

L
O
U
I
S
V
I
L
L
E

Science—Everyone, Everyday!



NSTA 2012 Area Conference on Science Education



LOOKING FOR iPad® AND MOBILE DEVICE SOLUTIONS?

Collect, view, analyze, and annotate sensor data from a LabQuest 2 on an iPad®, Android™ tablet, or other mobile device that has a supported web browser. www.vernier.com/css

Read the reviews at www.vernier.com/labquest2-reviews

Introducing LabQuest® 2

NEW
ONLY \$329

The most powerful, connected, and versatile data-collection device available for physics education

Our **NEW** Vernier LabQuest 2 interface puts scientific data-collection technology into your students' hands and is compatible with your existing Vernier sensors and software. Explore science in the lab and in the field with full-color clarity, touch-screen ease, and breakthrough, versatile technology. Features include:

- Full graphing and analysis tools
- Built-in wireless connectivity supports file transfers, printing, screen sharing, and WDSS
- Audio Function Generator
- Data sharing via email
- Fast data collection at up to 100 kHz
- Built-in sensors, including microphone, GPS, and three-axis accelerometer

Go to www.vernier.com/labquest2 for complete details and to find **FREE** workshops in your neighborhood.

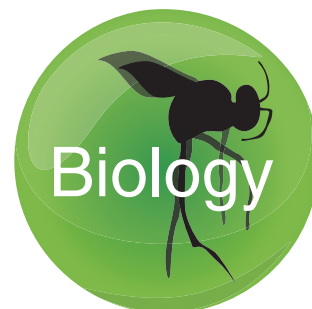
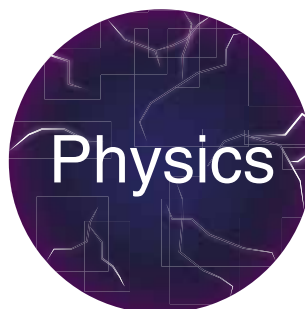
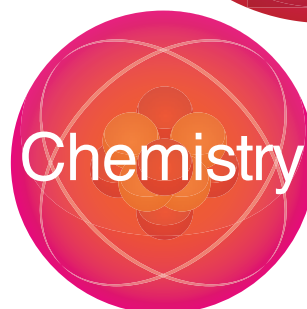


The Big Picture—In 3 Minutes

600+ Award-Winning Twig Science Videos

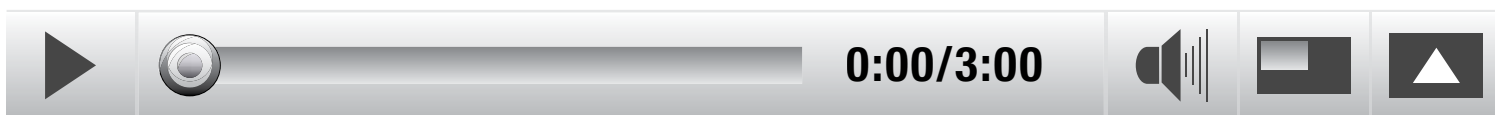
Bring science to life with Twig science videos that are:

- **Engaging**—Capture student interest with videos that combine rigorous research, stunning visuals, and concise content.
- **Easy**—Designed to align with science content, each video includes supporting materials for lesson plans, diagrams, and quizzes.
- **Extensive**—The videos cover 4 key science areas.



carolina
science
ONLINE™

Sign up for your free
30-day trial by visiting
www.carolina.com/twig.

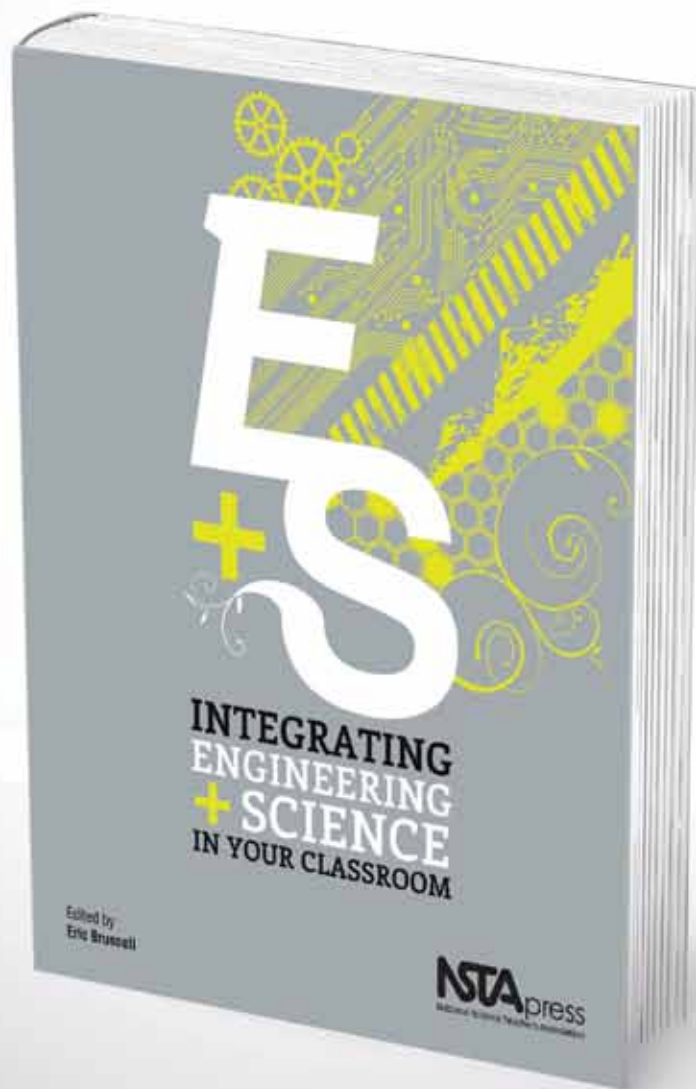


Lightsabers, Potatoes, Eggs ...

What do these have in common?

All are included in design challenges in NSTA Press's **NEW** book
Integrating Engineering and Science in Your Classroom.

Its 30 chapters include STEM lessons to help K–12 teachers blend authentic and meaningful engineering activities into instruction. The lessons reinforce important skills and science content while illustrating a wide range of STEM skills and opportunities.



To order, learn more, or check out our other STEM books, visit
www.nsta.org/store

NSTA National
Science
Teachers
Association

Committee Welcome	5
Louisville Conference Committee	5
President’s Welcome	7
Contributors to the Louisville Conference	7
NSTA Conferences Go Green!	8

Registration, Travel, and Hotels

Meeting Location and Times	10
Registration	10
Purchasing Ticketed Events	10
Airlines	10
Ground Transportation to/from Airport	10
Getting Around Town	10
Parking	10
Discounted Rental Cars	10
Louisville Map	11
Conference Hotels	11
Trolley Schedule	11

Conference Resources

Exhibits	12
NSTA Avenue	12
NSTA Science Bookstore	12
Meet the Presidents and Board/Council	12
Information Desk	12
Housing Questions or Concerns?	12
KSTA Booth	12
Presenters and Presiders Check-In	12
Conference Evaluation	12
Graduate Credit Opportunity	12
Lost and Found	13
NSTA Mobile Website	13
First Aid Services	13
Audiovisual Needs	13
Message Center	13
Business Services	14
Special Offer for the Kentucky Science Center	14
Online Session Evaluations/ Tracking Professional Development	14

National Science Teachers Association

1840 Wilson Blvd.
Arlington, VA 22201-3000
703-243-7100, E-mail: conferences@nsta.org
www.nsta.org

Cover Photo

Students participate in hands-on exploration to discover the principles of fiber optics at the Kentucky Science Center. The clear fiber transmits light waves from one end of the fiber to the other. Photo courtesy of the Kentucky Science Center.

Conference Resources, cont.

Floor Plans	16
NSTA Headquarters Staff	20
NSTA Officers, Board of Directors, Council, and Alliance of Affiliates	21
Future NSTA Conferences	22
Call for Sessions	22
NSTA San Antonio National Conference	23
Professional Development Documentation Form	following p. 32

Conference Program

Conference Highlights	24
Conference Strands	26
NSTA Exemplary Science Program (ESP)	28
Engineering Day at NSTA	28
Chemistry Day at NSTA	29
Biology Day at NSTA	30
Physics Day at NSTA	30
NSTA Press Sessions	31
Meetings and Social Functions	32
Picture-Perfect Science Preconference Workshop	33
Symposium: Flight of the Monarch Butterflies	33
Short Courses	34
Field Trips	36
NSTA Affiliate Sessions	38
<i>Wednesday Daily Program</i>	41
<i>Thursday Daily Program</i>	43
<i>Friday Daily Program</i>	69
<i>Saturday Daily Program</i>	103

Indexes

Exhibitor List	113
Index of Exhibitor Workshops	126
Schedule at a Glance	131
Index of Participants	142
Index of Advertisers	144

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)

How can I motivate my students
to love science?



celebrating 20 years of ideas

TOSHIBA | NSTA

ExploraVision

GOOD NEWS!

ExploraVision is now more aligned with the **National Research Council Framework for K-12 Science Education!**

www.exploravision.org/regionalconference



1-800-EXPLOR-9
exploravision@nsta.org



www.Facebook.com/ToshibaInnovation



@ToshibaInnovate

The Science of **A-HA!**

Today's Young Minds Drive Tomorrow's Innovation

ExploraVision, the world's largest K-12 science competition, offers teams of students an opportunity to create and explore their visions of future technologies.

Up to \$240,000 in savings bonds (at maturity value) is awarded each year, plus expense-paid trips to Washington, DC for national winning students and their parents. Schools, coaches, and mentors win too!

Your students can reach that incredible "A-ha!" moment – when all of their real-world learning comes together in problem-solving, critical thinking, collaboration, and recognition.

Teachers submitting the most team projects win a **Toshiba Tablet!**

TOSHIBA
Leading Innovation >>>

Through **Toshiba's** shared mission partnership with **NSTA**, the Toshiba/NSTA ExploraVision competition makes a vital contribution to the educational community.

NSTA

Welcome to Louisville



Clara Mackin Fulkerson, Raymond Bowden, and Diane Johnson

Welcome to the NSTA Louisville Area Conference on Science Education! We have planned a conference overflowing with new ideas in science and science education. Organized around our conference theme, Science—Everyone, Everyday!, sessions have been selected to provide you with fresh approaches and exciting innovations ready to be used in your

classroom. You will be able to customize a professional learning experience that truly meets your needs from the hundreds of sessions in the program. We encourage you to take advantage of this unique opportunity to learn from some of the most inventive professional scientists and educators in the country. In addition to the sessions, there are interesting field trips, opportunities for more in-depth study with short courses, and graduate credit available. While at the conference, relax and enjoy the many museums, fine dining, and lots of nearby activities in downtown Louisville, where Southern hospitality abounds.

The local planning committee and KSTA have worked hard to provide a professional and energizing conference. I would like to thank them for all their work. Enjoy your stay in Louisville, y'all!

2012 Louisville Area Conference Committee Leaders
Raymond Bowden, Diane Johnson, and Clara Mackin Fulkerson

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

Conference Chairperson

Raymond Bowden
Retired Educator
3807 Spring Willow Court
Louisville, KY 40299
rbowd04@aol.com

Program Coordinator

Diane Johnson
Assistant Director
P-12 Math & Science Outreach Unit
of PIMSER
University of Kentucky
641 S. Limestone St.
Lexington, KY 40506
diane.johnson@uky.edu

Local Arrangements Coordinator

Clara Mackin Fulkerson
Instructional Coach and Gifted/
Talented Resource Teacher
Cox's Creek Elementary School
5635 Louisville Rd.
Cox's Creek, KY 40013
clara.fulkerson@nelson.kyschools.us

Louisville Conference Committee

Program Committee

Strand Leader: Everyday Connections: Science Across the Curriculum

Rico Tyler
Western Kentucky University
Bowling Green, KY

Strand Leader: Everyday Applications: Putting STEM to Work

Melinda Curless
Kentucky Dept. of Education
Frankfort, KY

Strand Leader: Everyday Innovations: Creativity and Problem Solving with Science

Vicki Riley
Daviess County Public Schools
Owensboro, KY

Program Representatives

Sean Elkins
Kentucky Dept. of Education
Frankfort, KY

Bonnie C. Embry
Rosa Parks Elementary School
Lexington, KY 40513

Sherry Fox
Kentucky Science Teachers Association
Louisville, KY

District VIII Representative

David Helm
Fayette County Public Schools
Lexington, KY

Conference Advisory Board Liaison

Alan J. McCormack
San Diego State University
San Diego, CA

Local Arrangements Committee

Field Trips Manager

Ginny Thompson
Kentucky Science Teachers Association
Lawrenceburg, KY

Guides Manager

Darleen Horton
Cane Run Environmental Magnet
School
Louisville, KY

Manager of Services for People with Disabilities

Carolyn Ray
Washington County Board of
Education
Springfield, KY

Volunteers Manager

Deidre Mackin
Humana, Inc.
Louisville, KY



Hands-on, Eyes-on

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

This high-definition document camera offers versatility for any curriculum. It is perfect for demonstrations, showing various items in any size classroom, pointing out small details, or for student use in project collaboration and assessment.

The FlexCam 2 features an HD 1080P camera and Applied Vision™ Software.

Visit Booth #928



ken-a-vision®
KNOWLEDGE THROUGH VISION

www.ken-a-vision.com

President's Welcome

Build the Scaffolding for 21st-Century Science Literacy



Welcome to the NSTA Louisville Area Conference on Science Education! This conference promises to be an exemplary professional development experience for you. The conference provides the opportunity to gain cutting-edge science content knowledge along with effective classroom instructional strategies. You will be able to document your attendance through our evaluation process in order to build your professional portfolio. I hope you will be able to acquire new tools, resources, and understandings to bring back to your colleagues and students as a result of attending this conference.

I believe your experiences here will support my presidential theme—Build the Scaffolding for 21st-Century Science Literacy. Science is everywhere in our daily lives—from cooking to recycling to using computers and smartphones. Scientific literacy is a necessity to survive and thrive in the 21st century. The Louisville Conference Planning Committee has built the conference program around the theme, *Science—Everyone, Everyday!* The professional development strands supporting this theme focus on the following relevant topics: “Everyday Connections: Science Across the Curriculum,” “Everyday Applications: Putting STEM to Work,” and “Everyday Innovations:

Creativity and Problem Solving with Science.” The conference offers an impressive array of workshops, featured speakers, field trips, exhibits, and networking opportunities. There are also a variety of special programs and ticketed events to choose from to enhance your professional development experience.

We are at a pivotal point to move science education forward in the 21st century with the publication of the NRC *Framework* and the pending release of the highly anticipated Next Generation Science Standards. These momentous documents have the potential to impact the teaching and learning of science in significant ways. Be part of the change process by participating in the conversation during this conference. As science educators, we need to ensure that every child acquires the skills and knowledge to survive and thrive in the 21st century. Let's become equipped with the tools necessary to meet the challenges and take advantage of the opportunities to inspire our diverse student population to achieve success in the 21st century. After the conference, I hope you will be energized with science knowledge and instructional strategies that will provide the scaffolding for your efforts to help all students attain 21st-century science literacy.

I look forward to meeting you and sharing thoughts and ideas throughout the conference to see how we can work together to build the scaffolding for 21st-century science literacy for all!

Karen L. Ostlund
2012–2013 NSTA President

Contributors to the Louisville Conference

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

American Association of Physics Teachers and the Kentucky Section of AAPT

American Chemical Society

American Society for Engineering Education (ASEE)

Cane Run Environmental Magnet School

Carolina Biological Supply

Kentucky Science Center

Kentucky Science Teachers Association

National Association of Biology Teachers (NABT)

RiverWorks Discovery

Southwest Airlines Co.

Texas Instruments, Inc.



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). 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 print 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.

Environmentally 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.

Kentucky International Convention Center's Green Efforts

Kentucky International Convention Center (KICC) is taking the initiative toward a more environmentally friendly facility by implementing sustainable practices, becoming more energy-efficient, and incorporating green products into its daily practices.

- **Recycling** cardboard, office paper, glass, aluminum, plastic, trash, and cooking oils. KICC has a full-time staffer devoted to recycling, who boasts of a 56% recycle-to-trash ratio. In 2011, KICC recycled 16,949 lbs. of newspaper/bond paper, 784 lbs. of aluminum, 7,506 lbs. of sheet iron, 58,561 lbs. of cardboard, and 736 gallons of cooking oil.
- Using extensive **Energy Conservation Programs** for lighting. The Convention Center has installed compact fluorescent and LED bulbs as well as ALTO fluorescent lamps—low-mercury content lamps that achieve the ISO 9000 certification.
- Currently more than 65% of all **Cleaning Supplies** used at KICC are environmentally safe products. The facility has replaced all aerosols or fragrance products with green nonaerosol and/or fragrance-free products.
- **Upgrading Restrooms** with low-flow toilets.

"Go Green" at the Louisville 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.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on the Session Browser/Personal Scheduler.
- 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.
- Evaluate sessions attended via your smartphone or online.

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 or call 1.800.722.6782

Registration, Travel, and Hotels

—Photo courtesy of Louisville Convention & Visitors Bureau



Meeting Location and Times

The conference hotels are the Louisville Marriott Downtown (*headquarters*) and the Galt House Hotel & Suites. Conference registration, the exhibits, the NSTA Avenue, the NSTA Science Bookstore, exhibitor workshops, and most sessions will be located at the Kentucky International Convention Center. Other sessions and events will be held at the Marriott and the Kentucky Science Center. The conference will begin on Thursday, October 18, at 8:00 AM, and end on Saturday, October 20, 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 (short courses, field trips, networking events, etc.).

The NSTA Registration Area, located in Exhibit Hall 2D of the Convention Center, will be open during the following hours:

Wed., Oct. 17	5:00–7:00 PM
Thu., Oct. 18	7:00 AM–5:00 PM
Fri., Oct. 19	7:00 AM–5:00 PM
Sat., Oct. 20	7:30 AM–12 Noon

If you misplace your badge or tickets, present your personal ID at the Badge Reprint Counter in the Registration Area and you will be issued replacements. Only one replacement badge will be issued.

Purchasing Ticketed Events

The Louisville 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 24) for details. Note that some events may have required advance registration.

Airlines

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

AirTran	866-683-8368	NSTA12*
American	800-433-1790	34H2BK
Continental	800-468-7022	ZM4V808214**
Delta	800-328-1111	NM87Y
United	800-468-7022	ZM4V808214**
Amtrak Rail	800-872-7245	X97K-952***

* For phone reservations only

** \$25 fee per ticket for phone reservations

*** Offer not valid on Auto Train and Acela service

Ground Transportation to/from Airport

Just seven miles from downtown, Louisville International Airport (SDF) is literally 10 minutes away. While Louisville does not have a designated airport shuttle service, you can make individual reservations through Sandollar Limousine. They provide shuttle service from the airport to all downtown hotels. Reservations can be made at www.sandollarlimo.com and must be done in advance. For more information, visit www.flylouisville.com.

Getting Around Town

For FREE, fast, and easy transportation in the downtown area, hop on the 4th Street and Main/Market Street trolleys. These trolleys run every 7–20 minutes and can get attendees all around downtown’s convention, entertainment, and attraction districts quickly and in style! For more information including routes and operating hours, go to www.ridetarc.org/trolleys-and-hops.

Parking

The Convention Center offers two parking garages for visitors. The Cowger Garage is located at Fourth and Market streets and the Commonwealth Garage is located on Jefferson Street between Third and Fourth streets (next to the Hyatt Regency). Rates are:

- \$2 per hour up to 3 hours
- \$8 for 3–8 hours
- \$10 for 8–24 hours

Go to www.nsta.org/louisvilletravel to access a parking map.

Discounted Rental Cars

The toll-free number to contact an NSTA-designated car rental company is as follows:

Enterprise 800-593-0505 16AH230

* go to www.enterprise.com and use “16AH230” in the “Optional: Coupon, Customer or Corporate Number” box and enter PIN “NST.”



SCIENCE everyone, everyday!

LOUISVILLE AREA CONFERENCE
October 18–20, 2012



1. **Louisville Marriott Downtown Headquarters Hotel**
280 W. Jefferson St.



2. **Galt House Hotel & Suites**
140 N. Fourth St.

Trolley Schedule

4th Street Trolley

TARC Route #1 WEEKDAYS
8:00–11:00 AM every 10 minutes
11:00 AM–6:00 PM every 7 minutes
6:00–7:00 PM every 10 minutes

TARC Route #1 SATURDAYS
10:00 AM–6:00 PM every 20 minutes

Main/Market Street Trolley

TARC Route #77 WEEKDAYS
6:00–11:00 AM every 15 minutes
11:00 AM–4:00 PM every 10 minutes
4:00–8:00 PM every 15 minutes

TARC Route #77 SATURDAYS
10:00 AM–6:00 PM every 15 minutes

Trolley does not run on Sundays

Trolley schedule is subject to change.

For the most updated trolley schedules and fares, please visit

www.ridetarc.org/trolleys-and-hops.

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



NSTA Exhibits

The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You'll discover something new and exciting in the world of science teaching.

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. A map display of the Exhibit Hall will be on-site. A complete list of exhibitors and contact information starts on page 113.

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

Exhibit Hall Hours. Located in Exhibit Hall 2D of the Convention Center, exhibits will be open for viewing during the following hours:

Thu., Oct. 18	11:00 AM–5:00 PM
Fri., Oct. 19	9:00 AM–5:00 PM
Sat., Oct. 20	9:00 AM–12 Noon

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 126 for a complete listing of exhibitor workshops.

NSTA Avenue

Stop by NSTA Avenue (Booth #726) and learn about NSTA's benefits, products, services, programs, and partners...and receive free gifts, too! Share with others, expand your knowledge, and earn rewards for you and your students. See pages 120–121 for a complete list of NSTA services and programs.

NSTA Science Bookstore

Award-winning professional development titles; the newest books for 2012; and "I Love Science" T-shirts, mugs, and gifts galore stock the shelves in NSTA's bookstore. Located directly opposite registration, you're invited to examine some of our latest books—*Integrating Engineering and Science in Your Classroom*; *The Everyday Science Sourcebook, Revised 2nd Edition*; and *Teaching Science Through Trade Books*—and check out our brand-new line of children's books. 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.

Meet the Presidents and Board/Council

Be sure to stop by Friday from 9:30 AM to 10:30 AM 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!

Information Desk

The Louisville Convention & Visitors Bureau has an Information Desk located in the lobby of Exhibit Hall 2D of the Convention Center that is available Thursday–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 Orchid Event Solutions toll free at 877-352-6710.

KSTA Booth

The Kentucky Science Teachers Association (KSTA) booth is located in the lobby of Exhibit Hall 2D of the Convention Center. Stop by for information on the benefits of becoming a member of this organization. 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!

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.

Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at <http://bit.ly/Q28akh>.

Graduate Credit Opportunity

Louisville conference attendees can earn one graduate-level credit in professional development through Framingham State University. To learn more about the assignment requirements and access a registration form, go to the Framingham State University website: www.framingham.edu/nsta. An NSTA transcript is required. *Note:* Credit is by pass/fail option only.

Lost and Found

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

NSTA Mobile Website

We invite you to visit the NSTA Mobile Website, *m.nsta.org*, the best way to keep track of what's happening at the conference from your phone. It 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 Louisville with bookmarks for the conference hotels and Convention Center, a link to the #nsta Twitter feed, NSTA news, and other important info. Please note that the site has been optimized for use with iPhone and Android devices.

If you have a barcode reader installed on your phone, 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.*)

First Aid Services

The First Aid room is located on the back wall of Exhibit Hall 2C right next to the elevator at the Convention Center; there is a red cross on the door. Attendees in need of first aid may simply walk into the room, which will be staffed by a Registered Nurse during the conference. To reach the First Aid room, call 502-595-2022.

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. 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 L13, Convention Center
- Grandstand Room, Marriott

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.

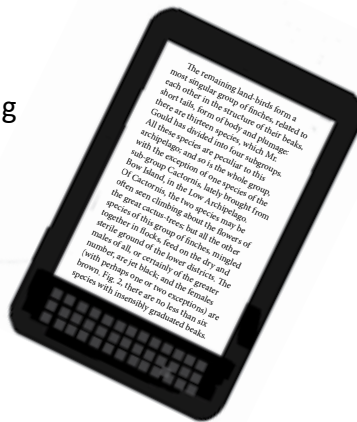
Help us with your feedback...and get a chance for a free Kindle Fire HD 8.9"

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

When you log on to *www.nsta.org/evaluations* and fill out an evaluation, you get entered into a drawing for a chance to win a Kindle Fire HD 8.9", Dolby Audio, Dual-Band Wi-Fi, 16 GB, *courtesy of the NSTA Conferences Department.*

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

• KINDLE FIRE HD 8.9" GIVEAWAY



• MOBILE WEBSITE



• You can also evaluate sessions via your smartphone at *m.nsta.org*.



Conference Resources

Business Services

There is no business center inside the Convention Center. There is a FedEx Kinko's across the street at 315 West Market Street, telephone 502-584-0407.

Located on the second floor of the Galt House Hotel & Suites, the UPS Store offers a variety of services, including photocopying, scanning, faxing, use of computer work stations, and same-day shipping. Hours are Monday through Friday, 7:00 AM–7:00 PM; Saturday, 8:00 AM–3:00 PM; and Sunday, 10:00 AM–2:00 PM. For information, call 502-583-3784 or e-mail store6123@theupsstore.com.

Located on the second floor, the Louisville Marriott Downtown's business center is open 24 hours a day with computers and printers, accessible for self-service with guestroom key. Fax service is available at front desk.

The following venue has extended a special offer for Louisville conference attendees.

Kentucky Science Center www.kysciencecenter.org



Recognized as a leader in inquiry-based learning, the Kentucky Science Center is advancing a science literacy campaign to encourage people of all ages to explore science in everyday life. As the State Science Center of Kentucky, the Kentucky Science Center boasts about 150 interactive exhibits and activity stations, a four-story IMAX Theatre, teaching laboratories, educational programs, and distance learning capabilities.

The Science Center is open from Monday to Thursday, 9:30 AM–5:00 PM; Friday and Saturday, 9:30 AM–9:00 PM; and Sunday, 9:30 AM–5:00 PM.

By presenting a conference badge and photo I.D. during the dates of the conference, attendees receive a discounted admission price of \$5 to the Kentucky Science Center; \$2 additional for the IMAX film. Exhibit admission must be purchased to receive discounted IMAX admission.

The Kentucky Science Center is located four blocks from the Convention Center (walk toward the river from the Convention Center and turn left on Main Street, walk about three or four blocks and the Kentucky Science Center is on the right, between 7th and 8th streets).

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 October 18 to October 31, 2012, via your smartphone (m.nsta.org) while the session is fresh in your mind! Or attendees can visit 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 HD 8.9" to one lucky 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 evaluations for their own sessions in order to track professional development credit.

To evaluate a session via 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 "Submit Session." The session information will appear and you can begin to evaluate the session.
- When finished evaluating the session, click "Submit Evaluation."
- Repeat this process for each session attended.

To evaluate a session via your smartphone, visit m.nsta.org and:

- Locate the appropriate session by schedule, format, subject, or keyword search from the home page and click "Evaluate This Session."
- 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 November 6, 2012, an attendee can view his or her transcript at the NSTA Learning Center (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.

Ward's Welcomes New Teachers to NSTA Louisville!

Our experts are here to help.
Join us for a free breakfast to learn more.

FREE!
New Teacher
Survival Kit

Friday, October 19, 2012

6:30 a.m.–8:00 a.m.

Louisville Marriott Downtown Hotel
Marriott Salon VI



The Plus is Us.

Ward's would like to officially welcome you into the wonderful world of science education.

- Free continental breakfast
- Free New Teacher Survival Kit
- Invaluable tips and resources for first-year or beginning science teachers
- Meet your personal account manager
- Bring your principal or mentor for a free gift too!



WARD'S
Natural Science

wardsci.com

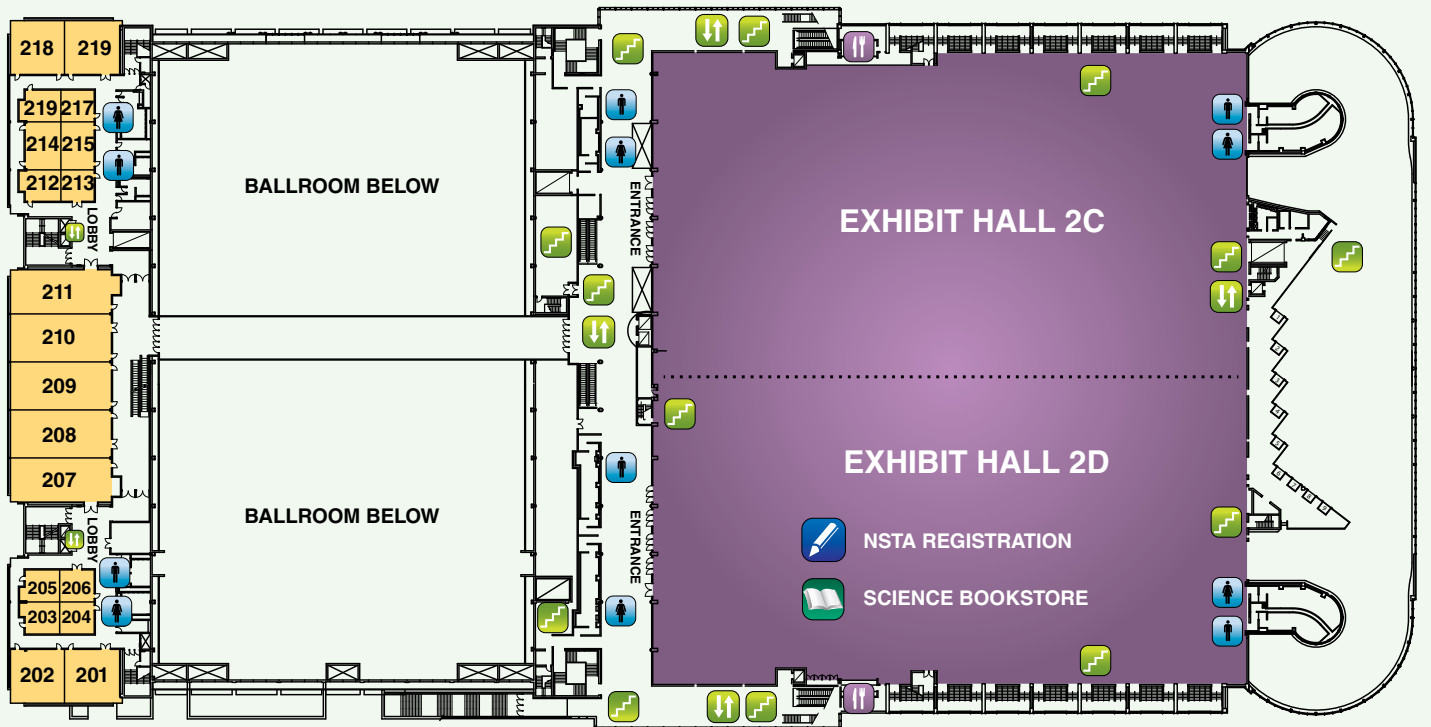
Offer details: To receive a free New Teacher Survival Kit, science teachers must have no more than 3 years teaching experience. Free gifts available while supplies last.

Kentucky International Convention Center

Level 1

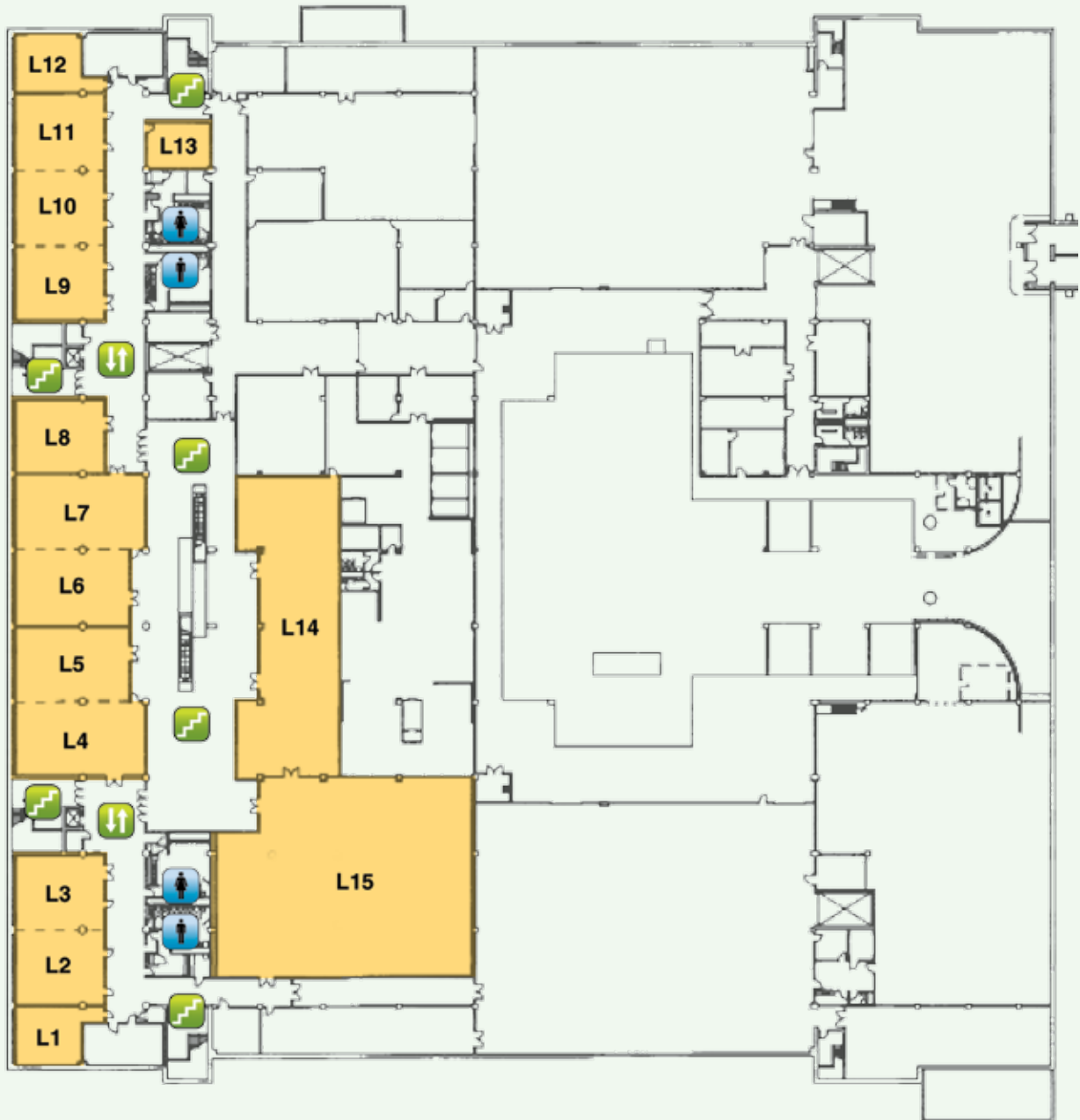


Level 2



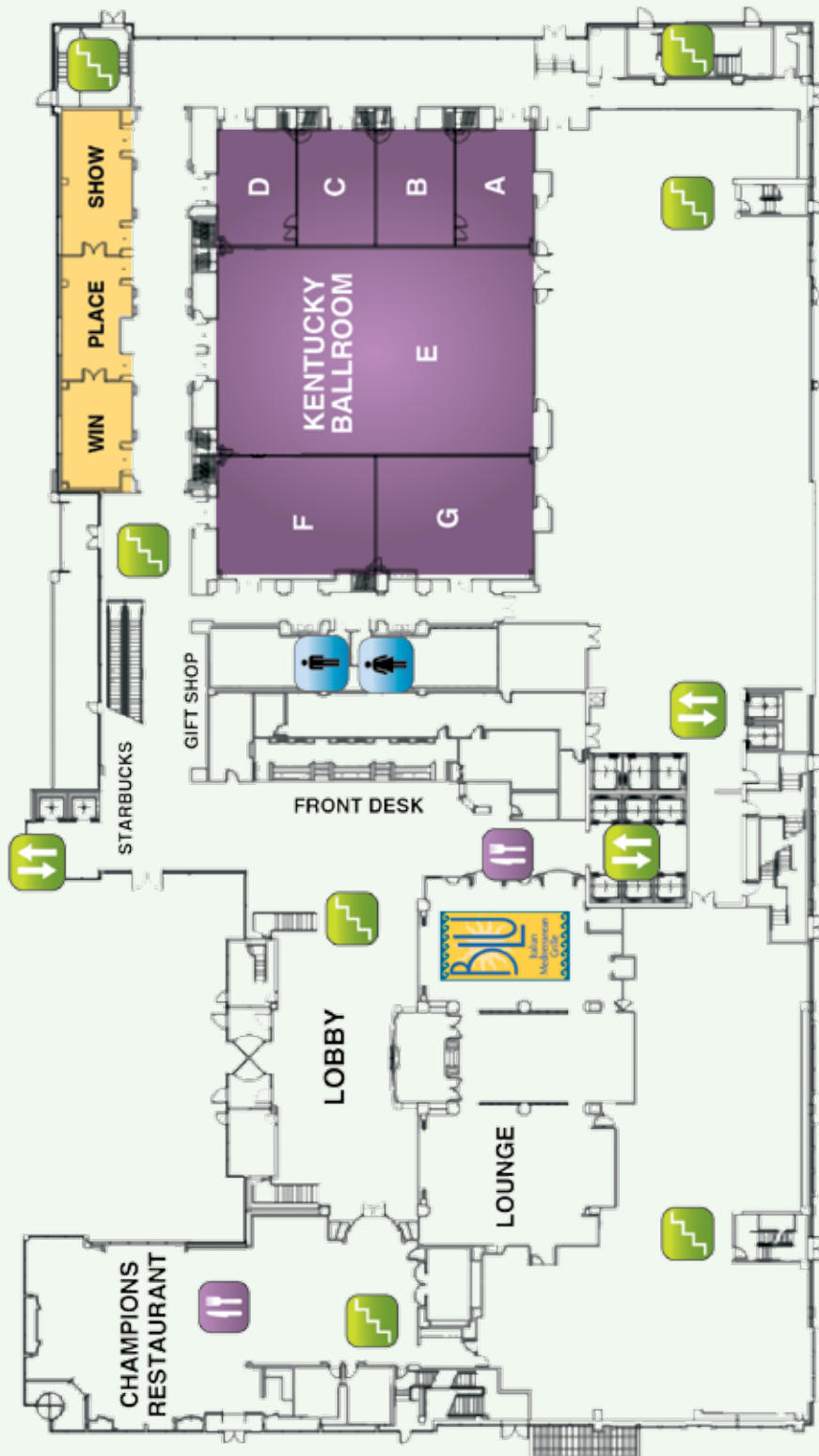
Kentucky International Convention Center

Lower Level



Louisville Marriott Downtown

First Level



Louisville Marriott Downtown

Second Level



Executive Office

Gerry Wheeler, Interim Executive Director

BOARD RELATIONS

Michelle Butler, Executive Administrator and Manager

COMPASS

Ted Willard, Program Director

DEVELOPMENT OFFICE

Ann Korando, Director, Major Gifts

Christina Rice, Development Services Coordinator

LaKeisha Hines, Administrative Coordinator/Development Services

LEGISLATIVE AND PUBLIC AFFAIRS

Jodi Peterson, Assistant Executive Director

Kate Falk, Senior Manager, Public Relations

Cindy Workosky, Communications Specialist

NOMINATIONS AND TEACHER AWARDS PROGRAM

Amanda Upton, Manager

Sales and Marketing

Edward Rock, Associate Executive Director

Jeffrey LeGrand, Marketing and Sales Associate

ADVERTISING, EXHIBITS, AND WORKSHOPS

Rick Smith, Managing Director

Jason Sheldrake, Assistant Director

Kimberly Hotz, Exhibits Manager

Olenka Dobczanska, Advertising Production Manager

Becky Shoemaker, Advertising Sales Associate

CORPORATE RECOGNITION PROGRAMS

Eric Crossley, Director, Science Education

Competitions

Brian Short, Director, Science Education

Competitions

Sue Whitsett, eCYBERMISSION Outreach

Manager

Larry Cain, eCYBERMISSION Analyst/Program Administrator

Jack Bunja, eCYBERMISSION Communications Coordinator

Matt Hartman, eCYBERMISSION Content Coordinator

Alexis Mundis, eCYBERMISSION Volunteer Coordinator

MARKETING

Michele Soulé, Director

Jennifer Gulley, Marketing Manager

NSTA MAILING LISTS

Danielle McNeill, Project Manager

Operations

Maira Baker, Associate Executive Director, COO, and CFO

Shantee Young, Administrative Assistant

BUSINESS AND FINANCE

David Dhala, Controller

Kristin Carter, Director, Grants and Contracts

Diane Cash, Manager, Accounts Payable

Beth Custer, Manager, Cash Receipts

Stephanie Steffer, Coordinator, Accounts Receivable

Gaby Bathiche, Accountant

FACILITIES AND OPERATIONS

Christine Gregory, Director

Rodney Palmer, Building Engineer

Donovan Parker, Mailing Services Coordinator

Joe Harpe, Mailing Services Assistant

HUMAN RESOURCES

Irene Doley, Assistant Executive Director

Janine Smith, HR Generalist

MANAGEMENT INFORMATION SYSTEMS

Todd Wallace, CIO

Ryan Foley, Director, Systems Development

Vacant, Director, IT

Edwin Pearce, Manager, IT Support

Martin Lopong, Manager, Web Development

Edward Hausknecht, Web and Database Developer

MEMBERSHIP

Howard Wahlberg, Assistant Executive Director

Teshia Birts, Senior Manager, Chapter Relations

Ken Rosenbaum, Chapter Relations Consultant

SERVICE CENTRAL

Michelle Chauncey, Director, Customer Service

Nelly Guacheta, Senior Manager, Service Central

Jasmine McCall, Special Projects Coordinator/CSR

Cindy Thomas, Fulfillment Coordinator/Claims Correspondent

Kiara Pate, Customer Service Representative

Vacant, Receptionist

Professional Programs

Zipporah Miller, Associate Executive Director, Professional Programs and Conferences

Caroline Nichols, Executive Administrator and International Program Coordinator

GOVERNMENT PARTNERSHIPS AND E-LEARNING

Al Byers, Assistant Executive Director

Dayna Anderson, Coordinator

e-Learning Production

Leisa Clark, Director/Producer

Kara Pantalena, Course Developer

Whitney Swain, Multimedia Specialist

NASA Explorer Schools Program

Jodie Rozzell, Director

NSTA Learning Center

Flavio Mendez, Senior Director

Brynn Slate, Web Seminars/Symposia Manager

Jeff Layman, Web/Technical Coordinator

CONFERENCES AND MEETINGS

Delores Howard, Assistant Executive Director

Dina Weiss, Associate Director

Linda Crossley, Assistant Director/Managing Editor

Dave Berenhaus, Conference Coordinator

Donna Fletcher, Conference Coordinator

Christina Dierssen, Project Editor

Kimberlyn McDonald, Registration Supervisor/Administrative Assistant

Jo Neville, Database Manager

Beverly Shaw, Conference Administrator

Marcelo Nunez, Exhibit Services Coordinator

PROFESSIONAL DEVELOPMENT

Damaris Blondonville, Senior Director

Science Matters

Kim Cherry, Director, Professional Development

Sherry Bracey, Program Manager

Tiffany McCoy, Program Coordinator

School Services Initiative

Wendy Binder, SPIR Project Director

Publications and Product Development

David Beacom, Associate Executive Director and Publisher
Emily Brady, Executive Administrator

ART AND DESIGN

Will Thomas, Director
Joseph Butera, Senior Graphic Designer
Rashad Muhammad, Graphic Designer

NEW PRODUCTS AND SERVICES

Tyson Brown, Director

NSTA PRESS

Claire Reinburg, Assistant Executive Director
Jennifer Horak, Managing Editor, Books
J. Andrew Cooke, Senior Editor
Agnes Bannigan, Associate Editor
Wendy Rubin, Associate Editor
Amy America, Book Acquisitions Coordinator

NSTA RECOMMENDS

Emily Brady, Manager

NSTA REPORTS

Lynn Petrinjak, Editor
Debra Shapiro, Associate Editor

JOURNALS

Ken Roberts, Assistant Executive Director
Rob McNeely, Editorial Assistant

Science & Children

Linda Froschauer, Field Editor
Valynda Mayes, Managing Editor
Stephanie Muldrow, Assistant Editor

Science Scope

Inez Fugate Liftig, Field Editor
Ken Roberts, Managing Editor

The Science Teacher

Stephen C. Metz, Field Editor
Scott Stuckey, Managing Editor

Journal of College Science Teaching

Ann Cutler, Field Editor
Caroline Barnes, Managing Editor

PRINTING AND PRODUCTION

Catherine Lorrain, Director
Nguyet Tran, Assistant Production Manager
Jack Parker, Electronic Prepress Technician

PUBLICATIONS OPERATIONS

Rick Bounds, Assistant Executive Director
Elsie Maka, Manager, Inventory and Distribution

SciLINKS

Tyson Brown, Director
Virginie Chokouanga, Customer Service and Database Coordinator

SOCIAL MEDIA AND E-MESSAGING

Lauren Jonas, Director

WEBSITE MANAGEMENT

Tim Weber, Assistant Executive Director of Web and News

NSTA Officers, Board of Directors, Council, and Alliance of Affiliates

NSTA Mission Statement

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

Officers and Board of Directors

Gerry Wheeler, Interim Executive Director
Karen L. Ostlund, President
Bill Badders, President-Elect
Patricia Simmons, Retiring President
Harold Pratt, Parliamentarian
LeRoy Lee, Treasurer

Peggy Carlisle, Preschool/Elementary
Patty McGinnis, Middle Level Science Teaching

Michael Lowry, High School Science Teaching

Thomas Lord, College Science Teaching
Candace Lutzow-Felling, Informal Science
Kathryn Scantlebury, Research in Science Education

Linda Lacy, Coordination and Supervision of Science Teaching

Lisa M. Nyberg, Preservice Teacher Preparation
Kathy Wright, Multicultural/Equity in Science Education

Steve Rich, Professional Development

Council

Karen L. Ostlund, President
Harold Pratt, Parliamentarian

Patricia Ruane, District I
Lynn Farrin, District II
Gloria Allen, District III
Frances Hess, District IV
Cynthia Willingham, District V
Carrie Jones, District VI
Chris Campbell, District VII
David Helm, District VIII
Ramona Lundberg, District IX
Janet Struble, District X
Sally Harms, District XI
Eric Brunsell, District XII
Martha Griffin, District XIII
Vicki Massey, District XIV
John Graves, District XV
Tim Williamson, District XVI

Jennifer Thompson, District XVII
Philip Langford, District XVIII

Alliance of Affiliates

Cherry C. Brewton, AMSE
Margaret Glass, ASTC
John Tillotson, ASTE
Barbara Z. Tharp, CESI
Peter McLaren, CSSS
Deborah Hanuscin, NARST
Rajeev Swami, NMLSTA
Darlene Ryan, NSELA
Brian Shmaefsky, SCST

All cities are subject to change pending final negotiation.

