas for Teachers (Gen)***(Elementary–Middle Level)* 616, Convention Center**Philip D. Wade** (*wadep@wou.edu*) and **Adele Schepige** (*schepia@wou.edu*), Western Oregon University, Monmouth

Explore engineering design activities such as water filtration

systems, reinforced concrete structures, and alternative energy systems that are appropriate for K–8 classrooms. Handouts!

**SESSION 11****STEM and Problem-Based Learning (PBL) in a Comprehensive High School (Gen)***(High School/Supervision)* 618, Convention Center**Kim Herzog** (*herzogk@bsd405.org*), **Suzanne Reeve** (*reeves@bsd405.org*), and **Bill Palmer** (*palmerw@bsd405.org*), Sammamish High School, Bellevue, Wash.

Gain insights from a teacher-led initiative to develop STEM PBL curricula, including collaborating with colleagues and drawing on partnerships with community organizations.

**SESSION 12****Regional STEM School Panel (Gen)***(General)* Ballroom 6A, Convention Center**Ann F. Wright-Mockler** (*ann.wrightmockler@pnl.gov*), Pacific Northwest National Laboratory, Richland, Wash.

Learn what regional STEM schools are doing and how they were developed. Leaders from several regional STEM schools will share the stories of their schools and what is working for their students.

**12:30–1:30 PM Workshops****Use Technology to Integrate Science and Math!****(Bio)***(General)* 2A, Convention Center**Jeff Lukens** (*jeffrey.lukens@k12.sd.us*), Roosevelt High School, Sioux Falls, S.Dak.

Science and math should be natural curriculum partners. Technology can help bridge the gap between these two areas and bring relevance to the classroom.

**Authentic Research on Smoking Behavior Using a Scientific Database (Bio)***(High School–College)* 3A, Convention Center**Maureen M. Munn** (*mmunn@uw.edu*), **Andrew W. Shouse**, **Katie Van Horne** (*katievh@uw.edu*), **Hiroki Oura** (*oura@uw.edu*), and **Jessica Aronson** (*jarons@uw.edu*), University of Washington, Seattle**Randy Knuth** (*randy@knuthresearch.com*), Knuth Research, Inc., Spokane, Wash.

Presider: Maureen M. Munn

Explore ways to engage students in conducting original research using the database from an epidemiological study of smoking behavior.



**ACS Session Four: Catalysis (Chem)**

(High School) 4C-4, Convention Center

**Jerry A. Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), American Chemical Society, Washington, D.C.

Your body is loaded with catalysts that speed up the chemical reactions necessary for life without themselves being used up in the reactions. As we explore the nature of catalysis, keep in mind that one goal of chemistry is creating catalysts to increase the efficiency of the processes involved in producing the goods that help make our lives longer and more pleasant. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

**Polymers: New Twists on Old Favorites (Chem)**

(Middle Level–High School) 201, Convention Center

**Andrew G. Nydam** ([andrewnydam@hotmail.com](mailto:andrewnydam@hotmail.com)), Olympia High School, Olympia, Wash.

**Debbie Goodwin** ([nywin@hotmail.com](mailto:nywin@hotmail.com)), Chillicothe High School, Chillicothe, Mo.

Enhance and deepen science and math concepts taught in traditionally “fun” polymer labs. Add more scientific processes to make them inquiry-based. Come participate and pick up complete handouts.



**NSTA Press Session: Bringing Outdoor Science into Your Classroom (Gen)**

(Elementary–Middle Level) 204, Convention Center

**Steve A. Rich** ([bflywriter@comcast.net](mailto:bflywriter@comcast.net)), Georgia Youth Science and Technology Center, Carrollton

Get your hands on materials that can be used in the classroom or school yard. Either way, you’ll find a wealth of resources. Free seeds!

**School Energy Survey (Env)**

(Informal Education) 206, Convention Center

**Rebecca Lamb**, The NEED Project, Manassas, Va.

Use your school building as a living laboratory! Walk away with lessons and online resources that will allow your students to do an audit and calculate energy costs, emissions, and costs.

**ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (Chem)**

(Middle Level) 310, Convention Center

**James H. Kessler** ([jhkessler@acs.org](mailto:jhkessler@acs.org)), American Chemical Society, Washington, D.C.

Do an activity to explore the first 20 elements of the periodic table and take a fresh look at covalent and ionic bonding.



**Enhancing Literacy Through Science Explorations (Gen)**

(Elementary) 617, Convention Center

**Susan R. McWilliams** ([smcw@bendcable.com](mailto:smcw@bendcable.com)), Lewis and Clark College, Portland, Ore.

Join us as we identify the benefits of using science content to enhance literacy skills for English language learners and offer hands-on investigations modeling best practices.

**NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy (Earth)**

(Middle Level–High School/Informal) 619, Convention Center

**Pamela K. Harman** ([pharman@seti.org](mailto:pharman@seti.org)), SETI Institute, Mountain View, Calif.

**Dana E. Backman** ([dbackman@sofia.usra.edu](mailto:dbackman@sofia.usra.edu)), SOFIA/SETI Institute, Moffett Field, Calif.

Experience inquiry activities for learning about visible and invisible light using simple classroom technologies. Take home standards-based lessons, colorful posters, and spectrometers.

**Not Just Hot Air: Exploring Climate Change’s Interconnections and Sustainable Solutions (Earth)**

(General) 620, Convention Center

**Dave Wilton** ([dave@facingthefuture.org](mailto:dave@facingthefuture.org)), Facing the Future, Seattle, Wash.

Equip your students to explore the web of climate change issues. Hands-on lessons investigate the interconnections between Earth systems and human actions using carbon footprint, emissions trading, and energy policy. Free curriculum!

**12:30–1:30 PM Exhibitor Workshop**

**Active Chemistry/Active Physics: Project-based Science That’s Relevant for All Students (Chem)**

(Grades 9–12) 4C-3, Convention Center

Sponsor: It’s About Time

**Arthur Eisenkraft**, 1999–2000 NSTA President, and University of Massachusetts, Boston

Active Chemistry and Active Physics are STEM curricula that make chemistry and physics accessible to all high school students. Find out how Active Chemistry and Active Physics can enhance your chemistry and physics instruction. Watch what happens to the quality of your students’ work when they take ownership of real-world scientific challenges that matter to them.

**12:30–2:30 PM NSTA ESP Symposium****NSTA's Exemplary Science Programs (ESP): Meeting the Reform Features Recommended in the National Science Education Standards (Gen)***(General) Room 3B, Convention Center*

The ESP series identifies people and places where the reforms recommended have emerged, including 1) Exemplary Science in Grades PreK–4; 2) Exemplary Science in Grades 5–8; 3) Exemplary Science in Grades 9–12; 4) Exemplary Science: Best Practices in Professional Development; 5) Inquiry: The Key to Exemplary Science; 6) Exemplary Science in Informal Education Settings; and 7) Exemplary Science for Resolving Societal Challenges. The exemplars are discussed in ESP symposia at all NSTA conferences.

The series was conceived by Robert E. Yager (1982–1983 NSTA President), who continues ESP searches and ways of recognizing classroom successes while also encouraging more to try!

*Coordinators: Herbert Brunkhorst (hkbrunkh@csusb.edu), California State University, San Bernardino; and Todd Campbell (todd.campbell@usu.edu), Utah State University, Logan*

**Student Inquiry and Research (from ESP #5)**

**Judith A. Scheppler** (*quella@imsa.edu*), Illinois Mathematics and Science Academy, Aurora

**Environment Inside and Outside the Classroom (from ESP #7)**

**Oksana Bartosh** (*ksenia\_brt@yahoo.com*), Directions Evidence and Policy Research Group, Vancouver, B.C., Canada

**Why Wasn't I Taught This Way? (from ESP #5)**

**Joseph I. Stepans** (*jstepans@uwyo.edu*), University of Wyoming, Laramie

**12:30–3:30 PM Short Course****Science for ELL: Vocabulary Instruction for Inquiry with English Language Learners (SC-6)***(K–12) Cirrus Ballroom, Sheraton***Tickets Required: \$40**

**David T. Crowther** (*crowther@unr.edu*), and **Elisa Storke** (*elisa@unr.edu*), University of Nevada, Reno

For description, see page 39.

**1:00–1:45 PM Presentation****SESSION 1****AAPT Session: Engaging Independent Projects to Teach Energy (Phys)***(Middle Level–College) 608, Convention Center*

**Michael Braunstein** (*braunst@cwu.edu*) and **Michael Jackson** (*jacksonm@cwu.edu*), Central Washington University, Ellensburg

President: Michael Jackson

Join us as we present a project-oriented curriculum designed around the broad theme of energy for interdisciplinary students who intend to major in STEM disciplines.

**1:00–2:00 PM Exhibitor Workshop****Chemistry—Atmospheric Pressure (Chem)***(Grades 9–12) 612, Convention Center*

Sponsor: PASCO Scientific

**Jason Lovell**, PASCO Scientific, Roseville, Calif.

This workshop applies PASCO's state-of-the-art science teaching solutions to a topic covered in all levels of chemistry classes—gases in the atmosphere. Use this standards-based, guided-inquiry activity as a platform to teach your students about pressure, gases, stoichiometry, and so much more. Experience how SPARKscience can change your teaching practice and improve student understanding of core chemistry topics.

**1:00–2:15 PM Exhibitor Workshop****Are You a Problem (Solving) Teacher? Want to Become One? (Gen)***(Grades K–8) 606, Convention Center*

Sponsor: Delta Education/School Specialty Science

**Tom Graika**, Consultant, Lemont, Ill.

**Johanna Strange**, Consultant, Richmond, Ky.

We would like to show you how a problem-based approach to science lessons provides opportunity for students to be engaged in activities that incorporate Science, Technology, Engineering and Math. Problem activities from Delta Science Modules will be emphasized.

### 1:00–2:30 PM Exhibitor Workshop

#### Bio-Rad—Enzymes and Biofuels: Go from Grass to Gas! (AP Biology Lab 2) (Bio)

(Grades 9–College) 610, Convention Center

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*biotechnology\_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Reveal the power of enzyme kinetics by illustrating the theory through a real-world application of biofuels. In this workshop, you will determine the rate of reaction for the enzyme cellobiase, a key enzyme in the production of cellulose. Can biofuels solve global warming? Let your students decide if this is possible!

### 2:00–2:30 PM Presentation

#### SESSION 1

#### Preservice Elementary Teachers' Performance and Reflection on Formative Assessment Probes (Gen)

(General) 213, Convention Center

**Christine A. Royce** (*caroyce@aol.com*), NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

Let's examine preservice students' performances on formative assessment probes in different areas as well as their reflections as to where they believe they "learned" the material.

### 2:00–3:00 PM Presentations

#### SESSION 1

#### Medical Mysteries Web Adventures (Bio)

(General) 3A, Convention Center

**Kristi G. Bowling** (*kmg4@rice.edu*) and **Lynn Lauterbach** (*lynnlauterbach@gmail.com*), Rice University, Houston, Tex. Teach microbiology, reinforce process skills, and incorporate technology into your curriculum. Experience this free online adventure game that promotes scientific inquiry and STEM careers while teaching about infectious diseases, immunity, and the scientific method. Handouts!

#### SESSION 2

#### Corrosion Is Everywhere—Use It to Make Chemistry Relevant and Fun (Chem)

(High School) 4C-1, Convention Center

**Andrew G. Nydam** (*andrewnydam@hotmail.com*), Olympia High School, Olympia, Wash.

**Debbie Goodwin** (*nywin@hotmail.com*), Chillicothe High School, Chillicothe, Mo.

Use corrosion to teach practical applications of chemistry concepts. Make reactivity, oxidation/reduction, solution chemistry, and corrosion prevention contextual and exciting using inquiry-based labs. Handouts.

#### SESSION 3

#### Get SIMulated! (Gen)

(Elementary–High School) 203, Convention Center

**Diane Kasparie** (*dkasparie@quincynotredame.org*), Quincy Notre Dame High School, Quincy, Ill.

Online science simulations are research-proven, student-centered, relevant tools that empower great teaching and active learning! They are engaging and motivating, and aligned to state/national standards.

#### SESSION 4



#### NSTA Press Session: Team Teaching Science: You Can Do It! (Gen)

(General) 204, Convention Center

**Ed Linz** (*coachlinz@cox.net*), Retired Science Teacher and Author, Springfield, Va.

**Mary Jane Heater** (*mjheater@fcps.edu*), West Springfield High School, Springfield, Va.

An experienced team of co-teachers discusses the challenges and the rewards of team teaching K–12 science and presents a game plan for success.

#### SESSION 5

#### Starting an NSTA Student Chapter: Faculty and Student Perspectives (Gen)

(General) 205, Convention Center

**Howard Wahlberg** (*hwahlberg@nsta.org*), Assistant Executive Director, Member, Chapter, and Customer Relations, NSTA, Arlington, Va.

**Teshia Birts** (*tbirts@nsta.org*), Senior Manager, Chapter Relations, NSTA, Arlington, Va.

Interested in getting your preservice teachers more involved in the profession? You won't want to miss this must-see panel discussion conducted by NSTA student chapter advisors on the advantages of starting an NSTA student chapter at your college or university.

**SESSION 6**

**Be Careful What You “Fish” For: Environmental Health for Humans (Env)**

(General) 304, Convention Center

**Alanna Shevak** ([ajshevak@pbs.org](mailto:ajshevak@pbs.org)), PBS, Arlington, Va.

**Sherry Schaaf** ([scitchrs@centurytel.net](mailto:scitchrs@centurytel.net)), PBS Teacherline, Forks, Wash.

From mercury to malaria, examine the environment’s impact on human health with open educational resources, including short clips from public television science programs.

**SESSION 7**

**Forcing STEM Education: Lessons Learned from Stewart Middle School (Gen)**

(Middle Level–College) 307, Convention Center

**Cyrus Brown** ([cbrown4@tacoma.k12.wa.us](mailto:cbrown4@tacoma.k12.wa.us)) and **Amy Karlstrom** ([akarlst@tacoma.k12.wa.us](mailto:akarlst@tacoma.k12.wa.us)), Stewart Middle School, Tacoma, Wash.

**Amy E. Ryken** ([aryken@pugetsound.edu](mailto:aryken@pugetsound.edu)), University of Puget Sound, Tacoma, Wash.

Let’s discuss the why’s and how’s of STEM education at one Tacoma, Washington, middle school, which went through a federal grant turnaround.

**“Life begins at retirement.”**

—Author Unknown

Join the NSTA Retired Advisory Board for an insightful information-sharing session. Fellow colleagues will share ideas about staying active both in and out of the profession.

**Before and After Retirement: Practicalities and Possibilities**

**Friday, December 9**

**3:30–4:30 PM**

Washington State Convention Center  
Room 205

For more information on the Retired Members Advisory Board, contact Mary Strother, chair, at [mary.strother@communityeducation.com](mailto:mary.strother@communityeducation.com).



SESSION 8

**Student-driven Investigations into School Yard Ecology and Habitat Restoration (Bio)**

(Elementary–Middle Level) 308, Convention Center

**Cara Ianni** ([cara@stillysnofish.org](mailto:cara@stillysnofish.org)), Stilly-Snohomish Fisheries Enhancement Task Force, Everett, Wash.

Learn from a working ecologist how to use students' observations and questions from outdoor activities as a springboard to implement student-driven investigations in ecology.

SESSION 9



**Assessment and STEM Project Based Learning (Gen)**

(General) 616, Convention Center

**Leah A. Bricker** ([lbricker@u.washington.edu](mailto:lbricker@u.washington.edu)) and **Katie Van Horne** ([katievh@uw.edu](mailto:katievh@uw.edu)), University of Washington, Seattle

**Susan Wood-Megrey** ([woodmesj@hsd401.org](mailto:woodmesj@hsd401.org)), Highline Public Schools, Burien, Wash.

**Scott McComb** ([mccombsw@hsd401.org](mailto:mccombsw@hsd401.org)), **Stephanie Durrant**, **Nikhil Joshi** ([nrjoshi@nrjoshi.info](mailto:nrjoshi@nrjoshi.info)), and **Garrrett Shiroma**, Aviation High School, Des Moines, Wash.

Join us as we focus on examples of assessments for learning implemented during STEM Project Based Learning curricula, including formative assessments, standards-based assessment systems, and learning analytics models.

**NSTA** SESSION 10

**NSTA Avenue Session: The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (Gen)**

(General) 618, Convention Center

**Flavio Mendez** ([fmendez@nsta.org](mailto:fmendez@nsta.org)), Senior Director, NSTA Learning Center, NSTA, Arlington, Va.

Lost when it comes to finding online professional development resources? With more than 6,000 resources (25% of which are free) and quality professional development opportunities, the NSTA Learning Center has the answers! Attend and receive free access to some of the fee-based resources. (Ice cream provided.)

2:00–3:00 PM Workshops

**Variation, Selection, and Time (Bio)**

(Middle Level–High School) 2A, Convention Center

**Molly A. Malone**, The University of Utah, Salt Lake City  
Molecular genetics is shedding light on the process of natural selection. Explore contemporary examples of evolution at work through free activities from <http://learn.genetics.utah.edu>.

**NABT Session: Hands-On Activities and Demonstrations to Stimulate Inquiry in Biology (Bio)**

(Informal Education) 2B, Convention Center

**John W. Fedors** ([jfedors@wavecable.com](mailto:jfedors@wavecable.com)), Retired Educator, Lincoln, Calif.

Explore osmosis, diffusion, simulated cell organelles, MRI, hydrophilic/hydrophobic properties, intimate microbes, energy transfer, and forensics.

**ACS Session Five: Light as a Reactant and/or Product (Chem)**

(High School) 4C-4, Convention Center

**Jerry A. Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), American Chemical Society, Washington, D.C.

Some chemical reactions produce energy and others require energy to proceed. Light is a form of energy, so it is natural to wonder whether and under what conditions reactions might produce light or whether light (perhaps from the Sun) could be harnessed to drive reactions that otherwise would not proceed. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

**Linking Home and School with P.A.S.S.© (Portable Affordable Simple Science) (Gen)**

(Elementary) 201, Convention Center

**Renee G. O'Leary**, Holy Angels School, Newark, Del.

**Peggy Vavalla**, DuPont, Wilmington, Del.

Discover simple, multisensory, hands-on early childhood/elementary explorations (preK–2)—in zippered plastic bags—with take-home and multidisciplinary follow-up. Walk away with sample lesson plans, bags, and follow-up.



**Focus on Forests: Project Learning Tree's New Secondary Curriculum (Env)**

(Informal Education) 206, Convention Center  
**Al Stenstrup** ([astenstrup@forestfoundation.org](mailto:astenstrup@forestfoundation.org)) and **Jackie Stallard** ([jstallard@forestfoundation.org](mailto:jstallard@forestfoundation.org)), Project Learning Tree, Washington, D.C.

Learn how secondary students can explore the major issues facing forests today—climate change, invasive species, fire, land ownership, management, and more. Receive Project Learning Tree's new *Exploring Environmental Issues: Focus on Forests* activity guide and resource materials.

**ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences (Chem)**

(Middle Level) 310, Convention Center

**James H. Kessler** ([jhkessler@acs.org](mailto:jhkessler@acs.org)), American Chemical Society, Washington, D.C.

Investigate what makes water a polar molecule and explore how water's polarity affects evaporation and dissolving.

**NASA's SOFIA Is Flying! Infrared Astronomy Images and Lessons (Earth)**

(Middle Level–High School) 619, Convention Center

**Dana E. Backman** ([dbackman@sofia.usra.edu](mailto:dbackman@sofia.usra.edu)), SOFIA, Moffett Field, Calif.

Join me for the latest astronomical images, lesson plans, and

application process information on NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) Airborne Astronomy Ambassador program.

**National Earth Science Teachers Association Earth Science Share-a-Thon (Earth)**

(Elementary–High School) Ballroom 6E, Convention Center

**Roberta Johnson** ([rmjohnsn@nestanet.org](mailto:rmjohnsn@nestanet.org)), National Earth Science Teachers Association, Boulder, Colo.

**Tammy Bravo** ([tkb@iris.edu](mailto:tkb@iris.edu)), IRIS, Washington, D.C.

**Alan D. Gould** ([agould@berkeley.edu](mailto:agould@berkeley.edu)), Lawrence Hall of Science, University of California, Berkeley

**H. Michael Mogil** ([hmmogil@weatherworks.com](mailto:hmmogil@weatherworks.com)), How The Weatherworks and Howard University, Naples, Fla.

**Barbara Stein Ritchie** ([britchie@francisarker.org](mailto:britchie@francisarker.org)), Francis Parker School, San Diego, Calif.

**David C. Tucker** ([david.tucker2@comcast.net](mailto:david.tucker2@comcast.net)), Bellingham (Wash.) School District

**Pamela Whiffen** ([pwpr@aol.com](mailto:pwpr@aol.com)), NASA Educator Ambassador, Phoenix, Ariz.

Join NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

**2:00–3:00 PM Exhibitor Workshop****Coordinated Science: Physical, Earth, and Space Sciences (Gen)**

(Grades 9–12) 4C-3, Convention Center

Sponsor: It's About Time

**Gary Curts**, Dublin (Ohio) Public Schools

This curriculum challenges students and introduces them to the scientific concepts and processes in Active Physics, Active Chemistry, and *EarthComm* in a student-friendly approach. Find out what makes this curriculum unique and how it works.

**2:00–3:15 PM Exhibitor Workshops****Sparking More Interest with Chemistry: A Part 2 Experience (Chem)**

(Grades 9–12) 4C-2, Convention Center

Sponsor: Houghton Mifflin Harcourt

**Jerry Sarquis**, Professor Emeritus, Miami University, Oxford, Ohio

**Mickey Sarquis**, Terrific Science, Healdsburg, Calif.

Roll up your sleeves and prepare to become engaged in chemistry activities, demos, challenges, and tips to help spark your students' interest and facilitate their understanding of chemistry. This Part 2 Experience provides a different set of topics from those done in Part 1 (page 98), but continues the emphasis on using inexpensive, readily available materials. The session is presented by *Modern Chemistry* authors Mickey and Jerry Sarquis, award-winning educators and recognized leaders in chemistry education initiatives.

### Detecting Radiation in Our Radioactive World

(Gen)

(Grades 5–12)

605, Convention Center

Sponsor: American Nuclear Society

**Toni Bishop** ([outreach@ans.org](mailto:outreach@ans.org)), American Nuclear Society, La Grange Park, Ill.

Discover how to use Geiger counters to detect radioactivity and teach principles of nuclear science. Expand your knowledge of the ways nuclear technology is applied in the everyday life of our society.