National Conferences on Science Education

San Antonio, Texas
April 11–14, 2013

Boston, Massachusetts
April 3–6, 2014

Chicago, Illinois
March 26–29, 2015

2013 STEM Forum & Expo

St. Louis, Missouri
May 15–18

Area Conferences on Science Education

2012 Area Conferences

Atlanta, Georgia—November 1–3
Phoenix, Arizona—December 6–8

2013 Area Conferences

Portland, Oregon—October 24–26
Charlotte, North Carolina—November 7–9
Denver, Colorado—December 12–14

2014 Area Conferences

Richmond, Virginia—October 16–18
Orlando, Florida—November 6–8
Long Beach, California—December 4–6

MACRO or Micro
Share Your Know-How

**Submit a session proposal
for an NSTA conference**

2013 Area Conferences on Science Education

Proposal Deadline: January 15, 2013

Portland, Oregon • October 24–26, 2013

Charlotte, North Carolina • November 7–9, 2013

Denver, Colorado • December 12–14, 2013

2014 National Conference on Science Education

Proposal Deadline: April 15, 2013

Boston, Massachusetts • April 3–6, 2014



www.nsta.org/conferences

NSTA National
Science
Teachers
Association

★
NSTA NATIONAL CONFERENCE

on

SCIENCE EDUCATION

SAN ANTONIO, TEXAS

— APRIL 11-14, 2013 —

EVERYTHING'S
BIGGER
IN TEXAS
★

FOR MORE INFORMATION OR TO REGISTER, VISIT
WWW.NSTA.ORG/CONFERENCES/2013SAN

PROFESSIONAL DEVELOPMENT STRANDS

- Next Generation Assessments: Effectively Measuring Student Learning
- Next Generation Elementary Science: Building the Foundation
- Next Generation Special Populations: Improving Science Instruction to Meet the Needs of Diverse Learners
- Next Generation Technology: Putting the "T" in STEM

ATTENDEES CAN ACCESS:

- A wide range of Science, Technology, Engineering, and Math (STEM); Next Generation Science Standards (NGSS); and Common Core sessions
- 2,000 sessions, workshops, field trips, and short courses for K–16 educators
- Content development and ready-to-use teaching techniques
- 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

Photo courtesy of Dam Dry / Louisville Convention & Visitors Bureau



Wednesday, October 17	
8:30 AM–3:30 PM	Picture-Perfect Science Preconference Workshop 41
Thursday, October 18	
8:00–9:00 AM	First-Timers Conference Attendees' Orientation 45 (Is This Your First NSTA Conference?)
8:00 AM–6:00 PM	Engineering Day 28
9:15–10:30 AM	General Session: Stephen L. Pruitt 47
11:00–11:05 AM	Ribbon Cutting Ceremony/Exhibits Opening 49
11:05 AM–5:00 PM	Exhibits 50
2:00–3:00 PM	Featured Presentation: Christine M. Cunningham 55
Friday, October 19	
8:00 AM–1:00 PM	Symposium: Flight of the Monarch Butterflies (SYM-1) . . 33, 75
8:00 AM–1:30 PM	Biology Day 30
8:00 AM–4:30 PM	Chemistry Day (For Grades 9–12) 29
8:00 AM–4:30 PM	Middle School Chemistry Day 29
8:00 AM–4:30 PM	Physics Day 30
9:00–11:00 AM	NSTA ESP Symposium 28, 76
9:00 AM–5:00 PM	Exhibits 77
9:30–10:30 AM	Featured Presentation: Steven W. Gilbert 77
9:30–10:30 AM	Meet the Presidents and Board/Council 77
2:00–3:00 PM	Featured Presentation: Michelle J. Johnson 92
Saturday, October 20	
8:30–10:30 AM	CESI Breakfast (M-1) (Speaker: Betty Crocker) 106
9:00 AM–12 Noon	Exhibits 107

Questions on the New Standards?

Visit page 69 for a list of standards-related sessions.

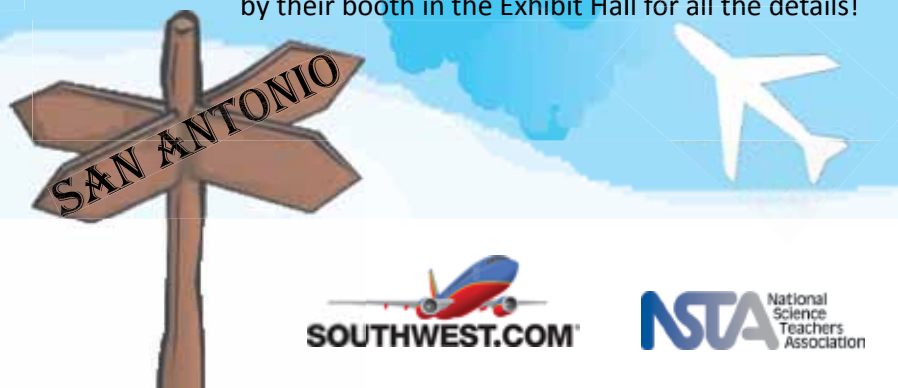
Is This Your First NSTA Conference?

Yes, you say? Then you are invited to attend a special session on Thursday, 8:00–9:00 AM. Learn how you can gain the most from your conference experience and have fun doing it! See page 45 for details. Refreshments are courtesy of Carolina Biological Supply.

Win a round-trip Southwest travel scholarship to the San Antonio conference

Thanks to the generosity of Southwest Airlines, we're giving away two Southwest Airline travel scholarships to the NSTA San Antonio National Conference on Science Education, April 11–14, 2013!

The drawings will be held at 3:00 PM on Oct. 18 and Oct. 19 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!





Free Hands-On Workshops

USING VERNIER DATA-COLLECTION TECHNOLOGY

FRIDAY, OCTOBER 19 th – ROOM 219	
8:00 – 9:30 am	Integrating Your iPad® or Mobile Device with Vernier Technology
10:00 – 11:30 am	Introducing the Vernier LabQuest® 2!
12:00 – 1:30 pm	Chemistry and Biology with Vernier
2:00 – 3:30 pm	Physics and Physical Science with Vernier

Stop by our **booth 920**
and enter to **WIN** a



LABQUEST® 2



The Louisville 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.



Everyday Connections: Science Across the Curriculum

Science does not exist in isolation. Disciplines within science are interdependent with each other as well as other curricular areas. This strand will improve participants' understanding of the synergies across disciplines and will provide the tools and strategies to impact student learning.



Everyday Applications: Putting STEM to Work

This strand addresses the student questions: "Why do I need to learn this? When am I going to use this?" Through the lens of science, students can better understand observations outside the classroom such as evaporation, electronic devices, flight of kites, and growth of plants in more meaningful ways. This can result in a deeper appreciation and application of what is learned in the science classroom. Emerging technology and careers are generated by the understanding and application of scientific concepts. The average American today enjoys a quality of life that would have been unfathomable only a few generations ago. This is a direct result of the implementation of STEM (Science, Technology, Engineering, and Mathematics) concepts.



Everyday Innovations: Creativity and Problem Solving with Science

Innovation, creativity, and problem solving are as important to science education as the laboratory equipment in the science classroom. Humans are naturally inquisitive and this should be fostered in classrooms. Therefore, strategies for teaching inquiry and problem solving are necessary for understanding the role of innovation and creativity in science. *A Framework for K–12 Science Education* will influence the teaching of science, making it necessary to expose misconceptions and refine classroom practices. This strand reflects the need for creativity and problem solving based on research and assessment. These are essential to the processes of science and engineering design.

Everyday Connections: Science Across the Curriculum

Thursday, October 18

8:00–9:00 AM

Literature to Engage Early Childhood Learners for Science

11:00 AM–12 Noon

Shine the Light on Inquiry Science

12:30–1:30 PM

SOS: Save Our Science—Integrating Across the Curriculum

2:00–3:00 PM

Using Data to Move the Common Core into Science Inquiry

3:30–4:30 PM

Integrating Theater Arts Through Color Mixing with Light

5:00–6:00 PM

Implementing Literacy Standards in Science

Friday, October 19

8:00–9:00 AM

Increasing Environmental Literacy Through Chemistry Applications

8:30 AM–12:30 PM

SC-3: Linking Conservation Efforts at the Zoo with the Science Behind Global Warming
(Tickets required: \$63)

9:30–10:30 AM

Featured Presentation: A Theory of Everything: How Models Define Science and Other Fields of Learning
(Speaker: Steven W. Gilbert)

11:00 AM–12 Noon

Shifting Our Thinking: The Benefits of Standards-based Grading

12:30–1:30 PM

Data: It's Not a Four-Letter Word

2:00–3:00 PM

Leaving No Child Inside: Using Outdoor Spaces for Instruction

3:30–4:30 PM

Music to Enhance Content Memory

Saturday, October 20

8:00–9:00 AM

Is It (Carolina) Gold? The Intersection of Genetics and American History

9:00 AM–12 Noon

SC-6: Exploring Planetary Science and Astronomy: What Would Galileo Do?
(Tickets required: \$62)

9:30–10:30 AM

Music and Physics: Magnetism, Electricity, Vibration, and How to Build an Electric Guitar

11:00 AM–12 Noon

Using NASA Press Releases to Develop Literacy in Integrated Science Lessons

Everyday Applications: Putting STEM to Work

Thursday, October 18

11:00 AM–12 Noon

Corrosion Is Everywhere: Use It to Make Chemistry Relevant and Fun

12:30–1:00 PM

Building a STEM Pipeline

1:30–5:00 PM

SC-2: Want to See Stars? Build a High-quality Refractor Telescope
(Tickets required: \$100)

2:00–3:00 PM

Featured Presentation: Engineering-enhanced Science, Inquiry, and Problem Solving
(Speaker: Christine M. Cunningham)

3:30–4:30 PM

Putting the “E” in Your STEM Courses

5:00–6:00 PM

Technological Design for Elementary Students

Friday, October 19

8:00–9:00 AM

Danger Will Robinson...Danger! Your Students May Start to Love Science!

9:00 AM–12 Noon

SC-4: Energizing Your Classroom
(Tickets required: \$20)

9:30–10:30 AM

Bring STEM Curriculum to Life with AMS Professional Development Courses

11:00 AM–12 Noon

Putting It All Together—Community Campus PLTW STEM Academy: A Western Kentucky Regional Initiative

12:30–1:30 PM

Put the “E” in STEM Using Lessons You May Already Have! Real-World Applications to Science Are Everywhere!

2:00–3:00 PM

The Science of Seat Belts

3:30–4:30 PM

Rockets, Balloons, Kites, and KMZ: Build Your Own Google Earth

Saturday, October 20

8:00–9:00 AM

STEM Through Aviation and Aerospace

9:30–10:30 AM

Using Case Studies to Teach AP Biology Content

11:00 AM–12 Noon

Waves and Technology of Modern Communications

Everyday Innovations: Creativity and Problem Solving with Science

Thursday, October 18

8:00–9:00 AM

Problem Finding and Problem Solving in the New AP Chemistry Course

8:30 AM–12 Noon

SC-1: Teaching Science Outdoors Through Research, Design, and Technology
(Tickets required: \$20)

12:30–1:30 PM

The Need for Adaptation: Using Formative Assessment Probes in High School Biology to Uncover Student Thinking About Genetics

2:00–3:00 PM

CReaTE-ing Success in the Science Classroom

3:30–4:30 PM

Bringing Tropical Rain Forest Research to the Urban Classroom

5:00–6:00 PM

Planning to Make Sure Inquiry = Learning

Friday, October 19

8:00–9:00 AM

Beyond the Humanities: Bringing Creativity to the Science Classroom

9:30–10:30 AM

Exploring the Science Encountered in the Young Child’s World: Nurturing, Observing, Questioning, Investigating, Thinking, and Talking About Science

11:00 AM–12 Noon

Climate Change Classroom Toolkit

12:30–1:30 PM

Facing the Future: Fueling the Future

1:00–5:00 PM

SC-5: Engineering Design Challenges for the Middle/High School Classroom
(Tickets required: \$22)

2:00–3:00 PM

Featured Presentation: Product Design and Robots Applied to Health Care Problems: A Recipe for Joy and Passion for K–12 Science and Engineering Education?
(Speaker: Michelle J. Johnson)

3:30–4:30 PM

Preparing Today’s Students for Tomorrow’s Challenges Through Creative Problem Solving

Saturday, October 20

8:00–9:00 AM

Standards and Content and Inquiry, Oh My! Creative Strategies to Integrate the Three!

9:30–10:30 AM

Squeezing GLUE-GOO into the National Science Education Standards

NSTA Exemplary Science Program (ESP)

Unique Features of Programs That Meet
“More Emphasis” Features in the NSES



Friday, October 19, 9:00–11:00 AM
L4, Convention Center

The National Science Education Standards offered four goals/justifications for science in K–6 settings, namely that all students would: 1) Experience the richness and excitement of knowing about and understanding the natural world; 2) Use appropriate scientific processes and principles in making personal decisions; 3) Engage intelligently in public discourse and debate about matters of scientific and technological concern; and 4) Increase their economic productivity through the use of the knowledge, understandings, and skills of the scientifically literate person in their careers.

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 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!

Coordinator: Thomas R. Lord, Indiana University of Pennsylvania, Indiana

Symposium Participants:

Revising an Old Strategy with New Frameworks

Teddie Phillipson-Mower, University of Louisville, Ky.

Revising Majors Biology: A Departmental Journey

Elizabeth Allan, University of Central Oklahoma, Edmond

Engineering Day at NSTA

Sponsored by the American Society
for Engineering Education



Thursday, October 18, 8:00 AM–6:00 PM
L6, Convention Center

The American Society for Engineering Education (ASEE) has put together a public/private partnership to develop ways of engaging elementary, middle school, and high school students and teachers in engineering. Participants will learn about innovative, hands-on, project-based engineering activities, courses, curriculum options, events, outreach programs, professional development, and competitions designed to increase engineering and technological literacy of all students; encourage more and more diverse 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 for use in the classroom and in informal educational settings. The materials result from a collaboration of engineering educators and STEM professionals working with NASA, *TeachEngineering.org*, Engineering is Elementary, and Colleges of Engineering across the nation who actively engage in K–12 engineering in collaboration with partner teachers and schools.

8:00–9:00 AM	ASEE’s K–12 Outreach Program eGFI: Engineering, Go For It and the Marshmallow Challenge (p. 44)
11:00 AM–12 Noon	Introducing Engineering to Elementary School Students (p. 50)
12:30–1:30 PM	Engineering the Future with TeachEngineering.org (p. 53)
2:00–3:00 PM	NASA’s BEST Students (Beginning Engineering, Science, and Technology): Build a Buggy to Explore Mars! (p. 58)
3:30–4:30 PM	Scientific Inquiry and the Engineering Design Process—How Are They Similar and Different? (p. 63)
5:00–6:00 PM	Developing and Publishing Standards for Professional Development for K–12 Teachers of Engineering (p. 67)



ACS
Chemistry for Life™

Chemistry Day at NSTA

Sponsored by the American Chemical Society

Equilibrium, Le Chatelier, and Rate

For Grades 9–12

*Friday, October 19, 8:00 AM–4:30 PM
207, Convention Center*

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 workshop 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 workshop 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. The workshop 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 of the workshop is incorporating activities as part of the assessment of student learning.

8:00–9:00 AM	Equilibrium and Concentration (p. 70)
9:30–10:30 AM	Equilibrium and Energy (p. 79)
11:00 AM–12 Noon	Rate (p. 85)
12:30–1:30 PM	Catalysis (p. 90)
2:00–3:00 PM	Light as a Reactant and/or Product (p. 93)
3:30–4:30 PM	Half-Life (p. 98)

Middle School Chemistry Day

Sponsored by the American Chemical Society

Middle School Chemistry— Big Ideas About the Very Small

*Friday, October 19, 8:00 AM–4:30 PM
L5, Convention Center*

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 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	Solids, Liquids, and Gases: The Kinetic-molecular Theory of Matter (p. 71)
9:30–10:30 AM	Changes of State: Evaporation and Condensation (p. 80)
11:00 AM–12 Noon	Density: A Molecular View (p. 85)
12:30–1:30 PM	The Periodic Table, Energy Levels, and Bonding (p. 90)
2:00–3:00 PM	The Polarity of the Water Molecule and Its Consequences (p. 94)
3:30–4:30 PM	Chemical Change: Breaking and Making Bonds (p. 98)

Biology Day at NSTA

Sponsored by the National Association
of Biology Teachers



Friday, October 19, 8:00 AM–1:30 PM
L7, Convention Center

NABT is proud to present Biology Day. Join us for hands-on and informative sessions that highlight the resources and tools you need to excel as a biology and life science teacher. Sessions will include activities on biodiversity, evolution, and the revised AP Biology course.

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 Louisville!

8:00–9:00 AM	The Revised AP Biology Course: Understanding the Changes in the Course Audit and New Exam (p. 70)
9:30–10:30 AM	AP Open Forum (p. 78)
11:00 AM–12 Noon	Free Resources from HHMI on the Origin of Modern Humans (p. 84)
12:30–1:30 PM	Free Resources from HHMI Exploring Biodiversity: The Search for New Medicines and Treatments (p. 88)

Physics Day at NSTA

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



Friday, October 19, 8:00 AM–4:30 PM
208, Convention Center

The American Association of Physics Teachers offers a full day of physics content. Physics Day consists of interactive hands-on workshops covering important physics topics for today's world. Each of these workshops is organized by experienced science educators and designed to deal with hard-to-express concepts that can be immediately applied in your classroom. Physics Day in Louisville is being organized by the Kentucky Section of the American Association of Physics Teachers.

8:00–9:00 AM	Newton's Laws Explained; Centripetal Motion Examined (p. 70)
9:30–10:30 AM	Working with Spectra in Physics and Astronomy (p. 79)
11:00 AM–12 Noon	The Light Fantastic: Demonstrations of Light and Radiation (p. 85)
12:30–1:30 PM	Making Magnetism Visible (p. 90)
2:00–3:00 PM	Fun with Elastic Energy (p. 93)
3:30–4:30 PM	Gathering Evidence for the Wave Nature of Light (p. 98)

NSTA Press Sessions

NSTA Press® books offer 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, October 18

- 8:00–9:00 AM Teaching and Learning Biology Through Scientific Argumentation (p. 44)
- 12:30–1:30 PM *Bringing Outdoor Science In* (p. 52)
- 2:00–3:00 PM Uncovering Physical Science Core Ideas in the NGSS Using Formative Assessment Probes (p. 56)
- 3:30–4:30 PM Uncovering Earth and Space Science Core Ideas in the NGSS Using Formative Assessment Probes (p. 61)
- 5:00–6:00 PM Connecting with Special Education Students (p. 65)

Friday, October 19

- 8:00–9:00 AM Authors Share Favorite Lessons from *Teaching Science Through Trade Books* (p. 70)
- 9:30–10:30 AM *More Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4* (p. 80)
- 11:00 AM–12 Noon *Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, 3–6* (p. 85)
- 12:30–1:30 PM Implementing Student Research Projects: Tips for Organization and Assessment (p. 88)
- 2:00–3:00 PM Uncovering Life Science Core Ideas in the NGSS Using Formative Assessment Probes (p. 92)

Saturday, October 20

- 8:00–9:00 AM Classroom Activities for *Stop Faking It! Force & Motion* (p. 104)
- 9:30–10:30 AM Inquiring Scientists, Inquiring Readers: Using Nonfiction to Promote Science Literacy, Grades 3–5 (p. 108)
- Classroom Activities for *Stop Faking It! Energy* (p. 109)
- 11:00 AM–12 Noon *Stop Faking It! Finally Understand Chemistry Basics So You Can Teach Them* (p. 111)



Conference Program • Meetings and Social Functions

Thursday, October 18

Multicultural/Equity Division Area Meeting
Jockey Club, Marriott 11:00 AM–12:30 PM

Friday, October 19

KSTA Meeting and Awards Presentation
By Invitation Only
Marriott I/II, Marriott 8:00–9:00 AM

Hoosier Association of Science Teachers, Inc. (HASTI) Social
Marriott I/II, Marriott 5:00–7:00 PM

Saturday, October 20

Council for Elementary Science International (CESI) Breakfast
(Tickets required: M-1; \$30)
Speaker: Betty Crocker
Marriott I, Marriott 8:30–10:30 AM

Enjoy a Wealth of FREE PD Resources to Build Content Knowledge

The **NSTA** Learning Center

- “Science Objects” (inquiry-based interactive, content modules)
- More than 120 interactive live web seminars
- More than 600 award-winning journal articles
- More than 100 book chapters
- Monthly special offers
- Searchable by subject, grade level, and state standards



Register for a free Learning Center account at www.learningcenter.nsta.org.

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

NSTA 2012 Louisville 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). Use this form to keep track of all sessions/events attended during the Louisville conference. Sessions/events such as field trips, short courses, meetings, and exhibit hall visits are not available for online evaluation. However, these events still qualify for professional development.

Beginning November 6, 2012, Louisville transcripts can be accessed at the NSTA Learning Center (*learning center.nsta.org*) by logging on with your Louisville Badge ID# and then clicking on "My PD Record and Certificates." Keep this form and use it to add the following activities to your Louisville 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 to evaluate sessions via your smartphone, or go to 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 HD 8.9"!**

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, October 17 8:30 AM–3:30 PM

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

We're giving a Kindle Fire HD 8.9" 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, October 18 7:45 AM-6:00 PM

Start Time	End Time	Activity/Event Title

Friday, October 19 8:00 AM-6:00 PM

Start Time	End Time	Activity/Event Title

Saturday, October 20 8:00 AM-12 Noon

Start Time	End Time	Activity/Event Title

Picture-Perfect Science Preconference Workshop (C-1)

Tickets for this preconference workshop were available by preregistration only.



Karen Ansberry

Karen Ansberry (karen@pictureperfectscience.com) and **Emily R. Morgan** (emily@pictureperfectscience.com), Classroom Veterans and Award-winning Authors of *Picture-Perfect Science Lessons, Expanded 2nd Edition: Using Children's Books to Guide Inquiry, 3–6* and *More Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4*

Level: Elementary

Date: Wednesday, October 17, 8:30 AM–3:30 PM

Location: Kentucky A–C, Marriott



Emily R. Morgan

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



—Courtesy of Emily R. Morgan

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: Using Children's Books to Guide Inquiry, 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!

Symposium: Flight of the Monarch Butterflies (SYM-1)

Jim O'Leary (oleary@mdsci.org), Maryland Science Center, Baltimore

Grant Bowers (bowe0182@umn.edu) and **Kelly Nail** (nail@umn.edu), University of Minnesota, St. Paul

Level: Grades K–12

Date: Friday, October 19, 8:00 AM–1:00 PM

Location: Off-site (Kentucky Science Center)

Registration Fee: \$54

Join us at the Kentucky Science Center to view the latest IMAX film *Flight of the Butterflies* and engage in classroom activities focused on the monarchs' amazing migration across North America, as well as their habitats and life cycle. Hear from experts in the field of monarch study about how you and your students can become involved in citizen science projects to help the monarchs. Educational materials will be provided for classroom use, and a drawing for door prizes will take place at the end of the program. Breakfast will be served! Each participant will receive a \$75 stipend for attendance.

The Kentucky Science Center is located four blocks from the Convention Center (walk toward the river from the Convention Center and turn left on Main Street, walk about three or four blocks and the Kentucky Science Center is on the right, between



—Courtesy of Jim O'Leary/Maryland Science Center

7th and 8th streets). Participants should plan to meet at 7:50 AM in the lobby of the Kentucky Science Center.

Symposium Follow-up Sessions:

2:00–3:00 PM

Monarch Life Cycles and Raising Monarchs in Captivity (p. 94)

3:30–4:30 PM

Classroom Lessons with Monarchs (p. 99)



—Photo courtesy of Joanna Snyder

Terry Shaw, The Lawrence Hall of Science curriculum developer, leads teachers through a discussion about the species richness of plants found in an urban grassland from Outdoor Biology Instructional Strategies (OBIS) activity Plant Hunt (www.outdoorbiology.com). *Teaching Science Outdoors Through Research, Design, and Technology (SC-1)*

Teaching Science Outdoors Through Research, Design, and Technology (SC-1)

Joanna Snyder (joanna_snyder@berkeley.edu) and **Erica Beck Spencer** (ebspencer@berkeley.edu), The Lawrence Hall of Science, Berkeley, Calif.

Level: Grades 5–9

Date: Thursday, October 18, 8:30 AM–12 Noon

Location: Wilkinson, Galt House

Registration Fee: \$20

Experience inquiry-based outdoor activities that explore ecological concepts in your local environment. This short course integrates the use of scientific and engineering practices by asking authentic ecological questions and using accessible methods and affordable materials to explore these questions. Learn effective strategies for managing students outdoors and use photographic technology to capture examples of classroom concepts that bridge gaps between formal and informal learning. Receive access to resources and examine case studies of two schools that have changed their learning culture to incorporate their local environment. For more details, go to www.outdoorbiology.com. *Note:* As most of this short course will be outside, be sure to dress for the weather.

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

Want to See Stars? Build a High-quality Refractor Telescope (SC-2)

Martha M. Day (martha.day@wku.edu) and **Rico Tyler** (rico.tyler@wku.edu), SKyTeach, Western Kentucky University, Bowling Green

Level: Middle Level–College

Date: Thursday, October 18, 1:30–5:00 PM

Location: Rose, Marriott

Registration Fee: \$100

Building a telescope is a great way to put STEM concepts to work and to experience the excitement of creating a working astronomy tool. Each participant will work through a series of stations to create a two-inch refractor telescope with a base, stand, and eyepiece. Take home not only the telescope but also handouts with building instructions. *Note:* Please dress in clothing that will allow you to use tools such as a power drill, hammer, power screwdriver, and assorted hand tools.

Linking Conservation Efforts at the Zoo with the Science Behind Global Warming (SC-3)

William “Doug” D. McCoy and **Marcelle Gianelloni** (marcelle.gianelloni@louisvilleky.gov), Louisville Zoo, Louisville, Ky.

Level: Middle Level–High School

Date: Friday, October 19, 8:30 AM–12:30 PM

Location: Off-site (Glacier Run classroom, Louisville Zoo)

Registration Fee: \$63

What is global warming? What are greenhouse gases? How do these relate? This hands-on short course will cover the science behind global warming using the zoo as a resource. The zoo’s newest exhibit, Glacier Run, resembles an Arctic town similar to Churchill, Canada, known as the “Polar Bear Capital of the World.” This exhibit will be used to connect participants to what is happening to Arctic regions due to global warming. Find out more about Arctic species and how global warming and the resultant climate changes are affecting these species and how the Louisville Zoo is involved in protecting these species.

Note: Please meet your instructor at the Third Street entrance of the Convention Center no later than 8:15 AM.



—Photo courtesy of Louisville Zoo

At left, Glacier Run exhibit at the Louisville Zoo is known as the Polar Bear Capital of the World, and, above, a polar bear cub at the zoo strikes a pose. *Linking Conservation Efforts at the Zoo with the Science Behind Global Warming (SC-3)*

—Photo courtesy of Robert Kennitz/Louisville Zoo



Energizing Your Classroom (SC-4)

Karen Reagor (info@need.org), The NEED Project, Manassas, Va.

Level: K–12

Date: Friday, October 19, 9:00 AM–12 Noon

Location: Marriott VII, Marriott

Registration Fee: \$20

With activities from The NEED Project (www.need.org), experience innovative ways to teach energy that will lead to a better understanding of the importance of practicing energy-saving behaviors. Engage in hands-on activities involving forms of energy, ranking energy sources as well as demonstrations of energy transformations during the generation of electricity. Make your classroom a laboratory for students to discover ways to reduce energy consumption and hear about NEED's Blueprint for Student Energy Teams.



Engineering Design Challenges for the Middle/High School Classroom (SC-5)

Brandon M. Hargis (brandon.hargis@nasa.gov), NASA Langley Research Center, Hampton, Va.

Level: Middle Level–High School

Date: Friday, October 19, 1:00–5:00 PM

Location: Marriott IX/X, Marriott

Registration Fee: \$22

Experience learning via inquiry within the framework of the engineering design process, addressing the highly anticipated Next Generation Science Standards. Within this hands-on

training model, participants will practice using an inquiry approach to meet challenges and solve authentic problems faced by NASA engineers. Bring your laptops/tablets if you have them. For more details, visit <http://bit.ly/SPV5uw> and <http://1.usa.gov/UR8ial>.



Exploring Planetary Science and Astronomy: What Would Galileo Do? (SC-6)

Roberta M. Johnson (rmjohnsn@gmail.com), National Earth Science Teachers Association, Boulder, Colo.

Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.

Level: Elementary–High School

Date: Saturday, October 20, 9:00 AM–12 Noon

Location: Kentucky C/D, Marriott

Registration Fee: \$62

This NESTA short course will explore key concepts in planetary science and astronomy, emphasizing inquiry-based strategies and the nature and practice of science. Using Galileo as a guide, explore classroom-tested standards-based activities with a focus on development of student reasoning. We will draw on astronomy and planetary science educational resources, including *The Universe at Your Fingertips 2.0* DVD, the Windows to the Universe website www.windows2universe.org, and other resources. Free webinars in spring 2013 will provide opportunities to extend your knowledge of astronomy and planetary science. Bring your laptops/tablets if you have them.

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 the Third Street entrance of the Convention Center 15 minutes before departure time.

How the River Works for Us

\$5

#T-1 Thurs., Oct. 18 7:45 AM–12:20 PM

The Louisville, Kentucky/Jeffersonville, Indiana region is a unique metropolitan area built on the banks of the mighty Ohio River. The Ohio River handles more cargo shipments on an annual basis than the Panama Canal. Participants on this special tour will see some of the busiest locations on the river, including the McAlpine Locks and Dam, which tamed the Falls of the Ohio; the Port of Indiana-Jeffersonville; and many business facilities that depend on the river. At the Port of Indiana-Jeffersonville (www.portsofindiana.com), the tour will visit loading docks for CGB Enterprises, Kinder Morgan, and Metals USA, and participants will be taken inside major steel processing facilities that use the Ohio River. There will also be a stop at MVBS (Mt. Vernon Barge Service) Jeffersonville where participants will get the chance to climb on board a working towboat. All stops will include guided talks and plenty of photo opportunities. Wear comfortable shoes and bring a camera. You are in for a very unique view of how the river works for us! Transportation for this trip is graciously being provided by RiverWorks Discovery. *Note:* The boat is accessible, but wheelchairs cannot get on all levels.

Backstretch Tram Tour and Kentucky Derby Museum Visit

\$43

#T-2 Thurs., Oct. 18 8:00 AM–12 Noon

During this tour of Churchill Downs, your group will view the exclusive atmosphere of a morning at the track. While aboard an open tram on the backside of Churchill Downs, guests will view the magical process of training world-class Thoroughbreds during their early morning workouts. You will be guided through the barn area where up to 1,400 horses are stabled. As you ride pass the stables, the guide will discuss what life on the backside is all about. You will see all of the early morning activity, which includes an opportunity to get off the tram and view the horses working out. You will leave with a new perspective and knowledge of Thoroughbred horse racing. Please dress appropriately for the weather as the tour will be completely outdoors. Not much walking involved, but wear comfortable shoes. For more information about Churchill Downs and the Kentucky Derby Museum, go to www.derbymuseum.org.

Note: Use of flash photography and raised umbrellas are prohibited. Flashing lights, flapping, snapping, and popping noises easily frighten horses. You don't want to cause an accident. Also, you will not be able to pet the horses. Racehorses are working animals, like service dogs, and need to focus on their job.



T-2: Backstretch Tram Tour and Kentucky Derby Museum Visit

—Photo courtesy of Louisville Convention & Visitors Bureau



T-3: Falls of the Ohio

—Photo courtesy of Indiana Dept. of Natural Resources/
Falls of the Ohio State Park

Falls of the Ohio

\$20

#T-3 Thurs., Oct. 18 12:30–4:15 PM

One of the most unusual natural resources in the U.S. with its own museum, the Falls of the Ohio State Park was created to protect and interpret a Middle Devonian coral-sponge patch reef encompassing more than 200 acres. October is the best time of year to visit—because the river is usually low and the temperatures on the fossil beds are comfortable. Experience walking on an ancient seafloor at one of the earliest discovered and easily accessed fossil beds in the country. Learn about 390-million-year-old sea life preserved in limestone with a guided hike on the fossil beds. Discover the nature of fossils and how they compare to today’s sea life with an indoor fossil lab that emphasizes modern and Devonian ecosystems. Dig and keep your own fossils and minerals from collecting piles maintained by the park for that purpose. Collecting bags for the rock piles as well as identification sheets will be provided. The fossils are from area quarries and date from the Silurian and Devonian periods, and the minerals come from fluorite mines in southern Illinois. On this field trip, you will also visit the George Rogers Clark home site and tour a representation of both his cabin and that of Ben and Venus McGee, the location of the first freed slave community in the Northwest Territory. This was where Meriwether Lewis met up with William Clark and where the first contingent of the Lewis and Clark expedition was recruited. For more information about the park, go to www.falloftheohio.org.

Note: This trip will run rain or shine! Do not wear open-toed shoes. The Interpretive Center is fully accessible by wheelchairs with a ramp leading to the upper fossil beds. However, the fossil beds themselves have rugged, irregular surfaces and are not negotiable by wheelchairs.

Growing STEM in the Outdoor Classroom

\$19

#F-1 Fri., Oct. 19 8:00 AM–1:30 PM

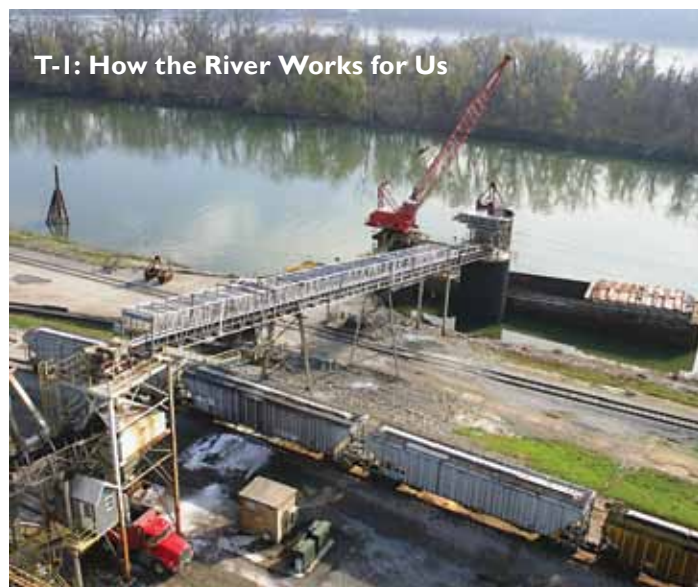
Engage in authentic STEM activities and lessons in an outdoor classroom setting, including math in the garden, problem solving and design of tools and features for student use, garden design with technology, force and motion inquiries with the physical science space, and more! Learn strategies to bridge and connect standards-based, inquiry learning with the elements of the natural world. Designed and built to connect directly to National Science Education Standards, the outdoor classroom at Cane Run Elementary is a rich environment for growing science, technology, engineering, and math. Take home lessons and activities. Bring your camera, wear comfortable clothes, and take away ideas you can use immediately in your own school. A light salad lunch will be served, courtesy of Cane Run Environmental Magnet School.

Mega Cavern Historical Tour

\$25

#F-2 Fri., Oct. 19 12:30–3:30 PM

Hop aboard an SUV-pulled tram with cushioned seating and be joined by a Mega Cavern expert who will guide you on an underground adventure. It’s a great tour for all ages; whether you want to learn about science, geology, history, green building technology, or if you just want to see what a giant cavern of this magnitude looks like. You’ll find it at the Louisville Mega Cavern. As an addition to your visit, you will also get a sneak preview of MEGA ZIPS—the world’s only all-underground zip lines and adventure tour featuring five underground zip lines. For more information about Louisville Mega Cavern, go to www.louisvillemegacavern.com. *Note:* Participants will view the zip lines, so no waiver is needed.



T-1: How the River Works for Us

—Photo courtesy of Ports of Indiana

Conference Program • Affiliate Sessions

Association for Multicultural Science Education (AMSE)

President: Eddie A. Chevis

Friday, October 19

5:00–6:00 PM	Literacy in the Science Classroom to Create a Balanced Program	Kentucky C/D, Marriott
--------------	--	------------------------

Council for Elementary Science International (CESI)

President: Barbara Z. Tharp

Thursday, October 18

3:30–4:30 PM	Power Paper Projects for Physical Science	208, Convention Center
--------------	---	------------------------

Friday, October 19

11:00 AM–12 Noon	Council for Elementary Science International Share-a-Thon	Marriott V, Marriott
------------------	---	----------------------

Saturday, October 20

8:30–10:30 AM	CESI Breakfast (Ticket M-1) Speaker: Betty Crocker, Author and Retired Educator, University of North Texas, Denton	Marriott I, Marriott
---------------	---	----------------------

Council of State Science Supervisors (CSSS)

President: Peter McLaren

Thursday, October 18

8:00–9:00 AM	Connecting with the Common Core State Standards (CCSS) for English Language Arts and Literacy	Marriott I/II, Marriott
--------------	---	-------------------------

National Association for Research in Science Teaching (NARST)

President: Sharon Lynch

Friday, October 19

8:30–9:00 AM	Using Technology to Address Student Misconceptions and Improve Insights into the Nature of Science in General Chemistry	204/206, Convention Center
9:30–10:30 AM	When It Comes to Accepting Evolution, Gut Feelings Trump Facts Case Studies in Teacher Content Learning in a Problem-Based Learning Professional Development Setting	204/206, Convention Center

National Middle Level Science Teachers Association (NMLSTA)

President: Rajeev Swami

Thursday, October 18

8:00–9:00 AM	Grant Proposal Writing—Step by Step	Kentucky A/B, Marriott
--------------	-------------------------------------	------------------------

Friday, October 19

9:30–10:30 AM	Fins + Plants = Inquiry Aquaponics in the Classroom	L8, Convention Center
---------------	---	-----------------------

National Science Education Leadership Association (NSELA)

President: Elizabeth Allan

Friday, October 19

11:00 AM–12 Noon	Tools for Leaders, Part I	204/206, Convention Center
12:30–1:30 PM	Tools for Leaders, Part II	204/206, Convention Center

Society for College Science Teachers (SCST)

President: Brian Shmaefsky

Saturday, October 20

9:30–10:30 AM	Converting Activities from Cookbook to Inquiry	216/217, Convention Center
---------------	--	----------------------------

Share Your Know-How

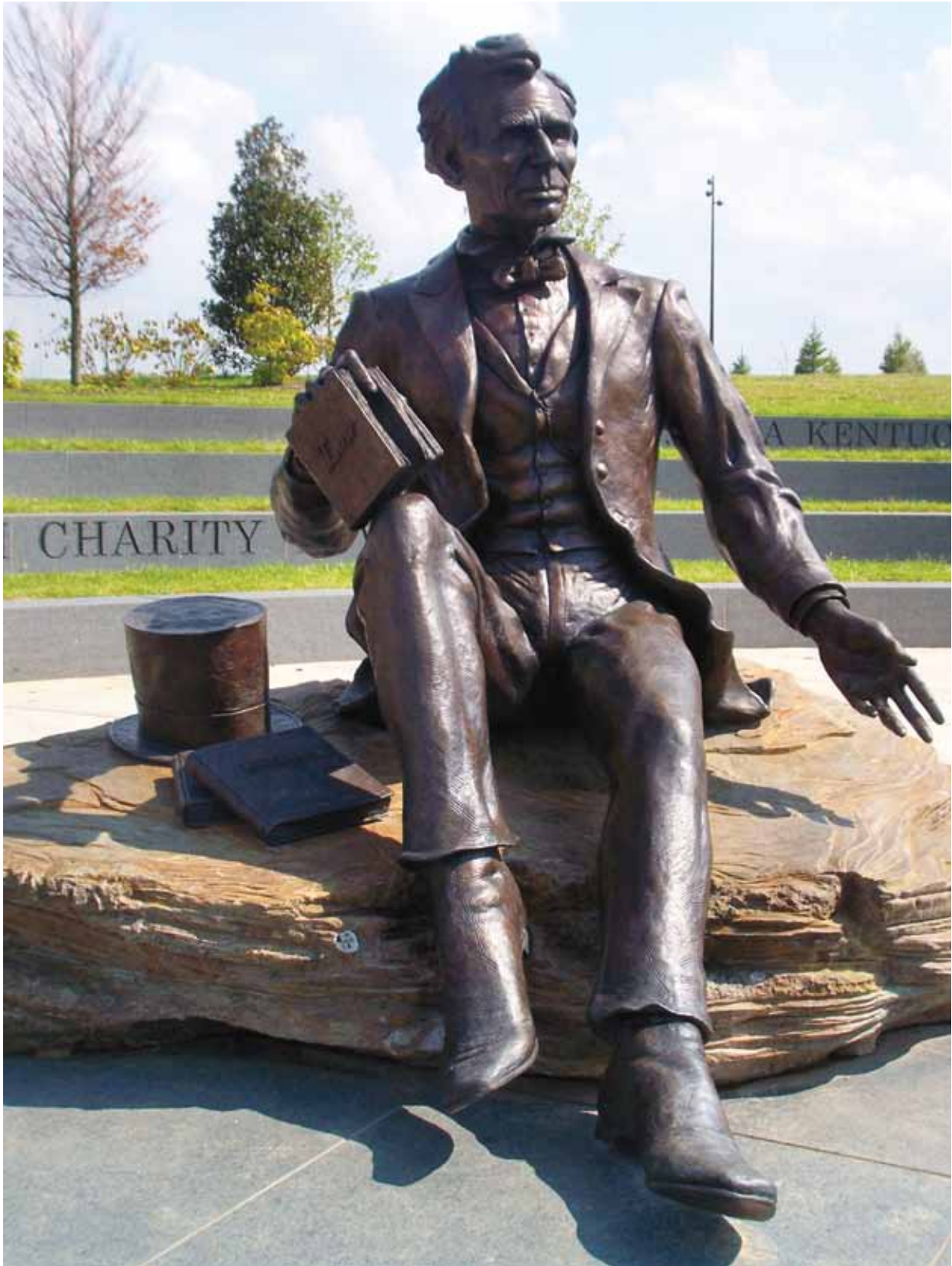
Submit a session proposal for our NSTA STEM Forum

2013 STEM Forum & Expo
 Proposal Deadline: November 30, 2012

St. Louis, Missouri • May 15–18, 2013
 (Exclusive evening exhibits preview May 15)

www.nsta.org/2013stemforum

NSTA National Science Teachers Association



—Photo courtesy of Louisville Convention & Visitors Bureau

Nestled between the downtown central business district and Butchertown is the award-winning Waterfront Park. Dedicated in 2009, a 12-foot sculpture of a young Abraham Lincoln is located in the park.

8:30 AM–3:30 PM Preconference Workshop

Picture-Perfect Science Preconference Workshop (C-1)

(Elementary)

Kentucky A–C, Marriott

By Preregistration Only

Karen Ansberry (karen@pictureperfectscience.com) and **Emily R. Morgan** (emily@pictureperfectscience.com), Classroom Veterans and Award-winning Authors of *Picture-Perfect Science Lessons, Expanded 2nd Edition: Using Children's Books to Guide Inquiry, 3–6* and *More Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4*

For description, see page 33.

Emily R. Morgan is a consultant for Picture-Perfect Science, LLC where she facilitates elementary science workshops for teachers nationwide. She feels that tapping into students' fascination with science will give them the motivation to read about it. Emily has a bachelor's degree in education from Wright State University and a master's in education from the University of Dayton. She taught seventh-grade science at Northridge Local Schools in Dayton, Ohio, and grades 2–4 science lab at Mason City Schools in Mason, Ohio. She has served as a science consultant for the Hamilton County Educational Service Center in Cincinnati, and as the science leader for the High AIMS Consortium. Emily is the co-author of the Picture-Perfect Science series published by NSTA Press, and the author of the Next Time You See... children's books series from NSTA Press.

Karen Ansberry is the elementary science curriculum leader for Mason City Schools in Mason, Ohio. As a former classroom teacher, she understands that teachers are crunched for time and need high-interest, ready-to-use lessons that integrate literature, reading strategies, and science. After graduating from Xavier University in Cincinnati with a bachelor's degree in biology, she completed an internship in the Cincinnati Zoo's education department. This experience inspired her to change her career focus from wildlife biology to elementary education, and after earning an MA in teaching from Miami University in Oxford, Ohio, she began teaching grades 5–6 science at Mason City Schools. Karen is the co-author of NSTA's Picture-Perfect Science series.

Emily and Karen are also the co-authors of the "Teaching Through Trade Books" column from NSTA's journal Science & Children and co-authors of the book Teaching Science Through Trade Books published by NSTA Press.

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 131, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

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

Strands

The Louisville 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 26.



Everyday Connections: Science Across the Curriculum



Everyday Applications: Putting STEM to Work



Everyday Innovations: Creativity and Problem Solving with Science

The following icon will be used throughout this program.



NSTA Press® Sessions



*Explore the Ocean,
even if you live in the Heartland*

Introducing our self-contained, portable saltwater touch tank!

- Seeing and touching exotic marine animals is a great way to engage your class
- The tank is fully self-contained. All the equipment needed to support marine life is hidden inside the base. Simply plug it in!
- Detailed instruction manual helps you maintain good water quality and healthy animals
- The tank is on casters and fits through typical doorways. Roll it wherever you need it!

Observing marine life is a fascinating learning experience, but field trips to the local aquarium may be a thing of the past. Introducing a portable touch tank that's the perfect solution!

Specifically designed by our aquarist to recreate a saltwater environment, it's a tiny block of ocean on wheels. Fill it with water, stock it with creatures and wheel it through the door and down the hall, from classroom to classroom.

The reinforced 1/2" thick acrylic corners and sides hold everything in place, while the open top allows students to observe and examine the wonders inside. An extra-wide rim around the edge prevents creatures from escaping. Tank measures 60 x 30 x 14", holds over 100 gallons and stands 44" high from top to wheels. Black ABS plastic base conceals included pumps, UV sterilizer, bioreactors and skimmers that keep the water fresh and pure. Heavy-duty locking casters. Complete instructions with detailed list of recommended animals. *Ships motor freight.*

*Never had a saltwater aquarium before?
It's easy! Just add water and animals!*



74-950 Touch Tank: \$6,999

Science First®

86475 Gene Lassere Blvd • Yulee, FL 32097

800-875-3214 • FAX 904-225-2228

www.sciencefirst.com

8:00–9:00 AM Presentations

SESSION 1

✓ Literature to Engage Early Childhood Learners for Science (Gen)

(Preschool–Elementary) 109, Convention Center

Abha Singh (*a-singh@wiu.edu*), Western Illinois University, Macomb

Children learn best when science content, processes, and literature are integrated to make science relevant. The purpose of this presentation is to provide examples of integration for early childhood learners.