### Inquiry and Evidence: Keys to Getting Students to Inquire

(Gen)

(Grades K–8)

609, Convention Center

Sponsor: Pearson

**Michael Padilla**, 2005–2006 NSTA President, and Clemson University, Clemson, S.C.

Inquiry continues to be a major thrust in science education as entities like the Partnership for 21st Century Skills call for improved student thinking across all disciplines. This session will develop an understanding of inquiry and evidence and outline teaching strategies that teachers can use to develop these important ideas.

### Drive Student Inquiry with Carolina's Advanced Environmental Science Labs

(Env)

(Grades 9–12)

611, Convention Center

Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

What do water quality, soil properties, and the Coriolis effect have in common? All three are explored in Carolina's exciting inquiry-based lab series for AP Environmental Science. Get hands-on experience with activities designed to inspire students to learn new concepts and apply them in their local environment. Free materials provided.

### Art vs. Science: The Role of Science in Wine Making

(Gen)

(Grades 8–12)

613/614, Convention Center

Sponsor: Fisher Science Education

**Robert Marshall** ([marshallr@carnegiesciencecenter.org](mailto:marshallr@carnegiesciencecenter.org)), Carnegie Science Center, Pittsburgh, Pa.

From the vineyard to the table, modern winemakers employ a multitude of scientific techniques to help them control every stage of the wine-making process. Learn how contemporary winemakers use scientific equipment and testing to help them face the challenge of producing the highest quality wines, while still maintaining the integrity of their art. Gain hands-on experience with real-world equipment used by enologists and learn about national degree programs in viticulture and enology. Take home activity guides.



**What Is the Difference Between Heat and Temperature?** (Chem)

(Grades 9–12) 615, Convention Center

Sponsor: Lab-Aids, Inc.

**Mark Koker**, Lab-Aids, Inc., Ronkonkoma, N.Y.

How many of your students can answer this question? We will show you a powerful, intuitive, and nearly foolproof way to teach this key idea in chemistry. The concept of heat and the flow of energy is a modern way to look at a core concept that appears in many of your standards. We will also use a classroom-rugged new probe system that stores data on a portable SD card!

**Teaching Science with Toys and Treats!** (Gen)

(Grades 3–11) Ballroom 6C, Convention Center

Sponsor: McGraw-Hill School Education Group

**Ralph Feather, Jr.**, Bloomsburg University, Bloomsburg, Pa.

Learn fun, practical, and engaging hands-on teaching ideas using toys and treats. Everyone is a winner—with strategies that you can use immediately. The positive reputation of this workshop precedes itself.

**2:00–3:30 PM Workshop****AAPT Session: Active Learning of Introductory Optics: Interactive Lecture Demonstrations and Optics Magic Tricks** (Phys)

(Middle Level–College) 608, Convention Center

**David R. Sokoloff** ([sokoloff@uoregon.edu](mailto:sokoloff@uoregon.edu)), University of Oregon, Eugene

Direct experience through audience participation with active learning in optics using Interactive Lecture Demonstrations (ILDs) is a strategy for large (and small) classes, including special optics magic tricks.

**2:00–3:30 PM Exhibitor Workshops****Exploring Science with Vernier** (Gen)

(Grades 7–College) 604, Convention Center

Sponsor: Vernier Software &amp; Technology

**Clarence Bakken** ([info@vernier.com](mailto:info@vernier.com)) and **Elaine Nam** ([info@vernier.com](mailto:info@vernier.com)), Vernier Software & Technology, Beaverton, Ore.

Use sensors and software to graph and analyze scientific data with state-of-the-art technology for your science classroom. In this hands-on session, you'll learn from master teachers and technology experts about Vernier LabQuest™ handheld and Logger Pro software. Explore how probeware can help you teach core topics in physics, chemistry, biology, Earth science, and environmental science.

**Sound, Waves, and Music** (Phys)

(Grades 6–12) 607, Convention Center

Sponsor: CPO Science/School Specialty Science

**Erik Benton**, CPO Science/School Specialty Science, Nashua, N.H.

Come create and control beautiful standing wave patterns resonating on a vibrating string with CPO's wave machine. Use a synthesizer to explore the wave properties of sound. Play music on a set of PVC palm pipes and learn how to make sets of your own. We'll show you how.

**2:00–4:00 PM Exhibitor Workshop****Developing Language Using FOSS** (Gen)

(Grades K–8) 602/603, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

**Brian Campbell, Joanna Totino, and Diana Velez**, Lawrence Hall of Science, University of California, Berkeley  
Active learning requires active thinking, and thinking involves language. Discover the ways language is used to help students make sense of their active-learning FOSS experiences. We will model a FOSS investigation using listening and speaking, reading and writing, and language-development strategies to further content knowledge, scientific practices, and academic literacy.**2:00–5:00 PM Meeting****ASTE-Northwest Regional Division Meeting**

Capitol Hill, Sheraton

Open to anyone interested in preparing preservice science teachers, this session includes presentations on teaching engineering/design to preservice teachers and poster presentations of members' research.

**2:30–3:30 PM Exhibitor Workshop**

**Renewable Energy Exploration: Solar and Wind Power (Env)**

(Grades 9–12) 612, Convention Center

Sponsor: PASCO Scientific

**Korey Champe**, PASCO Scientific, Roseville, Calif.

Investigate energy output from a solar cell and wind turbine under varying environmental conditions in this hands-on workshop featuring Horizon Renewable Energy SPARKlabs. This collection of 10 guided inquiry labs, developed jointly by PASCO and Horizon Fuel Cell Technologies, provides a standards-based, state-of-the-art science teaching solution to support your high school Earth or environmental science program. Additional labs from the collection will be demonstrated.

**3:00–5:30 PM Exhibitor Workshop**

**Bio-Rad—GMO Investigator Kit (Bio)**

(Grades 10–College) 610, Convention Center

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*biotechnology\_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Have your favorite foods been genetically modified (GM)? This hands-on workshop teaches the basics of DNA extraction, PCR, and gel electrophoresis and how these techniques are used to test common grocery store food products for the presence of GM foods. Are GM crops a good thing? You decide!

**3:30–4:30 PM Presentations**

**SESSION 1**

**NOAA in Your Backyard (Gen)**

(Elementary–High School) 201, Convention Center

**Lindsay Knippenberg** (*lindsay.knippenberg@noaa.gov*), Einstein Fellow, NOAA, Washington, D.C.

NOAA has hundreds of facilities and professional communicators across the nation. Get connected to NOAA guest speakers, field trips, and professional development in your area.

**SESSION 2**

**Putting It All Together...Powerful Collaboration, Instruction, and Assessment (Gen)**

(General) 203, Convention Center

**Kim Olson** (*kolson@tacoma.k12.wa.us*), **Greg Larsen** (*glarsen@tacoma.k12.wa.us*), **Deanne Crichton, Rhoni Davidson** (*rdavids@tacoma.k12.wa.us*), **Frost Cunningham** (*fcunnin@tacoma.k12.wa.us*), and **Zeek Edmond**, Giaudrone Middle School, Tacoma, Wash.

Interested in knowing how a science team positively impacted student learning at a western Washington turnaround school? Come join our interactive session to learn more.

**SESSION 3**



**NSTA Press Session: Putting the Science into PLCs (Gen)**

(Supervision/Administration) 204, Convention Center

**Page Keeley** (*pkeeley@mmsa.org*), 2008–2009 NSTA President, and Maine Mathematics and Science Alliance, Augusta Learn how to use Curriculum Topic Study and the *Uncovering Student Ideas* series to enhance the work of professional learning communities (PLCs).

**SESSION 4**

**Before and After Retirement: Practicalities and Possibilities (Gen)**

(General) 205, Convention Center

**Howard Wahlberg** (*hwahlberg@nsta.org*), Assistant Executive Director, Member, Chapter, and Customer Relations, NSTA, Arlington, Va.

The NSTA Retired Advisory Board invites you to a vibrant and useful information sharing session. Join your fellow colleagues and share your ideas about staying active both in and out of the profession.

**SESSION 5**

**City of Materials: Connecting Science to the “Stuff” in Children’s Lives (Gen)**

(General) 206, Convention Center

**Andrew G. Nydam** (*andrewnydam@hotmail.com*), Olympia High School, Olympia, Wash.

**Debbie Goodwin** (*nywin@hotmail.com*), Chillicothe High School, Chillicothe, Mo.

Discover an interactive STEM website for middle school students connecting science and engineering to their everyday world. See correlating demonstrations and labs for teachers. Handouts!

**SESSION 6****Square Pegs: Science for Those Other Kids (Gen)***(Middle Level–High School)* 212, Convention Center**Juliana Texley** (*jtexley@att.net*), Palm Beach State College, Boca Raton, Fla.

“Alternative” education takes many forms in districts across the country. Unorthodox behaviors or learning styles make students “square pegs.” Come learn great science for them.

**SESSION 7****Resources and Research for Professional Development Providers (Gen)***(Supervision/Administration)* 213, Convention Center

**Christine A. Royce** (*caroyce@aol.com*), NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

**Laura Ruscetta** (*ruscetta@pcsb.org*), Pinellas County School District, Largo, Fla.

Join members of the Professional Development Committee for a roundtable discussion as they provide short synopses of the current literature and research available in the professional development area.

**SESSION 8****Science Inquiry Projects at the Middle Level (Gen)***(Middle Level)* 214, Convention Center

**Misty J. Nikula**, Whatcom Day Academy, Bellingham, Wash.

Learn how to implement inquiry projects and receive materials from a 12-year veteran.

**SESSION 9****How Does the Melting Pot Become the Salad Bowl? (Gen)***(General)* 304, Convention Center

**Steve Canipe** (*steve.canipe@waldenu.edu*), Walden University, Minneapolis, Minn.

Join me for a discussion about approaches that science teachers can implement so that all diverse students—from language and religion to culture and gender—can learn effectively.

**SESSION 10****Climate Expeditions: Checking Out Your Team****(Earth)***(Middle Level–High School)* 307, Convention Center

**Linda M. Morris** (*linda.m.morris@dartmouth.edu*), Dartmouth College, Hanover, N.H.

**Spruce Schoenemann**, University of Washington, Seattle Partner with ice-drilling scientists or engineers to excite your students with knowledge and skills related to climate change content and careers. Come learn about team-based activities.

**SESSION 11****The Gray Wolf****(Bio)***(Elementary–High School)* 308, Convention Center

**Jerritt L. Johnston** (*jjohnston@wolf.org*), International Wolf Center, Ely, Minn.

The gray wolf continues to be of great interest. Learn more about this animal, its behaviors, and how to bring it alive to your students.

**SESSION 12****STEM, SLCs, and Inquiry****(Gen)***(High School)* 616, Convention Center

**David A. Young** (*dayoung7@gmail.com*), Fayetteville High School, Fayetteville, Ark.

**Michael Odell** (*modell@uttyler.edu*), The University of Texas at Tyler

Find out how the STEM initiative can work to facilitate Small Learning Communities (SLCs) in an inquiry-based science curriculum.

**SESSION 13****Using Performance Assessments to Evaluate Readiness to Learn and Expose Misconceptions (Gen)***(Preschool–Elementary)* 618, Convention Center

**John W. Payne** (*payne\_jw@mercer.edu*), Mercer University, Lithia Springs, Ga.

**Jane M. Metty** (*metty\_jm@mercer.edu*), Mercer University, McDonough, Ga.

Join us for a discussion centered around the use of narrative performance assessments, in which students write or talk about their predictions and conclusions, and how these assessments can be used to identify misconceptions and to assess student readiness to learn certain concepts. Engage in a concept mapping exercise.



### 3:30–4:30 PM Workshops

#### Infect Your Biology Classroom with Math (Bio)

(General) 2A, Convention Center

**Jeff Lukens** ([jeffrey.lukens@k12.sd.us](mailto:jeffrey.lukens@k12.sd.us)), Roosevelt High School, Sioux Falls, S.Dak.

Integrating biology and mathematics shouldn't just be a good idea—it should be the law! Come learn how easy, important, and fun it is to collect and analyze data as a part of good, solid, responsible science education.

#### ACS Session Six: Half-Life (Chem)

(High School) 4C-4, Convention Center

**Jerry A. Bell** ([j\\_bell@acs.org](mailto:j_bell@acs.org)), American Chemical Society, Washington, D.C.

Half-life is familiar as a way of characterizing the decay of radioactive nuclei and using radioactive isotopes as “clocks” to date past events. The concept of half-life is broader than this and applicable to many changes that are easy to explore safely in the classroom. Bring your USB flash drive and take away the presentation and the activities to use in your classes.

#### CESI Session: Council for Elementary Science International Presents Opportunities Galore (Gen)

(Preschool–Middle Level) 211, Convention Center

**Barbara Z. Tharp** ([btharp@bcm.edu](mailto:btharp@bcm.edu)), CESI President, and Baylor College of Medicine, Houston, Tex.

Join CESI and get involved at home and internationally as we share a wealth of ready-to-go resources tailored to the K–8 teacher.

#### ACS Middle Level Session: Chemical Change: Breaking and Making Bonds (Chem)

(Middle Level) 310, Convention Center

**James H. Kessler** ([jhkessler@acs.org](mailto:jhkessler@acs.org)), American Chemical Society, Washington, D.C.

Explore the production of a gas, a precipitate, and changes in temperature as a result of chemical reactions.

#### AAPT Session: Interactive Lecture Demonstrations for Smaller Classrooms (Phys)

(Middle Level–College) 608, Convention Center

**Robert Hobbs**, Bellevue College, Bellevue, Wash.

Emphasis will be placed on how modified interactive lecture demonstrations can capitalize on the increased flexibility and interactivity of the smaller classroom to target specific needs.

#### Addressing Student Misconceptions of the Earth-Sun-Moon System: Moon Phases and Eclipses

(Earth)

(Elementary–High School) 619, Convention Center

**John Gallagher** ([jgalla@wavecable.com](mailto:jgalla@wavecable.com)), Washington Science Teachers Association, Port Angeles

This Washington Science Teachers Association and NASA Space Grant workshop will deepen content knowledge and provide constructivist techniques to help your students truly understand moon phases and eclipses.

#### Stellar Bar Codes (Earth)

(High School) 620, Convention Center

**Donna L. Young** ([donna@aavso.org](mailto:donna@aavso.org)), Chandra E/PO Office, Cambridge, Mass.

**Doug Lombardi** ([lombardi.doug@gmail.com](mailto:lombardi.doug@gmail.com)), Southern Nevada Regional Professional Development Program, North Las Vegas

Use spectra of different types of stars to investigate how the study of spectra provides scientists with important information about stellar temperatures and evolutionary history.

#### National Earth Science Teachers Association (NESTA)

#### Rock and Mineral Raffle (Earth)

(General) Ballroom 6E, Convention Center

**Kimberly Warschaw** ([kimberly\\_warschaw@apsva.us](mailto:kimberly_warschaw@apsva.us)), Wakefield High School, Arlington, Va.

**Roberta Johnson** ([rmjohnsn@nestanet.org](mailto:rmjohnsn@nestanet.org)), National Earth Science Teachers Association, Boulder, Colo.

NESTA offers more than 50 specimens to choose from and a chance to win display-quality specimens of rocks, minerals, fossils, and other Earth science–related materials.

### 3:30–4:30 PM Exhibitor Workshop

#### Investigating Astronomy: NEW Astronomy Textbook Written for High School Students (Earth)

(Grades 9–12) 4C-3, Convention Center

Sponsor: It's About Time

**Gary Curts**, Dublin (Ohio) Public Schools

Developed by the education experts at TERC, *Investigating Astronomy* is the first comprehensive, yearlong astronomy curriculum designed specifically for high school students. Unlike other high school astronomy books that are text heavy and originally developed for college, *Investigating Astronomy* has a dynamic, active learning approach that allows students to explore astronomy topics while conducting hands-on/minds-on investigations.



## 3:30–5:00 PM Featured Panel



## STEM Education for All: A Quixotic Quest or Well Within Reach? (Gen)

(General)

Ballroom 6A, Convention Center



Julia Novy-Hildesley



Brad Smith



Tyler Rice



Matthew Lyons

**Panelists:**

**Brad Smith**, General Counsel and Senior Vice President, Legal and Corporate Affairs, Microsoft Corp., Redmond, Wash.

**Tyler Rice**, NBCT ([trice@mtadams.wednet.edu](mailto:trice@mtadams.wednet.edu)), Washington STEM Entrepreneur Award Recipient and Science Teacher, White Swan High School, White Swan, Wash.

**Matthew Lyons**, Analyst in Technology Practice, Deloitte Development LLC, Seattle, Wash.

Moderator: Julia Novy-Hildesley ([julia@washingtonstem.org](mailto:julia@washingtonstem.org)), Chief Executive Officer, Washington STEM, Seattle

Heckled for his battles with windmills and delusions of grandeur, Don Quixote's quest to become a knight eventually faded into the misty recesses of his addled imagination. Today's quest aims to ensure all students success in science, technology, engineering, and mathematics. What does success for all look like...and what do we really mean by all? Should the quest for excellence and equity in STEM education be abandoned as another impossible dream...or championed and pursued as social and moral imperative?

This featured panel brings together diverse voices to share compelling, personal messages and to explore whether our views about "STEM for all" are consistent with our daily actions.

A reception with the panelists will follow to further extend the dialogue. Don't miss what is sure to be a provocative, stimulating, and memorable conversation on the state of STEM education.



The audience is invited to participate in the discussion by tweeting questions to #STEMforall.

**Julia Novy-Hildesley** is chief executive officer of Washington STEM. Her past and current work is unified by a theme of forging multi-stakeholder partnerships to test new models and extend proven approaches to unleashing innovation.

Julia has lived and conducted research in Madagascar, Tanzania, Bolivia, French Polynesia, and other developing countries. She has consulted for a range of governmental organizations, including the World Bank, United States Agency for International Development and the U.K. Department for International Development, as well as nongovernmental organizations and private sector partners.

**Brad Smith** is Microsoft's general counsel and senior vice president, Legal and Corporate Affairs. He leads the company's Department of Legal and Corporate Affairs, which is responsible for the company's legal work, its intellectual property portfolio and patent licensing business, and its government affairs and philanthropic work. He also serves as Microsoft's corporate secretary and its chief compliance officer.

**Tyler Rice**, NBCT, is a science teacher at White Swan High School, a small public school in a tiny town on the Yakama Indian Nation Reservation in central Washington where he has taught biology, chemistry, and physics. He has created an inquiry-based, project-based, and technology-rich curriculum from the ground up.

Tyler attained National Board certification in 2009 and he has participated in a variety of external grant-funded PD opportunities. This past year, Tyler received a Washington STEM Entrepreneurial Award and an Amgen Award for Science Teaching Excellence.

**Matthew Lyons** is an analyst in the technology practice for Deloitte Consulting LLC in Seattle. He has seen the benefit of STEM education since he began studying cutting-edge technology tools and concepts as a student of the Technology Access Foundation's Technical Teens Internship Program (TTIP) in 2001. At Seattle University, Matt was a recipient of the university's Sullivan Leadership Award and, upon graduation in 2009, was awarded the Archbishop Raymond G. Hunthausen Award, the university's highest honor.

### 4:00–5:15 PM Exhibitor Workshops

#### Using the OHAUS Triple Beam Balance™ as a STEM-focused Skill Platform (Gen)

(Grades 5–10) 605, Convention Center

Sponsor: Ohaus Corp. and Frey Scientific

#### Frey Scientific and Neo/SCI

Have an opportunity to learn about STEM education and how to integrate the OHAUS Triple Beam balance in building a critical STEM-focused skill like measuring! Learn how to use STEM-based virtual labs and bench activities to enhance student learning! By performing a STEM-focused activity, participants will learn how to integrate STEM-focused measuring, balance theory, and data analysis skills into their curriculum. All participants receive a FREE OHAUS Triple Beam sampler containing STEM activities and one person will receive a FREE OHAUS Triple Beam Balance.

#### From Science to Engineering (Gen)

(Grades K–8) 609, Convention Center

Sponsor: Pearson

**Kathryn Thornton**, University of Virginia, Charlottesville  
Typical science activities focus on demonstrating a science concept whereas engineering focuses on solving a problem. Brainstorm ideas on how to extend your science activities into engineering design.

#### Introduction to Wisconsin Fast Plants® (Bio)

(Grades K–12) 611, Convention Center

Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

Small, fast-growing Wisconsin Fast Plants (35- to 40-day generation cycle) are ideal classroom tools for exploring variation and life cycle. Learn how to plant and germinate seeds, and about plant growth/development, flower dissection, and hand pollination. These interdisciplinary science materials offer opportunities for student inquiry and learning. Samples included.

#### Living By Chemistry: What Shape Is That Smell?

(Chem)

(Grades 9–12) 613/614, Convention Center

Sponsor: Key Curriculum Press

**Jeffrey Dowling** ([jdowling@keypress.com](mailto:jdowling@keypress.com)), Key Curriculum Press, Emeryville, Calif.

Teach rigorous chemistry with guided inquiry! Let's explore activities that help students understand molecular structure and other core chemistry concepts using the context of smell. Take home free sample lessons and materials from the *Living By Chemistry* curriculum.

#### Teaching About the Rock Cycle and Earth Time (Earth)

(Grades 4–8)

615, Convention Center

Sponsor: Lab-Aids, Inc.

**Mark Koker**, Lab-Aids, Inc., Ronkonkoma, N.Y.

Do your middle level students have trouble with complex concepts like the rock cycle and geologic time? Come experience motivating hands-on techniques and strategies for learning about these and related topics, like plate tectonics and continental drift. Support for literacy and technology will be addressed.

#### Teaching Science with Toys and Treats! (Gen)

(Grades 3–11)

Ballroom 6C, Convention Center

Sponsor: McGraw-Hill School Education Group

**Ralph Feather, Jr.**, Bloomsburg University, Bloomsburg, Pa.

Learn fun, practical, and engaging hands-on teaching ideas using toys and treats. Everyone is a winner—with strategies that you can use immediately. The positive reputation of this workshop precedes itself.



**4:00–5:30 PM Exhibitor Workshop****Chemistry and the Atom: Fun with Atom Building Games! (Phys)***(Grades 6–12) 607, Convention Center*

Sponsor: CPO Science/School Specialty Science

**Patsy Eldridge**, CPO Science/School Specialty Science, Nashua, N.H.

Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop, you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

**5:00–6:00 PM Presentations****SESSION 1****Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (Chem)***(High School) 203, Convention Center***Kenetia Thompson** and **Michael T. Mury** (*m\_mury@acs.org*), American Chemical Society, Washington, D.C.