SESSION 2

💡 Problem Finding and Problem Solving in the New AP Chemistry Course (Chem)

(High School–College) 112, Convention Center

Trinna S. McKay, Dunwoody High School, Dunwoody, Ga. The AP Chemistry Development Committee will present how to address the 21st-century skills of problem finding and solving in this revised AP chemistry course.

SESSION 3

Teaching Biological Processes Using Modules Based on 3-D Computer Animations (Bio)

(High School–College) 203/205, Convention Center

Georgia W. Hodges (*galee@uga.edu*), The University of Georgia, Athens

Demonstrations of case study modules combining dynamic 3-D animations and inquiry-based learning of biology will be highlighted.

SESSION 4

Solids: The Neglected “State” of Chemistry (Chem)

(High School) 204/206, Convention Center

Debbie Goodwin (*nywin@hotmail.com*), Chillicothe High School, Chillicothe, Mo.

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

Caryn Jackson (*cjackson@tolles.k12.oh.us*) and **Todd Bolenbaugh** (*tboenbaugh@tolles.k12.oh.us*), Tolles Career & Technical Center, Plain City, Ohio

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

SESSION 5

Students Committed to Saving Energy (Env)

(Elementary–High School) L8, Convention Center

Pamela Hambrick and **Julie Jones**, Russell Cave Elementary School, Lexington, Ky.

Tresine Logsdon (*tresine.logsdon@fayette.kyschools.us*), Fayette County Public Schools, Lexington, Ky.

Presenter: Tresine Logsdon

Come learn how students work through steps to monitor energy usage within their schools and then find ways to reduce energy consumption.

SESSION 6

Promoting Scientific Literacy Through the Use of Novels (Gen)

(Middle Level–High School) Kentucky C/D, Marriott

Leigh Bunn (*leigh.bunn@athens.edu*), Athens State University, Athens, Ala.

We’ll discuss ways of using novels within the science classroom to promote scientific literacy. Literacy strategies used with novels will also be provided.

SESSION 7

CSSS Session: Connecting with the Common Core State Standards (CCSS) for English Language Arts and Literacy (Gen)

(Middle Level–High School) Marriott I/II, Marriott

Sean Elkins (*sean.elkins@education.ky.gov*), Kentucky Dept. of Education, Frankfort

Join me as I highlight Kentucky’s pilot work in helping science teachers effectively implement the CCSS literacy standards.

8:00–9:00 AM Workshops

Be Prepared—Move from Cookbook to Inquiry! (Chem)

(Middle Level–High School) 207, Convention Center

Greg Dodd (*gbdodd@gmail.com*), George Washington High School, Charleston, W.Va.

Join me for a hands-on inquiry activity modeling the inquiry approach to science instruction.

Let’s Give ‘em Something to Talk (Write) About! (Gen)

(Elementary) 208, Convention Center

Katrina A. Slone (*katrina.slone@education.ky.gov*), Kentucky Dept. of Education, Hindman

With little time to teach science in primary school, combining with language arts makes sense. But how do we keep the science valid, interesting, and worth writing about? Engage in hands-on inquiry activities and learn methods to have students use the activities as the impetus for writing about science concepts.



NSTA Press® Session: Teaching and Learning Biology Through Scientific Argumentation (Bio)

(Middle Level–High School) Conference Theatre, Conv. Center

Sharon Schleigh (*schleighs@ecu.edu*), East Carolina University, Greenville, N.C.

Victor Sampson (*victor.sampson@gmail.com*), Florida State University, Tallahassee

Join us for an introduction to some innovative ways to help middle school and high school students learn more about and from scientific argumentation in biology.

Planning and Designing Safe, Sustainable, and Flexible Facilities for STEM-based Science (Science Facilities 101) (Gen)

(General) L3, Convention Center

LaMoine L. Motz (*llmotz@comcast.net*), 1988–1989 NSTA President, and Science Education and Facilities Specialist, White Lake, Mich.

Juliana Texley (*jtexley@att.net*), Palm Beach State College, Boca Raton, Fla.

James T. Biehle (*biehlej@sbcglobal.net*), Inside/Out Architecture, Inc., Kirkwood, Mo.

Presider: LaMoine L. Motz

So you want new science facilities. Does your curriculum define your science teaching facility? Hear from experts on planning and designing safe, sustainable, and flexible facilities for STEM-based science. Join the authors of *NSTA Guide to*

Planning School Science Facilities, 2nd edition and learn the “basics” of science facility planning, designing, and budgeting.

“Startastic” Science! (Earth)

(Middle Level–High School) L5, Convention Center

Christopher A. Rodriguez (*christopher.rodriguez@ttu.edu*), Texas Tech University, Lubbock

Engage in activities covering characteristics of stars, light-years, and black holes using spectroscopy readings, cotton candy, magnets, and flashlights. Door prizes!

ASEE Session: ASEE’s K–12 Outreach Program eGFI: Engineering, Go For It and the Marshmallow Challenge (Gen)

(General) L6, Convention Center

Dennis Cummings (*d.cummings@asee.org*), ASEE, Washington, D.C.

Presider: J.P. Mohsen, University of Louisville, Ky.

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

STEM and Health: Stressors on the Circulatory System Related to Excess Body Fat (Bio)

(General) L7, Convention Center

Robin L. Cooper (*rlcoop1@email.uky.edu*), **Kim Zeidler-Watters** (*kzeidle@uky.edu*), **Rebecca M. Krall** (*rebecca.krall@uky.edu*), and **Susan Mayo** (*susan.mayo@pikeville.kyschools.us*), University of Kentucky, Lexington

Diane Johnson (*diane.johnson@uky.edu*), Program Coordinator, NSTA Louisville Area Conference, and University of Kentucky, Lexington

Rachel C. Holsinger, Sayre School, Lexington, Ky.

The goal of this laboratory exercise is to understand the circulatory system while integrating STEM and health-related issues.

Inquiry in Action: Investigating Matter Through Inquiry (Chem)

(Elementary) L10, Convention Center

James H. Kessler (*jhkessler@acs.org*), American Chemical Society, Washington, D.C.

Conduct hands-on guided inquiry activities on common substances from the free website <http://inquiryinaction.org>. View and discuss molecular animations and receive a handout of all activities.

Student Motivation and Worms (Env)

(Elementary) *L11, Convention Center*

Brenda D. Stokes (*brenda.stokes@jefferson.kyschools.us*),
Portland Elementary School, Louisville, Ky.

Experience the story of inquiry in a surprising relationship with worms and vermicomposting. Learn to construct an inexpensive vermicomposter for your classroom. Come prepared to get your hands dirty with members of Portland's Environmental Club.

NMLSTA Session: Grant Proposal Writing—Step by Step (Gen)

(General) *Kentucky A/B, Marriott*

Diana M. Hunn (*dhunn1@udayton.edu*), University of Dayton, Ohio

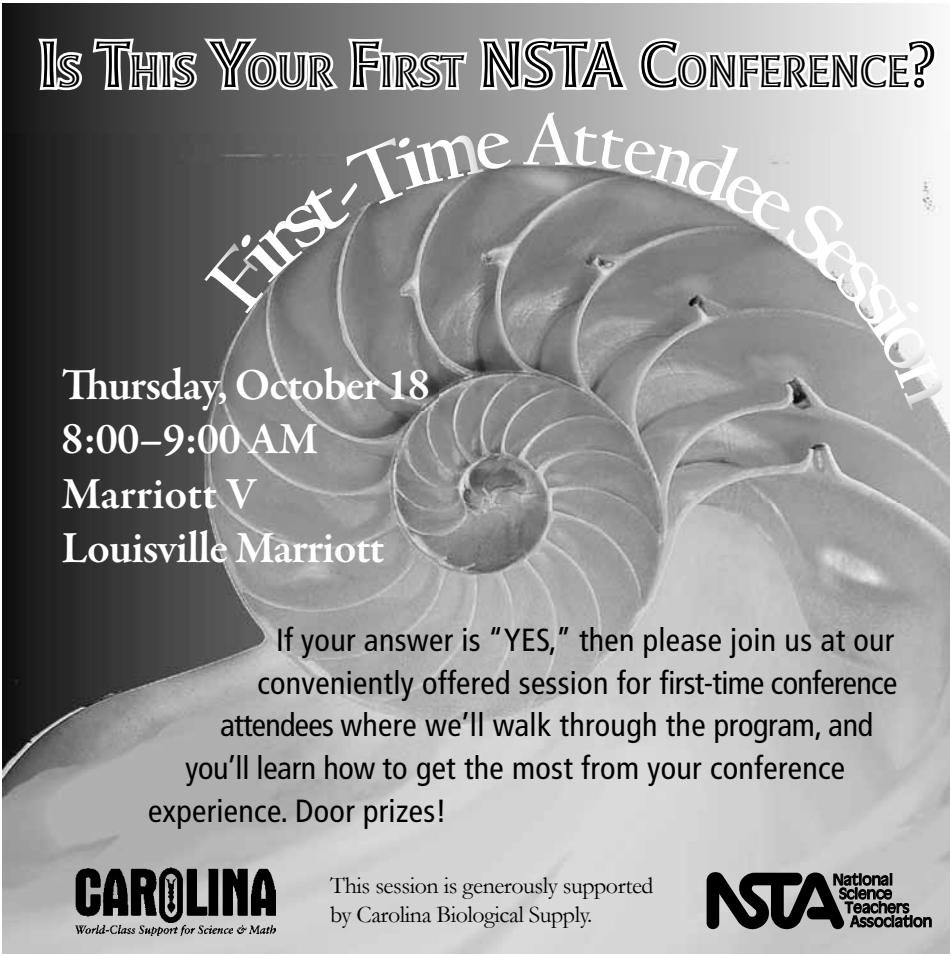
Activities for successful proposal writing will be practiced. This workshop is for teachers who want to learn skills and find resources.

Is This Your First NSTA Conference? (Gen)

(General) *Marriott V, Marriott*

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 book. 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. Door prizes!



IS THIS YOUR FIRST NSTA CONFERENCE?

First-Time Attendee Session

**Thursday, October 18
8:00–9:00 AM
Marriott V
Louisville Marriott**

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!

CAROLINA
World-Class Support for Science & Math

This session is generously supported
by Carolina Biological Supply.

NSTA National
Science
Teachers
Association

8:00–9:15 AM Exhibitor Workshops

A Simple Connection Between STEM and Data Logging (Gen)

(Grades 9–12) 102/103, Convention Center

Sponsor: Frey Scientific/School Specialty Science

Terry Reed, Consultant, Fishers, Ind.

Conduct a STEM-focused activity that links science concepts with the technology of data logging using the new uLog™ USB sensors. Integrate technology and hands-on inquiry activities effortlessly in the classroom with a cost-effective, easy-to-use data collection and analysis system.

Inquiring Minds Provide Spark for Science Lessons (Gen)

(Grades K–6) 110/111, Convention Center

Sponsor: Delta Education/School Specialty Science

Tom Graika, Consultant, Lemont, Ill.

Johanna Strange, Consultant, Lexington, Ky.

Inquiry is at the heart of science teaching. Using topics from the Delta Science module program, learn how inquiry strategies can provide a variety of learning opportunities for students. Engage in guided, challenge, and open inquiries and take home a resource packet.

Lemons and Light Bulbs: Exploring the Chemistry of Electricity (Chem)

(Grades 9–12) 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Brandon Watters, Lakes Community High School, Lake Villa, Ill.

The person who comes up with better batteries for electric cars will make oodles. The chemistry of electricity is cutting-edge chemical engineering and technology as well as the chemistry of our nervous system. Learn how to make a lemon light a bulb, electroplate copper, and make a battery from simple chemicals. As teachers, we tell students that electrons make chemistry. This workshop will show you how those same electrons make electricity, too.

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

(Grades 6–12) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Are you ready for a forensic dissection activity that is on the cutting edge? Engage students and revitalize your instruction of mammalian structure and function with a “real” classroom autopsy! Participants dissect a Carolina's Perfect Solution pig by modeling protocols of a forensic pathologist. Free dissection supplies and door prizes!

8:00–9:30 AM Exhibitor Workshop

Chemistry and the Atom: Fun with Atom-building Games! (Chem)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

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

Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students with opportunities to grasp atomic structure and its connection to the periodic table. Take away STEM activities and an understanding of how to incorporate science and engineering practices in your lessons.

8:00–10:00 AM Exhibitor Workshop

Science-centered Language Development with FOSS (Gen)

(Grades K–8) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

Brian Campbell, The 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.

8:30 AM–12 Noon Short Course



Teaching Science Outdoors Through Research, Design, and Technology (SC-1)

(Grades 5–9)

Wilkinson, Galt House Hotel

Tickets Required: \$20

Joanna Snyder (joanna_snyder@berkeley.edu) and **Erica Beck Spencer** (ebspencer@berkeley.edu), The Lawrence

Hall of Science, University of California, Berkeley

For description, see page 34.

9:15–10:30 AM General Session**Updating the Development of the Next Generation Science Standards***(General)**Cascade Ballroom A/B, Convention Center*

Stephen L. Pruitt, Vice President for Content, Research, and Development, Achieve, Inc., Washington, D.C.

Prsider and Introduction of Speaker: Karen L. Ostlund, NSTA President, and Advisory Council, Texas Natural Sciences Center, The University of Texas at Austin

Platform Guests: Stephen L. Pruitt; Karen L. Ostlund; Patricia Simmons, NSTA Retiring President, and North Carolina State University, Raleigh; Bill Badders, NSTA President-Elect, and Retired Director, Cleveland Math and Science Partnership, Cleveland, Ohio; David Helm, NSTA Director, District VIII, KSTA President, and Fayette County Public Schools, Lexington, Ky.; Raymond Bowden, Chairperson, NSTA Louisville Area Conference, and Retired Educator, Louisville, Ky.; Diane Johnson, Program Coordinator, NSTA Louisville Area Conference, and University of Kentucky, Lexington; Clara Mackin Fulkerson, Local Arrangements Coordinator, NSTA Louisville Area Conference, and Cox's Creek Elementary School, Cox's Creek, Ky.; Gerry Wheeler, NSTA Interim Executive Director, Arlington, Va.

The first public draft and review period for the Next Generation Science Standards (NGSS) is complete and revisions are under way. 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, Inc., with support from NSTA and the American Association for the Advancement of Science, have embarked on a two-step cooperative process to develop the Next Generation Science Standards. The first step, the NRC *Framework*, was released in July 2011. The next step is the development of the actual standards, a process led by Achieve involving science experts, science teachers, states, and other science education partners. The NGSS are due for completion in early 2013.

Stephen L. Pruitt was named vice president for Content, Research, and Development at Achieve in November 2010. He is leading the development of the Next Generation Science Standards. A native Georgian, Stephen earned a PhD in philosophy in chemistry education from Auburn University.

10:00–11:15 AM Exhibitor Workshops**Solving the Mystery of STEM Using Forensic Science** **(Bio)***(Grades 9–12)**102/103, 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, investigative activities, the preparation of web-based content, and individualized assessment.

Dynamic Demonstrations from Flinn Scientific**(Chem)***(Grades 7–12)**105, Convention Center*

Sponsor: Flinn Scientific, Inc.

Irene Cesa (*icesa@flinnsci.com*), Flinn Scientific, Inc., Batavia, Ill.

Chemistry in action! Join Flinn Scientific as we present dynamic, exciting, easy-to-perform demonstrations on core chemistry and physical science topics. Discover new demonstrations and refresh your knowledge of classic demonstrations, all guaranteed to make your science classroom come alive! Take home handouts for all activities.

DSM and STEM: Challenges for the Elementary Student **(Gen)***(Grades K–6)**110/111, Convention Center*

Sponsor: Delta Education/School Specialty Science

Tom Graika, Consultant, Lemont, Ill.

Johanna Strange, Consultant, Lexington, Ky.

Activities from the Delta Science Modules (DSM) program provide ample opportunity for younger students to engage in STEM-based challenges. Discover a process that fosters the STEM initiative and receive a workshop packet and related Delta materials.

Getting the Most Out of Molecular-Level Visualization and Simulation Tools (Chem)

(Grades 7–College) 116, Convention Center

Sponsor: Wavefunction Education Labs

Sean Ohlinger (sales@wavefun.com), Wavefunction Education Labs, Irvine, Calif.

Making connections between macroscopic and molecular phenomena is at the core of learning chemistry. Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to investigate at the molecular level with the powerful 2012 releases of *Odyssey High School Chemistry* and *Odyssey AP Chemistry*.

O₂ Understand Photosynthesis and Cellular Respiration! (Bio)

(Grades 9–12) 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Barbara Nagle, The Lawrence Hall of Science, University of California, Berkeley

Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding how matter and energy flow, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, participants will learn to use notebooking and discussion strategies to expose student thinking...all from SEPUP's new *Science & Global Issues* Biology program from LAB-AIDS.

Strawberry DNA and Molecular Modeling (Bio)

(Grades 9–12) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Introduce students to the fascinating world of DNA through age-appropriate hands-on activities designed to make biology fun. Learn how to effectively use DNA models to teach structure and function, then extract actual DNA from strawberries to start your unit on genetics. Handouts and door prizes!

Hurricanes and Volcanoes (Earth)

(Grades 4–12) 214/215, Convention Center

Sponsor: Simulation Curriculum Corp.

Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Minnetonka, Minn.

What are hurricanes and how are they formed? Why are volcanoes common in certain parts of the world? With *The Layered Earth*, students can visualize, measure, and manipulate these forces of nature as well as basic concepts of geology and meteorology using a virtual model of Earth.

10:00–11:30 AM Exhibitor Workshop

Genetics: Crazy Traits and Adaptation Survivor (Bio)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

Nathan Olsson, CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they experience genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity come alive as you use a unique kit to create crazy creatures and study the resulting population. Take away STEM activities and an understanding of how to incorporate science and engineering practices into lessons.

10:30–11:30 AM Exhibitor Workshop

Asteroid! Will Earth Be Hit Again? Planetary Science for Middle School (Earth)

(Grades 5–8) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

Jessica Penchos, Larry Malone, and Virginia Reid, The Lawrence Hall of Science, University of California, Berkeley

Earth has been hit in the past, but what lies ahead? Using data from the Moon, we will calculate frequency of impacts and consider implications for Earth. We'll discuss how these questions guide students' scientific exploration and review new features, strategies, content, and materials in the revised *FOSS Planetary Science* course.

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

Entrance to Exhibit Hall 2D, Convention Center

Presider: Karen L. Ostlund, NSTA President, and Advisory Council, Texas Natural Sciences Center, The University of Texas at Austin

Welcoming Remarks: Raymond Bowden, Chairperson, NSTA Louisville Area Conference, and Retired Educator, Louisville, Ky.

Special Guests: Karen L. Ostlund; Raymond Bowden; Patricia Simmons, NSTA Retiring President, and North Carolina State University, Raleigh; Bill Badders, NSTA President-Elect, and Retired Director, Cleveland Math and Science Partnership, Cleveland, Ohio; David Helm, NSTA Director, District VIII, KSTA President, and Fayette County Public Schools, Lexington, Ky.; Diane Johnson, Program Coordinator, NSTA Louisville Area Conference, and University of Kentucky, Lexington; Clara Mackin Fulkerson, Local Arrangements Coordinator, NSTA Louisville Area Conference, and Cox's Creek Elementary School, Cox's Creek, Ky.; Gerry Wheeler, NSTA Interim Executive Director, Arlington, Va.; Rick Smith, Managing Director, NSTA Advertising, Exhibits, and Workshops, Arlington, Va.

Musical Entertainment provided by the Nelson County High School (Bardstown, Kentucky) Brass Quintet under the direction of Marc Monroe.

11:00 AM–12 Noon Presentations

SESSION 1

Corrosion Is Everywhere: Use It to Make Chemistry Relevant and Fun (Chem)

(High School)

104, Convention Center

Debbie Goodwin (nywin@hotmail.com), Chillicothe High School, Chillicothe, Mo.

Andrew G. Nydam (andrewnydam@hotmail.com), Olympia High School, Olympia, Wash.

Caryn Jackson (cjackson@tolles.k12.oh.us) and **Todd Bolenbaugh** (tbolenbaugh@tolles.k12.oh.us), Tolles Career & Technical Center, Plain City, Ohio

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 2

Science Skills Toolkit (Gen)

(Middle Level)

Kentucky C/D, Marriott

Anne Farley Schoeffler (schoefflera@setoncatholicschool.org), Seton Catholic School, Hudson, Ohio

Using a checklist-style formative assessment, coupled with targeted lab activities, allows you to easily direct and document individual student's acquisition of science process skills.



11:00 AM–12 Noon Workshops

✓ Shine the Light on Inquiry Science (Phys) (Elementary) 109, Convention Center

Caryn S. Walker (*caryn.walker@jefferson.kyschools.us*),
Tonya L. Arnold (*tonya.arnold@jefferson.kyschools.us*), and
Debbi Wyman (*debbi.wyman@jefferson.kyschools.us*), Jefferson
County Public Schools, Louisville, Ky.

Investigate the mysteries of light using inquiry science lessons
in which writing is used to formatively assess and support
student understanding of content.

The Architects Have Started Without Me—What Do I Do Now? (Science Facilities 102) (Gen) (General) L3, Convention Center

LaMoine L. Motz (*llmotz@comcast.net*), 1988–1989 NSTA
President, and Science Education and Facilities Specialist,
White Lake, Mich.

Juliana Texley (*jtexley@att.net*), Palm Beach State College,
Boca Raton, Fla.

James T. Biehle (*biehlej@sbcglobal.net*), Inside/Out Archi-
tecture, 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 44), the
NSTA author team for *NSTA Guide to Planning School Science
Facilities*, 2nd. edition will present more detailed informa-
tion and examples of functional, flexible science spaces for
STEM-based science. Resource packet available!

ASEE Session: Introducing Engineering to Elemen- tary School Students (Gen) (General) L6, Convention Center

Stacy S. Klein-Gardner (*stacy.gardner@harpethhall.org*),
Harpeth Hall School, Nashville, Tenn.

Presider: J.P. Mohsen, University of Louisville, Ky.

Join us and become acquainted with the *Engineering is Elemen-
tary*® program and learn a hands-on way to introduce the
engineering design process to any grade level.

11:00 AM–12:30 PM Meeting

Multicultural/Equity Division Area Meeting

Jockey Club, Marriott

11:05 AM–5:00 PM Exhibits

Exhibit Hall 2D, Convention Center

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

12 Noon–1:00 PM Exhibitor Workshop

NASA's Kepler Mission and the Hunt for Exoplanets: Planetary Science for Middle School (Earth)

(Grades 5–8) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science—FOSS
Jessica Penchos, Larry Malone, and Virginia Reid, The
Lawrence Hall of Science, University of California, Berkeley
Recent headlines have excitedly announced findings of exo-
planets. Learn about the NASA Kepler Mission and how to
use classroom models to help your students understand this
rapidly developing field of planetary science. Find out about
the new features, strategies, content, and materials of the
revised *FOSS Planetary Science* course.

12 Noon–1:15 PM Exhibitor Workshop

STEM: The Game Changer in Science Lab Design (Gen)

(Grades 9–12) 102/103, Convention Center

Sponsor: Frey Scientific/School Specialty Science
Gordon Strohminger, Frey Scientific/School Specialty
Science, Nashua, N.H.

Discover how STEM impacts the environments in which we
teach. Participants will explore how STEM influences lab
environment design to strengthen the 21st-century skills
of collaboration and communication. See how technology
integration can push traditional boundaries to facilitate
access to essential concepts. Discussions include lab design
creation and future trends.

12 Noon–1:30 PM Exhibitor Workshop

STEM Approach to Teaching Electricity and Mag- netism (Phys)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science
Nathan Olsson, CPO Science/School Specialty Science,
Nashua, N.H.

Explore how electricity and magnetism are related through
hands-on experiences. Apply your knowledge to engineering
a wind turbine. Build, test, and revise your model so that it
generates as much power as possible. Take away STEM activi-
ties and an understanding of how to apply the engineering
cycle in science classes.

NCTM 2013 Regional
Conference & Exposition
LOUISVILLE, KENTUCKY NOVEMBER 6–8, 2013

Save the Date!

Join us in Louisville and hear from leading experts in mathematics education. Sign up at www.nctm.org/reg13nsta to receive the latest information about the conference, and you'll also receive a special discount offer when registration opens in April 2013.

Visit www.nctm.org/reg13nsta for up-to-date information.

 NATIONAL COUNCIL OF
TEACHERS OF MATHEMATICS
(800) 235-7566 | WWW.NCTM.ORG

12:30–1:00 PM Presentation**SESSION 1****Building a STEM Pipeline****(Gen)***(Supervision/Administration)**104, Convention Center***Gary J. Rivoli** (gary.rivoli@louisville.edu), University of Louisville, Ky.

Learn a process for developing and implementing a K–12 STEM pipeline and how the pipeline can be replicated.

12:30–1:00 PM Exhibitor Workshop**Welcome to the Neighborhood: Overview of the Solar System** **(Earth)***(Grades 5–8)**Booth #1043, Exhibit Hall, Conv. Center*

Sponsor: Science First®/STARLAB®

Helmut Albrecht (halbrecht@starlab.com) and **Nathaniel Bell**, Science First/STARLAB, Yulee, Fla.

In this “in dome” workshop, we demonstrate how you can introduce your students to our neighborhood—the solar system.

12:30–1:30 PM Presentations**SESSION 1****Introducing Nanotechnology into the Chemistry Classroom** **(Chem)***(Middle Level–High School)**203/205, Convention Center***Sherri Conn Rukes** (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Nanotechnology is a topic that is taking off in many different areas of science. Learn about what nanotechnology is as well as discover applications from ancient time to present day. Take home a CD of the activities and concepts.

SESSION 2 (two presentations)*(High School)**204/206, Convention Center***Teaching and Learning in the Digital Age: Chemistry Resources Teachers and Students Can Rely On** **(Chem)****Marta U. Gmurczyk** (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.Learn about the American Chemical Society’s innovative (and free of charge) collection of reliable and free digital resources for high school teachers, including ChemEd DL (Chemical Education Digital Library) with Models 360, ChemTeacher, and the award-winning Periodic Table Live! Also, see *ChemMatters* vid-eopodcasts and discover the ChemClub collection of activities.

Using Science Stories to Teach Chemistry...and Reading (Chem)

Marta U. Gmurczyk (m_gmurczyk@acs.org) and **Patrice Pages** (p_pages@acs.org), American Chemical Society, Washington, D.C.

Students learn core chemistry concepts in their classrooms but often may wonder how and why those concepts are relevant to their lives. Science stories may be a powerful tool to illustrate chemistry concepts, convey their relevance, educate students on real-world problems, and enhance their reading abilities. 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



NSTA Press® Session: *Bringing Outdoor Science In* (Gen) (Elementary–Middle Level) Conference Theatre, Conv. Center

Steve A. Rich (bflywriter@comcast.net), NSTA Director, Professional Development, and West GYSTC, Carrollton, Ga. Use natural materials from the school yard to bring science lessons to life and integrate reading, writing, and mathematics. Explore funding resources and get free seeds.

SESSION 4

Teaching Problem-Solving Strategies in the Elementary Classroom: Helping Students See the Interconnectedness of Science, Technology, Engineering, and Mathematics (Gen)

(General) Kentucky C/D, Marriott
Donna L. Knoell (dknoell@sbcglobal.net), Educational Consultant, Shawnee Mission, Kans.

Discover essential problem-solving strategies and process skills, and find out how to develop these process skills across the curriculum. Handouts!

SESSION 5

The Maryland Green Schools Program: Connections Between Environmental Education and Student Achievement (Gen)

(General) Kentucky F, Marriott
Sarah Haines (shaines@towson.edu), Towson University, Towson, Md.

Katie Dell, Towson University and Windsor Mill Middle School, Baltimore, Md.

Hear about quantitative results showing that students from schools with active Green School programs outperform those without such programs in core academic content areas and on standardized tests.

12:30–1:30 PM Workshops



SOS: Save Our Science—Integrating Across the Curriculum (Gen)

(Elementary) 109, Convention Center

Andi Webb (roliewebb@ccs.k12.nc.us) and **Lisa Popish** (lisapopish@ccs.k12.nc.us), Alderman Road Elementary School, Fayetteville, N.C.

Pick up strategies to include science instruction throughout the day in all subject areas in easy and effective ways in your elementary classroom.



The Need for Adaptation: Using Formative Assessment Probes in High School Biology to Uncover Student Thinking About Genetics (Bio)

(High School) 112, Convention Center

Miranda Messer (miranda.messer@jefferson.kyschools.us), and **Tracy E. Ising** (tracy.ising@jefferson.kyschools.us), Gheens Academy, Louisville, Ky.

Shannon Balentine (shannon.balentine@jefferson.kyschools.us), Moore Traditional High School, Louisville, Ky.

Frank J. Godlesky, Waggener High School, Louisville, Ky.

Scott Schneider (scott.schneider@jefferson.kyschools.us), Fairdale High School, Fairdale, Ky.

President: Lee Ann Nickerson, Gheens Academy, Louisville, Ky. Biology resource and classroom teachers will share formative assessment probes and instructional practices that were used to address student thinking around common misconceptions about adaptation.

STEM—Now or Never! (Chem)

(Middle Level–High School) 207, Convention Center

Greg Dodd (gbdodd@gmail.com), George Washington High School, Charleston, W.Va.

The use of appropriate technology in the classroom makes STEM instruction the best means to integrate science, math, and engineering instruction.

Seeing the Invisible: Making the Electromagnetic Spectrum Concrete (Phys)

(Middle Level–High School) 208, Convention Center

Christine A. Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

How do we “see” something that exists but is not visible? This workshop will allow participants to engage in activities that make the electromagnetic spectrum a bit more concrete.

Making the Burning of Coal Visible to Students**(Env)***(Middle Level–High School)**L3, Convention Center*

Steve R. Mattox (*mattox@gvsu.edu*), Grand Valley State University, Allendale, Mich.

Molly Hazel-Skrodenis (*mollyhazel@gmail.com*), Louisville Male High School, Louisville, Ky.

Coal is a common energy. This workshop makes coal consumption and impacts visible. See how much we use daily, lifetime volumes, and products released.

Using Inquiry to Teach Metamorphic Rocks and the Rock Cycle**(Earth)***(Elementary–High School)**L4, Convention Center*

Davida Buehler (*dbuehler@geosociety.org*), The Geological Society of America, Boulder, Colo.

This session is brought to you by The Geological Society of America. Come extract knowledge on metamorphic rocks and the rock cycle with an inquiry-based lesson.

Daytime Astronomy with Robotic Telescopes**(Earth)***(Middle Level–College)**L5, Convention Center*

Robert T. Sparks, National Optical Astronomy Observatory, Tucson, Ariz.

Learn how to get free access to robotic telescopes for your students to take their own astronomical images. Free NASA teacher's guide.

ASEE Session: Engineering the Future with TeachEngineering.org**(Gen)***(General)**L6, Convention Center*

Stacy S. Klein-Gardner (*stacy.gardner@harpethhall.org*), Harpeth Hall School, Nashville, Tenn.

President: J.P. Mohsen, University of Louisville, Ky.

Join us and become acquainted with *TeachEngineering.org*, a free online collection of standards-based engineering lessons and hands-on activities that help integrate innovative engineering trends into your K–12 classes.

The Effect of Environment and Modulators on Hindgut and Heart Function in Invertebrates**(Bio)***(General)**L7, Convention Center*

Rachel C. Holsinger, Sayre School, Lexington, Ky.

Kim Zeidler-Watters (*kzeidle@uky.edu*), **Rebecca M. Krall** (*rebecca.krall@uky.edu*), **Robin L. Cooper** (*rlcoop1@*

email.uky.edu), and **Susan Mayo** (*susan.mayo@pikeville.kyschools.us*), University of Kentucky, Lexington

The crayfish hindgut and *Drosophila* heart allow for easy physi-

ologic recordings and can be used as a bioassay for various compounds and environmental substances.

Clear Skies Ahead: Clearing Up Confusion on Clouds**(Earth)***(Preschool–Middle Level/Informal)**L10, Convention Center*

Tina J. Cartwright (*tina.cartwright@marshall.edu*), Marshall University, Huntington, W.Va.

Katie McDilda (*kmcdilda@wvstateu.edu*), West Virginia State University, Institute

Does teaching about clouds make you feel ominous and overcast? By incorporating classifications and simple dichotomous keys, your confusion over clouds will evaporate away!

Focus on Forests: Project Learning Tree's New Secondary Curriculum**(Env)***(High School–College/Informal)**L11, Convention Center*

Jaclyn Stallard (*jstallard@plt.org*) and **Al Stenstrup** (*astenstrup@plt.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. Participants receive Project Learning Tree's new *Exploring Environmental Issues: Focus on Forests* activity guide and resource materials.

Iteration in Engineering**(Gen)***(Middle Level–High School)**Kentucky A/B, Marriott*

Jacklyn Bonneau (*bonneau@wpi.edu*), Massachusetts Academy of Math & Science at WPI, Worcester

Engineering is the new buzzword, but engineering without testing prototypes students create and iterating those designs to make better products lacks rigor and reality.

Meet the Presidents and Board/Council

Come “meet and greet” with your elected NSTA officers on your way to the exhibits. Share some face-to-face time with the President, President-Elect, and Retiring President along with your Board and Council members. This Friday special session runs from 9:30 AM to 10:30 AM at the entrance to the Exhibit Hall. (page 77)

12:30–1:45 PM Exhibitor Workshops

Stand Back! We're Using Discovery Education Science Techbook for Grades K–12 (Gen)

(Grades K–12) 105, Convention Center

Sponsor: Discovery Education

Patti Duncan (patti_duncan@discovery.com), Wallenpaupack Area School District, Hawley, Pa.

Learn how to ENGAGE your students as they EXPLORE science through digital media in conjunction with hands-on resources. In this workshop, we will EXPLAIN how digital media can help develop process skills, ELABORATE on strategies for the science literacy connection and ways to meet the needs of every student, and EVALUATE student progress through science concepts.

Creating a Digital Strategy for STEM (Bio)

(Grades 7–College) 113, Convention Center

Sponsor: Swift Optical Instruments, Inc.

David Doty (david@swiftoptical.com) and **Cynthia Syverson-Mercer** (cynthia@swiftoptical.com), Swift Optical Instruments, Inc., Schertz, Tex.

Discover the strategies needed to create a digital STEM program for your school. Lab development, lesson plans, assessment, and teaching techniques will be demonstrated and modeled using Swift digital microscopes and Motic software. Leave with all you need to create a three- to five-year implementation plan plus keys to sustaining your STEM program, including professional development.

Environmental Issues—What Can Students Really Do to Help? (Env)

(Grades 6–9) 209, Convention Center

Sponsor: eCYBERMISSION

Brian P. Short (missioncontrol@ecybermission.com), Director, Science Education Competitions, NSTA, Arlington, Va.

In this hands-on workshop, come experience how to get grades 6–9 students excited and engaged in environmental issues. Find out what students can actually do about envi-

ronmental issues rather than just reading about what others are doing. Learn how to make these issues relevant to your students and how to turn an issue into a problem that can be solved using the scientific method. Sample lesson plans and other resources will be distributed along with information on how the new NSTA competition, eCYBERMISSION, can be used to help students solve real community environmental issues.

O₂ Understand Photosynthesis and Cellular Respiration! (Bio)

(Grades 9–12) 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Barbara Nagle, The Lawrence Hall of Science, University of California, Berkeley

Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding how matter and energy flow, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, participants will learn to use notebooking and discussion strategies to expose student thinking...all from SEPUP's new *Science & Global Issues* Biology program from LAB-AIDS.

The Solution Is Simple! Understanding Colligative Properties with Inquiries in Science® (Chem)

(Grades 9–12) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Make teaching colligative properties engaging and exciting. Use the 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning cycle and engage your students with a simple demo, then explore with a hands-on activity. Plotting data helps to explain the concepts before extending them to a real-world application—making ice cream. Free teacher materials and giveaways!

12:30–2:00 PM Exhibitor Workshop

Laurel and Hardy and the Laws of Science (Gen)
(Grades K–8) 110/111, Convention Center

Sponsor: Delta Education/School Specialty Science

John Cafarella, Consultant, Canadensis, Pa.

Let’s take a look at the NRC *Framework’s* Scientific and Engineering Practices as well as the highly anticipated Next Generation Science Standards through a lens using excerpts from the Laurel and Hardy movie *The Music Box**. Participants will also engage in activities based on the NRC *Framework*. Some Science Gnu humor, too.

**Permission has been granted by copyright holder to use excerpts from the movie for this session.*

1:30–3:00 PM Exhibitor Workshop

Engage Students with Active Learning Through FOSS, 3rd Edition (Gen)

(Grades K–6) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

Linda De Lucchi, Brian Campbell, and Kathy Long, The Lawrence Hall of Science, University of California, Berkeley

Join FOSS developers to learn about the conceptual framework behind the new FOSS elementary program. We’ll introduce the instructional design and illustrate how the system incorporates science-centered language development, notebooks, digital resources, formative assessments, and outdoor excursions into a coherent learning experience.

1:30–5:00 PM Short Course

 **Want to See Stars? Build a High-quality Refractor Telescope (SC-2)**

(Middle Level–College)

Rose, Marriott

Tickets Required: \$100

Martha M. Day (martha.day@wku.edu) and **Rico Tyler** (rico.tyler@wku.edu), SKyTeach, Western Kentucky University, Bowling Green

For description, see page 34.

2:00–3:00 PM Featured Presentation

 **Engineering-enhanced Science, Inquiry, and Problem Solving (Gen)**

(General)

101, Convention Center



Christine M. Cunningham (ccunningham@mos.org), Founder and Director, Engineering is Elementary; and Vice President, Museum of Science, Boston, Mass.

President: David Helm, NSTA Director, District VIII, KSTA President, and Fayette County Public Schools, Lexington, Ky.

Introduction of Speaker: Melinda N. Curless, Program Committee, NSTA Louisville Area Conference, and Kentucky Dept. of Education, Frankfort

Engineering is sometimes defined as the application of engineering and mathematics to solve problems. This talk will explore how integrating engineering design into science classes can engage students more deeply with science and mathematics concepts, highlight real-world connections, and foster inquiry and problem-solving skills.

A particular research focus of Christine Cunningham’s has been how teaching and learning of engineering, science, and technology can change to include and benefit a more diverse population. Her transition from science to engineering and technology education was an offshoot of her interest in women in science, which led her to consider why there are so few women in engineering. Christine directed the Women’s Experiences in College Engineering (WECE) project, the first national, cross-institutional, longitudinal study of factors contributing to women’s persistence in an engineering major.

Dr. Cunningham currently works as a vice president at the Museum of Science and is founder and director of the Engineering is Elementary® (EiE) project—a curriculum and professional development project designed to integrate engineering and technology concepts into elementary school science lessons.

Christine serves on a number of advisory boards. She holds a bachelor’s and master’s degree in biology from Yale University and a PhD in science education, curriculum, and instruction from Cornell University.

2:00–3:00 PM Presentations

SESSION 1

POGIL (Process-Oriented Guided Inquiry Learning) for the AP Physics Classroom (Phys)

(High School–College) 104, Convention Center

Sandee J. Coats-Haan (sandee.coatshaan@lakotaonline.com), Lakota East High School, Liberty Township, Ohio

Structured POGIL activities replace lectures with minds-on learning to ensure that the instructor is *not* the only person thinking in the AP Physics classroom.

SESSION 2



CRaTE-ing Success in the Science Classroom (Gen)

(Supervision/Administration) 112, Convention Center

Marge Maxwell (marge.maxwell@wku.edu), Western Kentucky University, Bowling Green

Matthew D. Constant (matthew.constant@owensborokyschools.us), Owensboro (Ky.) Public Schools

What does good instruction look like? Researchers in the Teacher Education department at Western Kentucky University have been working on an instrument to assess 21st-century instruction called the CRaTE Framework with four critical domains—cognitive complexity, real world, technology integration, and engagement. See how this instrument impacts the science classroom.

SESSION 3

Improve Administrator Effectiveness: Use the NSTA Learning Center Accountability System (Gen)

(General) 203/205, Convention Center

Flavio Mendez (flavio_m@nsta.org), Senior Director, NSTA Learning Center, Arlington, Va.

Come learn about the Learning Center, NSTA's e-PD portal, and its accountability system that administrators can use to document individual's usage data, pre/post-test scores, and other activity. Administrators can also manage the content of their cohort's home page and add branding. With more than 3,000 free resources and PD tools integrated within a professional learning community, the Learning Center can enhance and extend teachers' face-to-face PD experiences.

SESSION 4 (two presentations)

(High School/Informal) 204/206, Convention Center

Engaging Students in Chemistry Outside the Classroom: A Look at ChemClub (Chem)

Karen Kaleuati (hschemclubs@acs.org) and **Marta U. Gmurczyk** (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

Chemistry students are provided enrichment through various activities in the ChemClub. Join us to learn about this free and exciting program. Hear from club leaders and find out how you can easily start your own chemistry club with support and free resources from the American Chemical Society. Free of charge, this program is open to all teachers.

“Emergency Lesson Plans” for Teaching Chemistry Across Curricula (Chem)

Keith Lindblom (k_lindblom@acs.org) and **Marta U. Gmurczyk** (m_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

“Emergency lesson plans” have been designed to supplement high school chemistry and history courses. These lesson plans explore relationships between chemical and historical subjects. The classroom-ready lesson plans teach scientific concepts in a historical context using reading material, videos, and a variety of activities (available online) that can be used in combination or separately, and are easily implemented by a substitute teacher.

SESSION 5



NSTA Press® Session: Uncovering Physical Science Core Ideas in the NGSS Using Formative Assessment Probes (Phys)

(General) Conference Theatre, Convention Center

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, and Author/Consultant, Jefferson, Maine

Learn how the probes discussed in *Uncovering Student Ideas in Science* can be used as diagnostic and formative assessments of students' thinking related to the physical science core ideas in the highly anticipated Next Generation Science Standards and how use of the probes supports the science practices.

SESSION 6

Stepping-Stones to Inquiry: Learning in the Outdoors (Bio)

(Middle Level–High School) L8, Convention Center

Ella F. Bowling (*ella.bowling@mason.kyschools.us*), Mason County Middle School, Maysville, Ky.

Learn how our school created an outdoor classroom to facilitate student inquiry and class activities related to environmental science and ecology. Handouts provided!

SESSION 7

Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (Gen)

(Elementary) Kentucky C/D, Marriott

Donna L. Knoell (*dknoell@sbcglobal.net*), Educational Consultant, Shawnee Mission, Kans.

Join me as I share an overview of the components of differ-

entiation in the K–6 science classroom. I'll suggest ways to differentiate effectively to maximize student participation and learning. Handouts!

SESSION 8

Standards-based Grading in the Science Classroom (Gen)

(General) Kentucky F, Marriott

Ken Mattingly (*ken.mattingly@rockcastle.kyschools.us*), Rockcastle County Middle School, Mount Vernon, Ky.

Making grading a true reflection of learning can be difficult. See how one teacher has made the process transparent and uses it to motivate students.



Engage. Explore. Discover. Achieve.

At School Specialty we believe all students should love learning science

INNOVATION IN K-12 CURRICULUM SOLUTIONS

Explore the advantages of School Specialty Science's premiere solutions that include best in class hands-on curriculums and lab equipment needed to engage students and build 21st Century skills.

Discover the powerful advantage of our 50 year commitment to serving K-12 educators and students to engage in a lifetime of discovery.



800-663-2182

www.SchoolSpecialtyScience.com

2:00–3:00 PM Workshops

✓ Using Data to Move the Common Core into Science Inquiry (Phys)

(Elementary) 109, Convention Center

Tonya L. Arnold (tonya.arnold@jefferson.kyschools.us),
Caryn S. Walker (caryn.walker@jefferson.kyschools.us), and
Debbi Wyman (debbi.wyman@jefferson.kyschools.us), Jefferson
County Public Schools, Louisville, Ky.

Explore ways to integrate and support the math Common Core measurement and data standards in your science investigations.

Score a Winning Classroom (Chem)

(Middle Level–High School) 207, Convention Center

Christina Eisenhut, Texas Tech University, Lubbock

Tired of the same old games? Put a new and exciting spin on popular games that make assessment fun and engaging for students.

Stoichiometry of Safe Water (Chem)

(High School–College/Informal) 208, Convention Center

Theresa B. Britschgi (theresa.britschgi@seattlebiomed.org), Seattle Biomedical Research Institute, Seattle, Wash.

Connect your studies of stoichiometry to water disinfection and purification...and to the essential chemistry-based careers needed to deliver clean water to families around the world.

Using Inquiry to Teach Igneous and Sedimentary Rocks (Earth)

(Elementary–High School) L4, Convention Center

Davida Buehler (dbuehler@geosociety.org), The Geological Society of America, Boulder, Colo.

This Geological Society of America workshop will deepen content knowledge and provide inquiry lessons to help your students identify igneous and sedimentary rocks.

The Great Galaxy Mash-up (Earth)

(Middle Level–College) L5, Convention Center

Robert T. Sparks, National Optical Astronomy Observatory, Tucson, Ariz.

Learn how scientists classify galaxies and how your students can contribute to scientific research through the Galaxy Zoo. Free NASA teacher's guide!



ASEE Session: NASA's BEST Students (Beginning Engineering, Science, and Technology): Build a Buggy to Explore Mars! (Gen)

(General) L6, Convention Center

Laurie Cook (lcook@umbc.edu), Joint Center for Earth Systems Technology, University of Maryland Baltimore County, Catonsville

President: J.P. Mohsen, University of Louisville, Ky.

Design and build a buggy to NASA's specifications. Engage in the engineering design process, measurement skills, and data representation.

Linking Home and School with P.A.S.S. (Portable Affordable Simple Science) (Gen)

(Preschool–Elementary) L10, Convention Center

Renee G. O'Leary (vavallme@comcast.net), Holy Angels School, Newark, Del.

Peggy Vavalla (vavallme@comcast.net), 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.

Science & Children—A Year of Inquiry (Gen)

(Preschool–Elementary) L11, Convention Center

Linda Froschauer (fro2@mac.com), 2006–2007 NSTA President, and Field Editor, *Science & Children*, Westport, Conn.

The highly anticipated Next Generation Science Standards are explicit—inquiry remains an important strategy to use in our classrooms. Learn ways to infuse components of inquiry into your curriculum.

2:00–3:30 PM Exhibitor Workshop**Light and Optics: A Series of EnLIGHTening Experiments!** (Phys)

(Grades 5–12) 108, 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 with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine different spectra. We make studying light exciting! Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

2:00–5:00 PM Workshop**Implication of the NRC Framework and the Highly Anticipated NGSS for Teaching and Learning** (Gen)

(General) Kentucky G, Marriott

Mary Starr (m1starr@comcast.net), Starr and Associates, Educational Consultants, Plymouth, Mich.

Science teachers/leaders will be introduced to *A Framework for K–12 Science Education* and provided materials and guidance for replicating the workshop with others.

2:15–3:30 PM Exhibitor Workshops**New Guided Inquiry Labs for AP Biology from Flinn Scientific** (Bio)

(Grades 9–12) 105, Convention Center

Sponsor: Flinn Scientific, Inc.