Looking to fund your innovative ideas? We will give you pointers for writing a fundable proposal and share grant opportunities from the American Chemical Society.

**SESSION 2****NSTA Avenue Session: America's Home Energy Education Challenge (Env)***(Elementary–Middle Level) 205, Convention Center***Ray Ann Havasy**, Center for Science Teaching and Learning, Rockville Centre, N.Y.

Sponsored by the U.S. Department of Energy and administered by NSTA, the America's Home Energy Education Challenge is designed to educate grades 3–8 students about energy usage and energy efficiency and engage students and their families in a save energy, save money campaign. Learn about energy-efficiency resources available to schools, teachers, students, and families and find out how your students can earn an Energy Fitness Award from the U.S. Secretary of Energy.

**SESSION 3****SIOP Strategies and Classroom Instruction (Gen)***(Elementary–High School) 212, Convention Center***Chelsea R. Coleman** (*blufish09@yahoo.com*), Heide Trask High School, Rocky Point, N.C.

Emphasis will be placed on research showing correlation

between effective Sheltered Instruction Observation Protocol (SIOP) strategies and student performance based on assessments. Share your input on how these strategies can fit into your science instruction.

**SESSION 4****Presidential Awards for Excellence in Mathematics and Science Teaching (Gen)***(General) 213, Convention Center***Nafeesa Owens** (*nowens@nsf.gov*), National Science Foundation, Arlington, Va.

Come see how you can win a paid trip to Washington, D.C.; receive a citation signed by the President of the United States; and win \$10,000!

**SESSION 5****I See What You Mean! Developing Visual Literacy (Gen)***(Elementary–Middle Level) 214, Convention Center***JoAnne Vasquez** (*jvasquez@helios.org*), 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.

Interpreting and understanding the visuals and illustrations students encounter in their science textbooks is more than just luck. See what the current research says and experience new instructional strategies.

**SESSION 6**

**Building Effective Classroom Chemistry: It's About the Elements!** (Gen)

(Elementary–High School) 304, Convention Center

**Presenter to be announced**

Come learn five simple, fair, and mutually respectful management elements that create an amazing classroom chemistry where increased instruction and engaged learning thrive!

**SESSION 7**

**Student Analysis of NASA Images and Data via Free/Open-Source Resources** (Earth)

(Middle Level–High School) 307, Convention Center

**Susan Kelly**, NASA Education Ambassador, Bridgewater, Conn.

See application of free and open-source software for engaging and effective student analysis of NASA Earth and space images and data. Tutorials and sample student work will be provided.

**SESSION 8**

**Answering the Call to Innovate in STEM** (Gen)

(General) 616, Convention Center

**Ann F. Wright-Mockler** ([ann.wrightmockler@pnl.gov](mailto:ann.wrightmockler@pnl.gov)), Pacific Northwest National Laboratory, Richland, Wash.

Want to respond to all the recommendations to innovate, but not sure how? We will consider how to get ideas and implement them, including working with community partners.

**SESSION 9**

**Applying New Brain Research to Best Practices in Science: Reaching ALL Learners** (Gen)

(General) 618, Convention Center

**Bobbi Hansen** ([chansen@sandiego.edu](mailto:chansen@sandiego.edu)), University of San Diego, Calif.

This session will showcase powerful Best Practice science teaching strategies, supported by new research on the brain, to reach ALL learners.



**5:00–6:00 PM Workshops**

**A Journey from Sea to Market: Exploring Sustainable U.S. Seafood** (Bio)

(Middle Level–High School) 2A, Convention Center

**Rebecca F. Reuter** ([rebecca.reuter@noaa.gov](mailto:rebecca.reuter@noaa.gov)), NOAA National Marine Fisheries Service, Seattle, Wash.

**Sarah C. Johnson** ([sjohnson@seattletimes.com](mailto:sjohnson@seattletimes.com)), *The Seattle Times*, Seattle, Wash.

Presenter: Rebecca F. Reuter.

This workshop will introduce a five-part series that teaches about the complex process of how U.S. seafood gets to market, why seafood is important, seafood safety, and how science is used to make management decisions. The workshop will have activities that link to key scientific and management challenges within the series.

**Stem Cells: Science and Ethics** (Bio)

(Middle Level–College) 3A, Convention Center

**Jeanne T. Chowning** ([jchowning@nwabr.org](mailto:jchowning@nwabr.org)), Northwest Association for Biomedical Research, Seattle, Wash.

**Jodie Spitze** ([jodie.spitze@kent.k12.wa.us](mailto:jodie.spitze@kent.k12.wa.us)), Kent-Meridian High School, Kent, Wash.

Explore the scientific and ethical implications of embryonic stem cell research using engaging hands-on activities from our popular curriculum. Receive the unit free on CD.

**Bring Literacy and Science Together: “B.L.A.S.T.”© for Success at School and Home (Gen)***(Elementary)* 201, Convention Center

Renee G. O’Leary, Holy Angels School, Newark, Del.

Peggy Vavalla, DuPont, Wilmington, Del.

Discover simple, multisensory, hands-on elementary (grades 2–5) explorations using fairy tales as catalysts with take-home and language arts follow-up. Receive sample plans and materials.

**Using Readers Theater to Improve Science Instruction and Learning (Gen)***(Preschool–Middle Level)* 206, Convention Center

Michelle K. Tucker, Academy International, Colorado Springs, Colo.

Science instruction through Readers Theater can merge reading instructional strategies with science education. Let’s discuss how implementing proven reading strategies may produce dynamic results in science instruction.

**What Are They Thinking? Formative Assessments Reveal Students’ Thoughts (Gen)***(General)* 617, Convention CenterKristin L. White ([kristin.white@evergreenps.org](mailto:kristin.white@evergreenps.org)), Evergreen Public Schools, Vancouver, Wash.

Emphasis will be placed on formative assessment probes as an assessment strategy to answer: How do we know what they know? What are they thinking?

**9:00–10:00 PM Meeting****WSTA Board Meeting***Metropolitan A, Sheraton*



—Photo courtesy of Tim Thompson, Seattle's Convention and Visitors Bureau



## 7:00–8:30 AM Breakfast

### WSTA/OSTA Awards Breakfast (M-4)

(Tickets Required: \$50)

*Cirrus Ballroom, Sheraton*

Plan to join your colleagues from WSTA and OSTA in this joint celebration as we honor our outstanding science teachers of the year.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 12 Noon on Friday.



## 8:00–9:00 AM Presentations

### SESSION 1

#### Virtual Worlds: Exploring the Natural World Through “The Cloud” (Gen)

(Elementary–High School)

*2B, Convention Center*

**Juliana Texley** (*jtexley@att.net*), Palm Beach State College, Boca Raton, Fla.

For millions of children, a virtual world replaces the natural part of every day. There they inquire, explore, and grow. Visit and use their worlds for science.

### SESSION 2

#### Using Science Stories to Teach Chemistry (Chem)

(High School)

*203, Convention Center*

**Marta Gmurczyk** (*m.gmurczyk@gmail.com*) and **Michael J. Tinnese** (*mjtinnese@gmail.com*), American Chemical Society, Washington, D.C.

Join us as we examine how magazine articles about science can be used to help students understand basic chemistry concepts and enrich their ability to apply what they have learned to everyday life.

### SESSION 3

#### Managing Your Own Professional Development

(Gen)

(General)

*211, Convention Center*

**Ann F. Wright-Mockler** (*ann.wrightmockler@pnl.gov*), Pacific Northwest National Laboratory, Richland, Wash.

Come learn about various professional development possibilities, including National Board Certification and teacher research experience internships...and how to locate even more.

### SESSION 4

#### Be a NOAA Teacher at Sea!

(Gen)

(General)

*213, Convention Center*

**Lindsay Knippenberg** (*lindsay.knippenberg@noaa.gov*), Einstein Fellow, NOAA, Washington, D.C.

NOAA's Teacher at Sea Program provides all teachers with the opportunity of working with scientists on board a NOAA research ship. Come learn how to apply and participate.

### SESSION 5

#### MY NASA DATA: Using Earth Systems Data Visualization in the Classroom (Earth)

(Elementary–High School)

*214, Convention Center*

**Denise Thompson** (*thompsond@orting.wednet.edu*), NASA Ambassador and Solar Exploration Educator, Orting, Wash. Learn how to engage your students in using MY NASA DATA as a data visualization tool for NASA Earth Systems satellite data. Plenty of handouts!

### SESSION 6

#### Promoting Critical Thinking in the 21st-Century Classroom (Gen)

(Elementary–High School)

*307, Convention Center*

**Fa M. Fairbank** (*faj@school.saintbrendan.org*), St. Brendan Catholic School, Bothell, Wash.

Walk away with strategies for engaging and motivating students through Socratic Dialogue and Choice Theory and for developing and using formative and summative rubrics.

SESSION 7

**Using Improv Comedy to Stimulate Learning (Bio)**  
(High School) 308, Convention Center

**Dan P. Downs** (Winter Park High School, Winter Park, Fla. Learn how to use improv comedy techniques to stimulate student learning and memory while having fun at the same time.

SESSION 8

**Green Sustainable Design and Technology Courses for the 21st Century (Env)**

(General) 616, Convention Center  
**Mike Town** (*mtown01@msn.com*), Lake Washington School District, Redmond, Wash.

**Gilda K. Wheeler** (*gilda.wheeler@k12.wa.us*), Office of Superintendent of Public Instruction, Olympia, Wash.

Join us for an exploration of cross-credited science/Career and Technical Education (CTE) courses and sustainability education standards. We'll share curriculum, student sustainability contests, and federal grants to initiate similar courses.

8:00–9:00 AM Workshops

**You Don't Know Beans About Beans (Bio)**  
(Elementary–High School) 2A, Convention Center

**Mark Watrin** (*mark.watrin@esd112.org*), Educational Service District 112, Vancouver, Wash.

Explore the full potential of using dry beans in your classroom, focusing on fun and friendly ways to teach the big idea of biological evolution.

**The Study of Rare Diseases: A New Approach to Teaching Scientific Inquiry in Middle School**

(Bio)  
(Middle Level) 3A, Convention Center

**Dave Vannier** (*vannierd@od.nih.gov*), National Institutes of Health, Rockville, Md.

Experience inquiry-based activities that use the study of rare diseases to engage middle school students in heredity and scientific inquiry.

**Promoting Scientifically Literate and Socially Aware Students (Gen)**

(General) 3B, Convention Center

**Adrienne M. Metcalfe**, Perspectives Charter School, Rodney D. Joslin Campus, Chicago, Ill.

Do you need free and exciting ideas to get all of the learners in your classroom scientifically literate? Then this is the workshop for you!



**NSTA Press Session: Picture-Perfect Science Lessons, Grades K–4 (Gen)**

(Elementary) 204, Convention Center

**Emily R. Morgan** (*emily@pictureperfectscience.com*), Picture-Perfect Science, West Chester, Ohio

**Karen Ansberry** (*karen@pictureperfectscience.com*), Mason (Ohio) City Schools

Learn how to use picture books to guide inquiry in the primary classroom.

**Reading and Writing Science Using Polymer Activities (Gen)**

(Elementary–Middle Level) 303, Convention Center

**Cora S. Salumbides** (*cora\_salumbides@yahoo.com*), Jefferson Union High School District, Daly City, Calif.

Discover exciting polymer activities that correspond to selected children's literature. The final activity will be the creation of students' own books.

 **Engaging English Language Learners and Striving Readers with Science Content Through Global Issues** (Env)

(Middle Level–High School) 617, Convention Center

**Dave Wilton** ([dave@facingthefuture.org](mailto:dave@facingthefuture.org)), Facing the Future, Seattle, Wash.

Invigorate your lessons with hands-on activities using global issues as themes. Develop sophisticated math, science, and literacy skills in your students to assist them in understanding complex issues and communicating orally and in writing. Free teacher's guide!

**Inquiry in Action** (Chem)

(Elementary) 619, Convention Center

**Patti M. Galvan** ([p\\_galvan@acs.org](mailto:p_galvan@acs.org)), American Chemical Society, Washington, D.C.

Explore characteristic physical properties of four similar-looking household liquids. Then as a final challenge, identify four unknowns. Take home explanations of observations and a handout of all activities.

**8:00–9:15 AM Exhibitor Workshops**

**Destructive Forces of Nature: Earthquakes** (Earth)

(Grades K–8) 609, Convention Center

Sponsor: Pearson

**Michael Wyession**, Washington University in St. Louis, Mo.

Earthquakes are fascinating phenomena—dramatic and exciting. Many fear them because they are deadly and unpredictable. Scientists are drawn to them because of the important role they play in discovering how our planet works. Join us as Michael Wyession, a Pearson author and world-renowned seismologist, gives an exciting account of what we know about earthquakes and answers any questions you may have.

**Diagnosing Diabetes** (Bio)

(Grades 6–College) 612, Convention Center

Sponsor: Science Take-Out

**Susan Holt** ([contact@sciencetakeout.com](mailto:contact@sciencetakeout.com)), Science Take-Out, Pittsford, N.Y.

Follow the real-life case of a young woman with diabetes. Conduct a simulated glucose tolerance test to determine if the patient has Type 1 or Type 2 diabetes. This hands-on Science Take-Out kit introduces students to concepts involved in homeostasis and the regulation of insulin and glucose levels.

**NIH Science Education Partnership Award West Coast Alliance** (Bio)

(Grades 7–College) 613/614, Convention Center

Sponsor: NIH Science Education Partnership Award West Coast Alliance

**Jeanne T. Chowning** ([jchowning@nwabr.org](mailto:jchowning@nwabr.org)), Northwest Association for Biomedical Research, Seattle, Wash.

Sponsored by the National Institutes of Health, the Science Education Partnership Award (SEPA) program funds grants for innovative educational programs creating partnerships among biomedical and clinical researchers with K–12 teachers and schools. Join us and walk away with teaching resources from West Coast SEPA programs and the NIH Office of Science Education.

**Teaching About Hydrogen Fuel Cells** (Env)

(Grades 7–12) 615, Convention Center

Sponsor: Lab-Aids, Inc.

**John Howarth**, Lawrence Hall of Science, University of California, Berkeley

Explore SEPUP's new module, *Introduction to Alternative Energy: Hydrogen Fuel Cells*, which teaches chemistry standards such as conservation of energy, stoichiometry, and redox reactions around the issue of using hydrogen fuel cells for transportation. Take home a SEPUP activity on fuel cells appropriate for high school chemistry or environmental science.

### 8:00–9:30 AM Exhibitor Workshop

#### Bio-Rad—Light Up Your Classroom with Prize-winning GFP! (AP Biology Lab 6) (Bio)

(Grades 9–College) 610, Convention Center

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*biotechnology\_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

What happens when you cross a jellyfish with *E. coli*? You create your own pGLO green glowing bacteria! By the end of this workshop you'll become a genetic engineer—modifying genes and transforming bacteria with the Green Fluorescent Protein (GFP). See purified GFP from transformed bacteria via a biomanufacturing process—chromatography. Take home a free lab-prep DVD!

### 8:30–11:00 AM Science Matters Community Event

*Exhibit Hall, Convention Center*

Bring science to life for your students and children with the folks that do it best! NSTA is hosting a FREE community event to electrify parents, teachers, and students about the exciting world of science.

Science Matters is NSTA's newest initiative designed to rekindle a national sense of urgency and action among schools and families about the importance of science education. During this FREE community event for elementary teachers, parents, school officials, and students, we'll engage in exciting hands-on activities and discover new ways to bring science to life for students and children.

Presenters include numerous Washington-based science organizations such as the Museum of Flight and the Pacific Science Center. Also featured are many nationally recognized presenters and organizations, including Jason Lindsey of Hooked On Science, Sharon Bowers of the National Institute of Aerospace, and representatives from Educational Innovations and NOAA.

Visit [www.nsta.org/sciencematters](http://www.nsta.org/sciencematters) for more information.

### 9:00 AM–12 Noon Exhibits

*Hall 4B, Convention Center*

Come see the most up-to-date science textbooks, software, equipment, and other teaching materials. Some exhibitors will offer materials for sale.

### 9:00 AM–3:00 PM Meeting

#### Council of State Science Supervisors Regional Meeting

*(By Invitation Only)*

*Alki Boardroom, Sheraton*

### 9:30–10:30 AM Presentations

#### SESSION 1

##### CSI Web Adventures

*(General)*

**(Bio)**

*2B, Convention Center*

**Kristi G. Bowling** (*kmg4@rice.edu*) and **Lynn Lauterbach** (*lynnlauterbach@gmail.com*), Rice University, Houston, Tex. Engage students in technology, teach forensic science, and encourage STEM careers. Developed with CBS and the American Academy of Forensics, this free award-winning website provides rookie training plus cases for students to solve. Handouts!

#### SESSION 2

##### A Cytopeian Adventure: Bringing Flow Cytometry to the High School Classroom **(Bio)**

*(High School)*

*3B, Convention Center*

**Jeffrey M. Shaver** (*jmshaver@seattleschools.org*), Cleveland High School, Seattle, Wash.

**Tami Caraballo** (*tami.caraballo@sno.wednet.edu*), Glacier Peak High School, Snohomish, Wash.

Presider: MaryMargaret Welch, Seattle (Wash.) Public Schools

A flow cytometer is a versatile fluorescence-based laboratory instrument that characterizes individual cells or particles flowing in a stream of liquid. Come learn about three proposed applications of this technology for students and teachers, including testing water quality, using beads of different sizes and fluorescence as surrogates for immune cells, and determining optimal growing conditions of cyanobacteria for maximum production of biofuels.

#### SESSION 3

##### Basic Polymer Chemistry for the High School Classroom **(Chem)**

*(High School)*

*203, Convention Center*

**Andrew G. Nydam** (*andrewnydam@hotmail.com*), Olympia High School, Olympia, Wash.

**Debbie Goodwin** (*nywin@hotmail.com*), Chillicothe High School, Chillicothe, Mo.

Simple demonstrations, labs, and activities bring polymers into your curriculum and make it relevant. Concepts include formation, classification, structure, and properties. Handouts!

## SESSION 4

**Kindergarten Science Engagement for Inquiry Lessons (Gen)***(General)* 213, Convention Center**Andrea Zdinak Andretta** (*aandretta5@optonline.net*), Jefferson Science Magnet School, Norwalk, Conn.**Zackery Zdinak** (*wildlife@lifedraw.com*), Life Drawing & Education, Flagstaff, Ariz.

Kindergartners are easily engaged. Join us as we look at how the inquiry process is accessible to these young learners, beginning with a planned engagement lesson.

## SESSION 5

**Sustainability Education as a Core Concept in Elementary Science Instruction (Env)***(General)* 214, Convention Center**Grinell Smith** (*grinell@gmail.com*) and **Colette Rabin** (*colette.rabin@sjsu.edu*), San Jose State University, San Jose, Calif.

Researchers introduce sustainability education as a core concept in a preservice elementary science methods course to motivate elementary teachers to increase their science instructional time.

## SESSION 6

**Award-winning Inquiry Lab Activities for High School Biology (Bio)***(High School)* 308, Convention Center**Ron Thompson** (*thompsonron@me.com*), Mercer Island, Wash.


Learn how to conduct three high-interest lab activities that give students experience in hypothesis formation, experimental design, data collection, and interpretation.

## SESSION 7

 **Science Learning Progressions: Good News and Cautions (Phys)***(General)* 617, Convention Center**Richard J. Shavelson** (*richs@stanford.edu*), Stanford University, Stanford, Calif.

Learning progressions as orderly content sequences can guide curriculum, teaching, and assessment construction. Progressions as orderly cognitive-activity sequences can mislead—exercise caution.

## SESSION 8

 **Science and Writing: Documented Success in Increasing Achievement of Diverse Learners in Both Domains (Gen)***(Elementary)* 618, Convention Center**Betsy Rupp Fulwiler**, Seattle (Wash.) Public Schools

Through video, mini-lessons, and discussion, learn research-based strategies for using visual, oral, and written scaffolding to increase all students' achievement in science and scientific writing.

## 9:30–10:30 AM Workshops

**Hands-On/Minds-On Science: Using Interactive White Boards and Hands-On Activities to Reach All Learners (Gen)***(General)* 2A, Convention Center**Maribeth Lowe** (*mlowe@greencountyschools.com*) and **Leah Talbert** (*ltalbert@greencountyschools.com*), William Monroe High School, Stanardsville, Va.

Join us for an exciting, interactive presentation demonstrating how the use of high-tech and low-tech materials can give your students the best learning experience.

**Using Hands-On Lessons to Promote Good Global Citizenship (Env)***(Preschool–Middle Level)* 3A, Convention Center**Julianne Schrader** (*jschrader@ra.org*), Rainforest Alliance, New York, N.Y.

Join us in practicing Rainforest Alliance's dynamic activities that help students build environmental values and understand the powerful role we play in protecting natural resources.

**Sniff Trails: Engaging the Senses to Learn About Wildlife (Gen)**

(Preschool–Middle Level/Informal) 201, Convention Center  
**Emily M. Ford** (*emilyford@virginia.edu*), University of Virginia, Boyce

Sniff trails are an engaging, kinesthetic way to teach your students about wildlife and to develop observational skills. Make your own trail for your classroom.

**Drop the Lecture and Let the Students Pick Up the Learning in Environmental Science (Env)**

(High School) 206, Convention Center  
**Kristen R. Dotti** (*kristen\_dotti@yahoo.com*), Christ School, Arden, N.C.

Using a game of chance to simulate island biogeography, an “Olympic” committee to judge water quality, and a biogeochemical cycle group challenge, this session will add several new activities to your bag of tricks for teaching in-depth Advanced Placement Environmental Science (APES) topics in an engaging and memorable manner.

**Collaborating and Curricula for Teaching Systems Biology (Gen)**

(Middle Level–High School) 211, Convention Center  
**Claudia Ludwig** (*cludwig@systemsbiology.org*), Institute for Systems Biology, Seattle, Wash.

**Mari K. Herbert** (*knutsonm@lynden.wednet.edu*), Lynden High School, Lynden, Wash.

Learn about opportunities to bring interdisciplinary systems biology and thinking to your life and your high school physical science students through curricula and internships. Hands-on exploration of materials.

**MoonKAM (Moon Knowledge Acquired by Middle School Students): Exploring Lunar Images (Earth)**

(Middle Level) 619, Convention Center  
**Leesa Hubbard** (*astro poet@aol.com*), Sally Ride Science, San Diego, Calif.

**Julie Miller** (*jmillerirc@olatheschools.com*), Olathe (Kans.) Public Schools USD 233

Learn about the exciting Gravity Recovery and Interior Laboratory (GRAIL) mission to Earth’s Moon, how students can take pictures with MoonKAM cameras, and what imagery of the lunar surface can teach us about the Moon’s history, composition, and role in our solar system. Try some hands-on lunar science activities.

**10:00–11:00 AM Exhibitor Workshop**

**Creating a Biotechnology Skills Course with Bio-Rad and Author J. Kirk Brown (Bio)**

(Grades 9–College) 610, Convention Center  
Sponsor: Bio-Rad Laboratories

**Sherri Andrews** (*biotechnology\_explorer@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Empower your students to become tomorrow’s leaders by giving them the skills they need to become independent thinkers. Learn how to set the foundation of your program with equipment, supplies, and Bio-Rad’s new lab textbook, *Biotechnology: A Laboratory Skills Course* by J. Kirk Brown. Hear words of wisdom from model biotech programs and learn how to prepare students with career and college-ready skills.

**10:00–11:15 AM Exhibitor Workshop**

**Teaching English Language Learners in the Science Classroom: Collaboration, Co-teaching, and Coaching (Gen)**

(Grades 3–8) 609, Convention Center  
Sponsor: Pearson

**Bonnie E. Baer-Simahk** and **Patricia Page-Aube**, Fitchburg (Mass.) Public Schools

Join us as we share research-based practices that have been successfully implemented in a linguistically diverse urban school district, resulting in improved achievement of ELLs. Take home a sample lesson, models for co-teaching, characteristics of a sheltered science class, and access to a free online curriculum design tool. Get tools to start your own initiatives.





**11:00 AM–12 Noon Presentations****SESSION 1****Become an Einstein Fellow (Gen)***(General)* 203, Convention Center

**Kathryn G. Culbertson** ([culbertsonk@triangle-coalition.org](mailto:culbertsonk@triangle-coalition.org)), Triangle Coalition for Science and Technology Education, Arlington, Va.

Get the details about an 11-month paid fellowship program open to K–12 classroom teachers in a STEM field who have been teaching for at least five years. You could become an Einstein Fellow!

**SESSION 2****Measuring Change in Teachers' Formative Assessment Attitudes and Practice (Gen)***(Middle Level–High School/Supv.)* 212, Convention Center

**Gloria Ferguson** ([gloria.ferguson@esd112.org](mailto:gloria.ferguson@esd112.org)), Educational Service District 112, Vancouver, Wash.

**Cathleen A. Kennedy** ([cathy@kacgroup.com](mailto:cathy@kacgroup.com)), KAC Group, San Carlos, Calif.

Explore promising tools that triangulate teacher self-report, classroom observation, and student data to measure change in teachers' attitudes and practice of formative assessment.

**SESSION 3****Partnerships Enhancing Informal Marine Science Learning Opportunities for Students (Env)***(Informal Education)* 213, Convention Center

**Ruth McDonald** ([ruth.mcdonald@lincoln.k12.or.us](mailto:ruth.mcdonald@lincoln.k12.or.us)) and **Amy Calavan**, Lincoln County School District, Newport, Ore.  
**Mary Beth Guerena** ([marybeth.guerena@lincoln.k12.or.us](mailto:marybeth.guerena@lincoln.k12.or.us)) and **Matt Falby** ([matt.falby@lincoln.k12.or.us](mailto:matt.falby@lincoln.k12.or.us)), Oceanlake Elementary School, Lincoln City, Ore.

**Tracy Crews** ([tracy.crews@oregonstate.edu](mailto:tracy.crews@oregonstate.edu)), Hatfield Marine Science Center, Oregon State University, Newport

**Kama Almasi**, Isaac Newton Magnet School, Newport, Ore.

**Kristin Becker** ([kristin.becker@lincoln.k12.or.us](mailto:kristin.becker@lincoln.k12.or.us)), Toledo Elementary School, Newport, Ore.

Lincoln County Schools, Oregon State University, Oregon Sea Grant, and Oregon Coast Aquarium share strategies from their successful partnership. This partnership successfully trains teachers and provides high-quality, standards-aligned, engaging marine science learning for K–12 students.

**SESSION 4****NASA's High-Energy Vision: Chandra and the X-ray Universe (Earth)***(General)* 214, Convention Center

**Donna L. Young** ([donna@aavso.org](mailto:donna@aavso.org)), Chandra E/PO Office, Cambridge, Mass.

**Doug Lombardi** ([lombardi.doug@gmail.com](mailto:lombardi.doug@gmail.com)), Southern Nevada Regional Professional Development Program, North Las Vegas

Listen to the latest discoveries from NASA's Chandra X-ray Observatory—including massive black holes, neutron stars, supernovae events, stellar evolution, colliding galaxies, and dark matter.

**SESSION 5****The Magic Web: Integrating Outstanding Trade Books (Gen)***(Elementary–High School)* 307, Convention Center

**Juliana Texley** ([jtexley@att.net](mailto:jtexley@att.net)), Palm Beach State College, Boca Raton, Fla.

Breaking News! Learn which trade books have won the title “Outstanding” for the coming year from NSTA and how to use them in an integrated program.

**SESSION 6****Don't Be Scared of Primary Literature: Explore Science Through Experimental Design (Bio)***(High School–College)* 308, Convention Center

**Bryan D. White** ([bwhite@uwb.edu](mailto:bwhite@uwb.edu)), University of Washington, Bothell.

**Jenny Phillips** ([phillipsj@bellarmineprep.org](mailto:phillipsj@bellarmineprep.org)), Bellarmine Preparatory School, Tacoma, Wash.

Join us as we present science cases based on primary literature that explore a compelling phenomenon and ask students to make observations, form hypotheses, and design experiments.


**SESSION 7****Teach Science Content and Inspire STEM Careers with FREE Online Web Adventures (Gen)***(Middle Level–High School)* 616, Convention Center

**Yvonne Klisch** ([yvonne.klisch@rice.edu](mailto:yvonne.klisch@rice.edu)) and **Lynn Lauterbach** ([lynnlauterbach@gmail.com](mailto:lynnlauterbach@gmail.com)), Rice University, Houston, Tex.

Spark your students' interest in STEM careers with interactive simulations of real jobs in science.



SESSION 8

 **A Learning Progression-based System for Promoting Understanding of Carbon-transforming Processes** (Gen)

(General) 618, Convention Center

**Daniel J. Gallagher** ([gallagherd@bsd405.org](mailto:gallagherd@bsd405.org)), Bellevue (Wash.) School District.

Join a discussion of how learning progressions can aid teaching, focusing on the development of a learning progression-based suite of tools for understanding carbon-transforming processes.

**11:00 AM–12 Noon Exhibitor Workshop**

**Bio-Rad—Protein Expression and Purification Series** (Bio)

(Grades 11–College) 610, Convention Center

Sponsor: Bio-Rad Laboratories

**Sherri Andrews** ([biotechnology\\_explorer@bio-rad.com](mailto:biotechnology_explorer@bio-rad.com)), Bio-Rad Laboratories, Hercules, Calif.

From biomanufacturing industrial enzymes to cancer therapy, protein purification is essential! Make teaching the core process of protein expression and purification easy. Experience this new hands-on affinity purification series that provides an adaptable set of techniques and content to match the goals of the beginning protein educator up to an advanced college-level course.

**11:00 AM–12 Noon Workshops**

**Teaching Energy Conservation with an Emphasis on Biofuels** (Gen)

(Elementary–Middle Level) 2A, Convention Center

**Sue Kral** ([spk@cdfun.org](mailto:spk@cdfun.org)) and **Wayne Robinson** ([jwr@cdfun.org](mailto:jwr@cdfun.org)), Creative Discovery Museum, Chattanooga, Tenn.

Connecting environmental issues to the National Science Education Standards and current research, this session focuses on inquiry-based activities explaining biofuels as a future energy source.

**Oceanography: Dynamics of Water Movement** (Gen)

(High School–College/Informal) 201, Convention Center

**Marta C. Branch**, Orcas Island School District, Eastsound, Wash.

**Sylvia Yang** ([sy3@uw.edu](mailto:sy3@uw.edu)), University of Washington, Seattle

Experience classroom laboratory setups that model the tides, currents, and wave interaction that fuel the movement of ocean waters. K–12 lessons can be used with both alternative and traditional classrooms. Applications will be discussed.

**Modeling Populations** (Env)

(Middle Level–High School) 211, Convention Center

**Jacklyn Bonneau** ([bonneau@wpi.edu](mailto:bonneau@wpi.edu)), Massachusetts Academy of Mathematics & Science, Worcester

Population growth is an environmental concern that students can easily explore and model. Let's explore graphical representations and models as well as additional factors.

**STEM Careers: Connections with Climate Change Scientists** (Gen)

(Elementary) 617, Convention Center

**Adele Schepige** ([schepia@wou.edu](mailto:schepia@wou.edu)) and **William Schoenfeld** ([schoenfeldw@wou.edu](mailto:schoenfeldw@wou.edu)), Western Oregon University, Monmouth

**Susan R. McWilliams** ([smcw@bendcable.com](mailto:smcw@bendcable.com)), Lewis and Clark College, Portland, Ore.

This session will include hands-on scientific inquiry activities for K–5 students based on children's books about climate change scientists and their research.

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

Biology/Life Science	B
Chemistry/Physical Science	C
Earth/Space Science	EA
Environmental Science	EN
Integrated/General Science	G
Physics/Physical Science	PH
Professional Development	PD
Technology Education	T



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A foldout floor plan of the Exhibit Hall is available at Program Pickup.



**3D Molecular Designs & MSOE Center for BioMolecular Modeling** #223  
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4–12, College  
1050 N. Market, Suite CC130A  
Milwaukee, WI 53202  
Phone: 414-774-6562  
E-mail: [herman@msoe.edu](mailto:herman@msoe.edu)  
Website: [www.3dmoleculardesigns.com](http://www.3dmoleculardesigns.com)

See our new and improved products and customers' favorites: Water Kit, DNA Discovery Kit, Amino Acid Starter Kit, Paper Bioinformatics, and protein folding kits. 3D Molecular Designs and MSOE Center for BioMolecular Modeling (CBM) collaborate to provide molecular models and professional development. CBM involves educators in designing physical molecular models and supporting curricula.

**American Chemical Society** #313  
C, G  
K–12, College  
1155 16th St. NW  
Washington, DC 20036  
Phone: 202-872-6269  
E-mail: [p\\_isikoff@acs.org](mailto:p_isikoff@acs.org)  
Website: [www.acs.org](http://www.acs.org)

The American Chemical Society (ACS) is the world's largest scientific society. ACS will exhibit textbooks, reference materials, videos, and other materials to supplement the K–12 and college curricula. ACS will also provide information on programs for students and teachers.

**American Lab Design** #600  
B, C, EA, PH  
PO Box 2351  
Daytona Beach, FL 32114  
Phone: 800-494-3237  
E-mail: [mikelee.inc@gmail.com](mailto:mikelee.inc@gmail.com)  
Website: [www.americanlabdesign.com](http://www.americanlabdesign.com)

**American Nuclear Society** #511  
G  
4–12  
555 N. Kensington Ave.  
La Grange Park, IL 60526  
Phone: 708-352-6611  
E-mail: [tbishop@ans.org](mailto:tbishop@ans.org)  
Website: [www.ans.org](http://www.ans.org)

The American Nuclear Society (ANS) exhibit offers teachers free, classroom-ready resources for teaching about nuclear science and technology. Educators may preview teacher handbooks offered through ANS teacher workshops and receive sample copies of the ANS teacher newsletter "ReActions."

**American Society for Engineering Education—eGFI (Engineering, Go For It!)** #611  
All  
All  
1818 N St. NW  
Washington, DC 20036  
Phone: 202-331-3502  
E-mail: [d.cummings@asee.org](mailto:d.cummings@asee.org)  
Website: [www.egfi-k12.org](http://www.egfi-k12.org)

Introduce your class to engineering with eGFI (Engineering, Go For It!), the K–12 outreach program from the American Society for Engineering Education (ASEE), which includes free STEM lessons, class activities, an award-winning magazine and website, fun cards for the classroom, a brand-new picture book, and affordable teacher kits.

**Anatomy** #623  
B  
College  
911 Adelaine Ave.  
South Pasadena, CA 91030  
Phone: 800-971-7905  
E-mail: [amysweetman@earthlink.net](mailto:amysweetman@earthlink.net)  
Website: [www.anatomyology.com](http://www.anatomyology.com)

**Apperson Education Products** #522  
All  
K–12  
851 SW 34th St., Bldg. B  
Renton, WA 98057  
Phone: 800-827-9219  
E-mail: [dspaulding@appersonprint.com](mailto:dspaulding@appersonprint.com)  
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Website: [www.arborsci.com](http://www.arborsci.com)

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# Exhibitors

**Aurelia Press #228**  
 PO Box 1426 B, Ea, En, G  
 Richland, WA 99352 5-12, College  
 Phone: 509-531-2155  
 E-mail: [aureliapress2@charter.net](mailto:aureliapress2@charter.net)  
 Website: [www.aureliapress.com](http://www.aureliapress.com)

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 Website: [www.avrover.com](http://www.avrover.com)

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**Bedford, Freeman & Worth Publishers #318**  
 4B Cedarbrook Dr. B, C, EA, EN, G, PH, T  
 Cranbury, NJ 08512 9-12, College  
 Phone: 866-843-3715  
 E-mail: [cweiss@bfwpub.com](mailto:cweiss@bfwpub.com)  
 Website: [www.bfwpub.com/highschool](http://www.bfwpub.com/highschool)


W.H. Freeman of Bedford, Freeman & Worth (BFW) Publishers is the prestigious publisher of several groundbreaking texts, software, and instructor materials. Please visit our booth to preview these resources. You can also visit [www.bfwpub.com/highschool](http://www.bfwpub.com/highschool) to request complimentary consideration copies.

**Bio-Rad Laboratories #305**  
 2000 Alfred Nobel Dr. B  
 Hercules, CA 94547  
 Phone: 510-741-1000  
 E-mail: [biotechnology\\_explorer@bio-rad.com](mailto:biotechnology_explorer@bio-rad.com)  
 Website: <http://explorer.bio-rad.com>

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**Camp Invention #314**  
 3701 Highland Park NW B, EA, EN, G,  
 North Canton, OH 44720 PH, PD  
 Phone: 800-968-4332 K-6  
 E-mail: [dhosni@invent.org](mailto:dhosni@invent.org)  
 Website: [www.campinvention.org](http://www.campinvention.org)

Stop by and learn how we prepare children with 21st-century skills. The Camp Invention program presents children with real-world challenges, allowing them to solve problems through engaging hands-on investigations, experiments, and engineering. This program is designed to foster higher levels of learning and to reinforce past school-year learning while preparing students for the coming year.

**Carolina Biological Supply Co. #420**  
  
 2700 York Rd. All  
 Burlington, NC 27215 K-12,  
 Phone: 800-334-5551 College  
 E-mail: [carolina@carolina.com](mailto:carolina@carolina.com)  
 Website: [www.carolina.com](http://www.carolina.com)

Carolina Biological Supply Company is a worldwide leader in providing top-quality, innovative science and math materials for educators. Carolina serves the K-12 and college market with everything needed to equip a science laboratory or classroom. A complete catalog, *Carolina™ Science*, is also available free to educators and health professionals.

**Carolina Curriculum #400**  
 2700 York Rd. B, C, EA, G, PH, PD  
 Burlington, NC 27215 PreK-10  
 Phone: 800-334-5551  
 E-mail: [carolina@carolina.com](mailto:carolina@carolina.com)  
 Website: [www.carolinacurriculum.com](http://www.carolinacurriculum.com)

Carolina has the results-driven curricula and literacy resources you need to meet assessment standards and help you and your students succeed. Stop by our booth to learn more about our new literacy resources and more. Also, get your copy of the 2011 *Carolina™ Curriculum* catalog.

**Catalyst Learning Curricula #410**  
 59 Clemmons St. B, EN  
 Asheville, NC 28801 10-12, College  
 Phone: 828-687-0807  
 E-mail: [kristen.dotti@catalystlearningcurricula.com](mailto:kristen.dotti@catalystlearningcurricula.com)  
 Website: [www.catalystlearningcurricula.com](http://www.catalystlearningcurricula.com)

We provide hands-on engagement activities for teachers of AP and pre-AP science through year-long curricula and teacher training that is 100% experientially based. Sequential daily lesson plans curricula that exceed the national and state standards are currently available for high school biology and environmental science courses.

**Costa Rican Resource #435**  
 PO Box 359-3011 B, EA, EN, PD, T  
 Barva, Heredia, Costa Rica 6-12, College  
 Phone: 855-CRR-TOUR  
 E-mail: [info@crtravel.com](mailto:info@crtravel.com)  
 Website: [www.crtravel.com](http://www.crtravel.com)

Costa Rican Resource is a student travel company that operates in Costa Rica. Our goal is to offer teachers and students the chance to experience nature and learn about the importance of ecology and conservation through visiting one of the most beautiful countries in the tropics.

**CPO Science/School Specialty Science #205**  
 80 Northwest Blvd. G  
 Nashua, NH 03063 6-12  
 Phone: 800-932-5227  
 E-mail: [customerservice.cpo@schoolspecialty.com](mailto:customerservice.cpo@schoolspecialty.com)  
 Webmail: [www.cposcience.schoolspecialty.com](http://www.cposcience.schoolspecialty.com)

Stop by the CPO Science booth and participate in STEM activities and receive free gifts. CPO Science provides all the essential components for a hands-on, inquiry-based science program for grades 6-12. Our programs are ideal for differentiated instruction and meet state and national standards, and student texts are correlated to the STEM frameworks.

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 Website: [www.craigmorecreations.com](http://www.craigmorecreations.com)

Stop by our booth and check out our graphic novels and picture books based on Earth science and natural history. We also offer assembly services, workshops, and educational tools based on our educational books.

**Crow Canyon Archaeological Center #719**  
 23390 Road K G  
 Cortez, CO 81321 4-12, College  
 Phone: 970-565-8975  
 E-mail: [dmiller@crowcanyon.org](mailto:dmiller@crowcanyon.org)  
 Website: [www.crowcanyon.org](http://www.crowcanyon.org)

Crow Canyon offers school group programs for grades 4-12 ranging in length from a single day to a five-day/six-night archaeology program. Our programs are designed to meet the National Science Education Standards, and children thrive in the hands-on atmosphere! Program information and DVDs available.

**Delight's Earthly Delights #718**  
 PO Box 2013 B, C, EA, EN, G  
 Benson, AZ 85602 K-12  
 E-mail: [delightsearthlydelights@hotmail.com](mailto:delightsearthlydelights@hotmail.com)

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 Website: [www.digitaliseducation.com](http://www.digitaliseducation.com)

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Dinah-Might Adventures is an educational publishing and consulting company owned by author/speaker Dinah Zike. Her books are known for their innovative ways for using Foldables® in teaching all subjects and grade levels. She also offers professional development at the Dinah Zike Academy, a unique trainer of trainers facility.

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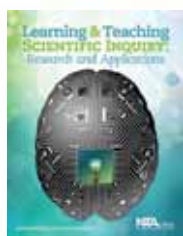
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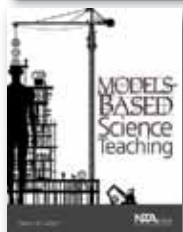
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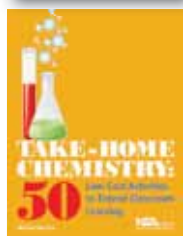
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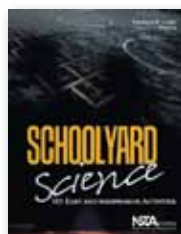
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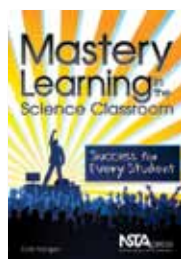
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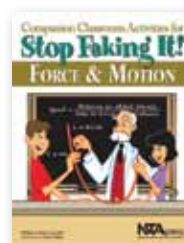
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**HANDS-ON WORKSHOPS**

**Friday, December 9 • Room 612**

<b>8:00am - 9:00am</b>	Biology—Cell Respiration in Germinating Peas
<b>9:30am - 10:30am</b>	Physics & Physical Science—Investigating Motion
<b>11:00am - 12:00pm</b>	Middle School—Investigating earthquakes: Bringing Science and Technology Together <i>Featuring Sally Ride Science - Key Concepts in Science</i>
<b>1:00pm - 2:00pm</b>	Chemistry—Atmospheric Pressure
<b>2:30pm - 3:30pm</b>	Renewable Energy Exploration—Solar and Wind Power



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**STEM  
 EDUCATOR  
 AWARD**

**NSTA** National Science Teachers Association

## Exhibitors

**NIH Science Education Partnership Award West Coast Alliance** #532  
B, G, PD  
7–12, College  
100 W. Harrison, N430  
Seattle, WA 98119

Teaching resources from West Coast SEPA programs and the NIH Office of Science Education.

**NOAA** #526  
1401 Constitution Ave. NW B, EA, EN  
Suite 6863  
Washington, DC 20230  
Phone: 301-713-1203  
E-mail: [education@noaa.gov](mailto:education@noaa.gov)  
Website: [www.education.noaa.gov](http://www.education.noaa.gov)

NOAA is a federal science agency providing free information to educators about weather, climates, oceans, coasts, satellite data, and fisheries. Every day NOAA's science touches the lives of all Americans. In partnership with NSTA, NOAA supports and develops a suite of products for the science classroom, including SciGuides, Science Objects, symposia, and web seminars.

**NSTA-DOE America's Home Energy Education Challenge** #219  
EA, EN, T  
1840 Wilson Blvd 3–8  
Arlington, VA 22201  
Phone: 703-312-9201  
E-mail: [erock@nsta.org](mailto:erock@nsta.org)  
Website: [www.homeenergychallenge.org](http://www.homeenergychallenge.org)

The U.S. Department of Energy together with NSTA is offering teachers the opportunity for their schools, classrooms, and students to compete with others across the nation to save energy resources, save money, and actively learn how energy lights our homes and powers our lives.

**Nutrients for Life Foundation** #533  
425 Third St. SW, Suite 950 B, EN  
Washington, DC 20024 K–12  
Phone: 800-962-9065  
Website: [www.nutrientsforlife.org](http://www.nutrientsforlife.org)

The Nutrients for Life Foundation offers plant and soil science curricula and other educational resources for elementary, middle school, and high school teachers.