Maureen Hunt (mhunt@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Four big ideas, more great labs! The revised AP Biology curriculum integrates scientific inquiry and reasoning through a series of student-directed, inquiry-based laboratory investigations. Join Flinn Scientific as we model the inquiry process and demonstrate activities from our new guided inquiry labs for AP Biology. We will share proven strategies for improving students' ability to generate meaningful questions, design experiments, and analyze scientific evidence. Handouts provided for all activities include alignment with the new AP Biology curriculum framework.

Create a Digital Classroom...Using 21st-Century STEM Initiatives! (Gen)

(Grades 7–College) 113, Convention Center

Sponsor: Swift Optical Instruments, Inc.

David Doty (david@swiftoptical.com) and **Cynthia Syverson-Mercer** (cynthia@swiftoptical.com), Swift Optical Instruments, Inc., Schertz, Tex.

Go digital...using STEM technology. Transform your labs, lesson plans, and activities into digital formats. Engage your students by incorporating Motic software, digital cameras, and Swift microscopes into your lessons. Learn how to integrate digital technology, student assessment, and motivation into your current curriculum.

Chemistry in the Community, 6th Edition—Changing with the Times (Chem)

(Grades 9–College) 201/202, Convention Center

Sponsor: American Chemical Society

Michael Mury (m_mury@acs.org), American Chemical Society, Washington, D.C.

Think you know ChemCom? Think again. Want your students thinking scientifically and learning how chemistry has an important role in their everyday lives? Learn about the exciting new features in the 6th edition of this engaging and groundbreaking chemistry text. We will perform text activities, share supplemental resources, and give prizes!

Homeostasis and Diabetes (Bio)

(Grades 6–12) 209, Convention Center

Sponsor: Science Take-Out

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

Experience two simple hands-on activities on homeostasis and diabetes. First, we'll use lab simulations, graphic organizers, and analogies to understand how negative feedback mechanisms are used to maintain homeostasis. Next, we'll analyze simulated blood plasma samples collected during a glucose tolerance test to determine if your patient has Type 1 or Type 2 diabetes.

I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (Bio)

(Grades 9–12) 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Barbara Nagle, The Lawrence Hall of Science, University of California, Berkeley

Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and see how it is connected to genetic engineering. Innovative activities are selected from the new *Science & Global Issues* Biology program from SEPUP and LAB-AIDS. Activities focus on ways to integrate this topic as a relevant and engaging sustainability issue into teaching about selective gene expression.

What Quality Science Instruction Has to Do with Raising Achievement Scores K–8 (Gen)

(Grades K–8) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Learn how inquiry-based science instruction increases student achievement on assessments in reading, writing, and mathematics. Leave with practical strategies that can help you advocate for quality science instruction in your district.

Earthquakes and Tornadoes (Earth)

(Grades 4–12) 214/215, Convention Center

Sponsor: Simulation Curriculum Corp.

Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Minnetonka, Minn.

What are tornadoes and how are they formed? Why are earthquakes common in certain parts of the world? With *The Layered Earth*, students can visualize, measure, and manipulate these forces of nature as well as basic concepts of geology and meteorology using a virtual model of Earth.

3:00–4:30 PM Exhibitor Workshop

What's Going on in There? NGSS Inquiry Science for Supervisors, Trainers, and Teachers (Gen)

(Grades K–8) 110/111, Convention Center

Sponsor: Delta Education/School Specialty Science

John Cafarella, Consultant, Canadensis, Pa.

Learn how to observe an inquiry science lesson as we support and evaluate it. We'll define types of inquiry and look at the use of inquiry skills through the lens of a draft of the Next Generation Science Standards. We will also engage in activities based on the NRC *Framework's* Scientific and Engineering Practices.

3:30–4:30 PM Presentations

SESSION 1

Putting the "E" in Your STEM Courses (Phys)

(High School) 104, Convention Center

Robert E. Lang (robert_lang@glenbard.org), Glenbard South High School, Glen Ellyn, Ill.

Come see examples of how a former engineer (now a National Board Certified physics teacher) incorporates engineering principles into his school's STEM courses.

SESSION 2

Bringing Tropical Rain Forest Research to the Urban Classroom (Gen)

(Elementary–Middle Level) 112, Convention Center

Sarah Oszuscik (sarahbgo@gmail.com), La Escuela Fratney, Milwaukee, Wis.

Urban educators share five teaching modules and their experience collaborating with leading ecologists at the Smithsonian Tropical Research Institute, Panama (NSF Research Experience for Teachers).

SESSION 3

Before and After Retirement: Practicalities and Possibilities (Gen)

(General) 203/205, Convention Center

Howard Wahlberg (hwahlberg@nsta.org), Assistant Executive Director, Membership, 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 4

Introducing Chemistry with *An Inconvenient Truth* (Chem)

(High School) 204/206, Convention Center

Theresa Y. Robinson, National Louis University, Chicago, Ill.

Come discover a unit created to promote literacy development in chemistry. It's designed to introduce chemistry content using *An Inconvenient Truth* with high school students from Chicago public schools.



SESSION 5



NSTA Press® Session: Uncovering Earth and Space Science Core Ideas in the NGSS Using Formative Assessment Probes (Earth)

(General) Conference Theatre, Convention Center

Page Keeley (pagekeeley@gmail.com), 2008–2009 NSTA President, and Author/Consultant, Jefferson, Maine

Learn how the probes in *Uncovering Student Ideas in Science* can be used as diagnostic and formative assessments of students' thinking related to the Earth and space science core ideas in the highly anticipated Next Generation Science Standards and how use of the probes supports the science practices.

SESSION 6

Integrating Technology into the Classroom (Bio)

(General) L8, Convention Center

Sabrina M. Helm (sabrina.helm@dcs.edu), Cedar Ridge Middle School, Decatur, Ala.

Find out how to successfully integrate technology into your classroom in an easy, uncomplicated manner using what you have and exploring innovative technologies. Learn some ways to get technology into the classroom on a budget.

“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

Thursday, October 18

3:30–4:30 PM

Kentucky International Convention Center
Room 203/205

For more information on the Retired Members Advisory Board, contact Rebecca Bell, chair, at rbell153@gmail.com.



SESSION 7

Is a PhD in Science Education the Right Next Step for Me? (Gen)

(General) Kentucky A/B, Marriott
Thomas R. Tretter (tom.tretter@louisville.edu), **Sherri L. Brown** (slbrow15@louisville.edu), **Ingrid Weiland** (ingrid.weiland@louisville.edu), and **Melissa L. Shirley** (melissa.shirley@louisville.edu), University of Louisville, Ky.

Join us as we explore whether a doctoral program in science education may fit into your future career trajectory. We'll share issues to consider, career opportunities, and next steps.

SESSION 8

The Tablet Computer in the Science Classroom (Gen)

(High School) Kentucky C/D, Marriott
Lynette M. Lane (lynette_lane@webbschool.org), Webb School of Knoxville, Tenn.

Discover innovative ways to enhance learning in science classrooms by using tablet computers to analyze data, design experiments, and assess student progress.

SESSION 9

Bringing Your Classroom Alive: Active Learning in the Science Classroom (Gen)

(General) Kentucky F, Marriott
DJ West (djwest78@gmail.com), Schoolcraft College, Livonia, Mich.

Let me introduce you to strategies for making learning active in your science classroom. The intent of the session is to engage students as active partners in the learning process through intentional planning.



3:30–4:30 PM Workshops

✓ **Integrating Theater Arts Through Color Mixing with Light (Gen)**

(Middle Level) 109, Convention Center
Susan Gran (sgran@purdue.edu), Purdue University, West Lafayette, Ind.

Science in the school play? Engage students with a lesson that develops understanding of additive color mixing and applies that understanding to theater design principles.

Using Modeling to Help Every Kid Understand Chemistry (Chem)

(Middle Level–High School) 207, Convention Center
Candace Haudenschild (chaudenschild@zanesville.k12.oh.us), Zanesville High School, Zanesville, Ohio

Many times students plug and chug their way through chemistry classes using various formulas. The gas law unit is a great example of where this can happen. Come experience how the modeling pedagogy, developed at Arizona State University, can help students build lasting visual models they have to explain. Teachers all over the country are using the modeling pedagogy. Shouldn't you try it and see what it's all about?

CESI Session: Power Paper Projects for Physical Science (Phys)

(Preschool–Middle Level) 208, Convention Center
Barbara Z. Tharp (btharp@bcm.edu), CESI President, and Baylor College of Medicine, Houston, Tex.

Jeff A. Thomas (jathomas@usi.edu), University of Southern Indiana, Evansville

Join us to create flying, spinning, rolling, and floating creations that easily, cheaply, and memorably teach the basic concepts of force and motion.

A BLAST from the Past—Discipline for a Less Explosive Classroom (Gen)

(Supervision/Administration) L3, Convention Center
Sasha Devoe (sashadevoe@4studentsuccess.com), Atlanta, Ga.

Learn strategies for managing minor classroom misbehaviors, including techniques that eliminate gimmicks, reduce teacher stress, and work for students. Regain 5–9 hours of your instruction time!

Using Inquiry to Teach Plate Tectonics (Earth)

(Middle Level–High School) L4, Convention Center
David A. Buehler (dbuehler@geosociety.org), The Geological Society of America, Boulder, Colo.

Join The Geological Society of America as we share inquiry-based lessons to improve student understanding of plate tectonic boundaries characteristics and the resulting features.

Stellar Evolution—From Formation to Destruction (Earth)

(General) *L5, Convention Center*
Donna L. Young (*donna@aavso.org*), NASA/Chandra EPO Office, Cambridge, Mass.

Use beautiful multiwavelength images of stellar nurseries, protostars, supernova remnants, planetary nebulae, neutron stars, pulsars, and black holes to investigate the stages of stellar evolution.

ASEE Session: Scientific Inquiry and the Engineering Design Process—How Are They Similar and Different? (Gen)

(General) *L6, Convention Center*
Stacy S. Klein-Gardner (*stacy.gardner@harpethhall.org*), Harpeth Hall School, Nashville, Tenn.

Presider: J.P. Mohsen, University of Louisville, Ky.
 Confused about the similarities and differences between scientific inquiry and the engineering design process? Join me to clarify it with classroom-ready activities and brainstorming.

Best Practices: Modeling Scientific Phenomena in AP and General Biology (Bio)

(High School) *L7, Convention Center*
Kristen R. Dotti (*kristen_dotti@yahoo.com*), Christ School, Arden, N.C.

Make science an active experience with props, narration, and moving simulations. Add modeling to your bag of tricks to gain scientific understanding using AP-level content.

Cutting Across the Curriculum: Examining Lessons That Integrate Science, Literacy, and Mathematics (Gen)

(Elementary) *L10, Convention Center*
Christine A. Royce (*caroyce@aol.com*), Shippensburg University, Shippensburg, Pa.

Lessons that integrate literacy strategies and mathematical and science concepts will be modeled. Overview of research and connection to Common Core State Standards provided.

Learning Progression for Matter and Its Interactions, K–8 (Chem)

(Elementary–Middle Level) *L11, Convention Center*
Martin Brock (*martin.brock@eku.edu*), Eastern Kentucky University, Richmond

Diane Johnson (*diane.johnson@uky.edu*), Program Coordinator, NSTA Louisville Area Conference, and University of Kentucky, Lexington

Experience a learning progression for the core idea of matter and its interactions for K–8 designed to develop scientific understanding.

3:30–4:30 PM Exhibitor Workshop

Materials in Our World: STEM for Early Childhood (Gen)

(Kindergarten) *106/107, Convention Center*

Sponsor: Delta Education/School Specialty Science–FOSS
Linda De Lucchi and **Larry Malone**, The Lawrence Hall of Science, University of California, Berkeley

For thousands of years, humans have used natural fibers to produce useful materials. Join FOSS developers to see how early childhood students using FOSS explore the properties of paper and investigate how it can be designed and engineered into diverse products.

4:00–5:15 PM Exhibitor Workshops

Science Projects and Notebooking (Gen)

(Grades K–12) *105, Convention Center*

Sponsor: Dinah-Might Adventures, LP
Dinah Zike, Dinah-Might Adventures, LP, San Antonio, Tex.

High energy, hands on, and research based describe this workshop! Hear from the creator of Foldables® on how to transform manila envelopes into Notebook Foldable projects sure to engage even the most reluctant student. Leave with your own model ready for immediate application.

Forensic Digital Microscopy and Inquiry Learning (Gen)

(Grades 7–College) *113, Convention Center*

Sponsor: Swift Optical Instruments, Inc.
David Doty (*david@swiftoptical.com*) and **Cynthia Syverson-Mercer** (*cynthia@swiftoptical.com*), Swift Optical Instruments, Inc., Schertz, Tex.

Learn how to leverage the use of exciting microscopy principles to engage your students in forensic and other case studies using inquiry-based learning tools. Forensic digital microscopy combines a comparison microscope, digital camera, and a computer with software that allows students to become forensic scientists. Learn how to view and manipulate specimens, then capture and qualify the microscopic images.

Modeling Protein Structure/Function and Photosynthesis/Respiration (Bio)

(Grades 6–12) 209, Convention Center

Sponsor: Science Take-Out

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

Join us for two simple hands-on modeling activities. In “From DNA to Protein,” we’ll model how the coded information in genes results in proteins with specific shapes that perform specific functions. In “Photosynthesis and Respiration,” we’ll use simple snap bead models to illustrate the reactants, products, and flow of energy for photosynthesis and respiration.

I Think There’s a Genetically Engineered Fly in My Genetically Modified Pea Soup! (Bio)

(Grades 9–12) 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Barbara Nagle, The Lawrence Hall of Science, University of California, Berkeley

Students often have trouble conceptualizing how selective gene expression works. In this workshop, participants will use manipulatives to teach this concept and see how it is connected to genetic engineering. Innovative activities are selected from the new *Science & Global Issues* Biology program from SEPUP and LAB-AIDS. Activities focus on ways to integrate this topic as a relevant and engaging sustainability issue into teaching about selective gene expression.

Hands-On Science with Classroom Critters (Bio)

(Grades 3–8) 211, Convention Center

Sponsor: Carolina Biological Supply

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 about experiments that incorporate measuring with beetle activities. Workshop includes care and handling information, free samples, and literature.

Integrate! A Better Way to Teach and Learn (Gen)

(Grades 2–6) 214/215, Convention Center

Sponsor: Wireless Generation

Traci Wierman and **Carrie Strohl**, The Lawrence Hall of Science, University of California, Berkeley

Explore pedagogical approaches to integration focusing on the synergies between science and literacy from the Seeds of Science/Roots of Reading® program. Developed at The Lawrence Hall of Science, this program is designed to reflect the practices of real scientists and meet the needs of all students.

4:00–5:30 PM Exhibitor Workshop

Sound, Waves, and Music (Phys)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

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

Create standing wave patterns on a vibrating string with CPO’s wave machine. Use a synthesizer to explore the wave properties of sound, and play some music and learn how to make your own instruments. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

5:00–6:00 PM Presentations

SESSION 1

Technological Design for Elementary Students (Phys)

(Preschool–Middle Level) 104, Convention Center

Abha Singh (a-singh@wiu.edu), Western Illinois University, Macomb

Gain ideas on how you can incorporate technological design into your elementary classroom by using everyday materials.

SESSION 2

Implementing Literacy Standards in Science (Gen)

(Middle Level–High School) 109, Convention Center

Stephanie L. Harmon (stephanie.harmon@rockcastle.kyschools.us), Rockcastle County High School, Mount Vernon, Ky.

Amy James (amy.james@oldham.kyschools.us), South Oldham High School, Crestwood, Ky.

Incorporating literacy standards in science can be a natural part of how we teach by using a variety of strategies and resources. Discover how incorporating the Common Core State Standards for reading and writing in science can strengthen your teaching.

SESSION 3

Genetics Gets Personal: Teaching the Ethical, Legal, and Social Issues in Personal Genetics (Bio)

(High School–College) 203/205, Convention Center

Lauren Tomaselli (ltomaselli@pged.med.harvard.edu), Harvard Medical School, Boston, Mass.

Explore the cutting-edge field of personal genetics and its benefits and challenges for individuals and our society through relatable lenses, including athletics and crime.

SESSION 4

Bioplastics—Going from Synthetic to Natural Polymers (Chem)

(Middle Level—High School) 204/206, Convention Center
Sherri Conn Rukes (*sherri.rukes@d128.org*), Libertyville High School, Libertyville, Ill.

Many of the items that we use today are becoming more Earth friendly. Learn how a bioplastic is made and what plant materials are used. Take home a CD with information and activities.

SESSION 5



NSTA Press® Session: Connecting with Special Education Students (Gen)

(General) Conference Theatre, Convention Center
Ed Linz (*coachlinz@cox.net*), Retired Science Teacher and Author, Springfield, Va.

What different strategies, if any, should a science teacher use to enable students with special needs to succeed? Let's discuss your experiences with ours!

SESSION 6

Putting STEM to Work in an Elementary STEM Lab (Gen)

(Elementary—Middle Level) L10, Convention Center
Tara C. Bell (*tbell@ista-il.org*), Washington STEM Academy, Champaign, Ill.

Make STEM Lab—a K–5 lab dedicated to integrating STEM subjects and emphasizing inquiry—the heart of your STEM program. Curriculum, lessons, research, and raffles!

SESSION 7

Aligning STEM Theory and Application Through Community-based Partnerships (Gen)

(General) Kentucky A/B, Marriott
Jan Sneddon (*jsneddon@earthforce.org*), Earth Force, Inc., Indianapolis, Ind.

Join me for facilitated discussions and practical strategies that support critical coordination of STEM learning before, during, and after the school bell rings through coordinated partnerships.

Visit
the Frey
Booth!

iNEO/SCI™

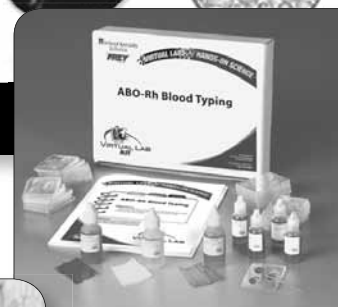
A blended approach that provides a complete solution!

Double the power of your students' learning with **on-line and hands-on labs**. Web-based labs and lab kits work together for all types of learners.

Each on-line title includes:

- Tutorials
- Virtual Lab Experiences
- Assessment
- Teacher Resources
- Learning Management System

For complete information and to sign up for a **Free 21 day on-line trial**, go to www.freyscientific.com/ineosci



Each hands-on kit includes a lab that aligns with one of the web-based labs.

SESSION 8

Making the Leap to a Textbook-less Course (Gen)

(High School) *Kentucky C/D, Marriott*

Mary H. Chuboff (mchuboff@athensacademy.org), Athens Academy, Athens, Ga.

Come see a demonstration of how to gather resources into a single, easily updated electronic space that will make students, teachers, and parents willing to toss the textbook!

SESSION 9 (two presentations)

(General) *Kentucky F, Marriott*

What Middle School Students Want You to Know

(Gen)

Kathleen Schwartz Crooks, Lorain County Community College, Elyria, Ohio

Students are seldom asked about their experiences with science. Research with a middle school class provides interesting answers and insights to the above question.

21st-Century Teachers Learning 21st-Century Skills

(Gen)

Kathleen Schwartz Crooks, Lorain County Community College, Elyria, Ohio

To be effective, teachers need to know what is outside the classroom. Plan professional development that shows teachers where 21st-century skills will be used.

Louisville welcomes NSTA conference attendees with great discounts to top destinations through the Very Important Badge (V.I.B.) program.

Take advantage of special offers and discounts from the city's most popular sites, including retail shops, restaurants, and attractions.

For more details, visit www.nsta.org/louisville or scan the V.I.B. QR code.



Louisville
CONVENTION & VISITORS BUREAU



5:00–6:00 PM Workshops

**Planning to Make Sure Inquiry = Learning (Gen)***(Elementary–Middle Level)* 112, Convention Center**Katrina A. Slone** (*katrina.slone@education.ky.gov*), Kentucky Dept. of Education, Hindman

Students love inquiry! But how do we plan ahead to make sure they have learned what we want them to learn?

Understanding the School Building as a System**(Phys)***(Middle Level–High School)* 208, Convention Center**Karen Reagor** (*kreagor@need.org*), The NEED Project, Manassas, Va.

Find out how you as a teacher can go beyond turning the lights off and really understand how a house works.

How Healthy Is Your Stream? (Env)*(Middle Level–High School)* L3, Convention Center**Jacklyn Bonneau** (*bonneau@wpi.edu*), Massachusetts Academy of Math & Science at WPI, Worcester

Water is a necessity—determining abundance and types of life. Measure variables, quantify how “clean our water is,” and relate findings to what lives in streams.

JetStream: An Online School for Weather (Earth)*(Informal Education)* L4, Convention Center**Dennis Cain** (*dennis.cain@noaa.gov*), National Weather Service, Fort Worth, Tex.

JetStream is a free online resource from the National Weather Service that includes lesson plans and demonstrations for teaching various aspects of weather in the classroom.

Pulsating Variable Stars and the H-R Diagram**(Earth)***(General)* L5, Convention Center**Donna L. Young** (*donna@aavso.org*), NASA/Chandra EPO Office, Cambridge, Mass.

Plot pulsating variable stars on a Hertzsprung-Russell diagram to determine regions of instability where stars are transitioning from main sequence stars to giants and supergiants.

ASEE Session: Developing and Publishing Standards for Professional Development for K–12 Teachers of Engineering (Gen)*(General)* L6, Convention Center**Cheryl Farmer** (*cheryl.farmer@mail.utexas.edu*), The University of Texas at Austin**Stacy S. Klein-Gardner** (*stacy.gardner@harpethhall.org*), Harpeth Hall School, Nashville, Tenn.

President: J.P. Mohsen, University of Louisville, Ky.

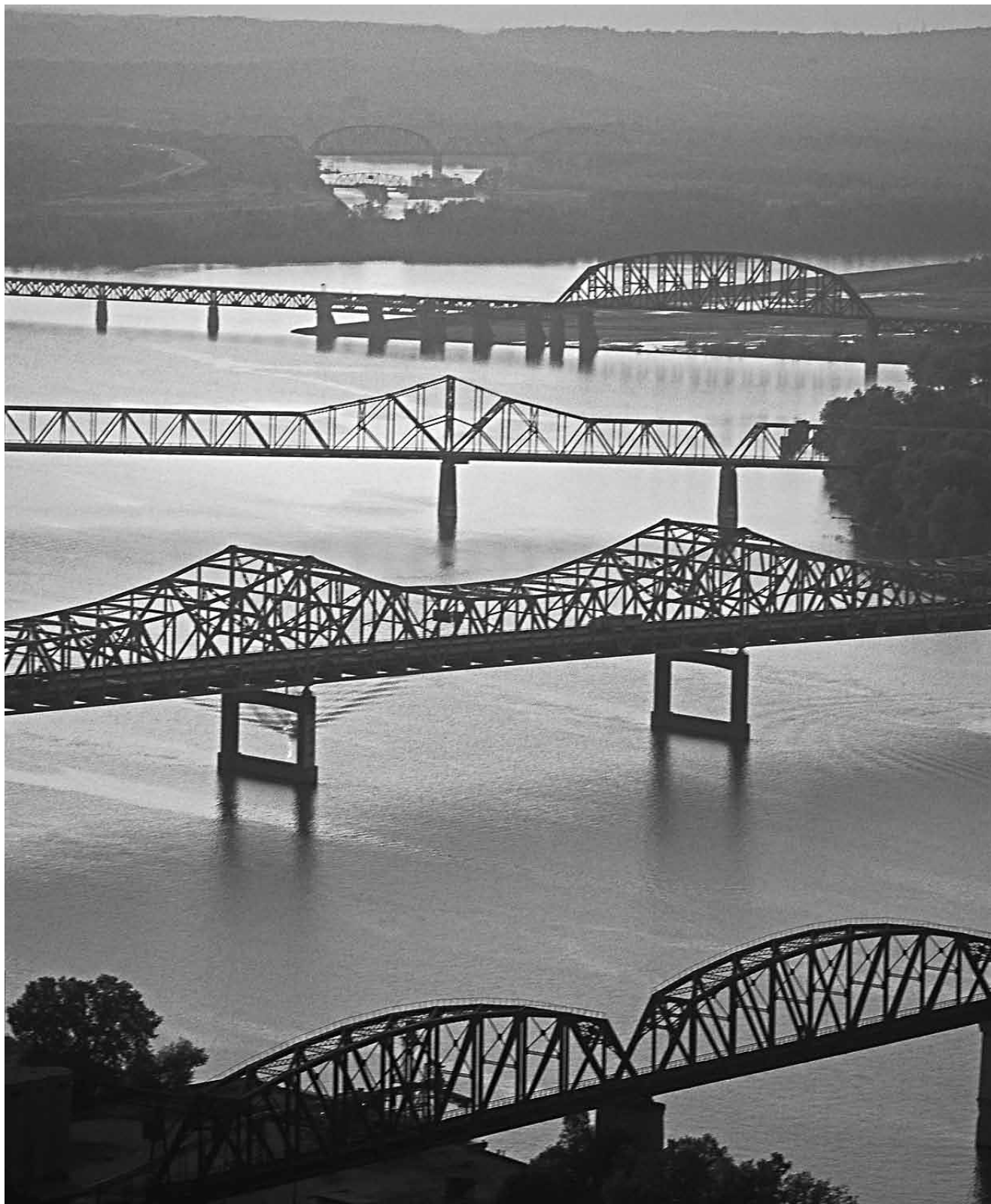
Participate in a focus group to provide feedback on the developing standards to prepare and enhance the capacity for K–12 teachers to teach engineering.

Preparing for the Redesign: Using Student-designed Experiments in AP Biology (Bio)*(High School)* L7, Convention Center**Kristen R. Dotti** (*kristen_dotti@yahoo.com*), Christ School, Arden, N.C.

A simple technique can take students through the laboratory door and into real scientific exploration. Learn a step-by-step process to transition your students from scientific thinkers to scientific “do-ers.”

Pop Bead Equilibrium (Chem)*(High School–College)* L11, Convention Center**Edmund J. Escudero** (*escudero_e@summitcds.org*), Summit Country Day School, Cincinnati, Ohio

Pop beads can be used to reinforce concepts that are key to understanding chemical equilibrium. Come learn how a group of up to nine students can simulate a synthesis reaction.



—Photo courtesy of Louisville Convention & Visitors Bureau

8:00–8:30 AM Presentation

SESSION 1

Merging Inquiry and Creativity—with Data Loggers (Gen)

(Middle Level) L2, Convention Center

James E. Hollenbeck (jehollen@ius.edu) and **Sarah Elizabeth Vaughn**, Indiana University Southeast, New Albany
Presider: James E. Hollenbeck

Find out how data loggers provided experiences for students that led to improved STEM state exam scores for the Greater Clark School Corporation.

8:00–9:00 AM Meeting

KSTA Meeting and Awards Presentation

(By Invitation Only) Marriott I/II, Marriott

Welcome all KSTA members. Join us for a KSTA meeting that includes presenting our annual KSTA Outstanding Teacher Awards and the Kentucky Presidential Awards. Enter your name for door prizes. Visit www.ksta.org for more information.

Don't miss these standards-related sessions

CCSS Session: Connecting with the Common Core State Standards (CCSS) for English Language Arts and Literacy (page 43)

General Session: Updating the Development of the Next Generation Science Standards (page 47)

Implication of the NRC *Framework* and the Highly Anticipated NGSS for Teaching and Learning (page 59)

Preparing for NGSS—Exploring the Scientific and Engineering Practices (page 69)

How to Engage Science Educators in the Public Review of NGSS (page 83)

Kentucky's Science Standards—Looking Forward to 2013 (page 87)



8:00–9:00 AM Presentations

SESSION 1


Preparing for NGSS—Exploring the Scientific and Engineering Practices (Gen)

(General) 101, Convention Center

Harold Pratt (hpratt@comcast.net), NSTA Parliamentarian, 2001–2002 NSTA President, and Educational Consultants, Inc., Littleton, Colo.

The highly anticipated Next Generation Science Standards (NGSS) will include an important new element—scientific and engineering practices—as established in the NRC report, *A Framework for K–12 Science Education*. What are these practices? How are they different or similar to inquiry? How do they work together to form performance expectations in the upcoming NGSS? Come join me and explore these important practices and what it means for science educators. Session participants will have a chance to win a FREE copy of the NRC *Framework*!

SESSION 2

 **Increasing Environmental Literacy Through Chemistry Applications (Chem)**

(High School) 109, Convention Center

Catherina L. Wiley (catherina.wiley@fayette.kyschools.us), Tates Creek High School, Lexington, Ky.

Join me for this presentation and activities that demonstrate how to integrate natural cycles within a traditional chemistry curriculum to provide environmental literacy tools for students.

SESSION 3

 **Beyond the Humanities: Bringing Creativity to the Science Classroom (Gen)**

(General) 112, Convention Center

David M. Baxter (david.baxter@warren.kyschools.us) and **Jennifer S. Smith** (jennifer.smith@warren.kyschools.us), GEMS Academy, Bowling Green, Ky.

Sure, artists and musicians need to create. But what about scientists? Learn strategies to infuse your science classes with innovative thinking.

SESSION 4

Using UDL Principles to Teach Chemistry (Chem)

(Middle Level–High School) 203/205, Convention Center

Melissa K. Payne (melissa.payne@jefferson.kyschools.us) and **Laura L. Brown** (laura.brown@jefferson.kyschools.us), Jeffersonsontown High School, Louisville, Ky.

Presider: Mary Lineberry, Jeffersonsontown High School, Louisville, Ky.

Learn how to utilize the principles of Universal Design for

Learning when teaching chemistry to students with learning difficulties.

SESSION 5

NABT Session: The Revised AP Biology Course: Understanding the Changes in the Course Audit and New Exam (Bio)

(High School) *L7, Convention Center*

Jim Smanik, Sycamore High School, Cincinnati, Ohio

Tanya Sharpe (*lsharpe@collegeboard.org*), The College Board, Duluth, Ga.

Gordon Uno (*guno@ou.edu*), University of Oklahoma, Norman

This session will focus on changes to the course audit and exam for the revised AP Biology course. New course audit requirements will be discussed as well as features of the new exam.

SESSION 6

Multiwavelength Astronomy Modules for High School Students (Earth)

(High School) *L9, Convention Center*

Julia Brazas (*julia@uchicago.edu*) and **Christie Thomas**, University of Chicago, Ill.

Discover story-based lessons on the history, science, tools, and impact of multiwavelength astronomy on our understanding of the universe. These lessons feature NASA multimedia.

SESSION 7

Science Notebooking Across the Grades (Gen)

(Elementary–High School) *Kentucky F, Marriott*

Jackie Allen (*jacqueline.allen@casey.kyschools.us*), Casey County High School, Liberty, Ky.

Katrina A. Slone (*katrina.slone@education.ky.gov*), Kentucky Dept. of Education, Hindman

Pick up some practical ideas for implementing and managing science notebooks to help meet English language arts standards, using examples from elementary, middle school, and high school classrooms.

SESSION 8

Standards-based Assessment for Inquiry-based Classrooms (Gen)

(General) *Kentucky G, Marriott*

Amy Beavers (*abeavers@utk.edu*) and **Jennifer Richards** (*jennifer.richards@utk.edu*), University of Tennessee, Knoxville

Meaningful assessment that supports inquiry-based science instruction is challenging. Encounter creative ways to integrate standards-based assessments to enhance student learning outcomes.

8:00–9:00 AM Workshops



Danger Will Robinson...Danger! Your Students May Start to Love Science! (Gen)

(Elementary–Middle Level) *104, Convention Center*

Erin M. Coyle (*erin.coyle@jefferson.kyschools.us*), Jefferson County Public Schools, Louisville, Ky.

Tim Carrico (*timothy.carrico@jefferson.kyschools.us*), Roosevelt-Perry Elementary School, Louisville, Ky.

This workshop will focus on how to build excitement for science and how to embed math and science standards into instruction using LEGO® MINDSTORMS® NXT.

ACS Session One: Equilibrium and Concentration (Chem)

(High School) *207, Convention Center*

Jerry Bell (*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 Le Chatelier's principle more tangible by comparisons between simulations and experiments. Bring your USB flash drive and take away the presentation and activities to use in your own classroom.

AAPT Session: Newton's Laws Explained; Centripetal Motion Examined (Phys)

(Middle Level–High School) *208, Convention Center*

Kenny Lee (*kenny.leel@warren.kyschools.us*), Warren Central High School, Bowling Green, Ky.

In this interactive hands-on workshop, inexpensive demonstrations are used to explain motion, inertia, velocity, acceleration, and forces...with instruction on how to construct and present the demonstrations.



NSTA Press® Session: Authors Share Favorite Lessons from Teaching Science Through Trade Books (Gen)

(Elementary) *Conference Theatre, Convention Center*

Christine A. Royce (*caroyce@aol.com*), Shippensburg University, Shippensburg, Pa.

Emily R. Morgan (*emily@pictureperfectscience.com*), Picture-Perfect Science, West Chester, Ohio

Karen Ansberry, Mason (Ohio) City Schools

Join the authors of *Science & Children's* "Teaching Through Trade Books" column as they share some of their favorite trade book-inspired lessons featured in their new book.

ACS Middle Level Session: Solids, Liquids, and Gases: The Kinetic-molecular Theory of Matter (Chem)

(Middle Level) L5, Convention Center

James H. Kessler (*jhkessler@acs.org*), American Chemical Society, Washington, D.C.

Explore solids, liquids, and gases on the molecular level to see how heating and cooling affect matter.

Care About an Earth Square (Env)

(Informal Education) L6, Convention Center

Cheryl W. Sundberg (*sundbergc@bellsouth.net*), Retired Educator, Millbrook, Ala.

Sherry Nichols (*snichols@bamaed.ua.edu*), The University of Alabama, Tuscaloosa

Learn how to use social media tech tools to creatively explore outdoor spaces.

Bring Literacy and Science Together: B.L.A.S.T.© for Success at School and Home (Gen)

(Elementary) L10, Convention Center

Renee G. O’Leary (*vavallme@comcast.net*), Holy Angels School, Newark, Del.

Peggy Vavalla (*vavallme@comcast.net*), 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.

How Does Your Garden Grow? (Env)

(Preschool–Elementary) L11, Convention Center

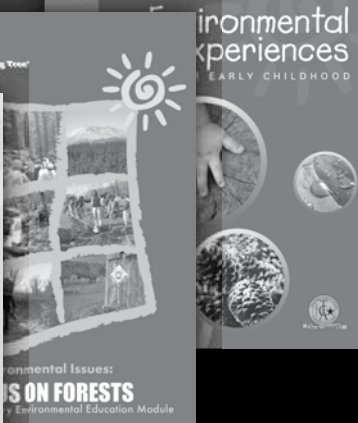
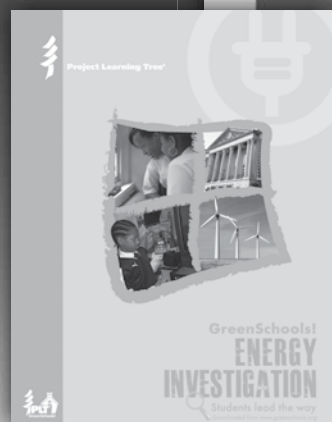
Juliana Texley (*jtexley@att.net*), Palm Beach State College, Boca Raton, Fla.

Steve A. Rich (*bflywriter@comcast.net*), NSTA Director, Professional Development, and West GYSTC, Carrollton, Ga. A school or community garden represents an ideal way to integrate across the elementary curricula. Come discover lessons, plans, and trade books for any space or any school.

Project Learning Tree

Environmental education curriculum aligned to state and national science standards.

Grants for service-learning projects.



Get free PLT materials at NSTA

Visit Exhibit Booth 1122

Participate in PLT sessions

- Focus on Forests: PLT’s new secondary curriculum – Thurs, Oct 18, 12:30-1:30pm (Convention Center, L11)
- PLT GreenSchools! – Fri, Oct 19, 9:30-10:30am (Convention Center, L6)
- Early Childhood Education – Fri, Oct 19, 3:30-4:30pm (Convention Center, L10)
- Forests, Carbon, and Climate Change – Fri, Oct 19, 5-6pm (Convention Center, L10)

Or, get PLT materials by attending a PLT workshop in your state. Contact your state’s PLT Coordinator for details.

www.plt.org

Activities from Across the Earth System (Earth)

(Elementary–High School) L15, Convention Center

Roberta Johnson (rmjohnsn@gmail.com), National Earth Science Teachers Association, Boulder, Colo.

Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.

In this NESTA workshop, participants will engage in multiple effective hands-on, inquiry-based activities that illustrate key concepts of Earth system science. Handouts!

Developing Skepticism as an Essential Strategy for Science (Gen)

(Middle Level–High School) Kentucky A/B, Marriott

William C. Metz (wmetzgolf@aol.com), Science Education Consultant, Fort Washington, Pa.

The clever manipulation of data is often used to sell common products. Attend this workshop and see how this applies to your science classroom.

8:00–9:00 AM Exhibitor Workshop

Active Chemistry—Ahead of Its Time in Capturing the Essence of the Highly Anticipated NGSS and STEM (Chem)

(Grades 8–12) 201/202, Convention Center

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston

Dr. Eisenkraft will show how this proven program implements STEM and the essence of the highly anticipated Next Generation Science Standards. Learn the benefits of the Engineering Design Cycle for teaching and learning. See how Dr. Eisenkraft designed a project-driven course that makes a positive impact for students of all levels.



8:00–9:15 AM Exhibitor Workshops

Equip Your iPad for Science with SPARKvue® HD, a Full-featured Science Application for the iPad (Gen)

(Grades K–12) 102/103, Convention Center

Sponsor: PASCO scientific

Presenter to be announced

Explore SPARKvue HD, PASCO's new science application for the iPad. This new app offers a full suite of display and analytical tools, including reflection prompts, journaling, and more...all within an integrated learning environment. SPARKvue HD also supports the growing collection of SPARKlabs®, which integrate rich content with live data collection and analysis.

Promote Inquiry Using Chemistry Demonstrations (Chem)

(Grades 9–12) 105, Convention Center

Sponsor: Flinn Scientific, Inc.

Irene Cesa (icesa@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Looking for new ways to incorporate more inquiry-based experiments in your chemistry classroom? Asking questions is the heart of inquiry, and there is no better way to get students to ask questions than with exciting, engaging demonstrations. Join us as we present classic demonstrations and describe a series of inquiry-based activities. We will model the inquiry process, sharing a strategy that is used in the Flinn ChemTopic™ Lab series to integrate inquiry into every core curriculum concept. Take home a copy of *Oxidation and Reduction*, vol.16 in the series.

Science: The Literacy Connection and the Core Curriculum (Gen)

(Grades K–6) 110/111, Convention Center

Sponsor: Delta Education/School Specialty Science

Tom Graika, Consultant, Lemont, Ill.

Johanna Strange, Consultant, Richmond, Ky.

We'll show you various strategies and Delta products that can integrate reading and language arts into your science programs. Find out 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.

How Is HIV Detected in Humans? Welcome to the Exciting World of Immunobiotechnology! (Bio)*(Grades 8–College)*

113, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian (info@edvotek.com), **Tom Cynkar** (info@edvotek.com), and **Khuyen Mai** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Join us to discover the endless applications offered by the ELISA in research and allied health care. Participants learn how ELISA is used as a diagnostic tool in medical diagnostics. The workshop features our new, simple, and foolproof single antibody ELISA that can be completed in under 40 minutes and analyzed by visual inspection. This procedure is much more rapid than the traditional ELISA. Take home a free T-shirt and flash drive.

Innovation, Creativity, and Problem Solving with the Anatomy in Clay® Learning System (Bio)*(Grades 7–College)*

114, Convention Center

Sponsor: Anatomy in Clay® Learning System

Teri Fleming, Medical Media Services, Inc., Houston, Tex.

Join us for a hands-on workshop that will demonstrate an easy and interactive approach for teaching health and wellness, along with anatomy, by constructing the human body in clay. Building body systems is a proven method for increasing test scores and retention while incorporating innovation, creativity, and problem-solving/critical-thinking skills.

Master of Science Degree in Geosciences Available Online Through the Teachers in Geosciences Program (Earth)*(Grades K–12)*

115, Convention Center

Sponsor: Mississippi State University

Doug Gillham and **Kathleen M. Sherman-Morris**, Mississippi State University, Mississippi State, Miss.

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.

Using Molecular-Level Visualization to Engage Middle School and High School Science Students (Chem)*(Chem)**(Grades 7–College)*

116, Convention Center

Sponsor: Wavefunction Education Labs

Sean Ohlinger (sales@wavefun.com), Wavefunction Education Labs, Irvine, Calif.

Would you like to teach chemistry more effectively with the help of molecular models and simulations that are scientifically sound? Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to truly engage your students with the powerful 2012 release of *Odyssey High School Chemistry*.

Pollution and Acid Rain Activities (Env)*(Grades 6–12)*

209, Convention Center

Sponsor: Science Take-Out

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

Join us for two simple hands-on activities. In “Pollution Investigation: What Is Causing the Pollution in Big Lake?” we’ll conduct and analyze simulated water tests for nitrates, PCBs, *E. coli*, and lead. In “Acid Rain and Buffers,” we’ll explore why some lakes are more susceptible to the effects of acid rain than others.

Investigating a Cliff Model (Earth)*(Grades 6–8)*

210, Convention Center

Sponsor: LAB-AIDS, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

When was the last time you engineered a coastal breakwater? Here’s your chance! Engineer a coastal breakwater (from the *Issues & Earth Science* “Erosion and Deposition” unit from LAB-AIDS) and analyze the trade-offs of the design. Explore how the natural world is modified by engineering design, which in turn creates more questions and issues for research. Activities support the NRC *Framework* and show how SEPUP embeds the engineering practices and uses real issues to deliver content learning.

Comparative Vertebrate Anatomy Featuring Carolina's Perfect Solution® Specimens (Bio)

(Grades 9–12) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Explore animal diversity by comparing and contrasting the anatomical adaptations of the pig, rat, perch, and frog. Participants use hands-on dissection to identify the characteristics of these popular vertebrates. This is an excellent comparative dissection activity featuring Carolina's Perfect Solution specimens. Free dissection supplies and great door prizes!

33 Strategies for Integrating Science (Gen)

(Grades 1–6) 214/215, Convention Center

Sponsor: Wireless Generation

Traci Wierman and **Carrie Strohl**, The Lawrence Hall of Science, University of California, Berkeley

Discover how to increase reading comprehension, disciplinary literacy skills, 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 both science and literacy. Free classroom materials!



8:00–9:30 AM Exhibitor Workshops

Genetics: Crazy Traits and Adaptation Survivor (Bio)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

Nathan Olsson, CPO Science/School Specialty Science, Nashua, N.H.

Students learn new vocabulary when they experience genetics. Concepts like traits, alleles, phenotypes, genotypes, and heredity come alive as you use a unique kit to create crazy creatures and study the resulting population. Take away STEM activities and an understanding of how to incorporate science and engineering practices into lessons.

Bio-Rad: Explore Inquiry and Ecology with Biofuel Enzymes (AP Big Idea 4) (Bio)

(Grades 9–College) 218, Convention Center

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Need energy? Reveal the power of enzyme kinetics by illustrating the theory through a real-world application of biofuels—using cellobiase—a key enzyme in the production of cellulosic ethanol (a biofuel). The reaction serves as a jumping-off point for introducing variables such as temperature, pH, substrate, and enzyme concentration. The capstone activity is for student-directed experiments using naturally occurring enzymes found in mushrooms. Expand the lab to studies of mushrooms in different ecological niches.

Integrating Your iPad or Mobile Device with Vernier Technology (Gen)

(Grades 3–College) 219, Convention Center

Sponsor: Vernier Software & Technology

David Carter (info@vernier.com) and **John Melville** (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, we will use the built-in wireless capabilities of our new LabQuest 2. You will be able to view and analyze data collected on LabQuest 2 using Graphical Analysis for iPad or on any device with a supported browser using Vernier Data Share.

8:00–10:00 AM Exhibitor Workshop

Using Science Notebooks to Impact Student Learning with FOSS (Gen)

(Grades K–8) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science—FOSS
Virginia Reid, The Lawrence Hall of Science, University of California, Berkeley

Ellen Mintz, Charleston County Schools, Charleston, S.C.
 Learn how we implement science notebooks in the new FOSS editions. Through active investigations from the new editions, you'll discover how science notebooks impact student achievement by providing a tool for developing conceptual understanding, exposing evidence of learning, and guiding instruction. Take home sample materials.

8:00 AM–1:00 PM NSTA Symposium

Flight of the Monarch Butterflies (SYM-1)

(Grades K–12) Off-site (Kentucky Science Center)

Tickets Required: \$54


Jim O'Leary (oleary@mdsci.org), Maryland Science Center, Baltimore

Grant Bowers (bowe0182@umn.edu) and **Kelly Nail** (nail@umn.edu), University of Minnesota, St. Paul

For description, see page 33.

Note: The Kentucky Science Center is located four blocks from the Convention Center (walk toward the river from the Convention Center and turn left on Main Street, walk about three or four blocks and the Kentucky Science Center is on the right, between 7th and 8th streets). Participants should plan to meet at 7:50 AM in the lobby of the Kentucky Science Center.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 5:00 PM on Thursday.



Programs that will put ideas in your head.

Captain Current vs. The Electricity Vampires
 POWERED BY LGE KU
PPL companies

School Assembly Programs

pulse OF SURGERY™
Live Heart Surgery

KENTUCKY SCIENCE CENTER
 LOUISVILLE, KENTUCKY
 727 West Main Street | Louisville, KY 40202 |
 502.561.6100 | 1.800.591.2203 | KYScienceCenter.org/teachers

8:30–9:00 AM Presentation

SESSION 1

NARST Session: Using Technology to Address Student Misconceptions and Improve Insights into the Nature of Science in General Chemistry (Chem)

(High School–College) 204/206, Convention Center

Ted M. Clark (clark.789@osu.edu), The Ohio State University, Columbus

E-learning resources were extensively used in an undergraduate chemistry classroom. Technology, like interactive simulations, can serve to expand course objectives and address student misconceptions.

8:30 AM–12:30 PM Short Course

✓ **Linking Conservation Efforts at the Zoo with the Science Behind Global Warming (SC-3)**

(Middle Level–High School) Off-site (Louisville Zoo)

Tickets Required: \$63

William “Doug” D. McCoy and **Marcelle Gianelloni**

(marcelle.gianelloni@louisvilleky.gov), Louisville Zoo, Louisville, Ky.

For description, see page 34.

Note: This short course will be held in Glacier Run classroom at the Louisville Zoo. Please meet your instructor at the Third Street entrance of the Convention Center no later than 8:15 AM.



9:00–11:00 AM NSTA ESP Symposium

ESP: Unique Features of Programs That Meet “More Emphasis” Features in the NSES (Gen)

(General)

L4, Convention Center

The National Science Education Standards offered Four Goals/Justifications for Science in K–6 Settings, namely that all students would: 1) Experience the richness and excitement of knowing about and understanding the natural world; 2) Use appropriate scientific processes and principles in making personal decisions; 3) Engage intelligently in public discourse and debate about matters of scientific and technological concern; and 4) Increase their economic productivity through the use of the knowledge, understandings, and skills of the scientifically literate person in their careers.