**Ohaus Corp.** #409  
Seven Campus Dr., #310 All  
Parsippany, NJ 07054 All  
Phone: 973-377-9000  
E-mail: [debbie.foreman@ohaus.com](mailto:debbie.foreman@ohaus.com)  
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## NSTA Avenue

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Website: [www.homeenergychallenge.org](http://www.homeenergychallenge.org)

**Disney's Planet Challenge**  
Booth #218 • E-mail: [corrine.martinez@disney.com](mailto:corrine.martinez@disney.com)  
Website: <http://disney.go.com/planetchallenge>

**The DuPont Challenge**©  
Booth #221 • E-mail: [p-jeanette.simon@usa.dupont.com](mailto:p-jeanette.simon@usa.dupont.com)  
Website: <http://thechallenge.dupont.com>

**Explore Mars, Inc.**  
Booth #214 • E-mail: [carberry@exploremars.org](mailto:carberry@exploremars.org)  
Website: [www.exploremars.org](http://www.exploremars.org)

**The John Glenn Center for Science Education**  
Booth #208 • E-mail: [cse@nsta.org](mailto:cse@nsta.org)  
Website: [www.nsta.org/involved/cse](http://www.nsta.org/involved/cse)

**NSTA Learning Center**  
Booth #213 • E-mail: [danderson@nsta.org](mailto:danderson@nsta.org)  
Website: <http://learningcenter.nsta.org>

**NSTA Membership**  
Booth #209 • E-mail: [hwahlberg@nsta.org](mailto:hwahlberg@nsta.org)  
Website: [www.nsta.org/membership](http://www.nsta.org/membership)

**Shell Science Lab Challenge, a program of NSTA**  
Booth #212 • E-mail: [karen.labat@shell.com](mailto:karen.labat@shell.com)  
Website: [www.nsta.org/shellsciencelab/](http://www.nsta.org/shellsciencelab/)

**Toshiba/NSTA ExploraVision**  
Booth #215 • E-mail: [exploravision@nsta.org](mailto:exploravision@nsta.org)  
Website: [www.exploravision.org](http://www.exploravision.org)



WHO

WHAT

WHERE

WHEN

WHY

HOW

# We Have the Answers, NSTA Avenue #209

Pick up your “NSTA Roadmap” to guide you through member benefits, products, services, programs, and partners—free gifts, too!

## Share with Others

- **NSTA Membership.** Learn about NSTA member benefits, pick up a sample journal, and ask about our student chapters and other ways we support young professionals. Take charge of your professional development to become the best teacher you can be.

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- The NSTA **New Science Teacher Academy** supports science teachers during the often challenging initial years by enhancing confidence, classroom excellence, and teacher content knowledge.

## Add Your Voice

- **Science Matters,** our major public awareness campaign about science education and science literacy, is designed to rekindle a national sense of urgency and action among schools and families. Register to receive our monthly e-newsletter.
- The **John Glenn Center for Science Education Campaign.** NSTA’s five-year, \$43 million national campaign to make excellence in science teaching and learning a reality for all will fund a series of forward-thinking programs and a state of the art facility designed to promote leadership, learning, and advocacy in science education.

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- **NSTA Press®** publishes 25 new titles each year. Browse at the Science Bookstore and connect with authors to have your new book signed. Submit your new book idea to <http://mc.manuscriptcentral.com/nstapress>.
- **SciLinks®.** Link to science resources on the internet using sites recommended by science educators. You’ll find vetted websites, effective pedagogy, and reliable content.

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- NSTA provides 17 awards programs to science teachers, K–College. Learn about them.
- **Toshiba/NSTA ExploraVision®** is a team-based, K–12 student competition that awards up to \$240,000 in savings bonds annually.
- **The DuPont Challenge®** Science Essay Competition is for grades 7–12 students, with cash prizes and an expense-paid trip to Disney World® and the Kennedy Space Center.
- **Disney’s Planet Challenge** is a project-based environmental competition for grades 3–8 students to make a difference in their homes, schools, and communities.
- **Shell Science Lab Challenge, a program of NSTA** provides science laboratory equipment and professional development support to middle schools and high schools with limited resources. Learn how you can win a \$20,000 lab makeover support package.
- The **Mars Education Challenge** awards cash prizes and trips to teachers who develop ways to fit Mars science and exploration into classes. Winners also can participate in field studies with planetary scientists.
- **America’s Home Energy Education Challenge,** sponsored by the U.S. Dept. of Energy, helps grades 3–8 students learn about energy usage, costs, and conservation for \$200,000 in prizes.



# Exhibitors

## Pearson

501 Boylston St.  
Boston, MA 02116  
Phone: 800-848-9500  
Website: [www.pearsonschool.com](http://www.pearsonschool.com)

Pearson, the leader in preK–12 education solutions, transforms education by connecting personalized, assessment-driven programs, services, school improvement strategies, and technology that deliver improved outcomes in student performance and classroom instruction. Pearson’s research-based curricula in print, digital, or blended options engage digital natives while empowering teachers with professional development training and services.

## #300

All  
PreK–12

## Pitsco Education

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Pittsburg, KS 66762  
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E-mail: [bockovera@pitsco.com](mailto:bockovera@pitsco.com)  
Website: [www.shop.pitsco.com](http://www.shop.pitsco.com)

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## #421

EA, PH, T  
5–12, College

## Project Learning Tree

1111 19th St. NW, Suite 780  
Washington, DC 20036  
Phone: 202-463-2475  
E-mail: [information@plt.org](mailto:information@plt.org)  
Website: [www.plt.org](http://www.plt.org)

Project Learning Tree is a nationally award-winning environmental education program designed for preK–12 and college formal and nonformal educators. The supplementary materials provide hands-on/minds-on multi-disciplinary activities.

## #320

EN, PD  
All



**Qwizdom Inc.** #618  
 12617 Meridian E B, C, EA, G, T  
 Puyallup, WA 98373 K-12, College  
 Phone: 877-794-9366  
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 Yulee, FL 32097 PreK-12  
 Phone: 904-225-5558  
 E-mail: [info@sciencefirst.com](mailto:info@sciencefirst.com)  
 Website: [www.sciencefirst.com](http://www.sciencefirst.com)

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 Website: [www.seattletimes.com/nie](http://www.seattletimes.com/nie)

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dents access to *The Seattle Times* e-Edition, lesson plans, curricula, workshops, and more—all for free! Stop by our booth to see examples of past programs and curricula and register for NIE.

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 Houston, TX 77252  
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 E-mail: [karen.labat@shell.com](mailto:karen.labat@shell.com)  
 Website: [www.shell.com](http://www.shell.com)

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 Website: [www.simulationcurriculum.com](http://www.simulationcurriculum.com)

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 Phone: 866-319-5900  
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# Exhibitors

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Englewood, CO 80112  
Phone: 303-948-4227  
E-mail: [vandervoort@smenet.org](mailto:vandervoort@smenet.org)  
Website: [www.smenet.org](http://www.smenet.org)

**#619**  
EA  
K-12

The SME/GEM Minerals Coalition booth is supported by the SME Foundation. The booth is staffed by local volunteers who provide teachers with rock and mineral samples, literature, and CDs as well as answer any questions teachers may have.

## Space Camp and Aviation Challenge #520

One Tranquility Base  
Huntsville, AL 35805  
Phone: 800-63-SPACE  
E-mail: [tomw@spacecamp.com](mailto:tomw@spacecamp.com)  
Website: [www.spacecamp.com](http://www.spacecamp.com)

EA, PD, T  
4-12

Stop by and learn about the U.S. Space and Rocket Center® and Aviation Challenge®. Trainees attending Space Camp and Aviation Challenge engage in simulated astronaut and fighter pilot training to learn leadership skills, teamwork, problem solving, and decision making. Space Camp trainees put their skills to the test as they train to live and work in space and take command of their own simulated space shuttle missions. Aviation Challenge trainees spend an exciting and educational week in the great outdoors training like military fighter pilots as they plan missions and fly high-performance jet simulators. Come experience the ultimate classroom!

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5274 Scotts Valley Dr.  
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Scotts Valley, CA 95066  
Phone: 877-395-1001  
E-mail: [sales@strscopes.com](mailto:sales@strscopes.com)  
Website: [www.schooltr.com](http://www.schooltr.com)

**#427**  
EA, EN, G, T  
All

## Swift Optical Instruments, Inc.

11113 Landmark 35 Dr.  
San Antonio, TX 78233  
Phone: 877-967-9438  
E-mail: [cynthia@swiftoptical.com](mailto:cynthia@swiftoptical.com)  
Website: [www.swiftoptical.com](http://www.swiftoptical.com)

**#408**  
B  
6-12, College

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**#508**  
B, C, PH, PD, T  
7-12, College

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## Toshiba/NSTA ExploraVision

1840 Wilson Blvd.  
Arlington, VA 22201  
Phone: 800-EXPLOR9  
E-mail: [exploravision@nsta.org](mailto:exploravision@nsta.org)  
Website: [www.exploravision.org](http://www.exploravision.org)

**#215**  
G, T  
K-12

Now in its 20th year, ExploraVision is a science competition that encourages K-12 students of all interests, skills, and ability levels to create and explore a vision of future technology by combining their imaginations with the tools of science.

## Triangle Coalition for Science and Technology Education

1840 Wilson Blvd., Suite 201  
Arlington, VA 22201  
Phone: 703-516-5960  
E-mail: [culbertsonk@triangle-coalition.org](mailto:culbertsonk@triangle-coalition.org)  
Website: [www.trianglecoalition.org](http://www.trianglecoalition.org)

**#529**  
PD  
K-12

Representing the Albert Einstein Distinguished Educator Fellowship Program, Triangle Coalition will provide information on the program, the work of Fellows, and the process of becoming a Fellow.

## U.S. Geological Survey

1300 SE Cardinal Ct.  
Vancouver, WA 98683  
Phone: 360-993-8907  
E-mail: [driedger@usgs.gov](mailto:driedger@usgs.gov)

**#635**  
EA

5-12, College

The U.S. Geological Survey (USGS) is a science agency that serves the nation by providing reliable scientific information to describe and understand Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

## Vandalia Science Education

PO Box 2705  
Huntington, WV 25726  
Phone: 866-602-2029  
E-mail: [info@vandaliascienced.com](mailto:info@vandaliascienced.com)  
Website: [www.vandaliascienced.com](http://www.vandaliascienced.com)

**#501**  
B, C, G

7-12, College

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Website: [www.vernier.com](http://www.vernier.com)

**#507**  
B, C, EA, EN,  
G, PH, T  
3-12, College

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 Cranbury, NJ 08619 G, PH, T  
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 E-mail: [cweiss@bfpwpub.com](mailto:cweiss@bfpwpub.com)  
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**Water Environment Federation** #418  
 601 Wythe St. EN  
 Alexandria, VA 22314 K–12  
 Phone: 703-684-2400  
 E-mail: [publiceducation@wef.org](mailto:publiceducation@wef.org)  
 Website: [www.wef.org](http://www.wef.org)

The Water Environment Federation (WEF) is a not-for-profit technical and education organization representing water quality professionals around the world. WEF uses the collective knowledge of its membership to further a shared goal of improving water quality.

**Wavefunction, Inc.** #518  
 18401 Von Karman Ave., Suite 320 C  
 Irvine, CA 92612 8–12, College  
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 E-mail: [sales@wavefun.com](mailto:sales@wavefun.com)  
 Website: [www.wavefun.com](http://www.wavefun.com)

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 Phone: 801-290-3636  
 E-mail: [jpink@wgu.edu](mailto:jpink@wgu.edu)  
 Website: [www.wgu.edu](http://www.wgu.edu)

This nonprofit online university offers Bachelors and Masters degrees in science education.

**YMIR, Inc./The Ultimate Puzzle** #335  
 46-E Peninsula Center, #351  
 Rolling Hills Estate, CA 90274 All  
 Phone: 310-567-1875  
 E-mail: [ymirinc@aol.com](mailto:ymirinc@aol.com)  
 Website: [www.theultimatepuzzle.com](http://www.theultimatepuzzle.com)

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## Carolina Biological Supply Co. (Booth #400 and #420)

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Thursday, December 8 10:00–11:15 AM 612, Conv. Center New Tools for STEM Education from Carolina™ Curriculum (p. 54)  
Thursday, December 8 12:30–1:45 PM 611, Conv. Center Amplify Your Genetics Teaching Skills with Carolina's Inquiries in Science® Biology Kits (p. 62)  
Thursday, December 8 12:30–1:45 PM 612, Conv. Center Implementing STEM in Your Classroom with Carolina™ Curriculum and the Smithsonian Institution (p. 62)  
Thursday, December 8 2:15–3:30 PM 611, Conv. Center Hands-On Science with Classroom Critters (p. 68)  
Thursday, December 8 2:15–5:15 PM 612, Conv. Center Science and Writing: Documented Success in Increasing Achievement in Both Domains (p. 68)  
Thursday, December 8 4:00–5:15 PM 611, Conv. Center Introduction to Electrophoresis (p. 73)  
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Friday, December 9 10:00–11:15 AM 611, Conv. Center Comparative Vertebrate Anatomy with Carolina's Perfect Solution® Specimens (p. 92)  
Friday, December 9 12 Noon–1:15 PM 611, Conv. Center Strawberry DNA and Molecular Models (p. 99)  
Friday, December 9 2:00–3:15 PM 611, Conv. Center Drive Student Inquiry with Carolina's Advanced Environmental Science Labs (p. 108)  
Friday, December 9 4:00–5:15 PM 611, Conv. Center Introduction to Wisconsin Fast Plants® (p. 114)

## CPO Science/School Specialty Science (Booth #205)

Thursday, December 8 8:00–9:30 AM 607, Conv. Center Chemistry and the Atom: Fun with Atom Building Games! (p. 52)  
Thursday, December 8 10:00–11:30 AM 607, Conv. Center Genetics: Crazy Traits and Adaptation Survivor (p. 55)  
Thursday, December 8 12 Noon–1:30 PM 607, Conv. Center Sound, Waves, and Music (p. 57)  
Thursday, December 8 2:00–3:30 PM 607, Conv. Center Light and Optics: A Series of EnLIGHTening Experiments! (p. 67)  
Thursday, December 8 4:00–5:30 PM 607, Conv. Center Genetics: Crazy Traits and Adaptation Survivor (p. 73)  
Friday, December 9 8:00–9:30 AM 607, Conv. Center Genetics: Crazy Traits and Adaptation Survivor (p. 84)  
Friday, December 9 10:00–11:30 AM 607, Conv. Center Chemistry and the Atom: Fun with Atom Building Games! (p. 92)  
Friday, December 9 12 Noon–1:30 PM 607, Conv. Center Light and Optics: A Series of EnLIGHTening Experiments! (p. 99)  
Friday, December 9 2:00–3:30 PM 607, Conv. Center Sound, Waves, and Music (p. 109)  
Friday, December 9 4:00–5:30 PM 607, Conv. Center Chemistry and the Atom: Fun with Atom Building Games! (p. 115)

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## Delta Education/School Specialty Science (Booth #200)

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Thursday, December 8	10:00–11:15 AM	606, Conv. Center	Delta Science Modules (DSM)...Never Heard of It...Want to Know More? (p. 54)
Thursday, December 8	1:00–2:30 PM	606, Conv. Center	What's Going On in There? Inquiry Science for Supervisors, Trainers, and Teachers (p. 62)
Thursday, December 8	3:00–4:30 PM	606, Conv. Center	Science Gnus: Scientists Famous and Forgotten...and Their Process Skills (p. 69)
Friday, December 9	8:00–9:15 AM	606, Conv. Center	Inquiring Minds Provide Spark for Science Lessons (p. 83)
Friday, December 9	10:00–11:15 AM	606, Conv. Center	Integrating Science and Literacy: Grades 1–6 (p. 91)
Friday, December 9	1:00–2:15 PM	606, Conv. Center	Are You a Problem (Solving) Teacher? Want to Become One? (p. 103)

## Delta Education/School Specialty Science–FOSS (Booth #200)

Thursday, December 8	8:00–10:30 AM	602/603, Conv. Center	Using Science Notebooks with FOSS (p. 52)
Thursday, December 8	11:30 AM–1:00 PM	602/603, Conv. Center	FOSS Program Evolution and the Next Generation Science Standards (p. 56)
Thursday, December 8	2:00–4:00 PM	602/603, Conv. Center	Taking Science Outdoors with FOSS K–8 (p. 67)
Friday, December 9	8:00–10:30 AM	602/603, Conv. Center	Using Student Science Notebooks to Assess Learning (Experienced Users) (p. 85)
Friday, December 9	11:30 AM–1:30 PM	602/603, Conv. Center	FOSS Planetary Science for Middle School (p. 98)
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## Delta Education/School Specialty Science–Seeds (Booth #200)

Thursday, December 8	2:00–3:00 PM	604, Conv. Center	33 Ways to Integrate Science (p. 67)
Thursday, December 8	3:30–4:30 PM	604, Conv. Center	The Four “It’s” of Science (p. 72)

## Dinah-Might Adventures, LP (Booth #412)

Thursday, December 8	12:30–1:45 PM	4C-3, Conv. Center	Natural Differentiation Using Foldables® (p. 61)
Thursday, December 8	2:15–3:30 PM	4C-3, Conv. Center	What the Hands Do, the Brain Does: Lasting Understanding Using Notebook Foldables® (p. 67)

## EcoTeach (Booth #523)

Thursday, December 8	2:15–3:30 PM	615, Conv. Center	EcoTeach: Biodiversity of Costa Rica (p. 68)
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## Educational Innovations, Inc. (Booth #601)

Friday, December 9	10:00–11:15 AM	613/614, Conv. Center	Dealing with Density 1.0: Activities to Support STEM in the Classroom (p. 92)
Friday, December 9	12 Noon–1:15 PM	613/614, Conv. Center	The Private Eye®: Hands-On Inquiry for an Interdisciplinary Mind—Science, Writing, and Art (p. 99)

## Edvotek (Booth #700)

Thursday, December 8	8:00–9:15 AM	615, Conv. Center	Rapid Single Antibody–based ELISA (p. 52)
Thursday, December 8	10:00–11:15 AM	615, Conv. Center	EDVOTEK Biotechnology—New! Achieve Successful PCR in One Lab Session (p. 55)
Friday, December 9	12 Noon–1:15 PM	605, Conv. Center	Whose DNA Was Left Behind? Are You Ready to Teach 30-Minute Forensics Experiments? (p. 98)

## Fisher Science Education (Booth #319)

Friday, December 9	2:00–3:15 PM	613/614, Conv. Center	Art vs. Science: The Role of Science in Wine Making (p. 108)
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## Flinn Scientific, Inc. (Booth #309)

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Friday, December 9	10:00–11:15 AM	4C-2, Conv. Center	Hands-On Integrated Science Activities for Middle School (p. 91)

## Frey Scientific/School Specialty Science (Booth #201)

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Thursday, December 8	8:00–9:15 AM	604, Conv. Center	STEM-focused Technology Activities Using Inquiry Investigations™ (p. 50)
Thursday, December 8	10:00–11:15 AM	604, Conv. Center	STEM-focused Forensics Activities Using Inquiry Investigations™ (p. 54)
Thursday, December 8	12 Noon–1:15 PM	604, Conv. Center	Incorporating Online Virtual Lab Solutions with Hands-On Science into Your Classroom (p. 57)

## Houghton Mifflin Harcourt (Booth #708)

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Thursday, December 8	8:00–9:15 AM	4C-2, Conv. Center	Connecting to Chemistry: Igniting Student Motivation with STEM Examples and Ideas (p. 50)
Thursday, December 8	12:30–1:45 PM	4C-2, Conv. Center	Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8 Science (p. 61)
Thursday, December 8	2:15–3:30 PM	4C-2, Conv. Center	Engaging Students and Enhancing Learning Outcomes with Project-based Videos (p. 67)
Thursday, December 8	4:00–5:15 PM	4C-2, Conv. Center	Ecology Adventures: Motivating Students Through Project Based Learning (p. 72)
Friday, December 9	8:00–9:15 AM	4C-2, Conv. Center	Effective STEM Challenges for the Classroom (p. 83)
Friday, December 9	12 Noon–1:15 PM	4C-2, Conv. Center	Sparking Interest and Learning with Chemistry: A Part 1 Experience (p. 98)
Friday, December 9	2:00–3:15 PM	4C-2, Conv. Center	Sparking More Interest with Chemistry: A Part 2 Experience (p. 107)

## It's About Time (Booth #308)

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Friday, December 9	8:00–9:00 AM	4C-3, Conv. Center	Project-Based Inquiry Science: PBIS™/STEM Solution—Earth, Life, and Physical Science in Middle School (p. 82)
Friday, December 9	9:30–10:30 AM	4C-3, Conv. Center	STEM Solutions for Middle School and High School Classrooms (p. 90)
Friday, December 9	11:00 AM–12 Noon	4C-3, Conv. Center	<i>EarthComm</i> —New Edition: Meeting Your STEM Needs (p. 97)
Friday, December 9	12:30–1:30 PM	4C-3, Conv. Center	Active Chemistry/Active Physics: Project-based Science That's Relevant for All Students (p. 102)
Friday, December 9	2:00–3:00 PM	4C-3, Conv. Center	Coordinated Science: Physical, Earth, and Space Sciences (p. 107)
Friday, December 9	3:30–4:30 PM	4C-3, Conv. Center	<i>Investigating Astronomy</i> : NEW Astronomy Textbook Written for High School Students (p. 112)

## Ken-A-Vision Manufacturing Co., Inc. (Booth #706)

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Thursday, December 8	12:30–1:45 PM	615, Conv. Center	I Can See Clearly Now...Digital Projection Techniques for Better Demonstration Visibility (p. 62)
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## Kendall Hunt Publishing Co. (Booth #607)

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Thursday, December 8	12:30–1:45 PM	613/614, Conv. Center	Taking a Human Approach to Biology Education (p. 62)
Friday, December 9	8:00–9:15 AM	613/614, Conv. Center	Interdisciplinary Science That Meets STEM Goals (p. 83)

## Key Curriculum Press (Booth #423)

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Thursday, December 8	10:00–11:15 AM	613/614, Conv. Center	<i>Living By Chemistry</i> : Create a Table (p. 54)
Friday, December 9	4:00–5:15 PM	613/614, Conv. Center	<i>Living By Chemistry</i> : What Shape Is That Smell? (p. 114)

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## Lab-Aids, Inc. (Booth #512)

Friday, December 9	8:00–9:15 AM	615, Conv. Center	Teaching About Batteries (p. 83)
Friday, December 9	10:00–11:15 AM	615, Conv. Center	Teaching About Gene Expression (p. 92)
Friday, December 9	12 Noon–1:15 PM	615, Conv. Center	Teaching About Gas Exchange (p. 99)
Friday, December 9	2:00–3:15 PM	615, Conv. Center	What Is the Difference Between Heat and Temperature? (p. 109)
Friday, December 9	4:00–5:15 PM	615, Conv. Center	Teaching About the Rock Cycle and Earth Time (p. 114)
Saturday, December 10	8:00–9:15 AM	615, Conv. Center	Teaching About Hydrogen Fuel Cells (p. 121)

## McGraw-Hill School Education Group (Booth #411)

Friday, December 9	8:00–9:15 AM	Blrm. 6C, Conv. Center	Formative Assessment Probes: Supporting an Idea-centered Classroom (p. 84)
Friday, December 9	10:00–11:15 AM	Blrm. 6C, Conv. Center	Fun, Fabulous Foldables® (p. 92)
Friday, December 9	12 Noon–1:15 PM	Blrm. 6C, Conv. Center	Fun, Fabulous Foldables® (p. 99)
Friday, December 9	2:00–3:15 PM	Blrm. 6C, Conv. Center	Teaching Science with Toys and Treats! (p. 109)
Friday, December 9	4:00–5:15 PM	Blrm. 6C, Conv. Center	Teaching Science with Toys and Treats! (p. 114)

## Mississippi State University (Booth #714)

Thursday, December 8	10:00–11:15 AM	4C-3, Conv. Center	Master of Science Degree in Geosciences Available Online Through the Teachers in Geosciences Program (p. 53)
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## NIH Science Education Partnership Award West Coast Alliance (Booth #532)

Saturday, December 10	8:00–9:15 AM	613/614, Conv. Center	NIH Science Education Partnership Award West Coast Alliance (p. 121)
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## Ohaus Corp. and Frey Scientific (Booth #201 and #409)

Thursday, December 8	2:15–3:30 PM	605, Conv. Center	Using the OHAUS Harvard Junior as a STEM-focused Skill Program (p. 68)
Friday, December 9	4:00–5:15 PM	605, Conv. Center	Using the OHAUS Triple Beam Balance™ as a STEM-focused Skill Platform (p. 114)

## PASCO Scientific (Booth #301)

Friday, December 9	8:00–9:00 AM	612, Conv. Center	Biology: Cell Respiration in Germinating Peas (p. 82)
Friday, December 9	9:30–10:30 AM	612, Conv. Center	Physics and Physical Science: Investigating Motion (p. 90)
Friday, December 9	11:00 AM–12 Noon	612, Conv. Center	Investigating Earthquakes in Middle School: Bringing Science and Technology Together (p. 97)
Friday, December 9	1:00–2:00 PM	612, Conv. Center	Chemistry—Atmospheric Pressure (p. 103)
Friday, December 9	2:30–3:30 PM	612, Conv. Center	Renewable Energy Exploration: Solar and Wind Power (p. 110)

## Pearson (Booth #300)

Thursday, December 8	8:00–9:15 AM	609, Conv. Center	Inquiry in the Classroom (p. 51)
Thursday, December 8	10:00–11:15 AM	609, Conv. Center	Stop Teaching and Start Coaching AP Chemistry (p. 54)
Thursday, December 8	12:30–1:45 PM	609, Conv. Center	Online Learning Exchange, Powered by Pearson—Our Content, Your Content (p. 61)
Thursday, December 8	2:15–3:30 PM	609, Conv. Center	The Next Generation of Science Virtual Labs for the Entire Science Curriculum—No Cleanup! (p. 68)
Thursday, December 8	4:00–5:15 PM	609, Conv. Center	Going Green: Economical and Environmentally Friendly Inquiry in Chemistry (p. 73)
Friday, December 9	8:00–9:15 AM	609, Conv. Center	<i>Marine Science: The Dynamic Ocean: A New High School STEM Offering</i> (p. 83)
Friday, December 9	10:00–11:15 AM	609, Conv. Center	Preparing Your Students to Become Tomorrow's Innovators with STEM Education (p. 92)

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## Pearson, cont.

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Friday, December 9	12 Noon–1:15 PM	609, Conv. Center	Science Under Siege? Teaching Evolution in a Climate of Controversy (p. 98)
Friday, December 9	2:00–3:15 PM	609, Conv. Center	Inquiry and Evidence: Keys to Getting Students to Inquire (p. 108)
Friday, December 9	4:00–5:15 PM	609, Conv. Center	From Science to Engineering (p. 114)
Saturday, December 10	8:00–9:15 AM	609, Conv. Center	Destructive Forces of Nature: Earthquakes (p. 121)
Saturday, December 10	10:00–11:15 AM	609, Conv. Center	Teaching English Language Learners in the Science Classroom: Collaboration, Co-teaching, and Coaching (p. 124)

## Science Kit & Boreal Laboratories (Booth #608)

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Thursday, December 8	4:00–5:15 PM	4C-1, Conv. Center	Cool Tech Tools for Chemistry: Really Easy Data Collectors (p. 72)
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## Science Take-Out (Booth #429)

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Thursday, December 8	12:30–1:45 PM	610, Conv. Center	Keeping a Balance: Homeostasis and Negative Feedback (p. 62)
Thursday, December 8	2:15–3:30 PM	610, Conv. Center	Genetic Testing for Huntington's Disease (p. 68)
Thursday, December 8	4:00–5:15 PM	610, Conv. Center	Enzymes and Lactose Intolerance (p. 73)
Saturday, December 10	8:00–9:15 AM	612, Conv. Center	Diagnosing Diabetes (p. 121)

## Simulation Curriculum Corp. (Booth #333)

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Thursday, December 8	8:00–9:15 AM	605, Conv. Center	The Layered Earth! (p. 50)
Thursday, December 8	10:00–11:15 AM	605, Conv. Center	Starry Night Education! (p. 54)
Friday, December 9	8:00–9:15 AM	605, Conv. Center	The Layered Earth! (p. 83)

## Swift Optical Instruments, Inc. (Booth #408)

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Thursday, December 8	4:00–5:15 PM	615, Conv. Center	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (p. 73)
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## Vernier Software & Technology (Booth #507)

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Friday, December 9	10:00–11:30 AM	604, Conv. Center	Exploring Science with Vernier (p. 92)
Friday, December 9	12 Noon–1:30 PM	604, Conv. Center	Exploring Science with Vernier (p. 99)
Friday, December 9	2:00–3:30 PM	604, Conv. Center	Exploring Science with Vernier (p. 109)

## WARD'S Natural Science (Booth #610)

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Thursday, December 8	8:00–9:15 AM	4C-1, Conv. Center	Integrating Math and Science Using Blood Spatter (p. 50)
Thursday, December 8	10:00–11:15 AM	4C-1, Conv. Center	Chemistry In-the-Bag Inquiry (p. 53)
Thursday, December 8	12:30–1:45 PM	4C-1, Conv. Center	Chemistry In-the-Bag Inquiry (p. 61)
Thursday, December 8	2:15–3:30 PM	4C-1, Conv. Center	Integrating Math and Science Using Blood Spatter (p. 67)

## Water Environment Federation (Booth #418)

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Thursday, December 8	2:15–4:30 PM	613/614, Conv. Center	Stream Assessment: An Active, Integrated Approach to Science Learning (p. 68)
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## Wavefunction, Inc. (Booth #518)

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Thursday, December 8	10:00–11:15 AM	610, Conv. Center	Teaching Chemistry with Molecular-Level Visualization and Simulation Tools (p. 54)
Friday, December 9	10:00–11:15 AM	605, Conv. Center	Molecular Modeling in Middle School and High School Science Classrooms: Engage Your Students! (p. 91)



# Schedule at a Glance

G = General  
P = Preschool  
C = College

M = Middle School  
H = High School  
R = Research

S = Supervision/Administration  
I = Informal Education

T = Teacher Preparation  
E = Elementary

## Biology/Life Science

### THURSDAY

8:00–9:00 AM	H	2B, Conv. Center	Drop the Lecture and Let the Students Pick Up the Learning in AP Biology (p. 49)
8:00–9:00 AM	E–M	3A, Conv. Center	Using Science as a Tool in Reading and Writing Instruction (p. 49)
8:00–9:00 AM	E/I	211, Conv. Center	Ocean Science and Literacy (p. 50)
8:00–9:00 AM	E	212, Conv. Center	Enhancing Elementary Science Teachers' and Students' Understanding of Science Through Systems Thinking (p. 47)
8:00–9:00 AM	G	304, Conv. Center	Introducing the Scientific and Social Practices of Scientists Through Video Interviews (p. 48)
8:00–9:15 AM	8–12	4C-1, Conv. Center	Integrating Math and Science Using Blood Spatter (p. 50)
8:00–9:15 AM	7–C	615, Conv. Center	Rapid Single Antibody–based ELISA (p. 52)
10:00–11:15 AM	8–12	611, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 54)
10:00–11:15 AM	7–C	615, Conv. Center	EDVOTEK Biotechnology—New! Achieve Successful PCR in One Lab Session (p. 55)
12:30–1:30 PM	H–C	3B, Conv. Center	Evolution and Medicine: A New Approach to a Central Topic in High School Biology (p. 60)
12:30–1:45 PM	6–C	610, Conv. Center	Keeping a Balance: Homeostasis and Negative Feedback (p. 62)
12:30–1:45 PM	9–12	611, Conv. Center	Amplify Your Genetics Teaching Skills with Carolina's Inquiries in Science® Biology Kits (p. 62)
12:30–1:45 PM	9–12	613/614, Conv. Center	Taking a Human Approach to Biology Education (p. 62)
2:00–3:00 PM	H	2B, Conv. Center	Helping High School Students Write Their Own Scientific Experiments (p. 65)
2:00–3:00 PM	M–H	3A, Conv. Center	Human Population Explosion (p. 65)
2:00–3:00 PM	H–C	3B, Conv. Center	Lost in Translation: Exploring Protein Synthesis with Interactive Physical Models (p. 65)
2:15–3:30 PM	7–12	4C-1, Conv. Center	Integrating Math and Science Using Blood Spatter (p. 67)
2:15–3:30 PM	9–12	4C-2, Conv. Center	Engaging Students and Enhancing Learning Outcomes with Project-based Videos (p. 67)
2:15–3:30 PM	6–C	610, Conv. Center	Genetic Testing for Huntington's Disease (p. 68)
2:15–3:30 PM	K–12	611, Conv. Center	Hands-On Science with Classroom Critters (p. 68)
3:30–4:30 PM	P–M/I	2B, Conv. Center	Secrets of Sea Horses (p. 71)
3:30–4:30 PM	M–H	3A, Conv. Center	Amazing Things Cells Can Do (p. 71)
3:30–4:30 PM	H–C	3B, Conv. Center	Integrating Bioinformatics into Introductory Biology Courses (p. 71)
4:00–5:15 PM	6–C	610, Conv. Center	Enzymes and Lactose Intolerance (p. 73)
4:00–5:15 PM	9–12	611, Conv. Center	Introduction to Electrophoresis (p. 73)
4:00–5:15 PM	9–C	615, Conv. Center	New Ways to Prepare Your Students Using 21st-Century STEM Initiatives—GO DIGITAL! (p. 73)
5:00–6:00 PM	H	2B, Conv. Center	The Science and Ethics of Animal Research (p. 75)
5:00–6:00 PM	H–C	3B, Conv. Center	Building Phylogenetic Trees by Modeling Change Through Time (p. 75)

### FRIDAY

8:00–9:00 AM	H–C	2A, Conv. Center	Let's Get Helical: Exploring DNA Structure/Function with Interactive Physical Models (p. 80)
8:00–9:00 AM	I	2B, Conv. Center	NABT Session: FREE Classroom Resources for Teaching Evolution (p. 79)
8:00–9:00 AM	M–C	308, Conv. Center	Homeostasis as a Unifying Theme (p. 80)
8:00–9:00 AM	6–C	610, Conv. Center	Bio-Rad—Genes in a Bottle™ Kit (p. 82)
8:00–9:00 AM	9–12	612, Conv. Center	Biology: Cell Respiration in Germinating Peas (p. 82)

## Schedule at a Glance Biology/Life Science

8:00–9:15 AM	9–12	613/614, Conv. Center	Interdisciplinary Science That Meets STEM Goals (p. 83)
9:30–10:30 AM	M–C	2A, Conv. Center	Bioethics 101: Laying a Foundation in Bioethics in a Biology Course (p. 89)
9:30–10:30 AM	M–C	2B, Conv. Center	NABT Session: FREE Resources from the Howard Hughes Medical Institute to Enhance Your Lessons on DNA and Biotechnology (p. 87)
9:30–10:30 AM	H–C	3A, Conv. Center	Dive In with Physical Models: Impact of Water on Protein Structure (p. 89)
9:30–11:30 AM	8–12	610, Conv. Center	Bio-Rad—Forensic DNA Fingerprinting Kit (AP Biology Lab 6) (p. 90)
9:30–10:30 AM	H–C	616, Conv. Center	Leveraging University K–12 Partnerships to Create Successful STEM Programs (p. 88)
10:00–10:30 AM	G	213, Conv. Center	NARST Session: Confirmation for Increased Attention to Four Core Areas of Evolution (p. 87)
10:00–11:15 AM	6–12	611, Conv. Center	Comparative Vertebrate Anatomy with Carolina’s Perfect Solution® Specimens (p. 92)
10:00–11:15 AM	6–12	615, Conv. Center	Teaching About Gene Expression (p. 92)
11:00 AM–12 Noon	E–M	2A, Conv. Center	Keeping Pests Out of the Garden: Designing Simple Inquiries with Household Spices (p. 95)
11:00 AM–12 Noon	M–C	2B, Conv. Center	NABT Session: FREE Resources for Teaching Gene Expression and Gene Regulation (p. 94)
12 Noon–1:15 PM	7–C	605, Conv. Center	Whose DNA Was Left Behind? Are You Ready to Teach 30-Minute Forensics Experiments? (p. 98)
12 Noon–1:15 PM	9–12	609, Conv. Center	Science Under Siege? Teaching Evolution in a Climate of Controversy (p. 98)
12 Noon–1:15 PM	6–12	611, Conv. Center	Strawberry DNA and Molecular Models (p. 99)
12 Noon–1:15 PM	6–12	615, Conv. Center	Teaching About Gas Exchange (p. 99)
12:30–1:30 PM	G	2A, Conv. Center	Use Technology to Integrate Science and Math! (p. 101)
12:30–1:30 PM	M–C	2B, Conv. Center	NABT Session: STEMware: Zombie Plague (p. 100)
12:30–1:30 PM	H–C	3A, Conv. Center	Authentic Research on Smoking Behavior Using a Scientific Database (p. 101)
12:30–1:30 PM	H	308, Conv. Center	From Beginning to End: The Steps for a Successful Overseas Educational Field Trip (p. 101)
1:00–2:30 PM	9–C	610, Conv. Center	Bio-Rad—Enzymes and Biofuels: Go from Grass to Gas! (AP Biology Lab 2) (p. 104)
2:00–3:00 PM	M–H	2A, Conv. Center	Variation, Selection, and Time (p. 106)
2:00–3:00 PM	I	2B, Conv. Center	NABT Session: Hands-On Activities and Demonstrations to Stimulate Inquiry in Biology (p. 106)
2:00–3:00 PM	G	3A, Conv. Center	Medical Mysteries Web Adventures (p. 104)
2:00–3:00 PM	E–M	308, Conv. Center	Student-driven Investigations into School Yard Ecology and Habitat Restoration (p. 106)
3:00–5:30 PM	10–C	610, Conv. Center	Bio-Rad—GMO Investigator Kit (p. 110)
3:30–4:30 PM	G	2A, Conv. Center	Infect Your Biology Classroom with Math (p. 112)
3:30–4:30 PM	E–H	308, Conv. Center	The Gray Wolf (p. 111)
4:00–5:15 PM	K–12	611, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 114)
5:00–6:00 PM	M–H	2A, Conv. Center	A Journey from Sea to Market: Exploring Sustainable U.S. Seafood (p. 116)
5:00–6:00 PM	M–C	3A, Conv. Center	Stem Cells: Science and Ethics (p. 116)

### SATURDAY

8:00–9:00 AM	E–H	2A, Conv. Center	You Don’t Know Beans About Beans (p. 120)
8:00–9:00 AM	M	3A, Conv. Center	The Study of Rare Diseases: A New Approach to Teaching Scientific Inquiry in Middle School (p. 120)
8:00–9:15 AM	6–C	612, Conv. Center	Diagnosing Diabetes (p. 121)
8:00–9:15 AM	7–C	613/614, Conv. Center	NIH Science Education Partnership Award West Coast Alliance (p. 121)
8:00–9:30 AM	9–C	610, Conv. Center	Bio-Rad—Light Up Your Classroom with Prize-winning GFP! (AP Biology Lab 6) (p. 122)
9:30–10:30 AM	G	2B, Conv. Center	CSI Web Adventures (p. 122)
9:30–10:30 AM	H	3B, Conv. Center	A Cytopeian Adventure: Bringing Flow Cytometry to the High School Classroom (p. 122)
9:30–10:30 AM	H	308, Conv. Center	Award-winning Inquiry Lab Activities for High School Biology (p. 123)

10:00–11:00 AM	9–C	610, Conv. Center	Creating a Biotechnology Skills Course with Bio-Rad and Author J. Kirk Brown (p. 124)
11:00 AM–12 Noon	H–C	308, Conv. Center	Don't Be Scared of Primary Literature: Explore Science Through Experimental Design (p. 125)
11:00 AM–12 Noon	11–C	610, Conv. Center	Bio-Rad—Protein Expression and Purification Series (p. 126)

### Chemistry/Physical Science

#### THURSDAY

8:00–9:00 AM	H	203, Conv. Center	Bring the Science of Cars into the Classroom (p. 47)
8:00–9:00 AM	E	619, Conv. Center	Oobleck, Slime, and Playdough: Materials Engineering for the Elementary Classroom (p. 50)
8:00–9:15 AM	9–12	4C-2, Conv. Center	Connecting to Chemistry: Igniting Student Motivation with STEM Examples and Ideas (p. 50)
10:00–11:15 AM	8–12	4C-1, Conv. Center	Chemistry In-the-Bag Inquiry (p. 53)
10:00–11:15 AM	7–12	4C-2, Conv. Center	Flinn Scientific Presents Best Practices for Teaching Chemistry™: Experiments and Demos (p. 53)
10:00–11:15 AM	9–12	609, Conv. Center	Stop Teaching and Start Coaching AP Chemistry (p. 54)
10:00–11:15 AM	8–C	610, Conv. Center	Teaching Chemistry with Molecular-Level Visualization and Simulation Tools (p. 54)
10:00–11:15 AM	9–12	613/614, Conv. Center	<i>Living By Chemistry</i> : Create a Table (p. 54)
12:30–1:30 PM	H–C	203, Conv. Center	Research Careers for Sustainability (p. 59)
12:30–1:30 PM	M–C	211, Conv. Center	Polymers 1B: Squeeze Them into General Chemistry (p. 60)
12:30–1:45 PM	8–12	4C-1, Conv. Center	Chemistry In-the-Bag Inquiry (p. 61)
2:00–3:00 PM	H	203, Conv. Center	Solids: The Neglected “State” of Chemistry (p. 63)
2:00–3:00 PM	H–C/S	212, Conv. Center	American Chemical Society (ACS) Guidelines and Recommendations for Teaching High School Chemistry: A Resource for High School Chemistry Teaching (p. 64)
2:00–3:00 PM	M–H	303, Conv. Center	What Is Your Cosmic Connection to the Elements? (p. 66)
2:00–3:00 PM	G	304, Conv. Center	Teaching and Learning in the Digital Age: Chemistry Resources Teachers and Students Can Rely On (p. 64)
2:00–3:00 PM	M–H/I	308, Conv. Center	Polymers 1A: They're Everywhere! Kitchen, Classroom, Cars, and Clothing (p. 64)
3:30–4:30 PM	M–H	303, Conv. Center	Inquiry-based Hands-On Activities and Demonstrations (p. 71)
4:00–5:15 PM	7–12	4C-1, Conv. Center	Cool Tech Tools for Chemistry: Really Easy Data Collectors (p. 72)
4:00–5:15 PM	9–12	609, Conv. Center	Going Green: Economical and Environmentally Friendly Inquiry in Chemistry (p. 73)
5:00–6:00 PM	M–H	303, Conv. Center	Technology Makes STEM Instruction Easy (p. 75)
5:00–6:00 PM	I	619, Conv. Center	Polydensity Tube: Make—Learn—Take. Serious Fun with a Dense Subject (p. 75)

#### FRIDAY

8:00–9:00 AM	H	4C-4, Conv. Center	ACS Session One: Equilibrium and Concentration (p. 80)
8:00–9:00 AM	G	203, Conv. Center	Maximizing Excel's Potential in the Science Classroom (p. 79)
8:00–9:00 AM	M	310, Conv. Center	ACS Middle Level Session: Solids, Liquids, and Gases: The Kinetic-molecular Theory of Matter (p. 81)
8:00–9:15 AM	9–12	611, Conv. Center	Introducing Inquiry into the Chemistry Lab (p. 83)
8:00–9:15 AM	6–12	615, Conv. Center	Teaching About Batteries (p. 83)
9:30–10:30 AM	H	4C-4, Conv. Center	ACS Session Two: Equilibrium and Energy (p. 89)
9:30–10:30 AM	H/S	203, Conv. Center	Engaging Students in Chemistry Outside the Classroom: A Look at ChemClub (p. 87)