The ESP series identifies people and places where the reforms recommended have emerged. The exemplars include: 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 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!

Coordinator: Thomas R. Lord, NSTA Director, College Science Teaching, and Indiana University of Pennsylvania, Indiana

Revising an Old Strategy with New Frameworks

Teddie Phillipson-Mower (t.phillipsonmower@louisville.edu), University of Louisville, Ky.

Revising Majors Biology: A Departmental Journey

Elizabeth Allan (eallan@uco.edu), NSELA President, and University of Central Oklahoma, Edmond

9:00 AM–12 Noon Short Course

📎 **Energizing Your Classroom (SC-4)**

(Grades K–12)

Marriott VII, Marriott

Tickets Required: \$20

Karen Reager (info@need.org), The NEED Project, Manassas, Va.

For description, see page 35.

9:00 AM–5:00 PM Exhibits*Exhibit Hall 2D, 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

✓ **A Theory of Everything: How Models Define Science and Other Fields of Learning (Gen)**

*(General)**101, Convention Center*

Steven W. Gilbert (*stevengilb@gmail.com*), Author of *Models-Based Science Teaching*, Bloomington, Ind.

Presider: David Helm, NSTA Director, District VIII, KSTA President, and Fayette County Public Schools, Lexington, Ky.

Introduction of Speaker: Rico Tyler, Program Committee, NSTA Louisville Area Conference, and Western Kentucky University, Bowling Green

We, humans, cannot know and understand a thing without building models of it. Since teaching and learning are both acts of model building, teaching within a models-based context can enhance inquiry and improve your students' understanding of what it means to know a thing in science and in other fields of learning.

Steven W. Gilbert is widely published and a recognized expert on the use of models in science teaching. His most recent book, Models-Based Science Teaching, was published in 2011 by NSTA Press®. In Dr. Gilbert's own words, "The best way to engage students in the creativity of science is engage them in inquiry, beginning with the creation of a problem and ending with a completed expressed model."


Steven has taught secondary science, as well as university-level elementary and secondary science teacher education courses, including science methods and the history and nature of science. He was also involved in the NSTA Science Teacher Preparation Standards. As a longtime proponent of inquiry, Steven has taken an interest in finding better ways to contextualize science so that students better understand the nature of knowledge—both in science and in other areas of human endeavor.

Steven holds a PhD in science education from Purdue University. He retired from academia in 2006 and now writes at his home in Bloomington, Indiana.

9:30–10:30 AM Special Session**Meet the Presidents and Board/Council***Entrance to Exhibit Hall, Convention Center*

Be sure to stop for this 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!

9:30–10:30 AM Presentations**SESSION 1**

 **Bring STEM Curriculum to Life with AMS Professional Development Courses (Earth)**

*(General)**104, Convention Center*

James A. Brey (*dcmeetings@ametsoc.org*), American Meteorological Society, Washington, D.C.

Looking to spice up that science lesson? Nothing's better than using real-world events! Learn how with AMS professional development courses.

SESSION 2**NSTA Teacher and Principal Awards and Recognition (Gen)***(General)**203/205, Convention Center*

Jean Tushie (*jtushie@comcast.net*), Eden Prairie High School, Eden Prairie, Minn.

NSTA recognizes exemplary teachers and principals with cash prizes up to \$10,000, trips, science materials, and more. Learn how to apply.

SESSION 3 (two presentations)*(General)**204/206, Convention Center***NARST Session: When It Comes to Accepting Evolution, Gut Feelings Trump Facts (Bio)**

David L. Haury (*haury.2@osu.edu*), The Ohio State University, Columbus

Hear about the findings from a study focusing on factors that influence acceptance of evolutionary theory, including a newly identified factor—intuitive cognition.

NARST Session: Case Studies in Teacher Content Learning in a Problem-Based Learning Professional Development Setting (Gen)

Tom J. McConnell (*tjmccConnell@bsu.edu*), Ball State University, Muncie, Ind.

Join us as we share cases of teacher learning to support open-ended instruments for assessing changes in science concepts.

SESSION 4

Social Media for Scientists: How Social Media Can Be Used for Research (Gen)

(General) L2, Convention Center

Krista Neher, Cincinnati State University, Cincinnati, Ohio
Join me for a demonstration on how social media can be a powerful tool in your scientific research.

SESSION 5

NABT Session: AP Open Forum (Bio)

(High School) L7, Convention Center

Jim Smanik, Sycamore High School, Cincinnati, Ohio
Tanya Sharpe (*lsharpe@collegeboard.org*), The College Board, Duluth, Ga.

Gordon Uno (*guno@ou.edu*), University of Oklahoma, Norman

Bring your questions and get them answered! We will focus on the changes to the AP Biology Curriculum and an overview of the audit, exam, and labs will be presented. College Board instructional materials and professional development opportunities will be highlighted as well.

SESSION 6

NMLSTA Session: Fins + Plants = Inquiry Aquaponics in the Classroom (Bio)

(Middle Level–High School) L8, Convention Center

Lisaann Hampton (*lisaann.hampton@ksd.kyschools.us*) and **Rajeev Swami** (*chem276@yahoo.com*), NMLSTA President, and Central State University, Wilberforce, Ohio

Watch your students gain environmental literacy along with increased interest in content with the self-made aquaponics system for your classroom.

SESSION 7

Teaching to the Test: Standards-based Grading in the Physics Classroom (Phys)

(Middle Level–High School) L9, Convention Center

Michael S. George (*michael.george@kirkwoodschools.org*), Kirkwood High School, Kirkwood, Mo.

Join me for a detailed overview of how standards-based grading practices can be used to revolutionize your physics classroom and help students at every skill level grow.

SESSION 8

Effective Professional Development with NSTA Resources (Gen)

(General) Kentucky F, Marriott

Steve A. Rich (*bflywriter@comcast.net*), NSTA Director, Professional Development, and West GYSTC, Carrollton, Ga. Professional development providers will get tips from the PD committee on effective use of NSTA Press® books and other resources that boost teachers' content knowledge and pedagogy.

SESSION 9

Literacy to Learn Science (Gen)

(Elementary–High School) Kentucky G, Marriott

Diane Johnson (*diane.johnson@uky.edu*), Program Coordinator, NSTA Louisville Area Conference, and University of Kentucky, Lexington

Susan Mayo (*susan.mayo@pikeville.kyschools.us*), University of Kentucky, Lexington

Learn a framework for incorporating reading, writing, and science into a coherent instructional module that can help students understand, deepen, and apply the science.

SESSION 10

NSTA Student Chapter Share-a-Thon (Gen)

(General) Marriott V, Marriott

Teshia Birts (*tbirts@nsta.org*), Senior Manager, Chapter Relations, NSTA, Arlington, Va.

Howard Wahlberg, Assistant Executive Director, Membership, NSTA, Arlington, Va.

Teshia Birts and Howard Wahlberg will moderate this interactive session for student chapter leaders, faculty advisors, and members. If you are planning to start a student chapter, this is the session for you.

SESSION 11

The Scientific Method vs. Scientific Practices—Who Will Survive? (Gen)

(General) Marriott IX/X, Marriott

Brian P. Short (*missioncontrol@ecybermission.com*), Director, Science Education Competitions, NSTA, Arlington, Va.

What is meant by “scientific method” and how does this compare to the new “scientific practices” found in the NRC Framework? Come to this session and learn how to use the scientific method in the grades 6–9 classroom and find out how students can also use this method outside of the classroom. Information will also be provided on how the new NSTA competition, eCYBERMISSION, uses the scientific method.

9:30–10:30 AM Workshops**Space Rescue Design Challenge (Phys)***(Middle Level–High School)* 109, Convention Center**Judith A. Wehn** (judith.wehn@wpafb.af.mil), National Museum of the U.S. Air Force, Wright-Patterson Air Force Base, Ohio**Diana M. Hunn** (dhunn1@udayton.edu), University of Dayton, Ohio

In a fast-paced, timed format, develop and test a “flying” vehicle capable of rescuing a space crew. Great STEM design challenge!

**Exploring the Science Encountered in the Young Child’s World: Nurturing, Observing, Questioning, Investigating, Thinking, and Talking About Science (Gen)***(Elementary)* 112, Convention Center**Donna L. Knoell** (dknoell@sbcglobal.net), Educational Consultant, Shawnee Mission, Kans.

Hear how to use examples of science, mathematics, and engineering that comprise a young child’s world to motivate and educate him or her about STEM.

ACS Session Two: Equilibrium and Energy (Chem)*(High School)* 207, Convention Center**Jerry Bell** (j_bell@acs.org), American Chemical Society, Washington, D.C.

Quantitative studies deepen understanding of equilibria. 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 activities to use in your classroom.

AAPT Session: Working with Spectra in Physics and Astronomy (Earth)*(Middle Level–High School)* 208, Convention Center**Richard Gelderman** (richard.gelderman@wku.edu), Western Kentucky University, Bowling Green

Walk away with activities for getting your students more comfortable about spectra—not the easiest task but vital to understanding how we know important physics/astronomy concepts.

**NSTA
Student
Chapter
Share-a-Thon**

Interested in starting an NSTA Student Chapter at your college or university? Are you a faculty advisor or student leader struggling with fund-raising or planning campus and community activities? Plan to attend this interactive session with other chapter advisors and leaders to develop your own awesome student chapter!

Friday, October 19**9:30–10:30 AM****Louisville Marriott
Marriott V****NSTA** National
Science
Teachers
Association



NSTA Press® Session: More Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4 (Gen)

(Elementary) Conference Theatre, Convention Center
Emily R. Morgan (emily@pictureperfectscience.com), Picture-Perfect Science, West Chester, Ohio

Karen Ansberry, Mason (Ohio) City Schools
NSTA Press authors will teach you how to integrate science and reading through the use of engaging picture books.

ACS Middle Level Session: Changes of State: Evaporation and Condensation (Chem)

(Middle Level) L5, Convention Center
James H. Kessler (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.

GreenSchools! (Env)

(Informal Education) L6, Convention Center
Jaelyn Stallard (jstallard@plt.org) and **Al Stenstrup** (astenstrup@plt.org), Project Learning Tree, Washington, D.C. PLT's 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 get free access to PLT GreenSchools! resources and materials online.

Elastic Power: Wind Up Your Engines and Explore (Phys)

(Elementary–Middle Level) L11, Convention Center
Norm B. Barstow (barstow@hartford.edu), Hartford, Conn. Use an elastic-powered wooden car to explore concepts, including energy transfer and force and motion. Continued exploration focuses on mass, friction, inertia, motion, momentum, and force.

Let's Get Well Grounded! (Earth)

(Middle Level–High School) L15, Convention Center
Roberta Johnson (rmjohnsn@gmail.com), National Earth Science Teachers Association, Boulder, Colo.
Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.
This NESTA workshop presents multiple exemplary activities for the geology classroom that bring fundamental concepts in Earth science to life for your students. Handouts!

NASA's HIAD Program: Engineering Design in Action (Gen)

(Middle Level–High School) Kentucky A/B, Marriott
Rebecca L. Jaramillo (rebecca.jaramillo@nianet.org), National Institute of Aerospace, Hampton, Va. Use NASA technologies, like the Hypersonic Inflatable Aerodynamic Decelerator (HIAD), to help your students understand engineering and visualize mass properties related to entry, descent, and landing on another world.

9:30–10:30 AM Exhibitor Workshop

PBIS™—Moving Beyond “What Is Science?” to Being Scientists Through Science and Engineering Practices (Gen)

(Grades 6–8) 201/202, Convention Center
Sponsor: It's About Time

Mary Starr, University of Michigan, Ann Arbor
Project-Based Inquiry Science aligns to the NRC *Framework* and the highly anticipated NGSS by blending practices, core ideas, and crosscutting themes. In this session, experience Project Science. Work with others to complete a science investigation that requires modeling, asking questions, and other science and engineering practices while developing core ideas.

10:00–11:15 AM Exhibitor Workshops

Achievable Inquiry in AP* Biology and Chemistry (Gen)

(Grades 9–12) 102/103, Convention Center
Sponsor: PASCO scientific

Presenter to be announced

Experience a true guided inquiry approach with PASCO probeware. Use probeware technology to develop students' inquiry and reasoning skills while teaching learning objectives and science practices addressed in the new College Board frameworks for biology and chemistry.

*AP is a registered trademark of the College Board, which was not involved in the production of, and does not endorse, this product.

You're NOT Gonna Believe What We Did in Science Class Today! (Gen)*(Grades K–12)* 105, Convention Center

Sponsor: Educational Innovations, Inc.

Margaret Flack, Educational Innovations, Inc., Bethel, Conn.

Mom and Dad will hear about these discrepant events at the dinner table...and you'll be teaching the National Science Education Standards at the same time!

Identifying, Clarifying, and Designing Experiments (Gen)*(Grades K–6)* 110/111, Convention Center

Sponsor: Delta Education/School Specialty Science

Tom Graika, Consultant, Lemont, Ill.**Johanna Strange**, Consultant, Richmond, Ky.

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. Join us as we feature Delta products and resources.

The Case of the Missing Archive: Crime Scene and DNA Fingerprinting Investigation (Bio)*(Grades 8–12)* 113, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian (info@edvotek.com), **Tom Cynkar** (info@edvotek.com), and **Khuyen Mai** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Are you ready for a cutting-edge forensic activity? Examine crime scene evidence to determine who stole priceless historical documents from the Maryland Historical Society, including copies of speeches by President Franklin D. Roosevelt. By analyzing "crime scene" and "suspect" DNA samples, you'll model the process of electrophoresis and DNA fingerprinting to determine whose DNA was left at the crime scene. Take home a free T-shirt and flash drive.

Pop & Slough—Come Get Cleansed with Chemistry! (Chem)*(Grades K–12)* 114, Convention Center

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

Twanelle Walker Majors (twanellemajors@yahoo.com), Warren County High School, McMinnville, Tenn.

Come experience hands-on stations using the kena™ digital microscope and Applied Vision 4 software. Learn how your students can make different skin care products in your classroom. Make your very own lip gloss, lip balm, shaving cream, and more. Explore and view your skin cells with the kena digital microscope before and after your treatment!

Detecting Radiation in Our Radioactive World (Gen)*(Grades 4–12)* 115, Convention Center

Sponsor: American Nuclear Society

Toni Bishop (outreach@ans.org), American Nuclear Society, La Grange Park, Ill.

Discover how to use Geiger counters to detect radioactivity and teach the principles of nuclear science. Expand your knowledge of ways nuclear technology is applied in the everyday life of our society.

Nailing Molecular Concepts with Scientifically Accurate Visualization and Simulation Tools (Bio)*(Grades 7–College)* 116, Convention Center

Sponsor: Wavefunction Education Labs

Sean Ohlinger (sales@wavefun.com), Wavefunction Education Labs, Irvine, Calif.

Indispensable in college chemistry classes, molecular modeling is also an effective teaching tool for high schools. Bring your laptop (Windows or Mac OS X) to this hands-on workshop and learn how to get the most out of the powerful 2012 releases of *Odyssey High School Chemistry* and *Odyssey AP Chemistry*.

Toxin and Energy Flow in an Ecosystem (Bio)*(Grades 6–12)* 209, Convention Center

Sponsor: Science Take-Out

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

During this simple hands-on activity, we'll model the flow of toxins and energy through an ecosystem's food chains and food webs and develop the concept of biological magnification for environmental toxins.

Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (Chem)*(Grades 9–12)* 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Brandon Watters, Lakes Community High School, Lake Villa, Ill.

We distill water to purify it, or so we think. So why does the clear distillate from apple cider smell like apples? Join us and find out! We will use a clever test tube distillation apparatus that is so easy to use that every student can do it. We will distill the essence of vanilla, the scent of mint, and even show how to make brandy from wine! Distillation is a crucial process in chemical engineering and chemical technology, yet few students ever get to explore the process. This hands-on distillation workshop is not illegal, but it is excellent chemistry and extremely relevant to those of you who want to put a little STEM in your test tube!

Engineering, Technology, and the Application of Science K–8 (Gen)

(Grades K–8) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Ready to prepare your district's students for STEM careers? Using practical applications of science skills from inquiry-based lessons, you will learn how to collaborate your science resources and translate them into best practice engineering processes.

Exploring STEM Careers: Water and Our Environment (Env)

(Grades 6–12) 214/215, Convention Center

Sponsor: Fisher Science Education

Robert Marshall (marshallr@carnegiesciencecenter.org), Carnegie Science Center, Pittsburgh, Pa.

With global population growth creating a rise in demand, access to clean water is becoming increasingly important. Learn how you can bring this real-world issue to life for your middle school and high school students. Gain hands-on experience in this technology-focused environmental workshop, led by Robert Marshall, a STEM educator from Carnegie Science Center, one of the nation's leading hands-on science museums. Handouts and door prizes!

10:00–11:30 AM Exhibitor Workshops

Chemistry and the Atom: Fun with Atom-building Games! (Chem)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

Nathan Olsson, CPO Science/School Specialty Science, Nashua, N.H.

Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students with opportunities to grasp atomic structure and its connection to the periodic table. Take away STEM activities and an understanding of how to incorporate science and engineering practices in your lessons.

Introducing the Vernier LabQuest 2! (Gen)

(Grades 3–College) 219, Convention Center

Sponsor: Vernier Software & Technology

David Carter (info@vernier.com) and **John Melville** (info@vernier.com), Vernier Software & Technology, Beaverton, Ore. In this hands-on workshop, we will conduct experiments using various sensors as we explore the features of our new LabQuest 2. The LabQuest 2 is our most versatile interface ever and it supports data collection as a stand-alone device, with a computer, and now with iPad and other mobile technology.

10:30 AM–12 Noon Exhibitor Workshop

Bio-Rad: Engineer the Tools for Inquiry of Candy Food Dyes (Bio)

(Grades 6–College) 218, Convention Center

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

What's in your candy? Extract the colorful food dyes from candy and separate them on a do-it-yourself agarose electrophoresis box to identify what dyes were used. This inquiry-based activity teaches pipetting, gel electrophoresis, and making solutions with stunning results. Turn this into a STEM activity by building your very own horizontal electrophoresis box, allowing your students to investigate the science and engineering behind a workhorse in the biotech lab.

10:30 AM–12:30 PM Exhibitor Workshop

FOSS Formative Assessment: Making Student Thinking Visible (Gen)

(Grades K–6) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

Kathy Long and **Brian Campbell**, The Lawrence Hall of Science, University of California, Berkeley

Formative assessment shows great promise for improving student achievement. FOSS makes it easy to make student thinking visible, interpret the evidence of learning, and take action to improve learning. Join FOSS developers for an introduction to the new assessment system created for the 3rd edition, including new computer software—FOSSmap.

11:00–11:30 AM Presentation

SESSION 1

Knowing What We Don't Know: A Formative Process (Gen)

(General) Kentucky F, Marriott

Christine A. Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

Join me for a discussion on research relating to preservice teachers' performance on Formative Assessment Probes.

11:00–11:30 AM Exhibitor Workshop**Location, Location—Finding Your Way Around the Sky (Earth)***(Grades K–4) Booth #1043, Exhibit Hall, Conv. Center*

Sponsor: Science First®/STARLAB®

Helmut Albrecht (*halbrecht@starlab.com*) and **Nathaniel Bell**, Science First/STARLAB, Yulee, Fla.

In this “in dome” workshop, come learn how to use Starry Night™ Small Dome to help your students discover how to use the stars to find their location on Earth and how to find their way around the night sky.

**11:00 AM–12 Noon Presentations****SESSION 1****How to Engage Science Educators in the Public Review of NGSS (Gen)***(General) 101, Convention Center***Gerry Wheeler** (*gwheeler@nsta.org*), NSTA Interim Executive Director, Arlington, Va.**Harold Pratt** (*hpratt@comcast.net*), NSTA Parliamentarian, 2001–2002 NSTA President, and Educational Consultants, Inc., Littleton, Colo.

Development of the Next Generation Science Standards (NGSS) is well under way. The NGSS are undergoing multiple reviews, including two public drafts, with a final document expected in 2013. NSTA is providing guidance on the project and engaging the science education community in the feedback process. This session will help science educators to become active participants in the review process.

SESSION 2**Putting It All Together—Community Campus PLTW STEM Academy: A Western Kentucky Regional Initiative (Gen)***(High School–College/Supervision) 104, Convention Center***Catherine P. Shelton** (*catherine.shelton@daviess.kyschools.us*) and **Aaron N. Yeiser**, Apollo High School, Owensboro, Ky.**Marcia Kuegel Carpenter** (*marcia.carpenter@daviess.kyschools.us*), Daviess County Public Schools, Owensboro, Ky.

We'll highlight a collaboration among six Western Kentucky school districts, local postsecondary partners, and business leaders to provide a STEM Academy for shared use by students in the Owensboro area. Come hear about the success of students participating in this program along with specifics about organization and certification of the program, recruitment of students, and utilization of the Project Lead the Way curriculum.

SESSION 3**Shifting Our Thinking: The Benefits of Standards-based Grading (Gen)***(Middle Level–High School) 109, Convention Center***Stephanie L. Harmon** (*stephanie.harmon@rockcastle.kyschools.us*), Rockcastle County High School, Mount Vernon, Ky.**Ken Mattingly** (*ken.mattingly@rockcastle.kyschools.us*), Rockcastle County Middle School, Mount Vernon, Ky.

Two veteran teachers will provide a snapshot of how standards-based grading looks in both middle school and high school.

SESSION 4**Creative Problem Solving with Toshiba/NSTA ExploraVision (Gen)***(General) 203/205, Convention Center***Barbara R. Pietrucha**, Point Pleasant, N.J.

Motivate students and challenge them to think creatively! Learn how the ExploraVision competition encourages developmental skills necessary for success in STEM and uses students' natural curiosity to enhance their science achievement. ExploraVision activities illustrate standards-based connections between science and technology. Session participants have an increased chance to win a Toshiba product!

SESSION 5**NSELA Session: Tools for Leaders, Part I (Gen)***(General) 204/206, Convention Center***Elizabeth Allan** (*eallan@uco.edu*), NSELA President, and University of Central Oklahoma, Edmond

The various tools and strategies shared with participants in this session support them in their work to enhance teaching and learning in their context.

SESSION 6

Understanding the New AP Biology Course: Curriculum, Science Practices, and Instructional Design (Bio)

(High School–College) L2, Convention Center

Tanya Sharpe (*lsharpe@collegeboard.org*), The College Board, Duluth, Ga.

Gordon Uno (*guno@ou.edu*), University of Oklahoma, Norman

Jim Smanik, Sycamore High School, Cincinnati, Ohio

Presider: Tanya Sharpe

AP Biology Development Committee members will provide an overview of the changes to the revised course, which include changes to the curriculum, labs, and exam.

SESSION 7

NABT Session: Free Resources from HHMI on the Origin of Modern Humans (Bio)

(Middle Level–College) L7, Convention Center

Anthony J. Bertino (*abertino@nycap.rr.com*) and **Patricia Nolan Bertino** (*nolanp@nycap.rr.com*), Retired Educators, Scotia, N.Y.

Where and when did humans arise? What distinguishes us from other species? Did our distant ancestors look and behave like us? Highlights from the Howard Hughes Medical Institute (HHMI) Holiday Lecture Series will be presented.

SESSION 8

Bioinformatics for Every Biology Student (Bio)

(Middle Level–College) L8, Convention Center

Elizabeth Rice (*erice@fandm.edu*), Franklin & Marshall College, Lancaster, Pa.

Susan Dodge (*lalimule@verizon.net*), The New School of Lancaster, Pa.

Learn how students can use sophisticated databases to answer biological questions. We will share lessons and demonstrate how bioinformatics can be incorporated in every biology class.

SESSION 9

Beautiful, Intriguing, and Often Confounding: Difficult Astronomy Concepts for Students and How to Help (Earth)

(Middle Level–College) L9, Convention Center

Elizabeth A.E. Roland (*e.roland@moreheadstate.edu*) and **Thomas G. Pannuti** (*t.pannuti@moreheadstate.edu*), Morehead State University, Morehead, Ky.

Join us as we address frequently encountered conceptual misunderstandings in astronomy and discuss effective instruc-

tional techniques. The three categories of difficulties include popular culture, terminology, and size/scale relationships.

SESSION 10

Learning Science Content Through Teaching Practice (Gen)

(Elementary–Middle Level) L10, Convention Center

Brian E. Kinghorn (*brian.kinghorn@gmail.com*), Michigan State University, East Lansing

Join me as I share results of academic research detailing effective strategies for teachers learning science from their own teaching practice and identifying potential classroom learning triggers.

SESSION 11

Science Fair—Not Just the Science Classroom (Gen)

(High School) Kentucky C/D, Marriott

Ronda K. Fields (*ronda.fields@jefferson.kyschools.us*) and **Belinda H. Hafell** (*belinda.hafell@jefferson.kyschools.us*), Ballard High School, Louisville, Ky.

Ashley C. Fields (*acfiel04@louisville.edu*), University of Louisville, Ky.

Science Fair projects cover multiple disciplines. The project itself is the science, but English, social studies, math, and other disciplines also come into play. Receive an overview of the process from two teachers who have coached more than 20 Intel International Science and Engineering Fair® (ISEF) finalists and a college student who was a three-time ISEF finalist.

SESSION 12

Teaching Climate and Energy with the CLEAN Collection: Peer-reviewed Climate and Energy Resources at Your Fingertips! (Gen)

(Middle Level–College) Kentucky G, Marriott

Marian Grogan (*marian_grogan@terc.edu*) and **Candace Dunlap** (*candace_dunlap@terc.edu*), TERC, Cambridge, Mass.

The Climate Literacy and Energy Awareness Network (CLEAN) collection provides activities, visualizations, and videos that can help you engage your students as you teach climate and energy with confidence.

11:00 AM–12 Noon Workshops**Gray Matter: Learning and Teaching Science with the Brain in Mind (Gen)***(General)* 112, Convention Center**Carolyn A. Hayes** (*caahayes@comcast.net*), Indiana University School of Medicine, Indianapolis

Experience via science activities how discoveries in cognitive neuroscience are applied to the National Science Education Standards and to principles of how students learn science.

ACS Session Three: Rate (Chem)*(High School)* 207, Convention Center**Jerry Bell** (*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 activities to use in your classroom.

AAPT Session: The Light Fantastic: Demonstrations of Light and Radiation (Phys)*(Middle Level–High School/Informal)* 208, Convention Center**Jennifer Birriel** (*j.birriel@moreheadstate.edu*) and **Ignacio Birriel** (*i.birriel@moreheadstate.edu*), Morehead State University, Morehead, Ky.Presider: Robert Boram (*r.boram@moreheadstate.edu*), Morehead State University, Morehead, Ky.

Join us as we discuss everyday applications of light and radiation, including the use of radiation in technologies such as remote controls, DVD players, and smoke detectors.

**NSTA Press® Session: Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, 3–6 (Gen)***(Elementary)* Conference Theatre, Convention Center**Emily R. Morgan** (*emily@pictureperfectscience.com*), Picture-Perfect Science, West Chester, Ohio**Karen Ansberry**, Mason (Ohio) City Schools

NSTA Press authors will teach you how to integrate science and reading through the use of engaging picture books.

ACS Middle Level Session: Density: A Molecular View (Chem)*(Middle Level)* L5, Convention Center**James H. Kessler** (*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.

Don't Isolate, Integrate—Science Is Not an Island (Earth)*(General)* L6, Convention Center**Barry Fried** (*bfried@schools.nyc.gov*) and **Honora Dash** (*hdash@schools.nyc.gov*), John Dewey High School, Brooklyn, N.Y.

Learn how to create an enriched, real, rigorous, and all-inclusive classroom environment using space science as a unifying theme to promote problem solving and communication by building literacy tools and research skills, and offering authentic science learning experiences.

Taking Science Outdoors with Outdoor Biology Instructional Strategies (OBIS) (Env)*(Elementary–Middle Level/Informal)* L11, Convention Center**Joanna Snyder** (*joanna_snyder@berkeley.edu*) and **Erica Beck Spencer** (*ebspencer@berkeley.edu*), The Lawrence Hall of Science, University of California, BerkeleyCome experience inquiry-based outdoor activities that connect classroom investigations to the local environment. Learn effective strategies for managing students, examine case studies of several Jefferson County Public Schools that have changed their learning culture to incorporate the local environment, and receive access to instructional resources created at The Lawrence Hall of Science, Berkeley. *Note:* Most of this workshop will be outdoors.**Climate Change Classroom Toolkit (Earth)***(Elementary–High School)* L15, Convention Center**Roberta Johnson** (*rmjohnsn@gmail.com*), National Earth Science Teachers Association, Boulder, Colo.**Ardis Herrold**, National Earth Science Teachers Association, Plymouth, Mich.

Explore the scientific foundations of what we know about climate change, greenhouse gases, and energy consumption through hands-on and data-rich classroom activities from NESTA.

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

(Preschool–Middle Level) *Marriott V, Marriott*
Barbara Z. Tharp (*btharp@bcm.edu*), CESI President, and Baylor College of Medicine, Houston, Tex.

Betty Crocker (*crocker@unt.edu*), Retired Educator, Denton, Tex.

Tara Bell (*tbell@ista-il.org*), Booker T. Washington STEM Academy, Champaign, Ill.

Join the Council for Elementary Science International for a wealth of ready-to-use, classroom-tested hands-on activities created just for the elementary teacher. Handouts and website links!

11:00 AM–12 Noon Exhibitor Workshop

Engineering the Future: A Practical Approach to STEM for High School (Gen)

(Grades 9–12) *201/202, Convention Center*

Sponsor: It's About Time

Lee Pulis, It's About Time, Mount Kisco, N.Y.

STEM—it's a real need. *Engineering the Future* is a real answer. See how the Museum of Science, Boston has packaged a solution that makes implementing STEM easy. Learn how *Engineering the Future's* four real-world projects give students an opportunity to see how engineering is part of their everyday world.

12 Noon–1:15 PM Exhibitor Workshops

STEM: Meeting the Standards in Your Classroom (Gen)

(Grades 6–12) *102/103, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

Experience hands-on, problem-solving STEM modules that engage students in scientific and engineering practices included in the NRC *Framework*. Not only do these modules incorporate specific disciplinary core ideas and crosscutting concepts, they also support the Common Core State Standards for literacy, reading, and math.

Building and Assessing Academic Vocabulary Using Notebook Foldables® (Gen)

(Grades K–12) *105, Convention Center*

Sponsor: Dinah-Might Adventures, LP

Nancy F. Wisker (*nancy@dinah.com*), Dinah Zike Academy, Comfort, Tex.

Learn by doing in this fast-paced Notebook Foldables workshop aimed at immersing students in academic vocabulary essential for success. Get immersed in words in a new way and leave with your own mini-comp book constructed on-site. It will be filled with immediately usable ideas for teaching and assessing academic vocabulary.



Wait! The Chips I Ate Were a Genetically Modified Organism (GMO)? (Bio)

(Grades 8–College)

113, Convention Center

Sponsor: Edvotek Inc.

Jack Chirikjian (info@edvotek.com), **Tom Cynkar** (info@edvotek.com), and **Khuyen Mai** (info@edvotek.com), Edvotek Inc., Washington, D.C.

Because the U.S. Food and Drug Administration does not require foods to be labeled as GMO, it is difficult to discern GMO products in your grocery store. By extracting DNA from soybean and FRITOS® chips from GMOs and performing a polymerase chain reaction (PCR), you will determine if any genetically modified indicator genes are present. Amplified DNA is separated and sized by gel electrophoresis. Take home a free T-shirt and flash drive.

Breeding Critters (Bio)

(Grades 6–8)

210, Convention Center

Sponsor: LAB-AIDS, Inc.

Lisa Kelp and **Jan Finch**, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Make the study of genetics more meaningful for students. Join us for an activity sequence from *Issues & Life Science* from LAB-AIDS that lays a framework for dominant/recessive as well as other patterns of inheritance. Pedigrees are introduced as another way to study the behavior of certain genes in humans. In the succeeding activities, you will use what you know to advise Joe about whether to be tested for Marfan's syndrome.

Introduction to Wisconsin Fast Plants® (Bio)

(Grades 3–12)

211, Convention Center

Sponsor: Carolina Biological Supply

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.

12 Noon–1:30 PM Exhibitor Workshops**Light and Optics: A Series of EnLIGHTening Experiments!** (Phys)

(Grades 5–12)

108, 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 with LED flashlights, a laser, lenses, a mirror, and more. Try color mixing, relate it to human vision, and examine different spectra. We make studying light exciting! Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

Chemistry and Biology with Vernier (Chem)

(Grades 9–College)

219, Convention Center

Sponsor: Vernier Software & Technology

John Melville (info@vernier.com) and **David Carter** (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, we will use our new LabQuest 2 with various sensors to conduct experiments from our popular chemistry and biology lab books. LabQuest 2 is our most versatile interface, supporting data collection as a stand-alone device with a computer, and now with iPad and other mobile technology.


12:30–1:30 PM Presentations**SESSION 1****Kentucky's Science Standards—Looking Forward to 2013** (Gen)

(General)

101, Convention Center

Sean Elkins (sean.elkins@education.ky.gov) and **Melinda N. Curless** (melinda.curless@education.ky.gov), Kentucky Dept. of Education, Frankfort

Discussion centers on Kentucky's adoption of the new science standards—the highly anticipated Next Generation Science Standards—and what this means to teachers and curriculum designers.

SESSION 2 **Data: It's Not a Four-Letter Word** (Gen)

(General)

109, Convention Center

Britta Culbertson (britta.culbertson@noaa.gov), Einstein Fellow, NOAA Office of Education, Washington, D.C.

NOAA's data aren't your grandfather's data! Learn about NOAA data resources that are readily available and easy to use in the classroom.

SESSION 3

Lotions, Potions, and Scrubs: Polymer Science in Cosmetics (Chem)

(Middle Level–High School) 203/205, Convention Center
Sherri Conn Rukes (sherri.rukes@d128.org), Libertyville High School, Libertyville, Ill.

Learn how to make various cosmetic products as well as discover the polymer science behind why they are needed. Handouts (CD) and samples will be provided.

SESSION 4

NSELA Session: Tools for Leaders, Part II (Gen)

(General) 204/206, Convention Center
Elizabeth Allan (eallan@uco.edu), NSELA President, and University of Central Oklahoma, Edmond

The various tools and strategies shared with participants in this session support them in their work to enhance teaching and learning in their context.

SESSION 5



NSTA Press® Session: Implementing Student Research Projects: Tips for Organization and Assessment (Gen)

(General) Conference Theatre, Convention Center
Darci J. Harland, Illinois State University, Normal

Allison Hennings (ahennings@oprfs.org), Oak Park River Forest High School, Oak Park, Ill.

Presenter: Allison Hennings

Join the author of *STEM Student Research Handbook* as she pairs up with a classroom teacher to share tips for beefing up student research designs. She'll also share tips for using feedback to encourage yet challenge students and for teaching the literacy aspects of science-focused research projects.

SESSION 6

Assessing the AAAS Document Through Action: Vision and Change in Undergraduate Biology Education (Bio)

(College) L2, Convention Center
Thomas R. Lord (trlord@iup.edu), NSTA Director, College Science Teaching, and Indiana University of Pennsylvania, Indiana

Join members of the NSTA College Science Teachers Committee in an action-packed hour of assessing and implementing the suggestions for change in the way institutions of higher education are teaching science.

SESSION 7

NABT Session: Free Resources from HHMI Exploring Biodiversity: The Search for New Medicines and Treatments (Bio)

(Middle Level–College) L7, Convention Center

Anthony J. Bertino (abertino@nycap.rr.com) and **Patricia Nolan Bertino** (nolanp@nycap.rr.com), Retired Educators, Scotia, N.Y.

Learn how biodiversity among venomous snails and bacterial communication has led to new medical discoveries. Receive free Howard Hughes Medical Institute (HHMI) DVDs and virtual lab CDs.

SESSION 8

Biotechnology on the Cheap: Hands-On Labs for Under \$50 (Bio)

(High School) L8, Convention Center

Jessica Dorman (jdormannsta@gmail.com), Logan Elm High School, Circleville, Ohio

Join us and learn how to do a handful of labs for under \$50. Lab topics will include dilution, bacterial growth, disinfectants, ELISA, as well as a helpful twist performed with a common DNA extraction lab that will make DNA more visible to students. Money-saving substitutions as well as ideas on how to get some free materials will also be covered. Take home copies of all activities covered in the session.

SESSION 9

Crossing Across STEM Silos: An Integrated Approach to Global Health (Gen)

(High School–College) L9, Convention Center

Theresa B. Britschgi (theresa.britschgi@seattlebiomed.org), Seattle Biomedical Research Institute, Seattle, Wash.

Cross-fertilize your instructional activities to better prepare your students for a future career in biomedical research and global health using a new proven interdisciplinary STEM curriculum.

SESSION 10

Hawaii Marine Science Seminar (Gen)

(High School) *Kentucky C/D, Marriott*
Steve Makurat, Brown County High School, Nashville, Ind.

Presiders: Michael T. Bowman, School Corporation of Brown County, Nashville, Ind.; and Lisa Tobias (*ltobias134@gmail.com*), John Paul II High School, New Braunfels, Tex.
 Hear about this opportunity for teachers to learn how to recruit and escort their students to Hawaii for a two-week program focusing mostly on marine science.

SESSION 11

The Ohio Performance Assessment Pilot Project (Gen)

(General) *Kentucky G, Marriott*
Lauren V. Monowar-Jones (*lauren.monowar-jones@ode.state.oh.us*), Ohio Dept. of Education, Columbus

The Ohio Performance Assessment Pilot Project is piloting a unique model for performance assessment that includes a formative component. This pilot is in grades 3–5 and 9–12.

cpo)science

Engage Students with Hands-On Science Programs

VISIT OUR BOOTH

CPO Science's complete, coordinated Teaching and Learning Systems, hands-on equipment, and supplemental curriculum provide all the essential components for a STEM-based science program.

Be sure to visit our booth to learn more about CPO Science's innovative curriculum and equipment.

Investigations Physical Earth and Space Science Lab Manual

Physical Earth and Space Science Student Textbook

Physical Earth and Space Science Integrated Technology

Foundations of Physical Science

Physics A First Course

Foundations of Physics

Equipment Kit

Physical Earth and Space Science Teacher Resources and Professional Development

cpo)science™
 Teaching & Learning Systems

School Specialty Science

www.cpoScience.com 800-932-5227

12:30–1:30 PM Workshops



Put the “E” in STEM Using Lessons You May Already Have! Real-World Applications to Science Are Everywhere! (Gen)

(Elementary–Middle Level) 104, Convention Center

Reeda Hart (hartr@nku.edu) and **Thomas B. Brackman** (brackmant1@nku.edu), Northern Kentucky University, Highland Heights

Experience “E”lectrical “E”ngineering in the physical sciences, “E”arthquake “E”ngineering in the Earth sciences, and “E”nvironmental “E”ngineering in the life sciences through this active workshop. Free CD of lesson plans.



Facing the Future: Fueling the Future (Env)

(Middle Level–High School) 112, Convention Center

Pamela Whiffen (pwppwr@aol.com), NASA Educator Ambassador/Carl Hayden High School, Phoenix, Ariz.

Experience a selection of hands-on, inquiry-based activities designed to explore the topic of sustainability. Free CD-ROM with complete lesson plans.

ACS Session Four: Catalysis (Chem)

(High School) 207, Convention Center

Jerry Bell (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 activities to use in your classroom.

AAPT Session: Making Magnetism Visible (Phys)

(Middle Level–High School/Informal) 208, Convention Center

Keith Andrew (keith.andrew@wku.edu), Western Kentucky University, Bowling Green

It can be very difficult for students to be able to conceptualize magnetic fields. Join us for a series of illustrative, motivating demonstrations and activities dealing with magnetism. These inexpensive, hands-on discovery activities have been designed for middle grades or integrated high school science classrooms.

Ice Core Records—From Volcanoes to Supernovas (Earth)

(General) L4, Convention Center

Donna L. Young (donna@aavso.org), NASA/Chandra EPO Office, Cambridge, Mass.

Use absolute and relative dating techniques with high-resolution ice core data and historic volcanic eruptions to correlate and date supernova events with nitrate anomalies.

ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (Chem)

(Middle Level) L5, Convention Center

James H. Kessler (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.

The Carbon Cycle and Bioenergy: Quantitative Modeling with Poker Chips and Student Monitoring of CO₂ (Env)

(Informal Education) L6, Convention Center

John M. Greenler (jgreenler@glbc.wisc.edu), University of Wisconsin–Madison

Understanding the carbon cycle is key to addressing climate change and developing sustainable energy systems, including biofuels. This workshop will involve dynamic active-learning activities.

Help! Putting Literacy into Science (Gen)

(Elementary–Middle Level) L11, Convention Center

Amanda R. Underwood (amanda.underwood@robertson.kyschools.us), Deming School, Mount Olivet, Ky.

Laurie Henry (lauriehenry@uky.edu), University of Kentucky, Lexington

Natalie C. Postel (natalie.postel@fayette.kyschools.us), Tates Creek Middle School, Lexington, Ky.

Presider: Laurie Henry

Discover a variety of strategies on ways to smoothly integrate literacy into the science of any classroom.

Our Changing Planet (Earth)*(Middle Level–High School) L15, Convention Center***Roberta Johnson** (*rmjohnsn@gmail.com*), National Earth Science Teachers Association, Boulder, Colo.**Ardis Herrold**, National Earth Science Teachers Association, Plymouth, Mich.

This NESTA workshop introduces 18 free online activities and videos about changes in the Earth system, including three activities we will do together. Handouts!

5E Learning Cycle (Gen)*(Middle Level–College) Kentucky A/B, Marriott***Martha M. Day** (*martha.day@wku.edu*) and **Rico Tyler** (*rico.tyler@wku.edu*), Western Kentucky University, Bowling Green

Join Western Kentucky University's SKyTeach faculty and students for a 5E (Engage, Explore, Explain, Elaborate, and Evaluate) learning cycle model lesson workshop. If you want to explore exciting science lessons and learn how to effectively teach inquiry-based science, this is your workshop!

12:30–1:30 PM Exhibitor Workshop**Active Physics—Ahead of Its Time in Capturing the Essence of the Highly Anticipated NGSS and STEM (Phys)***(Grades 8–12) 201/202, Convention Center*

Sponsor: It's About Time

Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston

Dr. Eisenkraft will show how this proven program implements STEM and the essence of the highly anticipated Next Generation Science Standards. Learn the benefits of the Engineering Design Cycle for teaching and learning. See how Dr. Eisenkraft designed a project-driven course that makes a positive impact for students of all levels.

1:00–2:15 PM Exhibitor Workshop**Technological Design Standards Meet the STEM Initiative (Env)***(Grades K–6) 110/111, Convention Center*

Sponsor: Delta Education/School Specialty Science

Tom Graika, Consultant, Lemont, Ill.**Johanna Strange**, Consultant, Richmond, Ky.

Learn how a problem-based approach to science lessons can provide opportunities for students to be engaged in activities that incorporate Science, Technology, Engineering, and Math (STEM) and meet technological design standards. Problem activities from Delta Science modules will be emphasized. Make and take a variety of prototypes.

**1:00–2:30 PM Exhibitor Workshop****Taking Science Outdoors with FOSS K–6 (Gen)***(Grades K–6) 106/107, Convention Center*Sponsor: Delta Education/School Specialty Science—FOSS
Erica Beck Spencer and **Joanna Snyder**, The Lawrence Hall of Science, University of California, Berkeley

FOSS now reaches beyond the classroom and into your school yard and local environment. Discover how FOSS 3rd Edition engages children in meaningful outdoor science learning experiences. Participate in outdoor investigations that can apply, extend, and expand classroom content and concepts to the real world. Take home a copy of *Taking FOSS Outdoors*.

1:00–5:00 PM Short Course**Engineering Design Challenges for the Middle/High School Classroom (SC-5)***(Middle Level–High School) Marriott IX/X, Marriott***Tickets Required: \$22****Brandon M. Hargis** (*brandon.hargis@nasa.gov*), NASA Langley Research Center, Hampton, Va.

For description, see page 35.

2:00–2:30 PM Presentation**SESSION 1****Physics Essential Curriculum and Assessment****(Phys)***(High School)**L8, Convention Center***Robert E. Lang** (*robert_lang@glenbard.org*), Glenbard South High School, Glen Ellyn, Ill.

Physics teachers from DuPage County, Illinois, identified an “Essential Physics Curriculum” and created a corresponding assessment. We will discuss the process and products from the project.

2:00–3:00 PM Featured Presentation



Product Design and Robots Applied to Health Care Problems: A Recipe for Joy and Passion for K–12 Science and Engineering Education? (Gen)

(General)

101, Convention Center



Michelle J. Johnson (*mjohnso@mcw.edu*), Associate Professor, Physical Medicine and Rehabilitation, Medical College of Wisconsin; and Research Assistant Professor, Biomedical Engineering, Marquette University, Milwaukee

President: David Helm, NSTA Director, District VIII, KSTA President,

and Fayette County Public Schools, Lexington, Ky.

Introduction of Speaker: Vicki Riley, Program Committee, NSTA Louisville Area Conference, and Daviess County Public Schools, Owensboro, Ky.

Join Michelle Johnson as she discusses how applying principles of product design and robotics to solving global and national health care problems can be a vehicle for helping K–12 students engage and become excited and passionate about science and engineering and their application to everyday lives. She will provide examples of this concept in action as well as insights into how to better engage girls and under-represented minorities.

Michelle Johnson specializes in the design, development, and therapeutic use of novel, affordable, intelligent robotic assistants for rehabilitation. As a director for the Rehabilitation Robotic Research and Design Laboratory, Dr. Johnson uses robotics to understand arm dysfunction and recovery after brain injury. She is an associate professor of physical medicine and rehabilitation at the Medical College of Wisconsin as well as research assistant professor in biomedical engineering at Marquette University. She is currently an NIH Career Awardee to study brain changes after robot-assisted therapy focused on real activities.

Michelle holds a PhD in mechanical engineering, with an emphasis in mechatronics, robotics, and design, from Stanford University. She also completed an NSF-NATO postdoctoral fellowship at the Advanced Robotics Technology and Systems Laboratory at the Scuola Superiore Sant’Anna in Italy.

2:00–3:00 PM Presentations

SESSION 1

✓ Leaving No Child Inside: Using Outdoor Spaces for Instruction (Gen)

(General)

109, Convention Center

Vivian L. Bowles (*vivian.bowles@madison.kyschools.us*) and **Carol F. Short** (*carol.short@madison.kyschools.us*), Kit Carson Elementary School, Richmond, Ky.

Using the research of Richard Louv and others, learn why and how to take instruction outside. Resource packet included.

Note: Portions of this session will be conducted outdoors.

SESSION 2

Authors Needed! Write for an NSTA Journal (Gen)

(General)

203/205, Convention Center

Ken Roberts, Assistant Executive Director of Journals, NSTA, Arlington, Va.

Meet with journal editors to discuss your article ideas and learn how to prepare and submit an article to an NSTA journal.