## Schedule at a Glance Chemistry/Physical Science

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9:30–10:30 AM	M	310, Conv. Center	ACS Middle Level Session: Changes of State: Evaporation and Condensation (p. 89)
10:00–11:15 AM	8–C	605, Conv. Center	Molecular Modeling in Middle and High School Science Classrooms: Engage Your Students! (p. 91)
11:00 AM–12 Noon	H	4C-4, Conv. Center	ACS Session Three: Rate (p. 95)
11:00 AM–12 Noon	M	310, Conv. Center	ACS Middle Level Session: Density: A Molecular View (p. 96)
12 Noon–1:15 PM	9–12	4C-2, Conv. Center	Sparkling Interest and Learning with Chemistry: A Part 1 Experience (p. 98)
12:30–1:30 PM	9–12	4C-3, Conv. Center	Active Chemistry/Active Physics: Project-based Science That's Relevant for All Students (p. 102)
12:30–1:30 PM	H	4C-4, Conv. Center	ACS Session Four: Catalysis (p. 102)
12:30–1:30 PM	M–H	201, Conv. Center	Polymers: New Twists on Old Favorites (p. 102)
12:30–1:30 PM	M–C	203, Conv. Center	Spreadsheets for Student Self-checking of Lab Work (p. 100)
12:30–1:30 PM	M	310, Conv. Center	ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (p. 102)
1:00–2:00 PM	9–12	612, Conv. Center	Chemistry—Atmospheric Pressure (p. 103)
2:00–3:00 PM	H	4C-1, Conv. Center	Corrosion Is Everywhere—Use It to Make Chemistry Relevant and Fun (p. 104)
2:00–3:00 PM	H	4C-4, Conv. Center	ACS Session Five: Light as a Reactant and/or Product (p. 106)
2:00–3:00 PM	M	310, Conv. Center	ACS Middle Level Session: Polarity of the Water Molecule and Its Consequences (p. 107)
2:00–3:15 PM	9–12	4C-2, Conv. Center	Sparkling More Interest with Chemistry: A Part 2 Experience (p. 107)
2:00–3:15 PM	9–12	615, Conv. Center	What Is the Difference Between Heat and Temperature? (p. 109)
3:30–4:30 PM	H	4C-4, Conv. Center	ACS Session Six: Half-Life (p. 112)
3:30–4:30 PM	M	310, Conv. Center	ACS Middle Level Session: Chemical Change: Breaking and Making Bonds (p. 112)
4:00–5:15 PM	9–12	613/614, Conv. Center	<i>Living By Chemistry</i> : What Shape Is That Smell? (p. 114)
5:00–6:00 PM	H	203, Conv. Center	Write Your Way to Success: Grant-writing Strategies for You and Your Chemistry Students (p. 115)

### SATURDAY

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8:00–9:00 AM	H	203, Conv. Center	Using Science Stories to Teach Chemistry (p. 119)
8:00–9:00 AM	E	619, Conv. Center	Inquiry in Action (p. 121)
9:30–10:30 AM	H	203, Conv. Center	Basic Polymer Chemistry for the High School Classroom (p. 122)

### Earth/Space Science

#### THURSDAY

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8:00–9:00 AM	M–H	307, Conv. Center	Building Inquiry Skills with Online Seismic Data (p. 49)
8:00–9:00 AM	E–M	618, Conv. Center	Earth Shattering! Hands-On Earth Science Activities from the Department of Energy (p. 49)
8:00–9:15 AM	5–12	605, Conv. Center	The Layered Earth! (p. 50)
10:00–11:15 AM	K–12	4C-3, Conv. Center	Master of Science Degree in Geosciences Available Online Through the Teachers in Geosciences Program (p. 53)
10:00–11:15 AM	5–12	605, Conv. Center	Starry Night Education! (p. 54)
12:30–1:30 PM	M–C	620, Conv. Center	NASA's Seven Ways a Black Hole Can Kill You (p. 61)
2:00–3:00 PM	M–H	201, Conv. Center	NASA's Pi in the Sky: Meaningful Math in Your Astronomy Lessons (p. 65)
2:00–3:00 PM	E–H	213, Conv. Center	Constructivist Activities for Teaching Physical Geology (p. 66)
3:30–4:30 PM	I	206, Conv. Center	JetStream: An Online School for Weather (p. 71)
3:30–4:30 PM	E–H	213, Conv. Center	NASA CERES S'COOL Project: Be a S'COOL Cloud Observer! (p. 70)
3:30–4:30 PM	M–H	617, Conv. Center	Decoding Starlight—From Pixels to Images (p. 72)
3:30–4:30 PM	M	619, Conv. Center	NASA: Dynamic Solar System Models for the Classroom (p. 72)

## Schedule at a Glance Earth/Space Science

5:00–6:00 PM	E–H	211, Conv. Center	Addressing Student Misconceptions of the Earth-Sun-Moon System: Seasons (p. 75)
5:00–6:00 PM	E–M	310, Conv. Center	O.C.T.O.P.U.S. (Oceanography Concepts and Technology Objectives for Pupils in an Urban Setting) (p. 76)

### FRIDAY

8:00–9:00 AM	M	206, Conv. Center	EarthKAM: Taking Pictures of Earth from Space (p. 81)
8:00–9:00 AM	M–H	307, Conv. Center	NASA INSPIRE Project (p. 80)
8:00–9:00 AM	E	619, Conv. Center	Our Solar System Through the Eyes of Scientists (p. 82)
8:00–9:00 AM	G	Blrm. 6E, Conv. Center	Let's Get Well Grounded! (p. 82)
8:00–9:15 AM	5–12	605, Conv. Center	The Layered Earth! (p. 83)
8:00–9:15 AM	9–12	609, Conv. Center	<i>Marine Science: The Dynamic Ocean: A New High School STEM Offering</i> (p. 83)
9:30–10:30 AM	E–H	307, Conv. Center	Leading the Salmon Home: A Healthy Dose of Indigenous Realism (p. 88)
9:30–10:30 AM	M	619, Conv. Center	Density-driven Ocean Circulation (p. 90)
9:30–10:30 AM	H–C	620, Conv. Center	NASA's Evidence for Dark Matter (p. 90)
9:30–10:30 AM	G	Blrm. 6E, Conv. Center	Climate Change Classroom Tool Kit (p. 90)
11:00 AM–12 Noon	8–12	4C-3, Conv. Center	<i>EarthComm</i> —New Edition: Meeting Your STEM Needs (p. 97)
11:00 AM–12 Noon	G	307, Conv. Center	NSTA Avenue Session: Explore Mars: Using Mars Exploration to Inspire Students (p. 95)
11:00 AM–12 Noon	H–C/I	620, Conv. Center	Ice Core Records—From Volcanoes to Stars (p. 96)
11:00 AM–12 Noon	G	Blrm. 6E, Conv. Center	Activities from Across the Earth System (p. 96)
12:30–1:30 PM	E–H	307, Conv. Center	Promoting Authentic Learning with Problem-Based Learning Units (p. 101)
12:30–1:30 PM	M–H/I	619, Conv. Center	NASA: Inquiry Activities for Learning About Light and the EM Spectrum and Multiwavelength Astronomy (p. 102)
12:30–1:30 PM	G	620, Conv. Center	Not Just Hot Air: Exploring Climate Change's Interconnections and Sustainable Solutions (p. 102)
2:00–3:00 PM	M–H	619, Conv. Center	NASA's SOFIA Is Flying! Infrared Astronomy Images and Lessons (p. 107)
2:00–3:00 PM	E–H	Blrm. 6E, Conv. Center	National Earth Science Teachers Association Earth Science Share-a-Thon (p. 107)
3:30–4:30 PM	9–12	4C-3, Conv. Center	<i>Investigating Astronomy: NEW Astronomy Textbook Written for High School Students</i> (p. 112)
3:30–4:30 PM	M–H	307, Conv. Center	Climate Expeditions: Checking Out Your Team (p. 111)
3:30–4:30 PM	E–H	619, Conv. Center	Addressing Student Misconceptions of the Earth-Sun-Moon System: Moon Phases and Eclipses (p. 112)
3:30–4:30 PM	H	620, Conv. Center	Stellar Bar Codes (p. 112)
3:30–4:30 PM	G	Blrm. 6E, Conv. Center	National Earth Science Teachers Association (NESTA) Rock and Mineral Raffle (p. 112)
4:00–5:15 PM	4–8	615, Conv. Center	Teaching About the Rock Cycle and Earth Time (p. 114)
5:00–6:00 PM	M–H	307, Conv. Center	Student Analysis of NASA Images and Data via Free/Open-Source Resources (p. 116)

### SATURDAY

8:00–9:00 AM	E–H	214, Conv. Center	MY NASA DATA: Using Earth Systems Data Visualization in the Classroom (p. 119)
8:00–9:15 AM	K–8	609, Conv. Center	Destructive Forces of Nature: Earthquakes (p. 121)
9:30–10:30 AM	M	619, Conv. Center	MoonKAM (Moon Knowledge Acquired by Middle School Students): Exploring Lunar Images (p. 124)
11:00 AM–12 Noon	G	214, Conv. Center	NASA's High-Energy Vision: Chandra and the X-ray Universe (p. 125)

# Schedule at a Glance Environmental Science

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## Environmental Science

### THURSDAY

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8:00–9:00 AM	I	620, Conv. Center	Forests, Carbon, and Climate Change (p. 50)
12:30–1:30 PM	M	3A, Conv. Center	Seven Billion and Counting: Lessons for Our Planet’s Future (p. 60)
12:30–1:30 PM	G	206, Conv. Center	Global Connections: Forests of the World (p. 60)
12:30–1:30 PM	H	617, Conv. Center	Climate Data and Modeling (p. 60)
2:00–3:00 PM	M–H	617, Conv. Center	N2: The Layered Curriculum Development Model for Project-based STEM Education (p. 66)
2:15–3:30 PM	5–C	615, Conv. Center	EcoTeach: Biodiversity of Costa Rica (p. 68)
2:15–4:30 PM	6–12	613/614, Conv. Center	Stream Assessment: An Active, Integrated Approach to Science Learning (p. 68)
3:30–4:30 PM	E–M	203, Conv. Center	NSTA Avenue Session: America’s Home Energy Education Challenge (p. 69)
3:30–4:30 PM	G	214, Conv. Center	Making the Global Local: State-specific Climate Curriculum Workshop Lessons by Teachers for Teachers (p. 70)
3:30–4:30 PM	G	620, Conv. Center	Facilitating Early Childhood Education with Project Learning Tree (p. 72)

### FRIDAY

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8:00–9:00 AM	E–M	304, Conv. Center	NSTA Avenue Session: Disney’s Planet Challenge: Project Based Learning and Service Learning–based Lesson Development and Funding (p. 80)
9:30–10:30 AM	M–H	304, Conv. Center	Video Club: A Collaborative Inquiry Professional Development (p. 88)
11:00 AM–12 Noon	I	201, Conv. Center	GreenSchools! (p. 96)
12:30–1:30 PM	I	206, Conv. Center	School Energy Survey (p. 102)
12:30–1:30 PM	E–H	304, Conv. Center	STEM Education Strategies of the Alaska Marine Science and Fisheries Career Coalition (p. 100)
2:00–3:00 PM	I	206, Conv. Center	Focus on Forests: Project Learning Tree’s New Secondary Curriculum (p. 107)
2:00–3:00 PM	G	304, Conv. Center	Be Careful What You “Fish” For: Environmental Health for Humans (p. 105)
2:00–3:15 PM	9–12	611, Conv. Center	Drive Student Inquiry with Carolina’s Advanced Environmental Science Labs (p. 108)
2:30–3:30 PM	9–12	612, Conv. Center	Renewable Energy Exploration: Solar and Wind Power (p. 110)
5:00–6:00 PM	E–M	205, Conv. Center	NSTA Avenue Session: America’s Home Energy Education Challenge (p. 115)

### SATURDAY

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8:00–9:00 AM	G	616, Conv. Center	Green Sustainable Design and Technology Courses for the 21st Century (p. 120)
8:00–9:00 AM	M–H	617, Conv. Center	Engaging English Language Learners and Striving Readers with Science Content Through Global Issues (p. 121)
8:00–9:15 AM	7–12	615, Conv. Center	Teaching About Hydrogen Fuel Cells (p. 121)
9:30–10:30 AM	P–M	3A, Conv. Center	Using Hands-On Lessons to Promote Good Global Citizenship (p. 123)
9:30–10:30 AM	H	206, Conv. Center	Drop the Lecture and Let the Students Pick Up the Learning in Environmental Science (p. 124)
9:30–10:30 AM	G	214, Conv. Center	Sustainability Education as a Core Concept in Elementary Science Instruction (p. 123)
11:00 AM–12 Noon	M–H	211, Conv. Center	Modeling Populations (p. 126)
11:00 AM–12 Noon	I	213, Conv. Center	Partnerships Enhancing Informal Marine Science Learning Opportunities for Students (p. 125)

## Integrated/General

### THURSDAY

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8:00–9:00 AM	G	204, Conv. Center	NSTA Press Session: What Were They Thinking? (p. 47)
8:00–9:00 AM	G	205, Conv. Center	ASEE Session: eGFI: Engineering, Go For It!—Dream Up the Future (p. 47)



## Schedule at a Glance Integrated/General

8:00–9:00 AM	M–H	206, Conv. Center	The Multilevel Classroom: Differentiation Strategies for Science (p. 49)
8:00–9:00 AM	P–M/I	214, Conv. Center	Kindergarten Science Illustrations (p. 48)
8:00–9:00 AM	G	303, Conv. Center	Point, Game, Set, Match: Science Wins with Tennis Ball Containers (p. 50)
8:00–9:00 AM	E	616, Conv. Center	Successful Field Experiences Using Partnerships (p. 49)
8:00–9:00 AM	G	Blrm. 6E, Conv. Center	Is This Your First NSTA Conference? (p. 50)
8:00–9:15 AM	6–12	604, Conv. Center	STEM-focused Technology Activities Using Inquiry Investigations™ (p. 50)
8:00–9:15 AM	K–6	606, Conv. Center	Learning the Design Process—Experiment or Product? (p. 51)
8:00–9:15 AM	K–8	609, Conv. Center	Inquiry in the Classroom (p. 51)
8:00–9:15 AM	3–5	612, Conv. Center	Dive into STEM with GEMS® Ocean Sciences Sequence (p. 51)
8:00–10:30 AM	K–8	602/603, Conv. Center	Using Science Notebooks with FOSS (p. 52)
9:15–10:30 AM	G	Blrm. 6 B/C, Conv. Center	General Session: The Emergence of Predictive Biology, Personalized Medicine, and Our Students' Future (Speaker: Leroy Hood) (p. 53)
10:00–11:15 AM	6–12	604, Conv. Center	STEM-focused Forensics Activities Using Inquiry Investigations™ (p. 54)
10:00–11:15 AM	K–8	606, Conv. Center	Delta Science Modules (DSM): Never Heard of It...Want to Know More? (p. 54)
10:00–11:15 AM	K–8	612, Conv. Center	New Tools for STEM Education from Carolina™ Curriculum (p. 54)
11:00 AM–12 Noon	H	205, Conv. Center	ASEE Session: UTeachEngineering: NASA Design Challenges (p. 56)
11:30 AM–1:00 PM	K–6	602/603, Conv. Center	FOSS Program Evolution and the Next Generation Science Standards (p. 56)
12 Noon–1:15 PM	6–12	604, Conv. Center	Incorporating Online Virtual Lab Solutions with Hands-On Science into Your Classroom (p. 57)
12:30–1:30 PM	M–C	2B, Conv. Center	Using Socratic Seminars in Science (p. 60)
12:30–1:30 PM	G	205, Conv. Center	ASEE Session: Engineers in the Classroom, Oh My! (p. 59)
12:30–1:30 PM	M	212, Conv. Center	Teaching Science in the Context of Substance Abuse with FREE Online Web Adventures (p. 59)
12:30–1:30 PM	G	214, Conv. Center	Impacting Teachers' Understanding and Implementation of Inquiry Science Teaching—What Works? (p. 59)
12:30–1:30 PM	G	304, Conv. Center	Oregon Science Teachers Partnership (p. 59)
12:30–1:30 PM	G	307, Conv. Center	iSTEM Summer Institute (p. 59)
12:30–1:30 PM	E–H	616, Conv. Center	Applying Learning Progressions and Facet-based Approaches to Inform Curriculum and Assessment Design (p. 59)
12:30–1:30 PM	E	618, Conv. Center	Dare to Differentiate: Strategies and Various Teacher Tricks to Improve Science Instruction for ALL Learners (p. 60)
12:30–1:30 PM	G	Blrm. 6A, Conv. Center	Featured Panel: Next Generation Science Standards (Panelists: Stephen L. Pruitt and Francis Q. Eberle) (p. 58)
12:30–1:30 PM	P–M	Blrm. 6E, Conv. Center	CESI Session: Council for Elementary Science International Share-a-Thon (p. 61)
12:30–1:45 PM	K–8	4C-2, Conv. Center	Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in K–8 Science (p. 61)
12:30–1:45 PM	K–12	4C-3, Conv. Center	Natural Differentiation Using Foldables® (p. 61)
12:30–1:45 PM	K–12	609, Conv. Center	Online Learning Exchange, Powered by Pearson—Our Content, Your Content (p. 61)
12:30–1:45 PM	K–10	612, Conv. Center	Implementing STEM in Your Classroom with Carolina™ Curriculum and the Smithsonian Institution (p. 62)
12:30–1:45 PM	9–12	615, Conv. Center	I Can See Clearly Now...Digital Projection Techniques for Better Demonstration Visibility (p. 62)
1:00–2:30 PM	K–8	606, Conv. Center	What's Going On in There? Inquiry Science for Supervisors, Trainers, and Teachers (p. 62)
2:00–3:00 PM	E/S	204, Conv. Center	NSTA Press Session: A Framework and Tools to Make Tough Grades 3–5 Science Topics Approachable (p. 66)
2:00–3:00 PM	G	205, Conv. Center	ASEE Session: VEX Robotics in the Classroom and in Competition (p. 63)
2:00–3:00 PM	M–H	206, Conv. Center	Inquiry Lessons: Life on Earth and Elsewhere? (p. 66)
2:00–3:00 PM	E	211, Conv. Center	Packing Science Home: Connecting School and Home Science (p. 63)
2:00–3:00 PM	M–C	214, Conv. Center	From Neurons to Robots—Exploring Free Online Neuroscience and Robotics Virtual Labs (p. 64)
2:00–3:00 PM	G	307, Conv. Center	School and Community Gardens: A Model for Effective Science Learning (p. 64)
2:00–3:00 PM	2–4	604, Conv. Center	33 Ways to Integrate Science (p. 67)
2:00–3:00 PM	G	616, Conv. Center	Using Learning Progressions to Support Formative Assessment Practices (p. 64)

## Schedule at a Glance Integrated/General

2:00–3:00 PM	G	618, Conv. Center	Dazzling Deceptions: Discrepant Events That Delight and Mystify! (p. 64)
2:00–3:00 PM	S	619, Conv. Center	Scaffolded Inquiry: Progressions in the Learning to Conduct Full Inquiry (p. 66)
2:00–3:00 PM	G	Blrm. 6A, Conv. Center	Featured Presentation: Supporting Students' Integrated Understandings of Big Ideas and Scientific Practices Across Time (Speaker: Joseph Krajcik) (p. 63)
2:00–4:00 PM	K–8	602/603, Conv. Center	Taking Science Outdoors with FOSS K–8 (p. 67)
2:15–3:30 PM	K–12	4C-3, Conv. Center	What the Hands Do, the Brain Does: Lasting Understanding Using Notebook Foldables® (p. 67)
2:15–3:30 PM	2–6	605, Conv. Center	Using the OHAUS Harvard Junior as a STEM-focused Skill Program (p. 68)
2:15–3:30 PM	9–12	609, Conv. Center	The Next Generation of Science Virtual Labs for the Entire Science Curriculum—No Cleanup! (p. 68)
2:15–5:15 PM	K–6	612, Conv. Center	Science and Writing: Documented Success in Increasing Achievement in Both Domains (p. 68)
3:00–4:30 PM	K–8	606, Conv. Center	Science Gnus: Scientists Famous and Forgotten...and Their Process Skills (p. 69)
3:30–4:30 PM	G	2A, Conv. Center	It's Not a Discrepant Event if They Don't Know What to Expect (p. 71)
3:30–4:30 PM	E	204, Conv. Center	NSTA Press Session: <i>Picture-Perfect Science Lessons, Grades 3–6</i> (p. 71)
3:30–4:30 PM	E–H	205, Conv. Center	ASEE Session: NASA's BEST Students (Beginning Engineering, Science, and Technology) (p. 70)
3:30–4:30 PM	G	211, Conv. Center	Fun Activities with Gel Polymers to Enhance Any Science Class (p. 71)
3:30–4:30 PM	E–M	212, Conv. Center	The Reflective Assessment Technique: 15 Minutes to Improved Instruction (p. 70)
3:30–4:30 PM	E–H	304, Conv. Center	Give Science a Voice! Digital Storytelling in the Science Classroom (p. 70)
3:30–4:30 PM	G	307, Conv. Center	Career Currents: Energy Careers (p. 70)
3:30–4:30 PM	M/S	308, Conv. Center	LEGO® Robotics Middle School STEM Class (p. 70)
3:30–4:30 PM	2–4	604, Conv. Center	The Four "It's" of Science (p. 72)
3:30–4:30 PM	G	608, Conv. Center	What's So "Next Generation" About the Next Generation Science Standards? (p. 71)
3:30–4:30 PM	G	616, Conv. Center	Assessment for Learning and Learning Progressions (p. 70)
3:30–4:30 PM	P–E/S	618, Conv. Center	Making Science Accessible for English Language Learners (p. 70)
4:00–5:15 PM	3–8	4C-2, Conv. Center	Ecology Adventures: Motivating Students Through Project Based Learning (p. 72)
5:00–5:30 PM	G	308, Conv. Center	Infusing Sustainability into Teacher Preparation Programs at a Large State University (p. 73)
5:00–6:00 PM	M–C	2A, Conv. Center	Meaningful Assessment in Science That Impacts Learning (p. 75)
5:00–6:00 PM	E/S	203, Conv. Center	Ready for Primary Time: Adapting Engineering Curricula for the K–2 Classroom (p. 74)
5:00–6:00 PM	G	205, Conv. Center	ASEE Session: eGFI: Engineering, Go For It!—Dream Up the Future (p. 74)
5:00–6:00 PM	M–H	206, Conv. Center	Forensics Science Can Turn Every Science into a Relevant Science (p. 75)
5:00–6:00 PM	M	212, Conv. Center	Learning Trajectories in Mathematics Tied to Diagnostics (p. 74)
5:00–6:00 PM	M	213, Conv. Center	Go Beyond the Scientific Method to Experimental Design (p. 74)
5:00–6:00 PM	G	214, Conv. Center	Inquiry-based Science in Seattle Preschools (p. 74)
5:00–6:00 PM	E–H	616, Conv. Center	Making the Most of NSDL's Science Literacy Maps (p. 74)
5:00–6:00 PM	G	617, Conv. Center	Science, Stuff, and Sustainability: Engaging Students in Examining Systems, Resources, and Consumption (p. 75)
5:00–6:00 PM	I	618, Conv. Center	Integrating Indigenous Knowledge and Science Education (p. 74)