SESSION 3

Cool Science for Grades 4–9 (Bio)

(Elementary–Middle Level)

204/206, Convention Center

Rajeev Swami (*chem276@yahoo.com*), NMLSTA President, and Central State University, Wilberforce, Ohio

Come watch some cool activities aligned with the science standards to motivate middle school kids to enjoy science learning.

SESSION 4

📖 NSTA Press® Session: Uncovering Life Science Core Ideas in the NGSS Using Formative Assessment Probes (Bio)

(General)

Conference Theatre, Convention Center

Page Keeley (*pagekeeley@gmail.com*), 2008–2009 NSTA President, and Author/Consultant, Jefferson, Maine

Learn how the probes in *Uncovering Student Ideas in Science* can be used as diagnostic and formative assessments of students’ thinking related to the life science core ideas in the highly anticipated Next Generation Science Standards and how use of the probes supports the science practices.

SESSION 5

Arguing Both Sides: Literacy and Science (Gen)*(Middle Level)* L2, Convention Center

Sara C. Taylor (sara.taylor@oldham.kyschools.us), **Elizabeth R. Atherton** (elizabeth.atherton@oldham.kyschools.us), and **Winn Wheeler** (winn.wheeler@oldham.kyschools.us), South Oldham Middle School, Crestwood, Ky.

As science teachers, we understand that literacy is an important aspect of all lines of thinking, including scientific. This session will equip you with tools and outlines to implement argumentative tasks and other literacy strands into your curriculum.

SESSION 6

Engaging Young People in STEM Through Service Learning (Gen)*(Middle Level–High School)* Kentucky C/D, Marriott

Elizabeth A. Koenig (ekoenig@nylc.org), National Youth Leadership Council, St. Paul, Minn.

Discover strategies and resources to implement rigorous STEM service learning experiences that can connect students with issues in their community and meet content standards.

SESSION 7

Get SIMulated! (Gen)*(Elementary–High School)* Kentucky F, Marriott

Diane L. 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 8

Building a Strong Foundation for Energy Literacy Through Integration of Instruction Across Content Areas and Grade Levels with “EnergyDay”! (Gen)*(Elementary–High School)* Kentucky G, Marriott

Deborah Shiflett-Fitton (dffitton@capelightcompact.org), Cape Light Compact, Barnstable, Mass.

Nancy Gifford (ngifford@harwich.edu), **Melinda Forist** (mforist@harwich.edu), and **Sally Rutledge** (srutledge@harwich.edu), Harwich Middle School, Harwich, Mass.

Presider: Deborah Shiflett-Fitton

Explore the concept of “Energy Day” with this award-winning, innovative, and interactive model that uses interdisciplinary and multi-grade level tools to turn an entire middle school into an energy learning laboratory for an entire school day.

2:00–3:00 PM Workshops

**The Science of Seat Belts (Phys)***(Middle Level–High School)* 104, Convention Center

Nicole Hesson (nicole.hesson@temple.edu), Temple University, Philadelphia, Pa.

Seat belts are a part of everyone’s daily life. But do students know why seat belts save lives? They probably aren’t aware that it’s all because of Newton’s first law of motion. Engage in activities and gain lesson plans that teach the Newtonian science of seat belts.

A Buyer’s Guide...and Gourmet Menu! Selecting and Using Outstanding Trade Books (Gen)*(Preschool–Middle Level)* 112, Convention Center

Juliana Texley (jtexley@att.net), Palm Beach State College, Boca Raton, Fla.

NSTA has cooperated with the Children’s Book Council for 40 years to select the best in children’s trade books. Explore the criteria, hear the surprising results, and learn how to use these exemplars in your classroom.

ACS Session Five: Light as a Reactant and/or Product (Chem)*(High School)* 207, Convention Center

Jerry Bell (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 activities to use in your classroom.

AAPT Session: Fun with Elastic Energy (Phys)*(Informal Education)* 208, Convention Center

Robert W. Arts (robertarts@upike.edu), University of Pikeville, Ky.

Through the use of simple materials, an elastic-powered rocket illustrates the nature of energy conservation and its connection to elastic materials.

Scale the Universe (Earth)*(Middle Level)* L4, Convention Center

Christine A. Royce (caroyce@aol.com), Shippensburg University, Shippensburg, Pa.

How big is big? How small is small? Let’s “scale the universe” as we investigate a variety of different scaling activities.

ACS Middle Level Session: The Polarity of the Water Molecule and Its Consequences (Chem)

(Middle Level) L5, Convention Center

James H. Kessler (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.

Teaching About Our Human-made World (Env)

(Middle Level–High School) L6, Convention Center

Rebecca Todd (rtodd0006@kctcs.edu), Elizabethtown Community and Technical College, Elizabethtown, Ky.

Take part in hands-on activities that explore how our species' population has expanded to dominate Earth and remake the natural world in unprecedented ways.

Neuroscience for Your Biology Classroom (Bio)

(Middle Level–High School) L7, Convention Center

Dina Markowitz (dina_markowitz@urmc.rochester.edu) and **Susan Holt**, University of Rochester, N.Y.

Would you like to use simple hands-on active learning lessons to introduce neuroscience concepts into your biology curriculum? Join us and experience two sample neuroscience activities from the University of Rochester's Life Sciences Learning Center. Take home handouts and information on support for field testing in your classroom.

Learning Progression for Force and Motion K–8

(Phys)

(Elementary–Middle Level) L10, Convention Center

Diane Johnson (diane.johnson@uky.edu), Program Coordinator, NSTA Louisville Area Conference, and University of Kentucky, Lexington

Martin Brock (martin.brock@eku.edu), Eastern Kentucky University, Richmond

Force and motion is one of the most difficult of the foundational core ideas for students in science. Come experience a progression for a key concept from kindergarten to grade 8.

Science at Home: Take-Home Inquiry Kits for Elementary Children (Gen)

(Elementary) L11, Convention Center

Steven M. Bernhisel (steveb@linfield.edu), Linfield College, McMinnville, Ore.

Let's use engaging, inexpensive, and safe take-home science kits to extend investigative science beyond the elementary classroom.

National Earth Science Teachers Association Earth Science Share-a-Thon (Earth)

(Elementary–High School) L15, Convention Center

Roberta Johnson (rmjohnsn@gmail.com), National Earth Science Teachers Association, Boulder, Colo.

Join NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

Elevate Student Success Through a Brain-friendly Classroom (Gen)

(General) Kentucky A/B, Marriott

Ashley Brimeyer, Texas Tech University, Lubbock

Create a brain-friendly classroom to enhance student learning in the science classroom. Take home successful strategies and materials for immediate use.

SYM-1 Follow-Up Session: Monarch Life Cycles and Raising Monarchs in Captivity (Env)

(Elementary–High School) Marriott VII, Marriott

Jim O'Leary (oleary@mdsci.org), Maryland Science Center, Baltimore

Grant Bowers (bowe0182@umn.edu) and **Kelly Nail** (nail@umn.edu), University of Minnesota, St. Paul

Observe live monarchs throughout their life cycle to learn about their biology and how you can raise these fascinating organisms in your classroom!

2:00–3:00 PM Exhibitor Workshop

How Do Scientists Work Together to Answer Big Questions and Solve Big Problems in PBIS™? (Gen)

(Grades 6–8) 201/202, Convention Center

Sponsor: It's About Time

Mary Starr, University of Michigan, Ann Arbor

Project-Based Inquiry Science Launcher units help students learn science and engineering practices while developing a culture of “doing” science. Investigate our Launcher units, discover the research that supports their use, and hear teachers testify to how these units have changed their students' ideas of science.

2:00–3:15 PM Exhibitor Workshops**Investigating Motion: Understanding and Interpreting Graphs (Phys)***(Grades 6–12) 102/103, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

Gain a deeper understanding of motion by graphing and interpreting real-time data. Explore the differences between speed and velocity in this hands-on, probeware-based workshop featuring PASCO carts and the new PASTrack Dynamics Systems. Your experience will include the 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. Extensions to other activities will also be demonstrated.

STEM Engineering for Science (Gen)*(Grades 5–College) 105, Convention Center*

Sponsor: WhiteBox Learning

Graham Baughman, WhiteBox Learning, Louisville, Ky. Connect the virtual to the physical. As the world's only integrated STEM learning system, WhiteBox Learning provides standards-based, web-based applied STEM learning applications. Flight2.0, Green Car2.0, Structures2.0, Rockets2.0, and Dragster2.0 allow students to build, analyze, and simulate their designs, and compete “virtually”—24/7—all around the world...how cool is that?!

Water Contaminants! Biotechnology Can Help Save the Marine Environment (Bio)*(Grades 8–College) 113, Convention Center*

Sponsor: Edvotek Inc.

Jack Chirikjian (*info@edvotek.com*), **Tom Cynkar** (*info@edvotek.com*), and **Khuyen Mai** (*info@edvotek.com*), Edvotek Inc., Washington, D.C.

Drinking water is routinely tested for contamination and more sophisticated tests are required if a screening tests positive. One such test uses a polymerase chain reaction (PCR) in multiplex format. Join us as we test for the presence of classroom-safe organisms in a water sample using a single PCR reaction. Take home a free T-shirt and flash drive.

NGSS and Scientific Practices—More Than Photo-shopping Models' Flaws (Phys)*(Grade 7) 114, Convention Center*

Sponsor: Sangari Active Science

VeAnn Tilson, Sangari Active Science/IQWST, Union, Mo.
LeeAnn Sutherland (*lsutherl@umich.edu*), The University of Michigan, Ann Arbor

What comes to mind when you hear the word “model”? Solar system mobiles? Cells in pie plates? New standards require going beyond the models used in science for years! Come engage in modeling activities for middle schoolers and unpack how to think about models you use now in ways consistent with the highly anticipated Next Generation Science Standards.

Student Collaboration in the Science Classroom**(Gen)***(Grades 6–9) 209, Convention Center*

Sponsor: eCYBERMISSION

Brian P. Short (*missioncontrol@ecybermission.com*), Director, Science Education Competitions, NSTA, Arlington, Va.

Students in grades 6–9 will either jump (literally) at the idea of working in a group or loathe the idea. Many teachers want their students to work in groups, but how can this be done efficiently and successfully? How can problems with group work be resolved? How can group work enhance the learning for ALL students and be a benefit to the teacher? This session will work to answer these questions and share how a new NSTA competition, eCYBERMISSION, sets up and uses groups to solve a scientific or engineering problem.

Mastering the Chemical Formula: An Exceptionally Effective Way to Teach Subscripts and Coefficients (Chem)*(Grades 9–12) 210, Convention Center*

Sponsor: LAB-AIDS, Inc.

Brandon Watters, Lakes Community High School, Lake Villa, Ill.

What is the difference between subscripts and coefficients? What does “balancing” a chemical equation mean? Many students have trouble with these fundamental chemistry concepts. Moles, reactions, and stoichiometry are hopelessly confusing if a student does not fully understand the chemical formula. Join us for some elegant, intuitive, and well-differentiated lessons that can help students of all ability levels master the chemical formula and, therefore, move confidently into a deeper understanding of chemistry.

Carolina Beyond the Tape: Forensic Science for Every Discipline (Bio)

(Grades 9–12) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Learn how to bring the science from headline news into your classroom. Be the first to experience Carolina's new forensic science laboratory activities with this fast-paced hands-on workshop. Activities are linked to standards and suitable for use in physical science, biology, and chemistry classes. Handouts and door prizes!

The Sky Through the Ages (Earth)

(Grades 4–12) 214/215, Convention Center

Sponsor: Simulation Curriculum Corp.

Herb Koller (hkoller@simcur.com), Simulation Curriculum Corp., Minnetonka, Minn.

What did our ancestors see in the night sky? How can astronomy help us determine the date of a battle fought thousands of years ago? Find out the answers to these and other historical questions and learn how Starry Night can make astronomy come alive for your students.

2:00–3:30 PM Exhibitor Workshops

Sound, Waves, and Music (Phys)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

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

Create standing wave patterns on a vibrating string with CPO's wave machine. Use a synthesizer to explore the wave properties of sound, and play some music and learn how to make your own instruments. Take away STEM activities and an understanding of how to apply the engineering cycle in science classes.

Physics and Physical Science with Vernier (Phys)

(Grades 9–College) 219, Convention Center

Sponsor: Vernier Software & Technology

John Melville (info@vernier.com) and **David Carter** (info@vernier.com), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, we will use our new LabQuest 2 with various sensors to conduct experiments from our popular physics and physical science lab books. LabQuest 2 is our most versatile interface, supporting data collection as a stand-alone device, with a computer, and now with iPad and other mobile technology.

2:00–4:30 PM Exhibitor Workshop

Bio-Rad: Crime Scene Investigator PCR Basics Kit (Bio)

(Grades 10–College) 218, Convention Center

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Which human DNA sequences are used in crime scene investigations and why? In this hands-on workshop, you will learn to use the polymerase chain reaction (PCR) and gel electrophoresis to identify which suspects can be exonerated—based on DNA evidence. Learn how the statistics of chance are integral to modern DNA fingerprinting.

3:00–4:00 PM Exhibitor Workshop

Fossil Evidence: A Preview of FOSS Earth History, 2nd Edition for Middle School (Earth)

(Grades 5–8) 106/107, Convention Center

Sponsor: Delta Education/School Specialty Science–FOSS

Jessica Penchos and **Virginia Reid**, The Lawrence Hall of Science, University of California, Berkeley

Explore the concept of index fossils through a brief hands-on activity and multimedia, and identify connections to the NRC *Framework*. Be among the first to preview the newly revised *FOSS Earth History* course, including new features, strategies, content, and materials.

3:30–4:30 PM Presentations

SESSION 1


The Scale of the Universe (Earth)

(General) 101, Convention Center

Jeffrey Bennett (jeff@bigkidscience.com), Big Kid Science, Boulder, Colo.

How big is the Sun? How far are the stars? The amazing scale of the universe can help you integrate science across your curriculum.

SESSION 2

 **Rockets, Balloons, Kites, and KMZ: Build Your Own Google Earth (Earth)**

(Middle Level–High School) 104, Convention Center

Vin Urbanowski (vurbanowski@aitestamford.org), Academy of Information Technology and Engineering, Stamford, Conn.

Learn to fly cameras and make your own Google Earth surface images and tours with inexpensive, free, and fun tools.

SESSION 3

✓ **Music to Enhance Content Memory (Gen)**
(General) 109, Convention Center

Steven T. Code (steven.code@casey.kyschools.us), Casey County High School, Liberty, Ky.

Enhance memory by using songs. Use and write songs for the rock cycle, DNA structure, the Avogadro constant (the mole), oxidation numbers, and other concepts.

SESSION 4

The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (Gen)

(General) 203/205, Convention Center

Flavio Mendez (flavio_m@nsta.org), Senior Director, NSTA Learning Center, NSTA, Arlington, Va.

Lost when it comes to finding online professional development resources to enhance your content knowledge and skills? With more than 8,000 resources (25% of which are always free) and quality professional development opportunities to assist educators with core subject content, The NSTA Learning Center has the answers! Walk away with free resources and ICE CREAM!

SESSION 5

Linking Science Writing and Research Through the DuPont Challenge (Gen)

(General) 204/206, Convention Center

Barbara R. Pietrucha, Point Pleasant, N.J.

Come learn a natural way of integrating research and writing into your curriculum that encourages developmental skills necessary for success in STEM and meets local, state, and national standards.

SESSION 6

Integrated Scenarios to Increase Relevance: Action Research Implemented to Improve Student Learning in a Microbiology Course (Bio)

(High School–College) L2, Convention Center

Jennifer Leigh Myka (jennifer.myka@kenton.kyschools.us), Kenton County Academies of Innovation and Technology, Edgewood, Ky.

Integrated patient scenarios and critical-thinking questions can add relevance and increase student learning. Action research data will be discussed and participants will complete a sample scenario.

SESSION 7

Why Now Is a Terrific Time to Eradicate Malaria (Bio)

(General) L8, Convention Center

Theresa B. Britschgi (theresa.britschgi@seattlebiomed.org), Seattle Biomedical Research Institute, Seattle, Wash.

Malaria strikes 10% of the world's population annually. Learn how innovative scientific and technological advances are diminishing the deadly impact of this disease.

SESSION 8

January and May Terms: A Novel Way to Incorporate Project Based Learning (PBL) into the Middle School Curriculum (Gen)

(General) Kentucky A/B, Marriott

Alison A. Beharka (abeharka@uni.edu), Malcolm Price Laboratory School, University of Northern Iowa, Cedar Falls
Let's focus on efforts to develop January and May term PBL experiences for middle school students. These projects cross age groups and disciplines.

SESSION 9

What's the Big Idea? Standards-based Teaching and Grading (Gen)

(High School) Kentucky C/D, Marriott

Miranda Messer (miranda.messer@jefferson.kyschools.us), **Scott Schneider** (scott.schneider@jefferson.kyschools.us), and **Tracy E. Ising** (tracy.ising@jefferson.kyschools.us), Gheens Academy, Louisville, Ky.

Dave Lechleiter (dlech13@gmail.com), Moore Traditional School, Louisville, Ky.

Janet Reichmuth (janet.reichmuth@jefferson.kyschools.us), Seneca High School, Louisville, Ky.

President: Lee Ann Nickerson, Gheens Academy, Louisville, Ky.
Districtwide resource teachers and classroom teachers will share structures and collaborative practices that supported standards-based teaching and grading in Jefferson County Public Schools.

**Evaluate Your Sessions Online
or on Your Smartphone!**

This year, we're giving away a Kindle Fire HD 8.9" to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win! (See page 14 for details.)

SESSION 10

Leveraging Web 2.0 to Teach Science (Gen)

(General) Kentucky F, Marriott

Steve Canipe (steve.canipe@waldenu.edu), Walden University, Minneapolis, Minn.

Deciding what Web 2.0 tools to use with students from the wealth of resources is daunting. Best practices will be described and explored.

SESSION 11

NOAA in Your Backyard (Gen)

(General) Kentucky G, Marriott

Britta Culbertson (britta.culbertson@noaa.gov), Einstein Fellow, NOAA Office of Education, 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.

3:30–4:30 PM Workshops



Preparing Today's Students for Tomorrow's Challenges Through Creative Problem Solving (Gen)

(Elementary) 112, Convention Center

Kristi A. Zenchak (zenchak@oakton.edu), Oakton Community College, Des Plaines, Ill.

Chris M. Culen (cculen@district95.org), Brook Park School, LaGrange Park, Ill.

Engage in an inquiry-based activity that includes a user-friendly framework for incorporating a full inquiry problem-solving experience into existing classroom activities.

ACS Session Six: Half-Life (Chem)

(High School) 207, Convention Center

Jerry Bell (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 activities to use in your classroom.

AAPT Session: Gathering Evidence for the Wave Nature of Light (Phys)

(Middle Level–College) 208, Convention Center

Scott Bonham (scott.bonham@wku.edu), Western Kentucky University, Bowling Green

Join us for this hands-on workshop as we work with inquiry-oriented materials that can be used to help students gather evidence themselves for the wave nature of light.

Carbon Capture and Storage (Earth)

(High School) L4, Convention Center

Karen Reagor (kreagor@need.org), The NEED Project, Manassas, Va.

Introduce students to a potential technique of mitigating climate change by capturing carbon dioxide at power plants and storing it in deep geologic formations.

ACS Middle Level Session: Chemical Change: Breaking and Making Bonds (Chem)

(Middle Level) L5, Convention Center

James H. Kessler (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.

Facing the Future: Global Connections and Sustainability (Env)

(Middle Level–High School) L6, Convention Center

Pamela Whiffen (pwppwr@aol.com), NASA Educator Ambassador/Carl Hayden High School, Phoenix, Ariz.

Come experience hands-on, inquiry-based materials to explore sustainable resource use and implications to future quality of life. Free CD-ROM with complete lesson plans.

What's so Important About Deep-Sea Coral Ecology? (Bio)

(High School) L7, Convention Center

Liz Goehring (exg15@psu.edu), Penn State, University Park, Pa.

Learn how real-life deep-sea ecological research informs important decisions regarding offshore oil exploration, and use Problem-Based Learning to teach this to your students.

Facilitating Early Childhood Education with Project Learning Tree (Env)*(Preschool–Middle Level/Informal) L10, Convention Center*

Jaclyn Stallard (jstallard@plt.org) and **Al Stenstrup** (astenstrup@plt.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. Take home PLT's *Environmental Experiences for Early Childhood* activity guide and accompanying music CD.

Mapping for Meaning (Gen)*(Elementary–Middle Level) L11, Convention Center*

Caryn S. Walker (caryn.walker@jefferson.kyschools.us) and **Martha Voll**, Jefferson County Public Schools, Louisville, Ky. Explore the use of concepts maps in multiple avenues that range from teacher planning to group work to individual student evaluation of ideas.

SYM-1 Follow-Up Session: Classroom Lessons with Monarchs (Env)*(Elementary–High School) Marriott VII, Marriott*

Grant Bowers (bowe0182@umn.edu) and **Kelly Nail** (nail@umn.edu), University of Minnesota, St. Paul

Jim O'Leary (oleary@mdsci.org), Maryland Science Center, Baltimore

After a brief overview of the monarch's life cycle, we will demonstrate different activities and lessons involving monarchs. Take-home instructions will be available!

3:30–4:30 PM Exhibitor Workshop**Your Technology Solution for STEM and the Highly Anticipated Next Generation Science Standards (Gen)***(Grades 6–12) 201/202, Convention Center*

Sponsor: It's About Time

Brian DeSoto, Fourier Systems, Orland Park, Ill.

David Birchler, It's About Time, Mount Kisco, N.Y.

Meeting the demands for the 21st century requires technology. How do you implement that goal with today's budgets? First, Fourier—the technology that gives you more for your money in data logging...and second, Webcam—one of the most effective software solutions that allows you to use inexpensive equipment. Seeing is believing!

4:00–5:15 PM Exhibitor Workshops**Exploring Renewable Energy: A Hands-On STEM Investigation (Env)***(Grades 9–12) 102/103, Convention Center*

Sponsor: PASCO scientific

Presenter to be announced

Experience a hands-on, relevant, problem-solving STEM lesson that engages students in Scientific and Engineering Practices included in the NRC *Framework*. In this hands-on workshop featuring the Horizon Renewable Energy SPARKlab® collection, measure energy output from your designed wind turbine under varying environmental conditions. The potential of renewable energy resources is also explored.

High School Biology in a Digital World: Critical Thinking Trumps Information Overload (Bio)*(Grades 9–12) 105, Convention Center*

Sponsor: Discovery Education

Wendy Raymond, Williams College, Williamstown, Mass.

Join Wendy Raymond, Discovery Education senior biology consultant, in exploring the excitement of biology education in a digital world. Learn why some students with the best high school science grades often struggle in college courses and what might be done to provide a stronger high school science foundation.

Color, Spectrophotometry, and Teaching the Structure of the Atom (Chem)*(Grades 9–12) 210, Convention Center*

Sponsor: LAB-AIDS, Inc.

Brandon Watters, Lakes Community High School, Lake Villa, Ill.

How do we teach topics such as electron configurations—that were graduate school material a generation ago—so that high school students can learn and understand them? Walk away with some effective ways to teach the structure of the atom. Using a user-friendly spectrophotometer, explore how light interacts with dyes. Then use unique spectrum cards to show how atoms, color, and spectra are related, making a conceptual bridge between a core chemical technology—making dyes—and the fundamental structure of the atom.

Hands-On Activities to Explore Environmental Change (Env)

(Grades 9–12) 211, Convention Center

Sponsor: Carolina Biological Supply

Carolina Teaching Partner

Simulate how human influence affects habitat degradation in a terrestrial ecosystem. Model how global warming and ocean acidification affect marine habitats. Investigate the advantages and disadvantages of four different population sampling methods. These real-world scenarios will challenge and engage your students. Door prizes!

4:00–5:30 PM Exhibitor Workshop

Chemistry and the Atom: Fun with Atom-building Games! (Chem)

(Grades 5–12) 108, Convention Center

Sponsor: CPO Science/School Specialty Science

Nathan Olsson, CPO Science/School Specialty Science, Nashua, N.H.

Understanding abstract concepts about atoms can be difficult. Use our model to experience innovative games and activities that present students with opportunities to grasp atomic structure and its connection to the periodic table. Take away STEM activities and an understanding of how to incorporate science and engineering practices in your lessons.



5:00–5:30 PM Presentation

SESSION 1

Classroom Activity on Buffering Related to Respiration for High School and Introductory College Courses in Biological Sciences (Bio)

(High School–College) L8, Convention Center

Rachel C. Holsinger, Sayre School, Lexington, Ky.

Kim Zeidler-Watters (kzeidle@uky.edu), **Rebecca M. Krall** (rebecca.krall@uky.edu), **Robin L. Cooper** (rlcoop1@email.uky.edu), and **Susan Mayo** (susan.mayo@pikeville.kyschools.us), University of Kentucky, Lexington

Experience a rapid hands-on chemical buffering activity that can be implemented within a lecture room or laboratory environment and related to health as well as systems physiology.

5:00–6:00 PM Presentations

SESSION 1

Snakes in the Classroom (Bio)

(General) L7, Convention Center

Kevin Jackson (kjack@loucol.com), Louisville Collegiate School, Louisville, Ky.

Snakes are ideal animals to stimulate the interest of science students at all levels. Learn about the benefits and practical considerations of snake keeping.

SESSION 2

AMSE Session: Literacy in the Science Classroom to Create a Balanced Program (Gen)

(General) Kentucky C/D, Marriott

Sharon J. Delesbore (sdelesbore@leadandlearn.com), Fort Bend ISD, Sugar Land, Tex.

Frustrated with the demand to teach students to read? Help prepare students to comprehend science content and increase student achievement within a balanced science program.

SESSION 3

Formative Assessment Strategies Designed to Scaffold Student Learning (Gen)

(Middle Level) Kentucky F, Marriott

Lacey D. Eckels (lacey.eckels@jefferson.kyschools.us), Gheens Academy, Louisville, Ky.

Beth Sanders (beth.sanders@jefferson.kyschools.us), Jefferson County Traditional Middle School, Louisville, Ky.

Amy Strite (amy.strite@jefferson.kyschools.us), Meyzeek Middle School, Louisville, Ky.

Two middle school science teachers and one science resource teacher will share their results from systematically investigating three formative assessment models that promote student ownership of learning.

5:00–6:00 PM Workshops

Forests, Carbon, and Climate Change (Env)
(Elementary–High School) L4, Convention Center

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

Al Stenstrup (astenstrup@plt.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.

Polydensity Tube: Make–Learn–Take: Serious Fun with a Dense Subject (Chem)

(Informal Education) L5, Convention Center

Lynn Higgins (lynhiggins@sbcglobal.net), Polymer Ambassadors, St. Louis, Mo.

Using grocery store materials, we'll make a bottle with solids floating or sinking in two immiscible liquids. No oil used, so layers separate cleanly and quickly. Free supplies!

National Earth Science Teachers Association Rock and Mineral Raffle (Earth)

(General) L15, Convention Center

Roberta Johnson (rjohnsp@neste.com), National Earth Science Teachers Association, Boulder, Colo.

Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.

NESTA is offering more than 50 specimens to choose from for a chance to win display-quality specimens of rocks, minerals, fossils, and other Earth science-related materials.


5:00–7:00 PM Social

Hoosier Association of Science Teachers, Inc. (HASTI) Social

Marriott I/II, Marriott

Attend the HASTI Social to network and share ideas with Indiana science educators.

RESCHEDULED TO 3:00 PM (See program changes)



NEW FOSS® Third Edition


The Next Generation of Active Learning

VISIT
OUR BOOTH

If you want **science** in thier minds...
Put **FOSS** in their **hands**.

CONVERT
NOW
ASK US
HOW!


Published and Distributed by




Delta Education®


School Specialty
Science

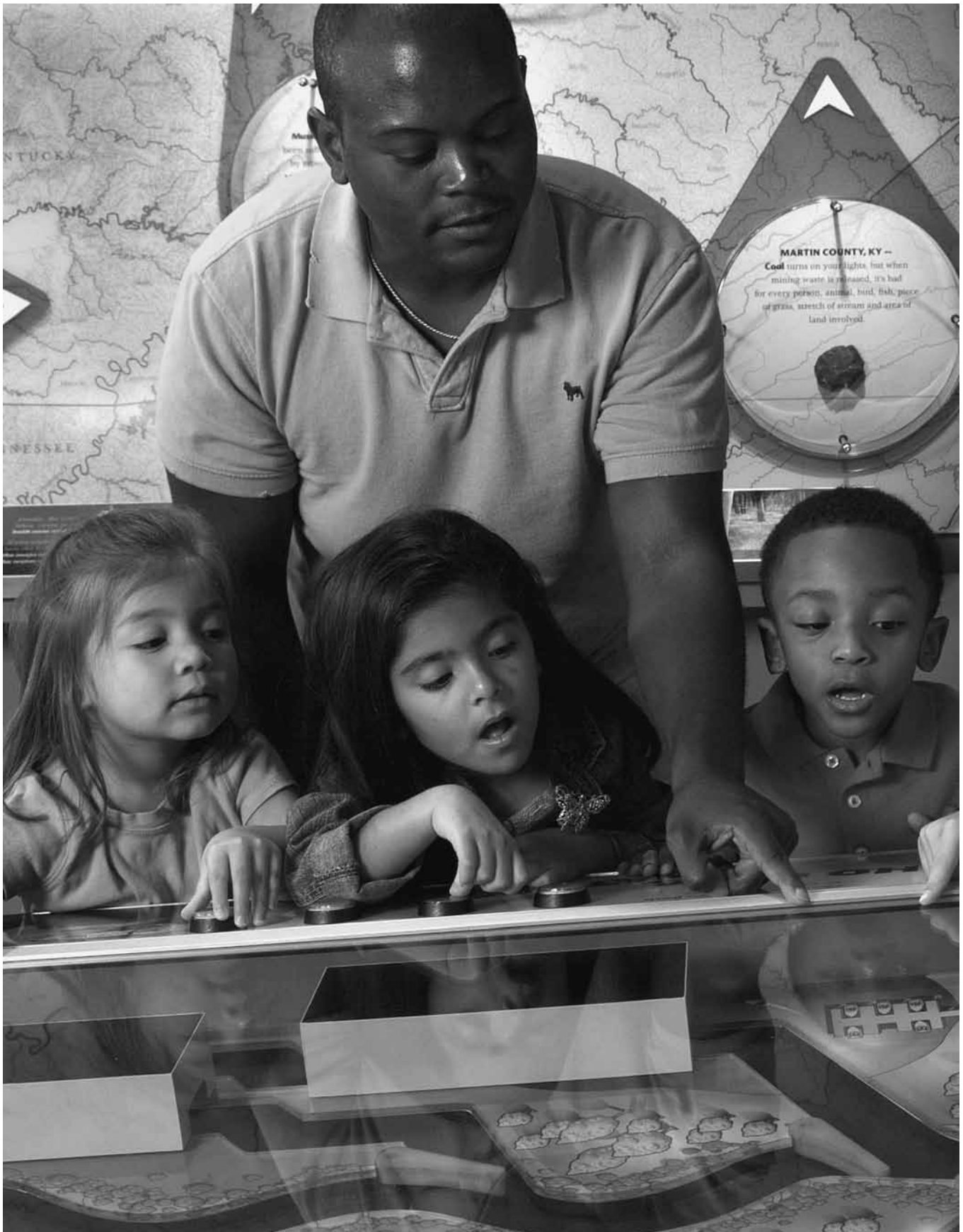
DEVELOPED AT



THE LAWRENCE
HALL OF SCIENCE
UNIVERSITY OF CALIFORNIA, BERKELEY

FOSS research supported in part by 





—Photo courtesy of Kentucky Science Center

8:00–9:00 AM Presentations

SESSION 1



Standards and Content and Inquiry, Oh My! Creative Strategies to Integrate the Three! (Gen)

(Elementary–High School) 112, Convention Center

Kerrie McDaniel (kerrie.mcdaniel@wku.edu), Western Kentucky University, Bowling Green

Explore how to turn a standards-based lesson—packed with science content—into a hands-on, inquiry-based learning experience.

SESSION 2

Breathe Fresh Air into Your Curriculum Using Environmental Education (Env)

(Elementary) 203/205, Convention Center

Caryn S. Walker (caryn.walker@jefferson.kyschools.us) and **Bryan Thompson** (bryan.thompson@jefferson.kyschools.us), Jefferson County Public Schools, Louisville, Ky.

Darleen Horton (darleen.horton@jefferson.kyschools.us), Cane Run Elementary School, Louisville, Ky.

Brenda D. Stokes (brenda.stokes@jefferson.kyschools.us), Portland Elementary School, Louisville, Ky.

Presider: Darleen Horton

Environmental education can transform learning by providing the context for studies across all contents. Learn how two Kentucky schools thread environmental studies into their curricula.

SESSION 3

Exploring the 2012 ACS Guidelines and Recommendations for Teaching High School Chemistry (Chem)

(High School/Supervision) 204/206, Convention Center

Terri M. Taylor (t_taylor@acs.org) and **Michael Mury** (m_mury@acs.org), American Chemical Society, Washington, D.C.

Featuring strategies for teaching high school chemistry, the *2012 ACS Guidelines and Recommendations for Teaching High School Chemistry* is a useful resource for strengthening high school chemistry programs.

SESSION 4

Discover the “Buried Carbon Hypothesis” and Climate Change (Earth)

(General) L8, Convention Center

Michael J. Passow (michael@earth2class.org), Dwight Morrow High School, Englewood, N.J.

What happens when glaciers retreat and organic matter is exposed? Discover how to teach the “buried carbon hypothesis” and other interesting polar science change concepts.

SESSION 5

STEM Projects for the Middle School Science Classroom (Gen)

(Middle Level) Kentucky A/B, Marriott

DJ West (djwest78@gmail.com), Schoolcraft College, Livonia, Mich.

Discover a variety of projects that can be used in middle school science to integrate STEM concepts into the classroom. Take home instructions for each of the projects discussed.

SESSION 6

Bringing Problem-based Writing Assignments to Life in the Science Classroom (Gen)

(General) Kentucky F, Marriott

Jennifer M. Good (jgood@aum.edu), **Michael R. Gilchrist**, **Kellie A. Shumack** (kshumack@aum.edu), and **Rachael Humber**, Auburn University at Montgomery, Ala.

When we write, we learn. Gain training ideas, sample writing assignments, and explore avenues (such as technology) for faculty development to integrate writing in the classroom.

8:00–9:00 AM Workshops



STEM Through Aviation and Aerospace (Gen)
(Middle Level–High School) 104, Convention Center

Judith A. Wehn (*judith.wehn@wpafb.af.mil*), National Museum of the U.S. Air Force, Wright-Patterson Air Force Base, Ohio

Diana M. Hunn (*dhunn1@udayton.edu*), University of Dayton, Ohio

Join us for fast-paced STEM activities linked to the real world of aviation and aerospace. These exciting, low-cost activities link to national standards.



Is It (Carolina) Gold? The Intersection of Genetics and American History (Bio)
(Middle Level–High School) 109, Convention Center

Elizabeth Rice (*erice@fandm.edu*), Franklin & Marshall College, Lancaster, Pa.

Susan Dodge (*lalimule@verizon.net*), The New School of Lancaster, Pa.

Use modern genetic techniques to determine if an archaeological sample is Carolina Gold Rice, and then explore a cross-curricular lesson collection full of data-rich exercises.

Polymers: New Twists on Old Favorites (Chem)
(Middle Level–High School) 207, Convention Center

Debbie Goodwin (*nywin@hotmail.com*), Chillicothe High School, Chillicothe, Mo.

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

Caryn Jackson (*cjackson@tolles.k12.oh.us*) and **Todd Bolenbaugh** (*tbolenbaugh@tolles.k12.oh.us*), Tolles Career & Technical Center, Plain City, Ohio

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.

WonderWorks in the Classroom (Phys)
(General) 208, Convention Center

Andrea R. Wilson (*awilson@wonderworkstn.com*), WonderWorks, Pigeon Forge, Tenn.

Turn fun upside down, as we use fun hands-on ideas to help all kids learn. One main objective of this workshop is learning while laughing!



NSTA Press® Session: Classroom Activities for Stop Faking It! Force & Motion (Phys)

(Elementary–High School) Conference Theatre, Conv. Center

Bill Robertson (*wrobert9@ix.netcom.com*), Bill Robertson Science, Inc., Woodland Park, Colo.

In response to teacher demand, there is now a set of classroom activities on force and motion to accompany the *Stop Faking It! Force & Motion* book. We incorporate the learning cycle in an easy-to-use, teacher-friendly, research-based curriculum for upper elementary and conceptually based high school curricula that can help students truly understand force and motion concepts. Join the author for activities from the book. Lame jokes quite possible.

“Astro”nishing “Astronomy: The Electromagnetic Spectrum (Earth)

(Middle Level–High School) L5, Convention Center

Pamela Whiffen (*pwpwr@aol.com*), NASA Educator Ambassador/Carl Hayden High School, Phoenix, Ariz.

Facilitated by a NASA Educator Ambassador and teacher, explore the hidden universe with a new set of eyes. NASA CD-ROM and posters provided.

Inquiry-based Photosynthesis Lab (Bio)

(Middle Level–College) L6, Convention Center

Jennifer Leigh Myka (*jennifer.myka@kenton.kyschools.us*), Kenton County Academies of Innovation and Technology, Edgewood, Ky.

Why is that pond plant bubbling in the Sun? Don’t tell your students, help them tell you! Hands-on photosynthesis lab models active inquiry-based instruction.

Infect Your Biology Classroom with Math! (Bio)

(General) L7, Convention Center

Jeff Lukens (*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 part of a good, solid, responsible science education.

Maximize Your Conference Experience!

While at the conference, don't forget to:

Pick up your badge holder, your copy of the daily program, and other materials ahead of time, if possible. Take some time to finalize your daily schedules. Keep your smartphone handy if you've created a calendar on it.

Evaluate the sessions you attend so that they can be added to your transcript.

Divide and conquer if you're attending with friends or colleagues. You can only be at one place at a time, so agree on what to attend and how to share notes and materials from sessions.

Get to the sessions early. Sometimes the smaller rooms fill up quickly.

Take some time for sightseeing. There will be a booth at registration staffed by local teachers. They'll have lots of ideas and suggestions for what to see and do and where to eat.

Put your cell phone on mute during sessions.

Consider taking some snacks and a water bottle.

Attend a session or two on a topic that's unfamiliar to you.

Keep a log or journal of the sessions you attended, people you met, and new ideas. Update your homepage, Facebook, tweets, or class Wiki/blog with a summary of what you are learning at the conference. Update your conference transcript.

Introduce yourself to teachers at the sessions or events. The value of a face-to-face conference is meeting and interacting with other science educators.

STEM Activities: Animal Pictures, WebQuest, Boat Constructions, and Pumpkingrams (Gen)

(Elementary) *L11, Convention Center*

Ava F. Pugh (apugh@ulm.edu) and **Dona C. Delgado** (delgaddc@warhawks.ulm.edu), The University of Louisiana at Monroe

Presider: Ava F. Pugh

Engage in hands-on activities for making science inferences from pictures, creating WebQuests, constructing boats, and recognizing mathematical relations with Pumpkingrams. CDs and handouts!

Chefs Don't Use Cookbooks—Why Should Students? (Gen)

(Elementary–High School) *Kentucky G, Marriott*

William C. Metz (wmetzgolf@aol.com), Science Education Consultant, Fort Washington, Pa.

Walk away with a number of uncomplicated teacher strategies designed to subtly shift the focus of perfunctory cookbook labs toward student-centered inquiry.

8:00–9:15 AM Exhibitor Workshop

Power Up! Investigating Electric Motors (Chem)

(Grades 6–8) *210, Convention Center*

Sponsor: LAB-AIDS, Inc.

Mark Koker, LAB-AIDS, Inc., Ronkonkoma, N.Y.

How do electric motors work? What is the relationship between electricity and magnetism? Although modern life as we know it would be inconceivable without them, most students do not have a good idea of how electric motors—and generators—work. In this activity from the Energy unit of the SEPUP middle level program *Issues & Physical Science*, students make and operate a small battery-powered electric motor, then disconnect the battery and reverse the leads to use the motor to light a small LED. Participants will receive a sample kit and print materials.

8:00–9:30 AM Exhibitor Workshop

Bio-Rad: Implementing a Skills-based Biotech Program with Author Kirk Brown (Bio)

(Grades 9–College) *218, Convention Center*

Sponsor: Bio-Rad Laboratories

Leigh Brown (leigh_brown@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, Bio-Rad's new biotechnology lab textbook *Biotechnology—A Laboratory Skills Course*, and supplemental materials such as videos and presentations. Hear the words of wisdom from Tracy High School's model biotech program and inspire your students with real-world lab experiences.

8:30–10:30 AM CESI Breakfast

Food for Thought: Edible Science (M-1)

(Tickets Required; \$30)

Marriott I, Marriott



Betty Crocker (crocker@unt.edu), Author and Retired Educator, University of North Texas, Denton

Join the Council for Elementary Science International for a great breakfast and innovative speaker, Betty Crocker, who will share “Food for Thought: Edible Science.” What did you expect from Betty Crocker?

You will conduct a series of hands-on activities to practice science skills such as collecting data, compare and contrast, variables, interpreting data, and space/time relationships. Take home a copy of the activities presented.

Betty Crocker taught elementary and middle school science in Mexico and Texas for 19 years. She then taught science methods at the university level in Georgia, Oregon, and Texas before retiring from the University of North Texas. She has been recognized by the International Biographical Centre, Cambridge, England, as an International Woman of the Year and Top 100 Educators, 2012. Betty has served on the board of directors of CESI, is a past president of the Science Teachers Association of Texas, and has given numerous presentations at NSTA conferences. She is a co-author of the *Food for Thought: Edible Science Activities* series of books.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 12 Noon on Friday.

9:00 AM–12 Noon Exhibits

Exhibit Hall 2D, 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–12 Noon Short Course

✓ **Exploring Planetary Science and Astronomy: What Would Galileo Do? (SC-6)**

(Elementary–High School)

Kentucky C/D, Marriott

Tickets Required: \$62

Roberta Johnson (*rmjohnsn@gmail.com*), National Earth Science Teachers Association, Boulder, Colo.

Ardis Herrold, National Earth Science Teachers Association, Plymouth, Mich.

For description, see page 35.

9:30–10:30 AM Presentations

SESSION 1

✓ **Music and Physics: Magnetism, Electricity, Vibration, and How to Build an Electric Guitar (Phys)**

(Middle Level–High School)

109, Convention Center

Vin Urbanowski (*vurbanowski@aitestamford.org*), Academy of Information Technology and Engineering, Stamford, Conn.

Find out how your students can build an electric guitar that can drive an amplifier and/or an oscilloscope for lessons in electromagnetism, vibrating strings, and music theory.

SESSION 2

Food Chains: Using Field Surveys That Give Real Numbers (Env)

(Middle Level/Informal Ed)

203/205, Convention Center

Frederick E. Maier (*fmaier@itasca.com*), Village of Itasca, Ill.

Jack Tison (*globes@comcast.net*), Lincoln Marsh Natural Area, Wheaton, Ill.

Hear about three hands-on survey techniques that allow students to calculate actual numbers of plants, herbivores, and carnivores in creating a food chain.



SESSION 3

Going Digital in the 1:1 Science Classroom (Chem)

(Middle Level–High School/Supv.) 204/206, Convention Center
Matthew D. Constant (matthew.constant@owensboro.kyschools.us)
and **Lora Wellman** (lora.wellman@owensboro.kyschools.us),
Owensboro (Ky.) Public Schools

Hear how an economically diverse school district continues to embark on a one-to-one laptop initiative with a dedicated science digital curriculum developer.

SESSION 4

KYEM Earthquake Awareness 101 (Earth)

(General) L8, Convention Center
David M. Davis (kyemeq@gmail.com), Kentucky Emergency
Management, Frankfort

Come learn about awareness-level training for all citizens of Kentucky. It provides a basic level understanding of earthquakes in nontechnical terms. We'll focus on education in the elementary classrooms. Take home an earthquake educational unit and reprintable earthquake worksheets with assessment and evaluation.

SESSION 5

MY NASA DATA: Earth Systems Data Visualization Tool for Students (Earth)

(Elementary–High School) L9, Convention Center
Brandon M. Hargis (brandon.hargis@nasa.gov), NASA
Langley Research Center, Hampton, Va.

Engage your students in using MY NASA DATA as a visualization tool for NASA Earth systems satellite data. Plenty of online lessons and great handouts!

SESSION 6

Scientists Write and Read, Too! Exploring Reading and Writing Strategies in the Science Classroom (Gen)

(General) Kentucky F, Marriott
Ella F. Bowling (ella.bowling@mason.kyschools.us), Mason
County Middle School, Maysville, Ky.

Come learn how to seamlessly integrate the Common Core reading and writing standards into your science content and still have fun doing it!

9:30–10:30 AM Workshops

Using Case Studies to Teach AP Biology Content (Bio)

(High School) 104, Convention Center
Kristen R. Dotti (kristen_dotti@yahoo.com), Christ School,
Arden, N.C.

Take part in a hands-on exploration of AIDS as a vehicle to learn cell communication, signal transduction, immunology, public health, drug resistance, and much more.



Squeezing GLUE-GOO into the National Science Education Standards (Chem)

(Middle Level–High School/Informal) 112, Convention Center
Lynn Higgins (lynhiggins@sbcglobal.net), Polymer Ambassadors,
St. Louis, Mo.

Make your own “slime” from grocery store supplies and learn the science behind this popular activity. Strategies for extending inquiry into a cooperative physical science project are modeled.



NSTA Press® Session: Inquiring Scientists, Inquiring Readers: Using Nonfiction to Promote Science Literacy, Grades 3–5 (Gen)

(Elementary) 207, Convention Center
Terry Shiverdecker (tshiverdecker.1@gmail.com), Ohio
Resource Center, The Ohio State University, Columbus
Jessica Fries-Gaither (jfriesgaither@gmail.com), Columbus
School for Girls, Columbus, Ohio

Get to know inquiring scientists, inquiring readers through an inquiry experience integrating science and literacy. Learn how this powerful approach can work in your classroom.

Exploring What Affects the Strength of a Solenoid (Phys)

(High School) 208, Convention Center
Kevin D. Dick (kevin.douglas.dick@gmail.com), Seneca High
School, Louisville, Ky.

Martha M. Day (martha.day@wku.edu), Western Kentucky
University, Bowling Green

Explore what affects the strength of a solenoid and use this discovery to design a solenoid for a contest.

SCST Session: Converting Activities from Cookbook to Inquiry (Gen)*(High School–College)* 216/217, Convention Center**Dee Silverthorn** (silverthorn@mail.utexas.edu) and **Peter English** (english@mail.utexas.edu), The University of Texas at Austin**Robert Hilborn** (rhilborn@aapt.org), American Association of Physics Teachers, College Park, Md.

Presider: Dee Silverthorn

Bring your lab and classroom activities and join us as we help guide you through the process of changing your activities from cookbook to inquiry.

**NSTA Press® Session: Classroom Activities for Stop Faking It! Energy (Phys)***(Elementary–High School)* Conference Theatre, Conv. Center**Bill Robertson** (wrobert9@ix.netcom.com), Bill Robertson Science, Inc., Woodland Park, Colo.In response to teacher demand, I'm developing a set of classroom activities on energy to accompany the *Stop Faking It! Energy* book. The learning cycle is incorporated in an easy-to-use, teacher-friendly, research-based curriculum for upper elementary and conceptually based high school curricula that can help students truly understand energy concepts. Join the author for activities from the upcoming book.**STEM in the Real World—We're Not Talking MTV (Earth)***(General)* 110, Convention Center**Barry Fried** (bfried@schools.nyc.gov) and **Honora Dash** (hdash@schools.nyc.gov), John Dewey High School, Brooklyn, N.Y.

Learn how STEM projects and partnerships create a multi-disciplinary approach and real-world applications by providing authentic science experiences through design projects, competitions, and live-data analysis to make science relevant by blending creativity, innovation, and inquiry to foster a deeper science understanding.

Marine Ecology, Human Impacts, and Conservation: A High School Ecology Unit from National Geographic (Bio)*(High School)* L6, Convention Center**Katie Hoekzema** (hoekzema2@yahoo.com), Milford High School, Milford, Ohio**David Wehunt** (wehunt@hotmail.com), Soddy Daisy High School, Soddy Daisy, Tenn.

Experience National Geographic's multimedia high school ecology unit—Marine Ecology, Human Impacts, and

Conservation—developed in partnership with 60 biology teachers from across the country.

Even Before STEM, Science and Math Loved Each Other! (Bio)*(General)* L7, Convention Center**Jeff Lukens** (jeffrey.lukens@k12.sd.us), Roosevelt High School, Sioux Falls, S.Dak.

Integrating science and math should be seamless, natural, and painless. Come see how the philosophy of STEM has been alive for a long time.

These Are Not Your Parents' LEGOs®! (Gen)*(Elementary)* L10, Convention Center**Erin M. Coyle** (erin.coyle@jefferson.kyschools.us), Jefferson County Public Schools, Louisville, Ky.**Laura G. Keeling** (laura.keeling@jefferson.kyschools.us), Tully Elementary School, Louisville, Ky.

Explore how to increase engagement in the elementary science classroom, and how to embed science standards into instruction using WeDo™ LEGO robots.

Rock and Roll Through Earth Science as You Connect Science and Mathematics in Your Classroom (Earth)*(Elementary–Middle Level)* L11, Convention Center**Reeda Hart** (hartr@nku.edu) and **Thomas B. Brackman** (brackmant1@nku.edu), Northern Kentucky University, Highland Heights

Experience qualitative and quantitative observations coming together as you use inquiry to identify four different rocks in this active workshop. Free CD of lesson plans.

How Dirty Is Your Windshield? Using Foldable Formative Assessments (Gen)*(Elementary–High School)* Kentucky G, Marriott**Kathy Krusenga**, Whitthorne Middle School, Columbia, Tenn.**Nancy F. Wisker** (nancy@dinah.com), Dinah Zike Academy, Comfort, Tex.

What is your students' visibility with concepts in the classroom? Learn how to use Foldables as authentic, relevant, formative assessment tools.

10:00–11:15 AM Exhibitor Workshop

An Absorbing Misconception About Waves and the “Power” of Colors (Chem)

(Grades 6–8) 210, Convention Center

Sponsor: LAB-AIDS, Inc.

Lisa Kelp, LAB-AIDS, Inc., Ronkonkoma, N.Y.

Most of us—middle school students included—have no idea how electromagnetic waves actually work despite their relevance to our lives. Join us for a “Next Generation Waves” unit from *Issues & Physical Science* by LAB-AIDS and SEPUP. Explore properties of light by investigating colors of the visible spectrum and energy levels of white light colors through the use of a phosphorescent material. Activities exemplify the NRC *Framework* and show how SEPUP embeds research-based practices and real issues to powerfully deliver content learning.

10:30–11:30 AM Exhibitor Workshop

Bio-Rad: Genes in a Bottle™ Kit (Bio)

(Grades 5–College) 218, Convention Center

Sponsor: Bio-Rad Laboratories

Leigh Brown (*leigh_brown@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!

11:00–11:30 AM Presentation

SESSION 1

Synthesis of Au and Ag Nanoparticles Using Appalachian Herbs (Chem)

(High School–College) 203/205, Convention Center

Haridas Chandran (*haridas.chandran@pike.kyschools.us*), Belfry School, Belfry, Ky.

Gold and silver nanoparticles were synthesized using herbs available from the Appalachian Mountains as capping agents. The size of the particles and several physical properties were estimated.

11:00 AM–12 Noon Presentations

SESSION 1

Waves and Technology of Modern Communications (Phys)

(Middle Level–High School) 104, Convention Center

Mark J. Davids (*markdavids@frontier.com*), Retired Educator, Fairfield Glade, Tenn.

Discover innovative and effective methods to teach the STEM of waves and wireless communications. Aligned with the national standards, pedagogy is consistent with Brain-Mind research.

SESSION 2

Biochemistry: Understanding Chemistry Can Change My Life (Chem)

(High School) 204/206, Convention Center

Catherina L. Wiley, Barren County High School, Glasgow, Ky.

Let’s focus on the integration of common medical issues addressed in traditional chemistry content. Application units examine cholesterol and diabetes.

SESSION 3

NASA CERES S’COOL Project: Cloud Observation Is S’COOL! (Earth)

(Elementary–High School) L8, Convention Center

Brandon M. Hargis (*brandon.hargis@nasa.gov*), NASA Langley Research Center, Hampton, Va.

Engage students in making cloud and weather observations for NASA. Become a S’COOL cloud observer! Plenty of online lessons, activities, and great handouts!

SESSION 4

Get Your Feet Wet! (Earth)

(Middle Level) L9, Convention Center

Anne Farley Schoeffler (*schoefflera@setoncatholicsschool.org*), Seton Catholic School, Hudson, Ohio

Stream assessment brings ecology standards alive for students. Simple fieldwork includes physical assessment, chemical tests, and biological identification. Multi-curricular experience with language arts links!



CANCELED

SESSION 5

You Are Certifiable! National Board Certifiable, That Is (Gen)

(General)

Kentucky A/B, Marriott

Joshua C. Underwood (josh.underwood@robertson.kyschools.us), Deming High School, Mount Olivet, Ky.

Come find out about the basics of the National Board process. Ask questions and learn about other resources to help you on your way to becoming certified.

SESSION 6

Laughing and Learning: How to Use Humor in Science Lessons (Gen)

(General)

Kentucky F, Marriott

Diana M. Hunn (dhunn1@udayton.edu), University of Dayton, Ohio**Susan Clay** (suzieclay@aol.com), Science Consultant, Parma, Ohio

Humor can help motivate and engage students in learning science in many different ways. See examples, share ideas, and learn strategies.



11:00 AM–12 Noon Workshops

✓ **Using NASA Press Releases to Develop Literacy in Integrated Science Lessons** (Gen)

(Middle Level/Informal Education)

109, Convention Center

Sharon Bowers (sharon.bowers@nianet.org), National Institute of Aerospace/Virginia City Beach Public Schools, Hampton, Va.

Use NASA press releases, integrated Space Math problems, and NASA eClips videos to bring current events to life.

Interactive Journals (Gen)

(Elementary–Middle Level)

112, Convention Center

Sharon L. Cumiskey (scumiskey@plymouth.k12.ma.us), Plymouth South Middle School, Plymouth, Mass.

Students love to create! Come learn a simple journal-making and implementing process that will keep students involved, invested, and organized while making assessment a breeze.

How Do You Know What They Know? A Look Inside Classroom Practice (Chem)

(High School/Supervision)

207, Convention Center

Scott Schneider (scott.schneider@jefferson.kyschools.us), Fairdale High School, Fairdale, Ky.

Miranda Messer (miranda.messer@jefferson.kyschools.us) and

Tracy E. Ising (tracy.ising@jefferson.kyschools.us), Gheens Academy, Louisville, Ky.

Janet Reichmuth (janet.reichmuth@jefferson.kyschools.us) and

Rod Goforth (rod.goforth@jeffersonkyschools.us), Seneca High School, Louisville, Ky.

Glenda Jones (glenda.jones@jefferson.kyschools.us), Ballard High School, Louisville, Ky.

Classroom teachers and districtwide resource teachers will share Professional Learning Community (PLC) facilitation experiences, strategies to analyze student work, and tools for collegial classroom observation and feedback.

**NSTA Press® Session: Stop Faking It! Finally Understand Chemistry Basics So You Can Teach Them**

(Chem)

(Elementary–High School)

Conference Theatre, Conv. Center

Bill Robertson (wrobert9@ix.netcom.com), Bill Robertson Science, Inc., Woodland Park, Colo.

Tired of trying to teach concepts you don't fully understand yourself? Join the author of the *Stop Faking It!* books for hands-on activities from the two chemistry books in the series. Wouldn't it be nice if your students knew why we think atoms look the way we say they do? Sure would!

Saving Energy, Saving Our Night Sky (Earth)

(Informal Education) L5, Convention Center

Robert T. Sparks and **Constance E. Walker** (*cwalker@noao.edu*), National Optical Astronomy Observatory, Tucson, Ariz.

Students discover how to conserve energy while preserving dark skies through standards-based, immersive learning experiences illustrating responsible lighting, effects on wildlife, night sky brightness measurements, and more.

Food for 9 Billion: Can Science and Politics Feed the World? (Bio)

(Middle Level–College) L6, Convention Center

Elizabeth Rice (*erice@fandm.edu*), Franklin & Marshall College, Lancaster, Pa.

Susan Dodge (*lalimule@verizon.net*), The New School of Lancaster, Pa.

Use recent radio and TV stories as your launching pad for data-rich exercises that help students learn more about nutrition, agriculture, famine, and how to feed the world.

Engage Your Students with NOAA’s Coral Reef Resources (Bio)

(Informal Education) L7, Convention Center

Britta Culbertson (*britta.culbertson@noaa.gov*), Einstein Fellow, NOAA Office of Education, Washington, D.C.

Grab your students’ attention by incorporating coral reefs into your existing curriculum. Several NOAA resources will be highlighted, including demos, labs, activities, and multimedia.

EiE I Know...I Can Be an Engineer...EiE I Know! (Gen)

(Elementary) L10, Convention Center

Erin M. Coyle (*erin.coyle@jefferson.kyschools.us*), Jefferson County Public Schools, Louisville, Ky.

Laura G. Keeling (*laura.keeling@jefferson.kyschools.us*), Tully Elementary School, Louisville, Ky.

This EiE workshop focuses on using inquiry to complete a hands-on activity using the engineering design process and ideas to implement engineering in your classroom.

Teaching Younger Students About Energy Outside the Science Classroom (Gen)

(Preschool–Elementary) L11, Convention Center

Karen Reagor (*kreagor@need.org*), The NEED Project, Manassas, Va.

Sheila Yule (*syule@need.org*) and **Sue Parrent** (*sparrent@need.org*), Kentucky NEED Project, Covington

Use language arts, math, and presentation skills to teach K–3 students about the energy resources we use. Activities can be implemented today with no special materials.

Moving from Misconceptions to Conceptual Change (Gen)

(Elementary–High School) Kentucky G, Marriott

William C. Metz (*wmetzgolf@aol.com*), Science Education Consultant, Fort Washington, Pa.

Let’s investigate how student misconceptions might occur and what strategies you can employ to help your students move toward conceptual change.



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

Look for a map display of the Exhibit Hall.

Thank you to our
Vendor Contributors
for their generous support
of The John Glenn Center
for Science Education

Platinum Level

CAROLINA
www.carolina.com

PASCO

Simulation Curriculum

A.D.A.M. #939
10 10th St. NE, Suite 500 B
Atlanta, GA 30309 6–12, College
Phone: 404-604-2757
E-mail: adameducation@ebix.com
Website: www.adameducation.com

A.D.A.M., a business unit of Ebix, is the leader in innovative digital content and interactive curriculum resources in classrooms around the world for teaching and learning about the human body. With teams of educators as well as industry professional and subject matter experts, we've developed products providing in-depth, compelling information to increase retention for difficult subject matters.

American Chemical Society #1042
1155 16th St. NW C, G
Washington, DC 20036 K–12, College
Phone: 202-872-6269
E-mail: p_isikoff@acs.org
Website: 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 & Manufacturing #947
PO Box 2351 B, C, PH
Daytona Beach, FL 32115 12, College
Phone: 800-494-3237
Website: www.americanlabdesign.com

American Lab Design has been in the business of designing and renovating science labs for 17 years. ALD is partnered with International Office Products Cooperative (IOPC)—Modular Millwork in Greer, South Carolina.

American Nuclear Society #836
555 N. Kensington Ave. G
La Grange Park, IL 60526 4–12
Phone: 708-352-6611
E-mail: tbishop@ans.org
Website: www.ans.org

The American Nuclear Society exhibit offers teachers free classroom-ready resources for teaching about nuclear science and technology. Educators may preview teacher handbooks

offered through ANS workshops and receive sample copies of the ANS teacher newsletter *ReActions*.

Anatomy in Clay® Learning System #1129
2198 W. 15th St. B, G, PD
Loveland, CO 80538 5–12, College
Phone: 970-667-9047
E-mail: leslie@anatomyinclay.com
Website: www.anatomyinclay.com

The Anatomy in Clay Learning System provides hands-on learning tools to teach and learn anatomy. Our specially designed models allow students to do research and projects to discover how the body works. Students are engaged, excited, and exhibit higher understanding and retention. Stop by our booth or check out www.anatomyinclay.com.

Apperson DataLink #1033
851 SW 34th St., Bldg. B
Renton, WA 98057 4–12, College
Phone: 800-827-9219
E-mail: doug.spaulding@apperson.com
Website: www.apperson.com/go/nstae12

DataLink is the most complete, affordable solution for digitally capturing and reporting data from paper assessments. Apperson's DataLink test scanners, answer sheets, and reporting software feature time-saving and reliable technology to deliver immediately useful, relevant information for instruction. DataLink easily connects paper to digital in every classroom.

Arbor Scientific #841
PO Box 2750 G, PH
Ann Arbor, MI 48106-2750 6–12, College
Phone: 800-367-6695
E-mail: mail@arborsci.com
Website: www.arborsci.com

We find the cool stuff! Arbor Scientific has spent more than 25 years working with physics and physical science educators to develop educational science instruments and physics lab equipment that make your efforts in the classroom more effective. Stop by our booth and try the most fascinating, dynamic hands-on tools to help promote student understanding of key concepts and principles of physics and chemistry.

Exhibitors

Artec Educational #840
21551 S. Western Ave. B, C, EA, G, PH
Suite 242 PreK–9
Torrance, CA 90501

Artec is a designer and manufacturer of affordable teaching materials. We have 52 years of experience helping teachers bring hands-on learning into the classroom. Our free catalog is filled with products designed to turn abstract ideas into accessible experiences. We have just what you need to excite any student's imagination!

**Ask An Astronomer/
Big Kid Science** #748
EA
680 Iris Ave. 1–12, College
Boulder, CO 80304
Phone: 303-440-9313
E-mail: jeff@bigkidscience.com
Website: www.bigkidscience.com

Ask An Astronomer! Speak one-on-one with professional astronomers about space science and astronomy. Also receive a free copy of *Max Goes to the Moon* (limited quantity) and meet author Jeffrey Bennett. Sponsored by Big Kid Science and the National Center for Earth and Space Science Education.

Astronomy To Go #1049
1115 Melrose Ave. B, C, EA,
Melrose Park, PA 19027 EN, G, PH
Phone: 215-831-0485 PreK–12, College
E-mail: astro2go@aol.com
Website: www.astronomytogo.com

As a nonprofit education organization, we fund our traveling astronomy programs through our traveling museum shop, which carries a large assortment of astronomy and science-related T-shirts, books, teaching aids, and gifts, as well as an extensive collection of meteorites and tektites. We also carry the full line of GIANTMmicrobes®.

Bedford, Freeman & Worth #940
(BFW) Publishers B, C, EA, EN,
41 Madison Ave. G, PH, T
New York, NY 10010 9–12, College
Phone: 866-843-3715
E-mail: cweiss@bfpwpub.com
Website: www.bfpwpub.com/highschool

W.H. Freeman of Bedford, Freeman & Worth (BFW) Publishers is the prestigious publisher of several groundbreaking resources, including many materials aligned with the highly

anticipated Next Generation Science Standards. Please visit our booth to preview these resources and receive correlations. You can visit www.bfpwpub.com/highschool to request complimentary consideration copies.

Bio-Rad Laboratories #830
2000 Alfred Nobel Dr. B
Hercules, CA 94547 7–12, College
Phone: 510-741-1000
E-mail: olga_padilla@bio-rad.com
Website: <http://explorer.bio-rad.com>

More than just a lab in a box, Bio-Rad provides a completely supported biotech experience. Best in class kits and equipment means peace of mind when you spend your precious budget.

Camp Invention #942
3701 Highland Park NW G, T
North Canton, OH 44720 1–6
Phone: 800-968-4332
E-mail: bbrewster@invent.org
Website: www.campinvention.org

Led by local educators, the weeklong Camp Invention program immerses elementary school children in exciting hands-on learning disguised as fun summer activities. Children will survive harsh living conditions on an alien planet, “green up” a polluted city’s infrastructure, and dismantle broken machines! For more information, visit www.campinvention.org.

Carolina Biological Supply #921
2700 York Rd. All
Burlington, NC 27215 PreK–12, College
Phone: 800-334-5551
E-mail: carolina@carolina.com
Website: www.carolina.com

Carolina is a worldwide leader in providing educators with top-quality, innovative science and math materials, including our newest e-learning tools available at carolinascienceonline.com. Carolina also serves the K–16 market with everything to equip a science laboratory or classroom. Our *CarolinaTM Science* catalog is free for educators and health professionals.

Carolina Curriculum #1021
2700 York Rd. B, C, EA,
Burlington, NC 27215 G, PH, PD, T
Phone: 800-334-5551 K–8
E-mail: carolinacurriculum@carolina.com
Website: www.carolinacurriculum.com

Carolina has the results-driven science/engineering curricula and informational text resources K–8 that you need to prepare students for STEM careers and to succeed in the 21st-century global marketplace. Stop by our booth to learn more. Also request your copy of the 2012–2013 *CarolinaTM Curriculum* catalog.



Catalyst Learning Curricula: #1123
Daily Lesson Plans B, EN
 59 Clemmons St. 9–12, College
 Asheville, NC 28801
 Phone: 828-687-0807
 E-mail: kristen.dotti@catalystlearningcurricula.com
 Website: www.catalystlearningcurricula.com

We provide hands-on engagement activities for teachers of AP and Pre-AP science through yearlong 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.

Challenger Learning Center #1147
The Academy @ Shawnee EA, PD
 4001 Herman St. K–12
 Louisville, KY 40212
 Phone: 502-485-7630
 E-mail: clc.shawnee@jefferson.kyschools.us
 Website: www.clcshawnee.org

The Challenger Learning Center @ Shawnee is Jefferson County Public School's own dynamic hands-on STEM learning environment destination. The center is part of an international network founded by the families of the *Challenger* shuttle crew; these centers are recognized as leaders in educational simulation with materials structured to support National Science Education Standards.

Christian Educators Association #1048
International All
 PO Box 45610 PreK–12, College
 Westlake, OH 44145
 Phone: 502-618-1972
 E-mail: roger.dillon@ceai.org
 Website: www.ceai.org

CEAI is a Christian professional association for public and private school educators, providing professional liability insurance and legal counsel to our members, while equipping them to understand and live out their constitutional religious freedoms in school.

Cornell Lab of Ornithology, #842
BirdSleuth B
 159 Sapsucker Woods Rd. K–12
 Ithaca, NY 14850
 Phone: 607-254-2489
 E-mail: ld85@cornell.edu
 Website: www.birdsleuth.net

BirdSleuth is an inquiry-based science curriculum that engages kids in scientific study and real data collection. Through participation in Cornell Lab's citizen science projects, kids connect with nature and are motivated by the real-world importance of their work.

COSI, Center of Science #1030
and Industry All
 333 W. Broad St. PreK–12
 Columbus, OH 43215
 Phone: 888-819-2674
 E-mail: dbuchanan@mail.cosi.org
 Website: www.cosi.org

Stop by to review science education resources from COSI, named America's #1 science center for families by *Parents* magazine!

CPO Science/School #720
Specialty Science B, EA, PH
 80 Northwest Blvd. 6–12
 Nashua, NH 03063
 Phone: 800-282-9560
 E-mail: customerservice.cpo@schoolspecialty.com
 Website: www.cposcience.com

CPO Science provides all the essential components for a hands-on, inquiry-based science program for grades 6–12. Student texts are correlated to the STEM frameworks. Our programs are ideal for differentiated instruction and meet state and national standards.

Crosscutting Concepts, LLC #929
 PO Box 349 B, C, G, PH, T
 Huntington, WV 25708 7–12, College
 Phone: 888-221-4344
 Website: www.crosscuttingconcepts.com

The Mystery of Lyle and Louise is a hands-on comprehensive forensic science suite. The suite is comprised of 14 individual modules, each of which teaches an exciting forensic science technique.

Delta Education/School #820
Specialty Science G
 80 Northwest Blvd. PreK–8
 Nashua, NH 03063
 Phone: 800-258-1302
 E-mail: customerservice.delta@schoolspecialty.com
 Website: www.deltaeducation.com

Delta Education is your leading educational partner in providing hands-on, inquiry-based curricula instructional resources K–12 for science, technology, engineering, and mathematics. We are prepared to help you develop students who are competitive and set a world-class standard in college and workforce readiness.

Dinah-Might Adventures, LP #943
 PO Box 690328 G, PD
 San Antonio, TX 78269 PreK–12, College
 Phone: 800-993-4624
 E-mail: dma@dinah.com
 Website: www.dinah.com

Dinah-Might Adventures is an educational publishing and consulting company owned by author/speaker Dinah Zike. Her books are known for their innovative ways to use Foldables® in teaching all subjects and grade levels. She also offers professional development at the Dinah Zike Academy, a unique trainer of trainers facility.

Discovery Education #1124
 One Discovery Place All
 Silver Spring, MD 20910 K–12
 Phone: 800-323-9084
 E-mail: education_sales@discovery.com
 Website: www.discoveryeducation.com/sciencetechbook

For 10 years, Discovery Education has transformed classrooms, empowered teachers, and captivated students through digital content in schools. Powered by Discovery Communications, Discovery Education supports educators in accelerating student achievement and tapping into students' natural curiosity through scientifically proven, standards-based digital media like Discovery Education Science Techbook.

Exhibitors

Discovery Student Adventures #843
2001 Flint B, C, EA, EN, G, PH
Spokane, WA 99224 5–12
E-mail: anson.lee@discoverystudentadventures.com
Website: www.discoverystudentadventures.com

Discovery Student Adventures offers immersive educational trips to amazing global destinations with unparalleled, behind-the-scenes access to local experts. Our journeys deliver a fascinating look deep into science, cultures, and creatures, providing teachers and their students in grades 5–12 with a unique perspective on the world through the eyes of Discovery.

The Dow Chemical Co. #741
2030 Dow Center C, G, PD, T
Midland, MI 48674 K–12, College
Phone: 215-592-3228
E-mail: ehheath@dow.com
Website: www.dow.com

Dow combines the power of science and technology to passionately innovate what is essential to human progress. Dow connects chemistry and innovation with the principles of sustainability to help address many of the world's most challenging problems such as the need for clean water, renewable energy generation and conservation, and increasing agricultural productivity. Each year, Dow makes significant investments in STEM education around the world and is proud to participate in NSTA as a supporter and advocate for science teachers. Dow will exhibit and provide information regarding professional development support for teachers, classroom aids for K–12, and other related STEM materials.

The DuPont Challenge[©] #736
Science Essay Competition All
200 Powdermill Rd. 7–12
Wilmington, DE 19898
Phone: 302-695-2554
E-mail: thechallenge@usa.dupont.com
Website: www.thechallenge.dupont.com

The DuPont Challenge Science Essay Competition is the premier science competition in North America, inspiring students to excel in scientific writing. Encourage your students to write a 700- to 1,000-word essay about any scientific discovery, theory, event, or technological application that interests them. When students win, teachers win also!

eCYBERMISSION #735
1840 Wilson Blvd. B, C, EA, EN,
Arlington, VA 22201 G, PH, T
Phone: 1-866-GO-CYBER 6–9
E-mail: missioncontrol@ecybermission.com
Website: www.ecybermission.com

eCYBERMISSION (eCM) is a free web-based STEM competition for students in grades 6–9. eCM challenges students to think about real-world applications of STEM by working in teams to identify a problem in their community and use the scientific method, scientific inquiry, or an engineering design process to find a solution. Students compete for state, regional, and national awards, with potential winnings of up to \$8,000 (maturity value) in U.S. savings bonds.

Educational Innovations, Inc. #934
Five Francis J. Clarke Circle B, C, EA,
Bethel, CT 06801 EN, G, PH, T
Phone: 203-229-0730 K–12, College
E-mail: ted@teachersource.com
Website: www.teachersource.com

Teacher owned and operated, Educational Innovations brings you SUPER! WOW! NEAT! science products, such as UV beads, growing alligators, and super slime kits. Our carefully selected supplies are guaranteed to make your colleagues, students, or grandkids sit up and take notice! We make science sizzle!

Edvotek Inc. #1128
1121 Fifth St. NW B, EN
Washington, DC 20001 8–12, College
Phone: 202-370-1500
E-mail: mariad@edvotek.com
Website: www.edvotek.com

Edvotek manufactures robust research-grade biotechnology education experiments, biologics, reagents, and equipment for high schools and colleges. Experiments include DNA science, electrophoresis, forensics, PCR, molecular cloning, immunology, environmental science, and AP biology. Products offer hands-on investigations with options for student participation in inquiry-based extensions that merge science and education.

Equal Exchange, Inc. #1046
50 United Dr. EN, PD
West Bridgewater, MA 02379 PreK–12,
Phone: 774-776-7371 College
E-mail: fundraising@equalexchange.coop
Website: www.equalexchange.coop/equal-exchange-fundraising

Equal Exchange Fundraising offers organic and fairly traded foods, beautiful fairly traded gifts, and recycled cotton gift wrap. With Equal Exchange Fundraising, your organization can support sustainability, enjoy award-winning products, and make a difference in the lives of small farmers and artisans across the globe. Enjoy the good taste!

ExploreLearning #835
PO Box 2185 B, C, EA, EN,
Charlottesville, VA 22902 G, PH, T
Phone: 866-882-4141 3–12
E-mail: sales@explorelearning.com
Website: www.explorelearning.com

ExploreLearning Gizmos are the world's largest library of interactive online simulations for math and science, driving deep conceptual understanding for students in grades 3–12. Teachers supplement and enhance instruction with powerful interactive visualizations of mathematics and science concepts. Students manipulate key variables, generate and test hypotheses, and engage in extensive "what-if" experimentation.

FDA: Center for Food and #823
Applied Nutrition (CFSAN) B, C, EN,
c/o Graduate School USA G, PD
600 Maryland Ave. SW, Suite 301 K–12
Washington, DC 20024
Phone: 202-314-4713
E-mail: isabelle.howes@graduateschool.edu
Website: www.fda.gov/food

FDA and NSTA created Science and Our Food Supply, a free, interactive curriculum for middle and high school teachers. Visit our booth to receive your copy, other free food safety material, and free nutrition materials on using the food label to make nutritious food choices. STEM content is linked to National Science Education Standards.

Fisher Science Education #1121
 300 Industry Dr. All
 Pittsburgh, PA 15275 K-12, College
 Phone: 724-517-2862
 E-mail: jill.jones@thermofisher.com
 Website: www.fisheredu.com

Fisher Science Education is your one source for everything science. We provide you with the tools you need to bring real-world science, technology, engineering, and mathematics to life in your classroom.

Flinn Scientific, Inc. #829
 PO Box 219 All
 Batavia, IL 60510 6-12
 Phone: 800-452-1261
 E-mail: flinn@flinnsci.com
 Website: www.flinnsci.com

Flinn Scientific is the leader in science and laboratory chemical safety. Publisher of the world-renowned *Flinn Science Catalog Reference*

Manual, Flinn develops and offers a full line of chemistry, biology, physics, life science, Earth science, physical science, and safety products for middle and high schools.

Frey Scientific/School Specialty Science #721
 80 Northwest Blvd. K-12
 Nashua, NH 03063
 Phone: 800-225-3739
 E-mail: customerservice.frey@schoolspecialty.com
 Website: www.freyscientific.schoolspecialty.com

Stop by the Frey Scientific booth to experience STEM solutions for K-12 educators. Come learn about product solutions for your STEM lessons using innovative technology and standards-based programs. Frey also offers lab planning as well as science supplies and equipment.

Gheens Science Hall and Rauch Planetarium #1149
 University of Louisville EA
 106 W. Brandels Ave. PreK-12, College
 Louisville, KY 40292
 Phone: 502-852-6665
 E-mail: planet@louisville.edu
 Website: www.planetarium.louisville.edu

The Gheens Science Hall and Rauch Planetarium's visually enriched, educational environment envelops the audience and displays authentic, real-time data precisely rendering our universe and its various components. This easy-to-comprehend visual information is enhanced with live demonstrations and discussions led by planetarium educators. Physical, Earth, and environmental science program-ming are available.



International Exchanges and Research Opportunities for U.S. Classroom Teachers

The **Fulbright Classroom Teacher Exchange Program** and **Distinguished Fulbright Awards in Teaching Program** provide U.S. primary and secondary teachers with opportunities to exchange teaching positions with an international teacher or participate in an independent study abroad. U.S. teachers may apply for programs during the 2013-2014 school year in **Argentina, the Czech Republic, Finland, France, Hungary, India, Mexico, Morocco, Singapore, South Africa** and the **United Kingdom**.

FULBRIGHT CLASSROOM TEACHER EXCHANGE PROGRAM
 Application Deadline | October 15, 2012

DISTINGUISHED FULBRIGHT AWARDS IN TEACHING PROGRAM
 Application Deadline | December 15, 2012

www.fulbrightteacherexchange.org



Exhibitors

Grand Classroom #1141
 1455 E. Rio Rd. EN
 Charlottesville, VA 22901 5–12
 Phone: 800-852-1453
 E-mail: johnraymond@grandclassroom.com
 Website: www.grandclassroom.com

Grand Classroom provides educational student travel to the Grand Canyon; Washington, D.C.; and many national parks. The tours are worry-free with an emphasis on safety and fun. Grand Classroom provides superior customer service and numerous benefits for educators, including free travel.

Howard Hughes Medical Institute (HHMI) #837
 B, EA, EN, PD
 4000 Jones Bridge Rd. 6–12, College
 Chevy Chase, MD 20815
 Phone: 301-215-8500
 E-mail: brickenj@hhmi.org
 Website: www.BioInteractive.org

HHMI's *BioInteractive.org* website brings cutting-edge science into the classroom. Teach ahead of the textbook with FREE award-winning animations, video clips, virtual labs, interactive features, classroom-ready lessons, and activities.

Innovate Kentucky #1145
 1906 College Heights Blvd., #71031 All
 Bowling Green, KY 42101 K–12, College
 Phone: 270-745-3015
 E-mail: innovateky@wku.edu
 Website: www.innovateky.org

Innovate Kentucky is a new initiative that seeks to promote awareness of and enthusiasm for the STEM disciplines in Kentucky. Literature about the initiative will be provided at the booth. Educators are encouraged to stop by and discuss any STEM events they have planned for the 2012–2013 school year.

It's About Time #1125
 333 N. Bedford Rd. B, C, EA, EN,
 Mount Kisco, NY 10549 PD, PH, T
 Website: www.its-about-time.com 6–12

It's About Time specializes in publishing National Science Foundation-supported, project-based, and inquiry-driven math and science programs for middle and high schools that are STEM focused and follow the essence of the highly anticipated Next Generation Science Standards.

Ken-A-Vision #928
Manufacturing Co., Inc. B, C, EA, EN,
 5615 Raytown Rd. G, PH, T
 Kansas City, MO 64133 K–12, College
 Phone: 816-353-4787
 E-mail: info@ken-a-vision.com
 Website: www.ken-a-vision.com

Ken-A-Vision is a leader in digital presentation solutions, document cameras, microscopes, and application software. For more than 65 years, Ken-A-Vision has created innovative and award-winning products for the global education market, such as the kena™ digital microscope, the FlexCam® 2 document camera, and a complete range of microscopes (Comprehensive 2, CoreScope 2, PrepScope 2, and Professor lines). Ken-A-Vision helps students see more, do more, and learn more!

Kentucky Environmental Education Council #1143
 EN, G, PD
 500 Mero St. PreK–12, College
 Frankfort, KY 40601
 Phone: 502-564-5937
 E-mail: elizabeth.schmitz@ky.gov
 Website: www.keec.ky.gov

The Kentucky Environmental Education Council (KEEC), a state agency within the Education Cabinet, will display information about the Kentucky Green & Healthy Schools program, the Kentucky Environmental Literacy Plan, and other state environmental education resources.

Kentucky Science Center #747
 727 W. Main St. B, C, EA, EN, G, PH
 Louisville, KY 40202 PreK–12
 Phone: 800-591-2203
 E-mail: lscinfo@louisvilleky.gov
 Website: www.kysciencecenter.org

The Kentucky Science Center features three floors of interactive exhibits and a four-story IMAX Theatre, and offers classes, labs, and virtual programming for grades preK–12. New this year! Meet Captain Current and help this energy-saving superhero catch Electricity Vampires in a traveling program headed to a school near you.

LAB-AIDS, Inc. #1036
 17 Colt Court All
 Ronkonkoma, NY 11779 6–12
 Phone: 800-381-8003
 E-mail: jweatherby@lab-aids.com
 Website: www.LAB-AIDS.com

For nearly half a century, LAB-AIDS® has been developing, manufacturing, and publishing supplementary and core curriculum products that help students better understand science concepts through direct experience. Visit our booth to learn more about our innovative kits, modules, and curricula, including our two new high school full-year core curricula: *A Natural Approach To Chemistry* and *SEPUP SGI: Biology*. For more information, call 800-381-8003 or visit us at *LAB-AIDS.com*.

LEGO Education #1132
 915 E. Jefferson T
 Pittsburg, KS 66762 PreK–12, College
 Phone: 800-362-4308
 E-mail: legoeducation@legoeducation.us
 Website: www.legoeducation.us

LEGO Education combines the unique excitement of LEGO® bricks with hands-on classroom solutions for science, technology, engineering, math, and literacy. The booth will feature products from product lines appropriate for grades 2–12.

The Markerboard People #930
 1611 N. Grand River Ave. B, C, EA,
 Lansing, MI 48906 EN, G, PH
 Phone: 800-379-3727 PreK–12, College
 E-mail: feedback@dryerase.com
 Website: www.dryerase.com

We offer student dry-erase markerboards and response boards in class set of 30 at unbeatable prices! Single- and double-sided available—perfect for graphing, handwriting, math, and science. We offer long-lasting, nontoxic, ultra low odor markers, too!



**Visit
Booth
1029**

NEW



sparkvue[®] HD
Science Application for the iPad[®]
 The full-featured version of our SPARKvue software for your iPad!

FREE

**HANDS-ON
WORKSHOPS**

Friday, October 19 • Rooms 102 and 103

8:00am - 9:15am	Equip Your iPad [®] for Science with SPARKvue [®] HD, a Full-Featured Science Application for the iPad
10:00am - 11:15am	Achievable Inquiry in AP [*] Biology and Chemistry
12:00pm - 1:15pm	STEM: Meeting the Standards in Your Classroom
2:00pm - 3:15pm	Investigating Motion: Understanding and Interpreting Graphs
4:00pm - 5:15pm	Exploring Renewable Energy: A Hands-On STEM Investigation



PASCO
www.pasco.com/sparkscience

PASCO is the proud sponsor of the STEM Educator Award:
Recognizing excellence and innovation in the field of STEM education.

**STEM
EDUCATOR
AWARD**

NSTA National Science Teachers Association

*AP is a registered trademark of the College Board, which was not involved in the production of, and does not endorse, this product. A-0269_NSTA_KY_10/12

Exhibitors

Minerals Education Coalition #1137
12999 E. Adam Aircraft Circle EA
Englewood, CO 80112 K-12, College
Phone: 303-948-4200
E-mail: mec@smenet.org
Website: www.mineralseducationcoalition.org

The Minerals Education Coalition reflects the Society for Mining, Metallurgy & Exploration's (SME) commitment to provide accurate and timely K-12 curriculum and activities to teachers. SME volunteers will distribute mineral samples and posters and be available to discuss the importance of mining and minerals to the public's lives and lifestyles.

Mississippi State University #1032
Box 5448 EA
Mississippi State, MS 39762 K-12
Phone: 662-325-9646
E-mail: kms5@geosci.msstate.edu
Website: distance.msstate.edu/geosciences

Discover how you can earn an MS degree in geosciences via distance learning through our Teachers in Geosciences program. Our 12-course, 36-credit hour graduate program is designed to take two years and includes courses in meteorology, geology, planetary science, oceanography, hydrology, and environmental geoscience. We have alumni in all 50 states and all students qualify for in-state tuition rates.

Nasco #740
901 Janesville Ave. All
Fort Atkinson, WI 53538 PreK-12, College
Phone: 800-558-9595
E-mail: info@enasco.com
Website: www.eNasco.com

For the past 70 years, Nasco has made a commitment to provide quality teaching aids, reliable service, realistic pricing, and most importantly, customer satisfaction. Known as "The Science Teacher's Favorite Catalog," Nasco offers supplies for a full-line science curriculum, including many items developed by Nasco and sold only through our catalog. Please visit us at www.eNasco.com or call 800-558-9595.

National Geographic Learning #1136
One Lower Ragsdale Dr.
Bldg. 1, Suite 200 PreK-12
Monterey, CA 93940
Phone: 831-620-6298
E-mail: brianne.spiersch@cengage.com
Website: www.ngl.cengage.com

National Geographic Learning provides a portfolio of quality materials for preK-12, academic, and adult education in the areas of ELA, ESL, reading and writing, science, social studies, and professional development. Combining print and media content in inspiring, innovative ways, the range of exciting series created by National Geographic Learning

brings our world and its different cultures to life. From the classroom to the world—we honor the mission and tradition of National Geographic Society—to inspire people to care about the planet.

The NEED Project #744
8408 Kao Circle C, EN, G, PH, PD
Manassas, VA 20110 K-12
Phone: 800-875-5029
E-mail: info@need.org
Website: www.need.org

The NEED Project is a nonprofit organization that provides K-12 energy education resources. Stop by the booth for free samples of materials!

NewPath Learning #825
760C Canning Pkwy. B, C, EA,
Victor, NY 14564 EN, G, PH, T
Phone: 585-742-0160 K-11
E-mail: kgelke@newpathlearning.com
Website: www.newpathlearning.com

NewPath Learning's curriculum mastery games, flip charts, interactive whiteboard software, visual learning guides, and study cards provide comprehensive coverage of the current national and state standards for science and math grades K-11. The company's products are supplemented with web-based activities at www.newpathlearning.com.

NSTA Avenue

The DuPont Challenge[©] Science Essay Competition
Booth #736 • E-mail: p-jeanette.simon@usa.dupont.com
Website: <http://thechallenge.dupont.com>

eCYBERMISSION
Booth #735 • E-mail: missioncontrol@ecybermission.com
Website: www.ecybermission.com

John Glenn Center for Science Education
Booth #727 • E-mail: cse@nsta.org
Website: www.nsta.org/involved/cse

NSTA Membership
Booth #726 • E-mails: hwahlberg@nsta.org; tbirts@nsta.org
Website: www.nsta.org/membership

NSTA Professional Programs
Booth #730 • E-mail: dblondonville@nsta.org
Website: www.nsta.org/pd

The Shell Science Lab Challenge
Booth #737 • E-mail: ecrossley@nsta.org
Website: www.nsta.org/shellsciencelab/

Toshiba/NSTA ExploraVision[®]
Booth #731 • E-mail: exploravision@nsta.org
Website: www.exploravision.org

PASSPORT



for Success

NSTA National Science Teachers Association

Find Your Way to the NSTA Avenue #726

Pick up your “NSTA Passport” 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 sample journals, 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.

Enhance Your Skills

- **NSTA Learning Center.** Select high-quality online learning opportunities to build content knowledge. Use our suite of tools for self-assessment and to document your progress. Examples include:
 - **Web Seminars.** Update your content knowledge with free, 90-minute, online presentations and join the discussion. Voice questions and share in rich conversations with the presenters and other educators.
 - **SciGuides.** Use these online resources, aligned with the national standards, to locate lessons organized by grade level and specific content themes to add to your classroom instruction.
- The **New Science Teacher Academy** supports second- and third-year science teachers during the often challenging initial years by enhancing confidence and teacher content knowledge.

Expand Your Mind

- **NSTA Press®** publishes 20–25 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 www.nsta.org/publications/press/authors.aspx.

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.** NSTA has embarked on a \$43 million national campaign to make excellence in science teaching and learning a reality for all. The funding will support a series of forward-thinking programs and a state-of-the-art facility designed to promote leadership, learning, and advocacy in science education.

Distinguish Yourself

- Learn about NSTA’s 17 awards programs for science teachers, K–College, such as NSTA’s **Shell Science Lab Challenge**, which provides science laboratory equipment and professional development support to winning middle schools and high schools with limited resources. Learn how to win a \$20,000 lab makeover support package.

Student Competitions

- **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 and awards cash prizes and an expense-paid trip to Disney World and the Kennedy Space Center.
- **eCYBERMISSION** is an online, STEM-related (Science, Technology, Engineering, and Mathematics) competition for students in grades 6–9.

NSTA National Science Teachers Association

Exhibitors

NOAA Office of Education #931
 1401 Constitution Ave. NW B, EN, G
 Washington, DC 20230 2–12, College
 Phone: 301-713-1208
 E-mail: education@noaa.gov
 Website: www.education.noaa.gov

NOAA is a federal science agency providing free information about weather, climate, oceans, coasts, satellite data, solar weather, 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.

Nutrients for Life Foundation #1028
 425 Third St. SW, Suite 950 B, EN
 Washington, DC 20024 1–12
 Website: www.nutrientsforlife.org

The Nutrients for Life Foundation offers free plant and soil science curricula and other classroom resources for elementary, middle, and high school teachers.

OHAUS Corp. #924
 Seven Campus Dr., Suite 310 B, C, EA,
 Parsippany, NJ 07054 EN, G, PH, T
 Phone: 800-672-7722 K–12, College
 E-mail: marketing@ohaus.com
 Website: www.ohaus.com

OHAUS, the leading manufacturer of balances and scales, offers a complete lineup of measurement solutions for grades K–12 and beyond. With OHAUS products, you'll connect your students to the real world of measurement through dependable equipment, engaging activities, and relevant technology that promise to help improve learning outcomes at all grade levels.

PASCO scientific #1029
 10101 Foothills Blvd. B, C, EA,
 Roseville, CA 95747 EN, G, PH, T
 Phone: 800-772-8700 K–12, College
 E-mail: sales@pasco.com
 Website: www.pasco.com

PASCO's award-winning SPARKscience™ is an inquiry-based science learning environment that leverages the latest technologies and integrates rich content, data collection, analysis, reflections, and assessment. Our SPARKvue software is compatible with all platforms, including iPad. We have solutions for all science disciplines.

PEPCO, Inc. #937
 1615 Robertson Rd. B, C, EA,
 Moberly, MO 65270 EN, G, PH, T
 Phone: 800-568-1067 K–12, College
 E-mail: dave@pepcoinc.com
 Website: www.pepcoinc.com

PEPCO will display several furniture options for science classrooms.

Pitsco Education #1133
 PO Box 1708 EA, PH
 Pittsburg, KS 66762 6–12, College
 Phone: 800-835-0686
 E-mail: bockovera@pitsco.com
 Website: www.shop.pitsco.com

Visit Pitsco Education's booth and discover new and exciting opportunities to teach science, technology, engineering, and math concepts. You will find a robust array of hands-on activities, kits, and products—dragsters, trebuchets, alternative energy, structures, and many more popular activities that provide real-world relevance to STEM subjects.

Project Learning Tree #1122
 1111 19th St. NW, Suite 780 EN
 Washington, DC 20036 PreK–12, College
 Phone: 202-463-2475
 E-mail: information@plt.org
 Website: www.plt.org

Project Learning Tree is a nationally award-winning environmental education program designed for preK–12 formal and nonformal educators. The supplementary materials provide hands-on/minds-on multidisciplinary activities.

Sangari Active Science #847
 50 Washington St. B, C, EA, EN,
 Norwalk, CT 06854-2710 G, PH, T
 Phone: 636-234-8474 6–8
 E-mail: jvtilson@sangariglobaled.com
 Website: www.sangariglobaled.com

Investigating and Questioning our World through Science and Technology (IQWST, grades 6–8), references real-world experiences using technology and the belief that students learn best by delving deeply into fewer, carefully selected topics. IQWST promotes scientific explanations using “Claim, Evidence, Reasoning and Use of Modeling.” Students think deeply, make connections, and investigate to

create their own explanation. IQWST aligns with both state and national standards and is rooted in principles of project-based scientific practices.

Science First®/STARLAB® #1043
 86475 Gene Lasserre Blvd. B, C, EA,
 Yulee, FL 32097 EN, PH
 Phone: 904-225-5558 K–12, College
 E-mail: info@sciencefirst.com
 Websites: www.sciencefirst.com; www.starlab.com

Science First/STARLAB specializes in the design, manufacturing, and marketing of high-quality science educational products and portable planetariums. Our classic and digital STARLAB planetariums create an exciting, immersive, and lasting learning experience.

Science Take-Out #1039
 PO Box 205 B, G
 Pittsford, NY 14534 6–12, College
 Phone: 585-764-5400
 E-mail: contact@sciencetakeout.com
 Website: www.sciencetakeout.com

Looking for an easy, fun, and affordable way to do hands-on science in any education setting? Science Take-Out kits are individually packaged so you can order just what you need. No teacher prep and no lab equipment needed. Science Take-Out kits are ready to go!

The Shell Science Lab Challenge #737
 c/o NSTA B, C, G
 1840 Wilson Blvd. 6–12
 Arlington, VA 22201-3000
 Phone: 703-312-9258
 E-mail: ecrossley@nsta.org
 Website: www.nsta.org/shellsciencelab

Are you succeeding in science lab instruction with minimal equipment? The Shell Science Lab Challenge gives you an opportunity to share your exemplary approach for a chance to win a school science lab makeover support package valued at \$20,000! More than \$93,000 in lab makeover prizes to be awarded this year to 18 schools!

**THANKS TO THE
IT'S ABOUT TIME STEM
APPROACH WE CAN COLLECT,
ORGANIZE, AND ANALYZE DATA,
THINK CRITICALLY, AND SOLVE
PROBLEMS LIKE ENGINEERS.**



Visit our booth #1125, or attend one of our workshops room 201/202

1-888-698-8463 • www.its-about-time.com



Exhibitors

Simulation Curriculum #946
11900 Wayzata Blvd., Suite 126 EA, G,
Minnetonka, MN 55305 PH, PD, T
Phone: 877-290-8256 K-12, College
E-mail: mgoodman@simcur.com
Website: www.simulationcurriculum.com

Simulation Curriculum is a leading developer of interactive Earth and space science software and curricula for K-12 and college.