### FRIDAY

8:00–8:30 AM	P	213, Conv. Center	NARST Session: Science in the preK Classroom: Leveraging Children's Everyday Experiences and Knowledge to Support Scientific Discourse (p. 79)
8:00–9:00 AM	G	4C-1, Conv. Center	<i>A Framework for K–12 Science Education</i> (p. 79)
8:00–9:00 AM	6–8	4C-3, Conv. Center	Project-Based Inquiry Science: PBIS™/STEM Solution—Earth, Life, and Physical Science in Middle School (p. 82)
8:00–9:00 AM	M–C	201, Conv. Center	Incorporating Current Scientific Research into Grades 7–12 Science Lessons (p. 81)
8:00–9:00 AM	E–H	204, Conv. Center	NSTA Press Session: <i>The Gourmet Lab</i> (p. 79)

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8:00–9:00 AM	S	214, Conv. Center	NSELA Session: Tools for Science Leaders (p. 79)
8:00–9:00 AM	M	618, Conv. Center	Teaching Systems as a Framework for Understanding (p. 80)
8:00–9:00 AM	M–H	620, Conv. Center	The Time for Inquiry Is Now! (p. 82)
8:00–9:15 AM	3–8	4C-2, Conv. Center	Effective STEM Challenges for the Classroom (p. 83)
8:00–9:15 AM	2–8	606, Conv. Center	Inquiring Minds Provide Spark for Science Lessons (p. 83)
8:00–9:15 AM	K–12	Blrm. 6C, Conv. Center	Formative Assessment Probes: Supporting an Idea-centered Classroom (p. 84)
8:00–9:30 AM	K–8	604, Conv. Center	K–8 Science with Vernier (p. 84)
8:00–10:30 AM	2–8	602/603, Conv. Center	Using Student Science Notebooks to Assess Learning (Experienced Users) (p. 85)
9:30–10:00 AM	M–H	213, Conv. Center	NARST Session: Critical Examinations of Media to Enhance Student Understandings of Science (p. 87)
9:30–10:30 AM	G	3B, Conv. Center	Science Facilities 101: Safe and Sustainable Facilities (p. 89)
9:30–10:30 AM	G	4C-1, Conv. Center	Exploring the Science Framework (p. 87)
9:30–10:30 AM	6–12	4C-3, Conv. Center	STEM Solutions for Middle School and High School Classrooms (p. 90)
9:30–10:30 AM	G	201, Conv. Center	Migration: Math and Movement (p. 89)
9:30–10:30 AM	G	205, Conv. Center	NSTA Avenue Session: Toshiba/NSTA ExploraVision (p. 87)
9:30–10:30 AM	E	206, Conv. Center	Global Sustainability Science Connections: Engaging Lessons for the Primary Grades (p. 89)
9:30–10:30 AM	G	211, Conv. Center	Making Sense of SCIENCE: A Professional Development Curriculum for K–8 Teachers (p. 89)
9:30–10:30 AM	M–H	212, Conv. Center	Integration in High School? (p. 87)
9:30–10:30 AM	S	214, Conv. Center	NSELA Session: Preservice Teachers and Science Leadership: Collaborating in Support of New Teachers to Support Student Learning (p. 88)
9:30–10:30 AM	G	308, Conv. Center	Make Social Media and Web Tools Work for You (p. 88)
9:30–10:30 AM	G	618, Conv. Center	Learning Progressions: A Valuable Tool (p. 88)
9:30–10:30 AM	G	Blrm. 6A, Conv. Center	Featured Presentation: Connecting Community Experiences and Science Learning (Speaker: Eric J. Jolly) (p. 86)
10:00–11:15 AM	6–8	4C-2, Conv. Center	Hands-On Integrated Science Activities for Middle School (p. 91)
10:00–11:15 AM	1–6	606, Conv. Center	Integrating Science and Literacy: Grades 1–6 (p. 91)
10:00–11:15 AM	K–12	609, Conv. Center	Preparing Your Students to Become Tomorrow’s Innovators with STEM Education (p. 92)
10:00–11:15 AM	G	613/614, Conv. Center	Dealing with Density 1.0: Activities to Support STEM in the Classroom (p. 92)
10:00–11:15 AM	K–8	Blrm. 6C, Conv. Center	Fun, Fabulous Foldables® (p. 92)
10:00–11:30 AM	7–C	604, Conv. Center	Exploring Science with Vernier (p. 92)
11:00 AM–12 Noon	G	3B, Conv. Center	Science Facilities 102: The Architects Have Started Without Me—What Do I Do Now? (p. 95)
11:00 AM–12 Noon	G	4C-1, Conv. Center	K–6 Science Instruction for All Students to Achieve Success (p. 94)
11:00 AM–12 Noon	G	203, Conv. Center	Focusing On Instruction: An Introduction to the Elements of Effective Science Instruction (p. 94)
11:00 AM–12 Noon	G	204, Conv. Center	NSTA Press Session: Implementing Research Projects as Part of the STEM Curriculum (p. 94)
11:00 AM–12 Noon	G	205, Conv. Center	Write for NSTA’s Journals (p. 94)
11:00 AM–12 Noon	M–C/S	212, Conv. Center	The Organized Binder: Best Practices in Action (p. 94)
11:00 AM–12 Noon	G	213, Conv. Center	Get the FACTs! (p. 95)
11:00 AM–12 Noon	G	308, Conv. Center	Raise Your Students’ IQ—Come Learn How to Do That! (p. 95)
11:00 AM–12 Noon	G	616, Conv. Center	Flights of Innovation: Ready Middle Schoolers for STEM Careers (p. 95)
11:00 AM–12 Noon	M	617, Conv. Center	Equal Access to Science: Universal Design and Students with Disabilities (p. 96)
11:00 AM–12 Noon	E	619, Conv. Center	If at First You Don’t Succeed, Get New Batteries! Spark Student Interest with Informal Science Activities (p. 96)
11:00 AM–12 Noon	G	Blrm. 6A, Conv. Center	Featured Panel: Building Bridges Between In-School and Out-of-School STEM Learning (Panelists: Theresa Britschgi, Karen Baker, Jamie Creola, and Ben Klasky; Moderator: Dennis Schatz) (p. 93)
11:00 AM–12 Noon	G	Exhibit Hall Entrance	Meet the Presidents and Board/Council (p. 94)
11:30 AM–1:30 PM	5–8	602/603, Conv. Center	FOSS Planetary Science for Middle School (p. 98)

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12 Noon–1:15 PM	K–8	Blrm. 6C, Conv. Center	Fun, Fabulous Foldables® (p. 99)
12 Noon–1:30 PM	7–C	604, Conv. Center	Exploring Science with Vernier (p. 99)
12:30–1:30 PM	E–M	204, Conv. Center	NSTA Press Session: Bringing Outdoor Science into Your Classroom (p. 102)
12:30–1:30 PM	G	205, Conv. Center	Teach STEM? NASA Explorer Schools Can Help! (p. 100)
12:30–1:30 PM	H–C	212, Conv. Center	Using Computer Models for Guided Inquiry: A Case Study of Biological and Physical Interactions in Estuaries (p. 100)
12:30–1:30 PM	G	213, Conv. Center	Credit Recovery: Energy as a Theme for Credit Recovery Success (p. 100)
12:30–1:30 PM	M–H/I	214, Conv. Center	Matching Science Concepts to Student Video Projects for Enhanced Assessment (p. 100)
12:30–1:30 PM	E–M	616, Conv. Center	Engineering Design: Constructing Ideas for Teachers (p. 101)
12:30–1:30 PM	E	617, Conv. Center	Enhancing Literacy Through Science Explorations (p. 102)
12:30–1:30 PM	H/S	618, Conv. Center	STEM and Problem-Based Learning (PBL) in a Comprehensive High School (p. 101)
12:30–1:30 PM	G	Blrm. 6A, Conv. Center	Regional STEM School Panel (p. 101)
12:30–2:30 PM	G	3B, Conv. Center	NSTA’s Exemplary Science Programs (ESP): Meeting the Reform Features Recommended in the National Science Education Standards (p. 103)
1:00–2:15 PM	K–8	606, Conv. Center	Are You a Problem (Solving) Teacher? Want to Become One? (p. 103)
2:00–2:30 PM	G	213, Conv. Center	Preservice Elementary Teachers’ Performance and Reflection on Formative Assessment Probes (p. 104)
2:00–3:00 PM	9–12	4C-3, Conv. Center	Coordinated Science: Physical, Earth, and Space Sciences (p. 107)
2:00–3:00 PM	E	201, Conv. Center	Linking Home and School with P.A.S.S.© (Portable Affordable Simple Science) (p. 106)
2:00–3:00 PM	E–H	203, Conv. Center	Get SIMulated! (p. 104)
2:00–3:00 PM	G	204, Conv. Center	NSTA Press Session: Team Teaching Science: You Can Do It! (p. 104)
2:00–3:00 PM	G	205, Conv. Center	Starting an NSTA Student Chapter: Faculty and Student Perspectives (p. 104)
2:00–3:00 PM	M–C	307, Conv. Center	Forcing STEM Education: Lessons Learned from Stewart Middle School (p. 105)
2:00–3:00 PM	G	616, Conv. Center	Assessment and STEM Project Based Learning (p. 106)
2:00–3:00 PM	G	618, Conv. Center	NSTA Avenue Session: The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 106)
2:00–3:15 PM	5–12	605, Conv. Center	Detecting Radiation in Our Radioactive World (p. 108)
2:00–3:15 PM	K–8	609, Conv. Center	Inquiry and Evidence: Keys to Getting Students to Inquire (p. 108)
2:00–3:15 PM	8–12	613/614, Conv. Center	Art vs. Science: The Role of Science in Wine Making (p. 108)
2:00–3:15 PM	3–11	Blrm. 6C, Conv. Center	Teaching Science with Toys and Treats! (p. 109)
2:00–3:30 PM	7–C	604, Conv. Center	Exploring Science with Vernier (p. 109)
2:00–4:00 PM	K–8	602/603, Conv. Center	Developing Language Using FOSS (p. 109)
3:30–4:30 PM	E–H	201, Conv. Center	NOAA in Your Backyard (p. 110)
3:30–4:30 PM	G	203, Conv. Center	Putting It All Together...Powerful Collaboration, Instruction, and Assessment (p. 110)
3:30–4:30 PM	S	204, Conv. Center	NSTA Press Session: Putting the Science into PLCs (p. 110)
3:30–4:30 PM	G	205, Conv. Center	Before and After Retirement: Practicalities and Possibilities (p. 110)
3:30–4:30 PM	G	206, Conv. Center	City of Materials: Connecting Science to the “Stuff” in Children’s Lives (p. 110)
3:30–4:30 PM	P–M	211, Conv. Center	CESI Session: Council for Elementary Science International Presents Opportunities Galore (p. 112)
3:30–4:30 PM	M–H	212, Conv. Center	Square Pegs: Science for Those Other Kids (p. 111)
3:30–4:30 PM	S	213, Conv. Center	Resources and Research for Professional Development Providers (p. 111)
3:30–4:30 PM	M	214, Conv. Center	Science Inquiry Projects at the Middle Level (p. 111)
3:30–4:30 PM	G	304, Conv. Center	How Does the Melting Pot Become the Salad Bowl? (p. 111)
3:30–4:30 PM	H	616, Conv. Center	STEM, SLCs, and Inquiry (p. 111)
3:30–4:30 PM	P–E	618, Conv. Center	Using Performance Assessments to Evaluate Readiness to Learn and Expose Misconceptions (p. 111)
3:30–5:00 M	G	Blrm. 6A, Conv. Center	Featured Panel: STEM Education for All: A Quixotic Quest or Well Within Reach? (Panelists: Brad Smith, Tyler Rice, Matthew Lyons; Moderator: Julia Novy-Hildesley) (p. 113)

## Schedule at a Glance Integrated/General

4:00–5:15 PM	5–10	605, Conv. Center	Using the OHAUS Triple Beam Balance™ as a STEM-focused Skill Platform (p. 114)
4:00–5:15 PM	K–8	609, Conv. Center	From Science to Engineering (p. 114)
4:00–5:15 PM	3–11	Blrm. 6C, Conv. Center	Teaching Science with Toys and Treats! (p. 114)
5:00–6:00 PM	E	201, Conv. Center	Bring Literacy and Science Together: “B.L.A.S.T.”© for Success at School and Home (p. 117)
5:00–6:00 PM	P–M	206, Conv. Center	Using Readers Theater to Improve Science Instruction and Learning (p. 117)
5:00–6:00 PM	E–H	212, Conv. Center	SIOP Strategies and Classroom Instruction (p. 115)
5:00–6:00 PM	G	213, Conv. Center	Presidential Awards for Excellence in Mathematics and Science Teaching (p. 115)
5:00–6:00 PM	E–M	214, Conv. Center	I See What You Mean! Developing Visual Literacy (p. 115)
5:00–6:00 PM	E–H	304, Conv. Center	Building Effective Classroom Chemistry: It’s About the Elements! (p. 116)
5:00–6:00 PM	G	616, Conv. Center	Answering the Call to Innovate in STEM (p. 116)
5:00–6:00 PM	G	617, Conv. Center	What Are They Thinking? Formative Assessments Reveal Students’ Thoughts (p. 117)
5:00–6:00 PM	G	618, Conv. Center	Applying New Brain Research to Best Practices in Science: Reaching ALL Learners (p. 116)

### SATURDAY

8:00–9:00 AM	E–H	2B, Conv. Center	Virtual Worlds: Exploring the Natural World Through “The Cloud” (p. 119)
8:00–9:00 AM	G	3B, Conv. Center	Promoting Scientifically Literate and Socially Aware Students (p. 120)
8:00–9:00 AM	E	204, Conv. Center	NSTA Press Session: <i>Picture-Perfect Science Lessons, Grades K–4</i> (p. 120)
8:00–9:00 AM	G	211, Conv. Center	Managing Your Own Professional Development (p. 119)
8:00–9:00 AM	G	213, Conv. Center	Be a NOAA Teacher at Sea! (p. 119)
8:00–9:00 AM	E–M	303, Conv. Center	Reading and Writing Science Using Polymer Activities (p. 120)
8:00–9:00 AM	E–H	307, Conv. Center	Promoting Critical Thinking in the 21st-Century Classroom (p. 119)
8:30–11:00 AM	G	Exhibit Hall, Conv. Center	Science Matters Community Event (p. 122)
9:30–10:30 AM	G	2A, Conv. Center	Hands-On/Minds-On Science: Using Interactive White Boards and Hands-On Activities to Reach All Learners (p. 123)
9:30–10:30 AM	P–M/I	201, Conv. Center	Sniff Trails: Engaging the Senses to Learn About Wildlife (p. 124)
9:30–10:30 AM	M–H	211, Conv. Center	Collaborating and Curricula for Teaching Systems Biology (p. 124)
9:30–10:30 AM	G	213, Conv. Center	Kindergarten Science Engagement for Inquiry Lessons (p. 123)
9:30–10:30 AM	E	618, Conv. Center	Science and Writing: Documented Success in Increasing Achievement of Diverse Learners in Both Domains (p. 123)
10:00–11:15 AM	3–8	609, Conv. Center	Teaching English Language Learners in the Science Classroom: Collaboration, Co-teaching, and Coaching (p. 124)
11:00 AM–12 Noon	E–M	2A, Conv. Center	Teaching Energy Conservation with an Emphasis on Biofuels (p. 126)
11:00 AM–12 Noon	H–C/I	201, Conv. Center	Oceanography: Dynamics of Water Movement (p. 126)
11:00 AM–12 Noon	G	203, Conv. Center	Become an Einstein Fellow! (p. 125)
11:00 AM–12 Noon	M–H/S	212, Conv. Center	Measuring Change in Teachers’ Formative Assessment Attitudes and Practice (p. 125)
11:00 AM–12 Noon	E–H	307, Conv. Center	The Magic Web: Integrating Outstanding Trade Books (p. 125)
11:00 AM–12 Noon	M–H	616, Conv. Center	Teach Science Content and Inspire STEM Careers with FREE Online Web Adventures (p. 125)
11:00 AM–12 Noon	E	617, Conv. Center	STEM Careers: Connections with Climate Change Scientists (p. 126)
11:00 AM–12 Noon	G	618, Conv. Center	A Learning Progression-based System for Promoting Understanding of Carbon-transforming Processes (p. 126)

# Schedule at a Glance Physics/Physical Science

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## Physics/Physical Science

### THURSDAY

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8:00–9:00 AM	H	201, Conv. Center	The Physics of Supernovae (p. 49)
8:00–9:30 AM	6–12	607, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 52)
10:00–11:30 AM	6–12	607, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 55)
12 Noon–1:30 PM	6–12	607, Conv. Center	Sound, Waves, and Music (p. 57)
12:30–1:30 PM	M–H	201, Conv. Center	Wind Power (p. 60)
12:30–1:30 PM	E–M/I	308, Conv. Center	STOP for Science! A Schoolwide Science Enrichment Program (p. 59)
12:30–1:30 PM	P–E	619, Conv. Center	Ramps and Pathways: An Inquiry-based Approach to Physical Science in Early Childhood (p. 61)
2:00–3:00 PM	E–M	620, Conv. Center	CRISIS Pieces: Supplemental Polar Science Activities (p. 66)
2:00–3:30 PM	6–12	607, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 67)
3:30–4:30 PM	M–H	201, Conv. Center	A Different Look at an Old Model: Modeling the Spectrum (p. 71)
4:00–5:30 PM	6–12	607, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 73)

### FRIDAY

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8:00–9:00 AM	M–H	212, Conv. Center	Doing Inquiry in a Standards World: Have Your Cake and Eat It, Too (p. 79)
8:00–9:30 AM	6–12	607, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 84)
8:00–9:30 AM	M–C	608, Conv. Center	AAPT Session: Invention Tasks That Promote Proportional Reasoning Skills in Physics and Physical Science (p. 84)
8:30–9:00 AM	G	213, Conv. Center	NARST Session: Integrating Linguistic Scaffolding into a Classroom Discourse to Shift ELL Student Engagement in a Secondary Science Classroom (p. 79)
9:30–10:30 AM	M–C	608, Conv. Center	AAPT Session: Putting Student Energy to Use with a Bike Generator! (p. 88)
9:30–10:30 AM	6–12	612, Conv. Center	Physics and Physical Science: Investigating Motion (p. 90)
10:00–11:30 AM	6–12	607, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 92)
11:00 AM–12 Noon	6–8	612, Conv. Center	Investigating Earthquakes in Middle School: Bringing Science and Technology Together (p. 97)
11:00 AM–12:45 PM	M–C	608, Conv. Center	AAPT/SCST Session: Physics by Inquiry: A Guided Inquiry Curriculum (p. 98)
12 Noon–1:30 PM	6–12	607, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 99)
1:00–1:45 PM	M–C	608, Conv. Center	AAPT Session: Engaging Independent Projects to Teach Energy (p. 103)
2:00–3:30 PM	6–12	607, Conv. Center	Sound, Waves, and Music (p. 109)
2:00–3:30 PM	M–C	608, Conv. Center	AAPT Session: Active Learning of Introductory Optics: Interactive Lecture Demonstrations and Optics Magic Tricks (p. 109)
3:30–4:30 PM	M–C	608, Conv. Center	AAPT Session: Interactive Lecture Demonstrations for Smaller Classrooms (p. 112)
4:00–5:30 PM	6–12	607, Conv. Center	Chemistry and the Atom: Fun with Atom Building Games! (p. 115)

### SATURDAY

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9:30–10:30 AM	G	617, Conv. Center	Science Learning Progressions: Good News and Cautions (p. 123)
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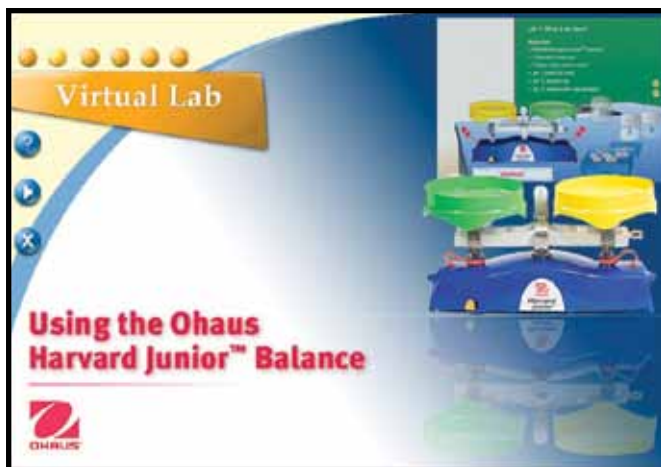
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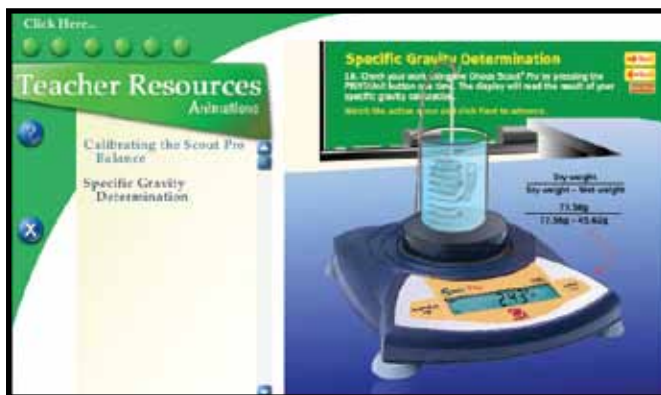
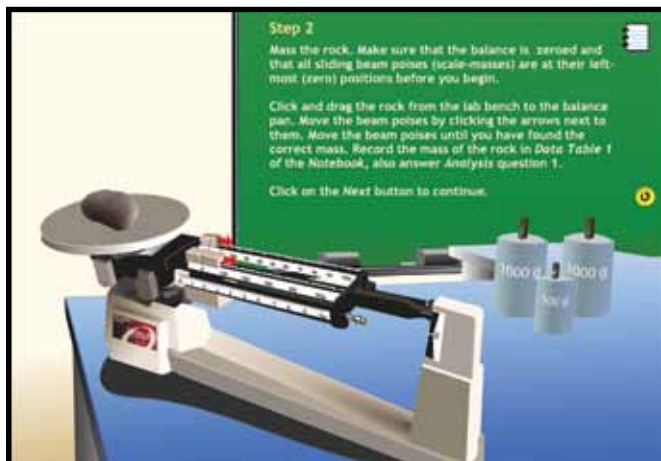


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