Swift Optical Instruments, Inc. #1120
6508 Tri-County Pkwy. B
Schertz, TX 78154 6-12, College
Phone: 877-967-9438
E-mail: cynthia@swiftoptical.com
Website: www.swiftoptical.com

A leader in the manufacturing of microscopes, Swift Optical brings a NEW LOOK and dimension to teaching. Visit our booth for the latest in microscopes and digital application. Learn how simple it is to “go digital” in your classroom. Let us show you how to bring STEM to your students! Known for quality and innovation, Swift Optical provides teachers with complete microscope solutions!

Texas Instruments, Inc. #826
PO Box 650311, MS 3821 All
Dallas, TX 75265 6-12, College
Phone: 800-TICARES
E-mail: ti-cares@ti.com
Website: education.ti.com

TI-Nspire™ CX and TI-Nspire™ CX CAS graphing handhelds and software bring new excitement to the science classroom, lab, and field every day. TI supports science educators with ready-to-use, standards-aligned activities and high-quality T³™ professional development.

Toshiba/NSTA ExploraVision® #731
1840 Wilson Blvd. G, T
Arlington, VA 22201 K-12
Phone: 800-EXPLOR9
E-mail: exploravision@nsta.org
Website: www.exploravision.org

The Toshiba/NSTA ExploraVision science competition encourages K-12 students to imagine what technology might be like in the future. ExploraVision helps teacher sponsors meet many of the National Science Education Standards while letting students experience scientific process and discovery in an engaging, hands-on way.

Vernier Software & Technology #920
13979 S.W. Millikan Way All
Beaverton, OR 97005 3-12, College
Phone: 888-837-6437
E-mail: info@vernier.com
Website: www.vernier.com

Vernier Software & Technology is a leading innovator of scientific data-collection technology. Focused on STEM, Vernier is dedicated to developing creative ways to teach and learn using hands-on science. Vernier creates easy-to-use and affordable science interfaces, sensors, and graphing/analysis software. Vernier’s technology-based solutions enhance STEM education, increase learning, and build students’ critical-thinking skills.

Wavefunction, Inc. #1131
18401 Von Karman Ave., Suite 370 C
Irvine, CA 92612 7-12, College
Phone: 949-955-2120
E-mails: michelle@wavefun.com; sales@wavefun.com
Website: www.wavefun.com

Wavefunction offers cutting-edge chemistry education software for high school and AP chemistry teachers and students. Odyssey provides an interactive molecular environment, rich with content and integrated lab activities for the high school, and AP/college general chemistry curricula. The iSpartan app and the Spartan Student Edition apply computational chemistry methods and compelling graphical models to enrich the study of organic and physical chemistry. Catalyze your students’ understanding with powerful yet easy-to-use molecular modeling software. Affordable single-user, school, and district pricing now available.

Western Governors University #1130
4001 S. 700 East, #700 B, C, EA, G,
Salt Lake City, UT 84107 PH, PD, T
Phone: 866-225-5948 K-12
E-mail: jpink@wgu.edu
Website: www.wgu.edu

The Teachers College at Western Governors University offers regionally, nationally, and NCATE-accredited, online competency-based master’s degree programs in science education with specializations in chemistry, physics, biology, and geosciences. As a student, you’ll enjoy modest tuition rates, unbelievable flexibility, and unmatched student support. Schol-

arships and financial aid are available.

W.H. Freeman #940
Bedford, Freeman & Worth (BFW) B, C, EA,
Publishers EN, G, PH, T
33 Irving Place 9-12, College
New York, NY 10003
Phone: 866-843-3715
E-mail: cweiss@bfpwpub.com
Website: www.bfpwpub.com/highschool

W.H. Freeman of Bedford, Freeman & Worth (BFW) Publishers is the prestigious publisher of several groundbreaking resources, including many materials aligned to the highly anticipated Next Generation Science Standards. Please visit our booth to preview these resources and receive correlations. You can visit www.bfpwpub.com/highschool to request complimentary consideration copies.

WhiteBox Learning #834
14600 Woodbluff Trace EA, EN, G, PH, T
Louisville, KY 40245 5-12
Phone: 800-592-3460, x1
E-mail: sales@whiteboxlearning.com
Website: www.whiteboxlearning.com

“Connect the Virtual to the Physical”—WhiteBox Learning is a complete standards-based, web-based applied STEM learning system. As the world’s only “Integrated STEM” learning system, Flight 2.0, Structures 2.0, Green Car 2.0, Rockets 2.0, and Dragster 2.0 allow students to analyze and simulate their designs in 3-D, and compete “virtually” 24/7 all around the world ... how cool is that?!

Wireless Generation #1037
55 Washington St., Suite 900 G
Brooklyn, NY 11201-1071 K-8
Phone: 800-823-1969, x1
E-mail: seeds@wgen.net
Website: www.wirelessgeneration.com/seeds

Wireless Generation is thrilled to represent the Seed of Science/Roots of Reading® program. Developed at The Lawrence Hall of Science, this integrated science and literacy program is proven to successfully help students build reading, writing, and language skills while learning new science concepts and how to think scientifically.

Visit NSTA's **SCIENCE BOOKSTORE**

Take
advantage of
**FREE
Shipping!**



ENJOY ALL OF THESE AND MORE:

- Award-winning books filled with best practices, science content, teaching tips, and lesson plans.
- New books hot off the press: *Integrating Engineering and Science in Your Classroom*; *Rise and Shine*; and *Teaching Science Through Trade Books*, to name a few.
- Plus *Dig In!*, *Outdoor Science*, and *Picture-Perfect Science Lessons, Expanded 2nd Edition*, along with Class Packs containing all the materials necessary to conduct each lesson.
- All attendees get member pricing—20% off all NSTA Press products.

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–12 Noon

Visit www.nsta.org/store to make a purchase today,
or call 1-800-277-5300.

NSTA National
Science
Teachers
Association

Index of Exhibitor Workshops

American Chemical Society (Booth #1042)

Thursday, October 18 2:15–3:30 PM 201/202, Conv. Center *Chemistry in the Community*, 6th Edition—Changing with the Times (p. 59)

American Nuclear Society (Booth #836)

Friday, October 19 10:00–11:15 AM 115, Conv. Center Detecting Radiation in Our Radioactive World (p. 81)

Anatomy in Clay® Learning System (Booth #1129)

Friday, October 19 8:00–9:15 AM 114, Conv. Center Innovation, Creativity, and Problem Solving with the Anatomy in Clay® Learning System (p. 73)

Bio-Rad Laboratories (Booth #830)

Friday, October 19 8:00–9:30 AM 218, Conv. Center Bio-Rad: Explore Inquiry and Ecology with Biofuel Enzymes (AP Big Idea 4) (p. 74)

Friday, October 19 10:30 AM–12 Noon 218, Conv. Center Bio-Rad: Engineer the Tools for Inquiry of Candy Food Dyes (p. 82)

Friday, October 19 2:00–4:30 PM 218, Conv. Center Bio-Rad: Crime Scene Investigator PCR Basics Kit (p. 96)

Saturday, October 20 8:00–9:30 AM 218, Conv. Center Bio-Rad: Implementing a Skills-based Biotech Program with Author Kirk Brown (p. 106)

Saturday, October 20 10:30–11:30 AM 218, Conv. Center Bio-Rad: Genes in a Bottle™ Kit (p. 110)

Carolina Biological Supply (Booth #921)

Thursday, October 18 8:00–9:15 AM 211, Conv. Center Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 46)

Thursday, October 18 10:00–11:15 AM 211, Conv. Center Strawberry DNA and Molecular Modeling (p. 48)

Thursday, October 18 12:30–1:45 PM 211, Conv. Center The Solution Is Simple! Understanding Colligative Properties with Inquiries in Science® (p. 54)

Thursday, October 18 2:15–3:30 PM 211, Conv. Center What Quality Science Instruction Has to Do with Raising Achievement Scores K–8 (p. 60)

Thursday, October 18 4:00–5:15 PM 211, Conv. Center Hands-On Science with Classroom Critters (p. 64)

Friday, October 19 8:00–9:15 AM 211, Conv. Center Comparative Vertebrate Anatomy Featuring Carolina's Perfect Solution® Specimens (p. 74)

Friday, October 19 10:00–11:15 AM 211, Conv. Center Engineering, Technology, and the Application of Science K–8 (p. 82)

Friday, October 19 12 Noon–1:15 PM 211, Conv. Center Introduction to Wisconsin Fast Plants® (p. 87)

Friday, October 19 2:00–3:15 PM 211, Conv. Center Carolina Beyond the Tape: Forensic Science for Every Discipline (p. 96)

Friday, October 19 4:00–5:15 PM 211, Conv. Center Hands-On Activities to Explore Environmental Change (p. 100)

CPO Science/School Specialty Science (Booth #720)

Thursday, October 18 8:00–9:30 AM 108, Conv. Center Chemistry and the Atom: Fun with Atom-building Games! (p. 46)

Thursday, October 18 10:00–11:30 AM 108, Conv. Center Genetics: Crazy Traits and Adaptation Survivor (p. 48)

Thursday, October 18 12 Noon–1:30 PM 108, Conv. Center STEM Approach to Teaching Electricity and Magnetism (p. 50)

Thursday, October 18 2:00–3:30 PM 108, Conv. Center Light and Optics: A Series of EnLIGHTening Experiments! (p. 59)

Thursday, October 18 4:00–5:30 PM 108, Conv. Center Sound, Waves, and Music (p. 64)

Friday, October 19 8:00–9:30 AM 108, Conv. Center Genetics: Crazy Traits and Adaptation Survivor (p. 74)

Friday, October 19 10:00–11:30 AM 108, Conv. Center Chemistry and the Atom: Fun with Atom-building Games! (p. 82)

Friday, October 19 12 Noon–1:30 PM 108, Conv. Center Light and Optics: A Series of EnLIGHTening Experiments! (p. 87)

Friday, October 19 2:00–3:30 PM 108, Conv. Center Sound, Waves, and Music (p. 96)

Friday, October 19 4:00–5:30 PM 108, Conv. Center Chemistry and the Atom: Fun with Atom-building Games! (p. 100)

Index of Exhibitor Workshops

Delta Education/School Specialty Science (Booth #820)

Thursday, October 18	8:00–9:15 AM	110/111, Conv. Center	Inquiring Minds Provide Spark for Science Lessons (p. 46)
Thursday, October 18	10:00–11:15 AM	110/111, Conv. Center	DSM and STEM: Challenges for the Elementary Student (p. 47)
Thursday, October 18	12:30–2:00 PM	110/111, Conv. Center	Laurel and Hardy and the Laws of Science (p. 55)
Thursday, October 18	3:00–4:30 PM	110/111, Conv. Center	What’s Going on in There? NGSS Inquiry Science for Supervisors, Trainers, and Teachers (p. 60)
Friday, October 19	8:00–9:15 AM	110/111, Conv. Center	Science: The Literacy Connection and the Core Curriculum (p. 72)
Friday, October 19	10:00–11:15 AM	110/111, Conv. Center	Identifying, Clarifying, and Designing Experiments (p. 81)
Friday, October 19	1:00–2:15 PM	110/111, Conv. Center	Technological Design Standards Meet the STEM Initiative (p. 91)

Delta Education/School Specialty Science–FOSS (Booth #820)

Thursday, October 18	8:00–10:00 AM	106/107, Conv. Center	Science-centered Language Development with FOSS (p. 46)
Thursday, October 18	10:30–11:30 AM	106/107, Conv. Center	Asteroid! Will Earth Be Hit Again? Planetary Science for Middle School (p. 48)
Thursday, October 18	12 Noon–1:00 PM	106/107, Conv. Center	NASA’s Kepler Mission and the Hunt for Exoplanets: Planetary Science for Middle School (p. 50)
Thursday, October 18	1:30–3:00 PM	106/107, Conv. Center	Engage Students with Active Learning Through FOSS, 3rd Edition (p. 55)
Thursday, October 18	3:30–4:30 PM	106/107, Conv. Center	Materials in Our World: STEM for Early Childhood (p. 63)
Friday, October 19	8:00–10:00 AM	106/107, Conv. Center	Using Science Notebooks to Impact Student Learning with FOSS (p. 75)
Friday, October 19	10:30 AM–12:30 PM	106/107, Conv. Center	FOSS Formative Assessment: Making Student Thinking Visible (p. 82)
Friday, October 19	1:00–2:30 PM	106/107, Conv. Center	Taking Science Outdoors with FOSS K–6 (p. 91)
Friday, October 19	3:00–4:00 PM	106/107, Conv. Center	Fossil Evidence: A Preview of <i>FOSS Earth History</i> , 2nd Edition for Middle School (p. 96)

Dinah-Might Adventures, LP (Booth #943)

Thursday, October 18	4:00–5:15 PM	105, Conv. Center	Science Projects and Notebooking (p. 63)
Friday, October 19	12 Noon–1:15 PM	105, Conv. Center	Building and Assessing Academic Vocabulary Using Notebook Foldables® (p. 86)

Discovery Education (Booth #1124)

Thursday, October 18	12:30–1:45 PM	105, Conv. Center	Stand Back! We’re Using Discovery Education Science Techbook for Grades K–12 (p. 54)
Friday, October 19	4:00–5:15 PM	105, Conv. Center	High School Biology in a Digital World: Critical Thinking Trumps Information Overload (p. 99)

eCYBERMISSION (Booth #735)

Thursday, October 18	12:30–1:45 PM	209, Conv. Center	Environmental Issues—What Can Students Really Do to Help? (p. 54)
Friday, October 19	2:00–3:15 PM	209, Conv. Center	Student Collaboration in the Science Classroom (p. 95)

Educational Innovations, Inc. (Booth #934)

Friday, October 19	10:00–11:15 AM	105, Conv. Center	You’re NOT Gonna Believe What We Did in Science Class Today! (p. 81)
--------------------	----------------	-------------------	--

Edvotek Inc. (Booth #1128)

Friday, October 19	8:00–9:15 AM	113, Conv. Center	How Is HIV Detected in Humans? Welcome to the Exciting World of Immunobiotechnology! (p. 73)
Friday, October 19	10:00–11:15 AM	113, Conv. Center	The Case of the Missing Archive: Crime Scene and DNA Fingerprinting Investigation (p. 81)

Index of Exhibitor Workshops

Edvotek Inc., cont.

Friday, October 19	12 Noon–1:15 PM	113, Conv. Center	Wait! The Chips I Ate Were a Genetically Modified Organism (GMO)? (p. 87)
Friday, October 19	2:00–3:15 PM	113, Conv. Center	Water Contaminants! Biotechnology Can Help Save the Marine Environment (p. 95)

Fisher Science Education (Booth #1121)

Friday, October 19	10:00–11:15 AM	214/215, Conv. Center	Exploring STEM Careers: Water and Our Environment (p. 82)
--------------------	----------------	-----------------------	---

Flinn Scientific, Inc. (Booth #829)

Thursday, October 18	10:00–11:15 AM	105, Conv. Center	Dynamic Demonstrations from Flinn Scientific (p. 47)
Thursday, October 18	2:15–3:30 PM	105, Conv. Center	New Guided Inquiry Labs for AP Biology from Flinn Scientific (p. 59)
Friday, October 19	8:00–9:15 AM	105, Conv. Center	Promote Inquiry Using Chemistry Demonstrations (p. 72)

Frey Scientific/School Specialty Science (Booth #721)

Thursday, October 18	8:00–9:15 AM	102/103, Conv. Center	A Simple Connection Between STEM and Data Logging (p. 46)
Thursday, October 18	10:00–11:15 AM	102/103, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 47)
Thursday, October 18	12 Noon–1:15 PM	102/103, Conv. Center	STEM: The Game Changer in Science Lab Design (p. 50)

It's About Time (Booth #1125)

Friday, October 19	8:00–9:00 AM	201/202, Conv. Center	Learn Firsthand How Student Success Improved in Physics and Chemistry in Louisville Schools (p. 72)
Friday, October 19	9:30–10:30 AM	201/202, Conv. Center	PBIS™—Moving Beyond “What Is Science?” to Being Scientists Through Science and Engineering Practices (p. 80)
Friday, October 19	11:00 AM–12 Noon	201/202, Conv. Center	Engineering the Future: A Practical Approach to STEM for High School (p. 86)
Friday, October 19	12:30–1:30 PM	201/202, Conv. Center	Learn Firsthand How Student Success Improved in Physics and Chemistry in Louisville Schools (p. 91)
Friday, October 19	2:00–3:00 PM	201/202, Conv. Center	How Do Scientists Work Together to Answer Big Questions and Solve Big Problems in PBIS™? (p. 94)
Friday, October 19	3:30–4:30 PM	201/202, Conv. Center	Your Technology Solution for STEM and the Highly Anticipated Next Generation Science Standards (p. 99)

Ken-A-Vision Manufacturing Co., Inc. (Booth #928)

Friday, October 19	10:00–11:15 AM	114, Conv. Center	Pop & Slough—Come Get Cleansed with Chemistry! (p. 81)
--------------------	----------------	-------------------	--

LAB-AIDS, Inc. (Booth #1036)

Thursday, October 18	8:00–9:15 AM	210, Conv. Center	Lemons and Light Bulbs: Exploring the Chemistry of Electricity (p. 46)
Thursday, October 18	10:00–11:15 AM	210, Conv. Center	O ₂ Understand Photosynthesis and Cellular Respiration! (p. 48)
Thursday, October 18	12:30–1:45 PM	210, Conv. Center	O ₂ Understand Photosynthesis and Cellular Respiration! (p. 54)
Thursday, October 18	2:15–3:30 PM	210, Conv. Center	I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (p. 60)
Thursday, October 18	4:00–5:15 PM	210, Conv. Center	I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (p. 64)
Friday, October 19	8:00–9:15 AM	210, Conv. Center	Investigating a Cliff Model (p. 73)
Friday, October 19	10:00–11:15 AM	210, Conv. Center	Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (p. 81)
Friday, October 19	12 Noon–1:15 PM	210, Conv. Center	Breeding Critters (p. 87)
Friday, October 19	2:00–3:15 PM	210, Conv. Center	Mastering the Chemical Formula: An Exceptionally Effective Way to Teach Subscripts and Coefficients (p. 95)

Index of Exhibitor Workshops

LAB-AIDS, Inc., cont.

Friday, October 19	4:00–5:15 PM	210, Conv. Center	Color, Spectrophotometry, and Teaching the Structure of the Atom (p. 99)
Saturday, October 20	8:00–9:15 AM	210, Conv. Center	Power Up! Investigating Electric Motors (p. 106)
Saturday, October 20	10:00–11:15 AM	210, Conv. Center	An Absorbing Misconception About Waves and the “Power” of Colors (p. 110)

Mississippi State University (Booth #1032)

Friday, October 19	8:00–9:15 AM	115, Conv. Center	Master of Science Degree in Geosciences Available Online Through the Teachers in Geosciences Program (p. 73)
--------------------	--------------	-------------------	--

PASCO scientific (Booth #1029)

Friday, October 19	8:00–9:15 AM	102/103, Conv. Center	Equip Your iPad for Science with SPARKvue® HD, a Full-featured Science Application for the iPad (p. 72)
Friday, October 19	10:00–11:15 AM	102/103, Conv. Center	Achievable Inquiry in AP* Biology and Chemistry (p. 80)
Friday, October 19	12 Noon–1:15 PM	102/103, Conv. Center	STEM: Meeting the Standards in Your Classroom (p. 86)
Friday, October 19	2:00–3:15 PM	102/103, Conv. Center	Investigating Motion: Understanding and Interpreting Graphs (p. 95)
Friday, October 19	4:00–5:15 PM	102/103, Conv. Center	Exploring Renewable Energy: A Hands-On STEM Investigation (p. 99)

Sangari Active Science (Booth #847)

Friday, October 19	2:00–3:15 PM	114, Conv. Center	NGSS and Scientific Practices—More Than Photoshopping Models’ Flaws (p. 95)
--------------------	--------------	-------------------	---

Science First®/STARLAB® (Booth #1043)

Thursday, October 18	12:30–1:00 PM	Booth #1043, Exh. Hall	Welcome to the Neighborhood: Overview of the Solar System (p. 51)
Friday, October 19	11:00–11:30 AM	Booth #1043, Exh. Hall	Location, Location—Finding Your Way Around the Sky (p. 83)

Science Take-Out (Booth #1039)

Thursday, October 18	2:15–3:30 PM	209, Conv. Center	Homeostasis and Diabetes (p. 59)
Thursday, October 18	4:00–5:15 PM	209, Conv. Center	Modeling Protein Structure/Function and Photosynthesis/Respiration (p. 64)
Friday, October 19	8:00–9:15 AM	209, Conv. Center	Pollution and Acid Rain Activities (p. 73)
Friday, October 19	10:00–11:15 AM	209, Conv. Center	Toxin and Energy Flow in an Ecosystem (p. 81)

Simulation Curriculum Corp. (Booth #946)

Thursday, October 18	10:00–11:15 AM	214/215, Conv. Center	Hurricanes and Volcanoes (p. 48)
Thursday, October 18	2:15–3:30 PM	214/215, Conv. Center	Earthquakes and Tornadoes (p. 60)
Friday, October 19	2:00–3:15 PM	214/215, Conv. Center	The Sky Through the Ages (p. 96)

Swift Optical Instruments, Inc. (Booth #1120)

Thursday, October 18	12:30–1:45 PM	113, Conv. Center	Creating a Digital Strategy for STEM (p. 54)
Thursday, October 18	2:15–3:30 PM	113, Conv. Center	Create a Digital Classroom...Using 21st-Century STEM Initiatives! (p. 59)
Thursday, October 18	4:00–5:15 PM	113, Conv. Center	Forensic Digital Microscopy and Inquiry Learning (p. 63)

Vernier Software & Technology (Booth #920)

Friday, October 19	8:00–9:30 AM	219, Conv. Center	Integrating Your iPad or Mobile Device with Vernier Technology (p. 74)
--------------------	--------------	-------------------	--

Index of Exhibitor Workshops

Vernier Software & Technology, cont.

Friday, October 19	10:00–11:30 AM	219, Conv. Center	Introducing the Vernier LabQuest 2! (p. 82)
Friday, October 19	12 Noon–1:30 PM	219, Conv. Center	Chemistry and Biology with Vernier (p. 87)
Friday, October 19	2:00–3:30 PM	219, Conv. Center	Physics and Physical Science with Vernier (p. 96)

Wavefunction Education Labs (Booth #1131)

Thursday, October 18	10:00–11:15 AM	116, Conv. Center	Getting the Most Out of Molecular-Level Visualization and Simulation Tools (p. 48)
Friday, October 19	8:00–9:15 AM	116, Conv. Center	Using Molecular-Level Visualization to Engage Middle School and High School Science Students (p. 73)
Friday, October 19	10:00–11:15 AM	116, Conv. Center	Nailing Molecular Concepts with Scientifically Accurate Visualization and Simulation Tools (p. 81)

WhiteBox Learning (Booth #834)

Friday, October 19	2:00–3:15 PM	105, Conv. Center	STEM Engineering for Science (p. 95)
--------------------	--------------	-------------------	--------------------------------------

Wireless Generation (Booth #1037)

Thursday, October 18	4:00–5:15 PM	214/215, Conv. Center	Integrate! A Better Way to Teach and Learn (p. 64)
Friday, October 19	8:00–9:15 AM	214/215, Conv. Center	33 Strategies for Integrating Science (p. 74)

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.



Arizona field course

Program highlights include:

- DVD lectures created by Geoscience faculty
- course materials presented online
- Master of Science degree earned in two years
- little time spent away from home (8-10 days in the field)
- MSU in-state tuition rate offered to all students

GEOSCIENCES DISTANCE LEARNING PROGRAMS
distance.msstate.edu/geosciences

Mississippi State University is fully accredited by the Southern Association of Colleges and Schools (SACS). Prospective students should check with the Department of Education in their states for local certification policies.



MISSISSIPPI STATE
UNIVERSITY

*Division of Academic Outreach &
Continuing Education*

Mississippi State University is an equal opportunity employer.

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	G	L7, Conv. Center	STEM and Health: Stressors on the Circulatory System Related to Excess Body Fat (p. 44)
8:00–9:00 AM	M–H	Conf. Theatre, Conv. Center	NSTA Press Session: Teaching and Learning Biology Through Scientific Argumentation (p. 44)
8:00–9:00 AM	H–C	203/205, Conv. Center	Teaching Biological Processes Using Modules Based on 3-D Computer Animations (p. 43)
8:00–9:15 AM	6–12	211, Conv. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 46)
10:00–11:15 AM	9–12	210, Conv. Center	O ₂ Understand Photosynthesis and Cellular Respiration! (p. 48)
10:00–11:15 AM	9–12	102/103, Conv. Center	Solving the Mystery of STEM Using Forensic Science (p. 47)
10:00–11:15 AM	9–12	211, Conv. Center	Strawberry DNA and Molecular Modeling (p. 48)
10:00–11:30 AM	5–12	108, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 48)
12:30–1:30 PM	H	112, Conv. Center	The Need for Adaptation: Using Formative Assessment Probes in High School Biology to Uncover Student Thinking About Genetics (p. 52)
12:30–1:30 PM	G	L7, Conv. Center	Effect of Environment and Modulators on Hindgut and Heart Function in Invertebrates (p. 53)
12:30–1:45 PM	7–C	113, Conv. Center	Creating a Digital Strategy for STEM (p. 54)
12:30–1:45 PM	9–12	210, Conv. Center	O ₂ Understand Photosynthesis and Cellular Respiration! (p. 54)
2:00–3:00 PM	M–H	L8, Conv. Center	Stepping-Stones to Inquiry: Learning in the Outdoors (p. 57)
2:15–3:30 PM	9–12	105, Conv. Center	New Guided Inquiry Labs for AP Biology from Flinn Scientific (p. 59)
2:15–3:30 PM	9–12	210, Conv. Center	I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (p. 60)
2:15–3:30 PM	6–12	209, Conv. Center	Homeostasis and Diabetes (p. 59)
3:30–4:30 PM	G	L8, Conv. Center	Integrating Technology into the Classroom (p. 61)
3:30–4:30 PM	H	L7, Conv. Center	Best Practices: Modeling Scientific Phenomena in AP and General Biology (p. 63)
4:00–5:15 PM	9–12	210, Conv. Center	I Think There's a Genetically Engineered Fly in My Genetically Modified Pea Soup! (p. 64)
4:00–5:15 PM	6–12	209, Conv. Center	Modeling Protein Structure/Function and Photosynthesis/Respiration (p. 64)
4:00–5:15 PM	3–8	211, Conv. Center	Hands-On Science with Classroom Critters (p. 64)
5:00–6:00 PM	H–C	203/205, Conv. Center	Genetics Gets Personal: Teaching the Ethical, Legal, and Social Issues in Personal Genetics (p. 64)
5:00–6:00 PM	H	L7, Conv. Center	Preparing for the Redesign: Using Student-designed Experiments in AP Biology (p. 67)

Friday

8:00–9:00 AM	H	L7, Conv. Center	NABT Session: The Revised AP Biology Course: Understanding the Changes in the Course Audit and New Exam (p. 70)
8:00–9:15 AM	8–C	113, Conv. Center	How Is HIV Detected in Humans? Welcome to the Exciting World of Immunobiotechnology! (p. 73)
8:00–9:15 AM	7–C	114, Conv. Center	Innovation, Creativity, and Problem Solving with the Anatomy in Clay® Learning System (p. 73)
8:00–9:15 AM	9–12	211, Conv. Center	Comparative Vertebrate Anatomy Featuring Carolina's Perfect Solution® Specimens (p. 74)
8:00–9:30 AM	5–12	108, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 74)
8:00–9:30 AM	9–C	218, Conv. Center	Bio-Rad: Explore Inquiry and Ecology with Biofuel Enzymes (AP Big Idea 4) (p. 74)

Schedule at a Glance Biology/Life Science

9:30–10:30 AM	G	204/206, Conv. Center	NARST Session: When It Comes to Accepting Evolution, Gut Feelings Trump Facts (p. 77)
9:30–10:30 AM	H	L7, Conv. Center	NABT Session: AP Open Forum (p. 78)
9:30–10:30 AM	M–H	L8, Conv. Center	NMLSTA Session: Fins + Plants = Inquiry Aquaponics in the Classroom (p. 78)
10:00–11:15 AM	6–12	209, Conv. Center	Toxin and Energy Flow in an Ecosystem (p. 81)
10:00–11:15 AM	8–12	113, Conv. Center	The Case of the Missing Archive: Crime Scene and DNA Fingerprinting Investigation (p. 81)
10:00–11:15 AM	7–C	116, Conv. Center	Nailing Molecular Concepts with Scientifically Accurate Visualization and Simulation Tools (p. 81)
10:30 AM–12 Noon	6–C	218, Conv. Center	Bio-Rad: Engineer the Tools for Inquiry of Candy Food Dyes (p. 82)
11:00 AM–12 Noon	M–C	L7, Conv. Center	NABT Session: Free Resources from HHMI on the Origin of Modern Humans (p. 84)
11:00 AM–12 Noon	M–C	L8, Conv. Center	Bioinformatics for Every Biology Student (p. 84)
11:00 AM–12 Noon	H–C	L2, Conv. Center	Understanding the New AP Biology Course: Curriculum, Science Practices, and Instructional Design (p. 84)
12 Noon–1:15 PM	3–12	211, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 87)
12 Noon–1:15 PM	6–8	210, Conv. Center	Breeding Critters (p. 87)
12 Noon–1:15 PM	8–C	113, Conv. Center	Wait! The Chips I Ate Were a Genetically Modified Organism (GMO)? (p. 87)
12:30–1:30 PM	M–C	L7, Conv. Center	NABT Session: Free Resources from HHMI <i>Exploring Biodiversity: The Search for New Medicines and Treatments</i> (p. 88)
12:30–1:30 PM	H	L8, Conv. Center	Biotechnology on the Cheap: Hands-On Labs for Under \$50 (p. 88)
12:30–1:30 PM	C	L2, Conv. Center	Assessing the AAAS Document Through Action: Vision and Change in Undergraduate Biology Education (p. 88)
2:00–3:00 PM	M–H	L7, Conv. Center	Neuroscience for Your Biology Classroom (p. 94)
2:00–3:00 PM	G	Conf. Theatre, Conv. Center	NSTA Press Session: Uncovering Life Science Core Ideas in the NGSS Using Formative Assessment Probes (p. 92)
2:00–3:00 PM	E–M	204/206, Conv. Center	Cool Science for Grades 4–9 (p. 92)
2:00–3:15 PM	8–C	113, Conv. Center	Water Contaminants! Biotechnology Can Help Save the Marine Environment (p. 95)
2:00–3:15 PM	9–12	211, Conv. Center	Carolina Beyond the Tape: Forensic Science for Every Discipline (p. 96)
2:00–4:30 PM	10–C	218, Conv. Center	Bio-Rad: Crime Scene Investigator PCR Basics Kit (p. 96)
3:30–4:30 PM	H–C	L2, Conv. Center	Integrated Scenarios to Increase Relevance: Action Research Implemented to Improve Student Learning in a Microbiology Course (p. 97)
3:30–4:30 PM	G	L8, Conv. Center	Why Now Is a Terrific Time to Eradicate Malaria (p. 97)
4:00–5:15 PM	9–12	105, Conv. Center	High School Biology in a Digital World: Critical Thinking Trumps Information Overload (p. 99)
5:00–5:30 PM	H–C	L8, Conv. Center	Classroom Activity on Buffering Related to Respiration for High School and Introductory College Courses in Biological Sciences (p. 100)
5:00–6:00 PM	G	L7, Conv. Center	Snakes in the Classroom (p. 100)

Saturday

8:00–9:00 AM	M–C	L6, Conv. Center	Inquiry-based Photosynthesis Lab (p. 104)
8:00–9:00 AM	G	L7, Conv. Center	Infect Your Biology Classroom with Math! (p. 104)
8:00–9:00 AM	M–H	109, Conv. Center	Is It (Carolina) Gold? The Intersection of Genetics and American History (p. 104)
8:00–9:30 AM	9–C	218, Conv. Center	Bio-Rad: Implementing a Skills-based Biotech Program with Author Kirk Brown (p. 106)
9:30–10:30 AM	H	L6, Conv. Center	Marine Ecology, Human Impacts, and Conservation: A High School Ecology Unit from National Geographic (p. 109)
9:30–10:30 AM	G	L7, Conv. Center	Even Before STEM, Science and Math Loved Each Other! (p. 109)
9:30–10:30 AM	H	104, Conv. Center	Using Case Studies to Teach AP Biology Content (p. 108)
10:30–11:30 AM	5–C	218, Conv. Center	Bio-Rad: Genes in a Bottle™ Kit (p. 110)
11:00 AM–12 Noon	M–C	L6, Conv. Center	Food for 9 Billion: Can Science and Politics Feed the World? (p. 112)
11:00 AM–12 Noon	I	L7, Conv. Center	Engage Your Students with NOAA's Coral Reef Resources (p. 112)

Chemistry/Physical Science

Thursday

8:00–9:00 AM	E	L10, Conv. Center	Inquiry in Action: Investigating Matter Through Inquiry (p. 44)
8:00–9:00 AM	H–C	112, Conv. Center	Problem Finding and Problem Solving in the New AP Chemistry Course (p. 43)
8:00–9:00 AM	H	204/206, Conv. Center	Solids: The Neglected “State” of Chemistry (p. 43)
8:00–9:00 AM	M–H	207, Conv. Center	Be Prepared—Move from Cookbook to Inquiry! (p. 44)
8:00–9:15 AM	9–12	210, Conv. Center	Lemons and Light Bulbs: Exploring the Chemistry of Electricity (p. 46)
8:00–9:30 AM	5–12	108, Conv. Center	Chemistry and the Atom: Fun with Atom-building Games! (p. 46)
10:00–11:15 AM	7–12	105, Conv. Center	Dynamic Demonstrations from Flinn Scientific (p. 47)
10:00–11:15 AM	7–C	116, Conv. Center	Getting the Most Out of Molecular-Level Visualization and Simulation Tools (p. 48)
11:00 AM–12 Noon	H	104, Conv. Center	Corrosion Is Everywhere: Use It to Make Chemistry Relevant and Fun (p. 49)
12:30–1:30 PM	H	204/206, Conv. Center	Using Science Stories to Teach Chemistry...and Reading (p. 52)
12:30–1:30 PM	M–H	207, Conv. Center	STEM—Now or Never! (p. 52)
12:30–1:30 PM	H	204/206, Conv. Center	Teaching and Learning in the Digital Age: Chemistry Resources Teachers and Students Can Rely On (p. 51)
12:30–1:30 PM	M–H	203/205, Conv. Center	Introducing Nanotechnology into the Chemistry Classroom (p. 51)
12:30–1:45 PM	9–12	211, Conv. Center	The Solution Is Simple! Understanding Colligative Properties with Inquiries in Science® (p. 54)
2:00–3:00 PM	H	204/206, Conv. Center	“Emergency Lesson Plans” for Teaching Chemistry Across Curricula (p. 56)
2:00–3:00 PM	H/S	208, Conv. Center	Stoichiometry of Safe Water (p. 58)
2:00–3:00 PM	M–H	207, Conv. Center	Score a Winning Classroom (p. 58)
2:00–3:00 PM	H/I	204/206, Conv. Center	Engaging Students in Chemistry Outside the Classroom: A Look at ChemClub (p. 56)
2:15–3:30 PM	9–C	201/202, Conv. Center	<i>Chemistry in the Community, 6th Edition</i> —Changing with the Times (p. 59)
3:30–4:30 PM	H	204/206, Conv. Center	Introducing Chemistry with <i>An Inconvenient Truth</i> (p. 60)
3:30–4:30 PM	M–H	207, Conv. Center	Using Modeling to Help Every Kid Understand Chemistry (p. 62)
3:30–4:30 PM	E–M	L11, Conv. Center	Learning Progression for Matter and Its Interactions, K–8 (p. 63)
5:00–6:00 PM	H–C	L11, Conv. Center	Pop Bead Equilibrium (p. 67)
5:00–6:00 PM	M–H	204/206, Conv. Center	Bioplastics—Going from Synthetic to Natural Polymers (p. 65)

Friday

8:00–9:00 AM	M–H	203/205, Conv. Center	Using UIDL Principles to Teach Chemistry (p. 69)
8:00–9:00 AM	H	109, Conv. Center	Increasing Environmental Literacy Through Chemistry Applications (p. 69)
8:00–9:00 AM	H	207, Conv. Center	ACS Session One: Equilibrium and Concentration (p. 70)
8:00–9:00 AM	M	L5, Conv. Center	ACS Middle Level Session: Solids, Liquids, and Gases: The Kinetic-molecular Theory of Matter (p. 71)
8:00–9:00 AM	8–12	201/202, Conv. Center	Active Chemistry—Ahead of Its Time in Capturing the Essence of the Highly Anticipated NGSS and STEM (p. 72)
8:00–9:15 AM	9–12	105, Conv. Center	Promote Inquiry Using Chemistry Demonstrations (p. 72)
8:00–9:15 AM	7–C	116, Conv. Center	Using Molecular-Level Visualization to Engage Middle School and High School Science Students (p. 73)
8:30–9:00 AM	H–C	204/206, Conv. Center	NARST Session: Using Technology to Address Student Misconceptions and Improve Insights into the Nature of Science in General Chemistry (p. 76)
9:30–10:30 AM	M	L5, Conv. Center	ACS Middle Level Session: Changes of State: Evaporation and Condensation (p. 80)
9:30–10:30 AM	H	207, Conv. Center	ACS Session Two: Equilibrium and Energy (p. 79)
10:00–11:15 AM	K–12	114, Conv. Center	Pop & Slough—Come Get Cleansed with Chemistry! (p. 81)
10:00–11:15 AM	9–12	210, Conv. Center	Distillation: Simple and Fascinating Experiments in the Chemistry of Aromas and Smells (p. 81)
10:00–11:30 AM	5–12	108, Conv. Center	Chemistry and the Atom: Fun with Atom-building Games! (p. 82)

Schedule at a Glance Chemistry/Physical Science

11:00 AM–12 Noon	H	207, Conv. Center	ACS Session Three: Rate (p. 85)
11:00 AM–12 Noon	M	L5, Conv. Center	ACS Middle Level Session: Density: A Molecular View (p. 85)
12 Noon–1:30 PM	9–C	219, Conv. Center	Chemistry and Biology with Vernier (p. 87)
12:30–1:30 PM	H	207, Conv. Center	ACS Session Four: Catalysis (p. 90)
12:30–1:30 PM	M	L5, Conv. Center	ACS Middle Level Session: The Periodic Table, Energy Levels, and Bonding (p. 90)
12:30–1:30 PM	M–H	203/205, Conv. Center	Lotions, Potions, and Scrubs: Polymer Science in Cosmetics (p. 88)
2:00–3:00 PM	M	L5, Conv. Center	ACS Middle Level Session: The Polarity of the Water Molecule and Its Consequences (p. 94)
2:00–3:00 PM	H	207, Conv. Center	ACS Session Five: Light as a Reactant and/or Product (p. 93)
2:00–3:15 PM	9–12	210, Conv. Center	Mastering the Chemical Formula: An Exceptionally Effective Way to Teach Subscripts and Coefficients (p. 95)
3:30–4:30 PM	H	207, Conv. Center	ACS Session Six: Half-Life (p. 98)
3:30–4:30 PM	M	L5, Conv. Center	ACS Middle Level Session: Chemical Change: Breaking and Making Bonds (p. 98)
4:00–5:15 PM	9–12	210, Conv. Center	Color, Spectrophotometry, and Teaching the Structure of the Atom (p. 99)
4:00–5:30 PM	5–12	108, Conv. Center	Chemistry and the Atom: Fun with Atom-building Games! (p. 100)
5:00–6:00 PM	I	L5, Conv. Center	Polydensity Tube: Make–Learn–Take: Serious Fun with a Dense Subject (p. 101)

Saturday

8:00–9:00 AM	H/S	204/206, Conv. Center	Exploring the 2012 ACS Guidelines and Recommendations for Teaching High School Chemistry (p. 103)
8:00–9:00 AM	M–H	207, Conv. Center	Polymers: New Twists on Old Favorites (p. 104)
8:00–9:15 AM	6–8	210, Conv. Center	Power Up! Investigating Electric Motors (p. 106)
9:30–10:30 AM	M–H/S	204/206, Conv. Center	Going Digital in the 1:1 Science Classroom (p. 108)
9:30–10:30 AM	M–H/I	112, Conv. Center	Squeezing GLUE-GOO into the National Science Education Standards (p. 108)
10:00–11:15 AM	6–8	210, Conv. Center	An Absorbing Misconception About Waves and the “Power” of Colors (p. 110)
11:00–11:30 AM	H–C	203/205, Conv. Center	Synthesis of Au and Ag Nanoparticles Using Appalachian Herbs (p. 110)
11:00 AM–12 Noon	H	204/206, Conv. Center	Biochemistry: Understanding Chemistry Can Change My Life (p. 110)
11:00 AM–12 Noon	H/V	207, Conv. Center	How Do You Know What They Know? A Look Inside Classroom Practice (p. 111)
11:00 AM–12 Noon	E–H	Conf. Theatre, Conv. Center	NSTA Press Session: <i>Stop Faking It!</i> Finally Understand Chemistry Basics So You Can Teach Them (p. 111)

Earth/Space Science

Thursday

8:00–9:00 AM	M–H	L5, Conv. Center	“Startastic” Science! (p. 44)
10:00–11:15 AM	4–12	214/215, Conv. Center	Hurricanes and Volcanoes (p. 48)
10:30–11:30 AM	5–8	106/107, Conv. Center	Asteroid! Will Earth Be Hit Again? Planetary Science for Middle School (p. 48)
12 Noon–1:00 PM	5–8	106/107, Conv. Center	NASA’s Kepler Mission and the Hunt for Exoplanets: Planetary Science for Middle School (p. 50)
12:30–1:00 PM	5–8	Booth #1043, Exhibit Hall	Welcome to the Neighborhood: Overview of the Solar System (p. 51)
12:30–1:30 PM	E–H	L4, Conv. Center	Using Inquiry to Teach Metamorphic Rocks and the Rock Cycle (p. 53)
12:30–1:30 PM	P–M/I	L10, Conv. Center	Clear Skies Ahead: Clearing Up Confusion on Clouds (p. 53)
12:30–1:30 PM	M–C	L5, Conv. Center	Daytime Astronomy with Robotic Telescopes (p. 53)
2:00–3:00 PM	M–C	L5, Conv. Center	The Great Galaxy Mash-up (p. 58)

Schedule at a Glance Earth/Space Science

2:00–3:00 PM	E–H	L4, Conv. Center	Using Inquiry to Teach Igneous and Sedimentary Rocks (p. 58)
2:15–3:30 PM	4–12	214/215, Conv. Center	Earthquakes and Tornadoes (p. 60)
3:30–4:30 PM	G	L5, Conv. Center	Stellar Evolution—From Formation to Destruction (p. 63)
3:30–4:30 PM	G	Conf. Theatre, Conv. Center	NSTA Press Session: Uncovering Earth and Space Science Core Ideas in the NGSS Using Formative Assessment Probes (p. 61)
3:30–4:30 PM	M–H	L4, Conv. Center	Using Inquiry to Teach Plate Tectonics (p. 62)
5:00–6:00 PM	I	L4, Conv. Center	JetStream: An Online School for Weather (p. 67)
5:00–6:00 PM	G	L5, Conv. Center	Pulsating Variable Stars and the H-R Diagram (p. 67)

Friday

8:00–9:00 AM	E–H	L15, Conv. Center	Activities from Across the Earth System (p. 72)
8:00–9:00 AM	H	L9, Conv. Center	Multiwavelength Astronomy Modules for High School Students (p. 70)
8:00–9:15 AM	6–8	210, Conv. Center	Investigating a Cliff Model (p. 73)
8:00–9:15 AM	K–12	115, Conv. Center	Master of Science Degree in Geosciences Available Online Through the Teachers in Geosciences Program (p. 73)
9:30–10:30 AM	M–H	208, Conv. Center	AAPT Session: Working with Spectra in Physics and Astronomy (p. 79)
9:30–10:30 AM	G	104, Conv. Center	Bring STEM Curriculum to Life with AMS Professional Development Courses (p. 77)
9:30–10:30 AM	M–H	L15, Conv. Center	Let's Get Well Grounded! (p. 80)
11:00–11:30 AM	K–4	Booth #1043, Exhibit Hall	Location, Location—Finding Your Way Around the Sky (p. 83)
11:00 AM–12 Noon	E–H	L15, Conv. Center	Climate Change Classroom Toolkit (p. 85)
11:00 AM–12 Noon	M–C	L9, Conv. Center	Beautiful, Intriguing, and Often Confounding: Difficult Astronomy Concepts for Students and How to Help (p. 84)
11:00 AM–12 Noon	G	L6, Conv. Center	Don't Isolate, Integrate—Science Is Not an Island (p. 85)
12:30–1:30 PM	M–H	L15, Conv. Center	Our Changing Planet (p. 91)
12:30–1:30 PM	G	L4, Conv. Center	Ice Core Records—From Volcanoes to Supernovas (p. 90)
2:00–3:00 PM	M	L4, Conv. Center	Scale the Universe (p. 93)
2:00–3:00 PM	E–H	L15, Conv. Center	National Earth Science Teachers Association Earth Science Share-a-Thon (p. 94)
2:00–3:15 PM	4–12	214/215, Conv. Center	The Sky Through the Ages (p. 96)
3:00–4:00 PM	5–8	106/107, Conv. Center	Fossil Evidence: A Preview of OSS Earth History, 2nd Edition for Middle School (p. 96)
3:30–4:30 PM	G	101, Conv. Center	The Scale of the Universe (p. 96)
3:30–4:30 PM	M–H	104, Conv. Center	Rockets, Balloons, Kites, and KMZ: Build Your Own Google Earth (p. 96)
3:30–4:30 PM	H	L4, Conv. Center	Carbon Capture and Storage (p. 98)
5:00–6:00 PM	G	L15, Conv. Center	National Earth Science Teachers Association Rock and Mineral Raffle (See program changes)

Saturday

8:00–9:00 AM	M–H	L5, Conv. Center	“Astro”nishing Astronomy: The Electromagnetic Spectrum (p. 104)
8:00–9:00 AM	G	L8, Conv. Center	Discover the “Buried Carbon Hypothesis” and Climate Change (p. 103)
9:30–10:30 AM	G	L5, Conv. Center	STEM in the Real World—We're Not Talking MTV (p. 109)
9:30–10:30 AM	G	L8, Conv. Center	KYEM Earthquake Awareness 101 (p. 108)
9:30–10:30 AM	E–H	L9, Conv. Center	MY NASA DATA: Earth Systems Data Visualization Tool for Students (p. 108)
9:30–10:30 AM	E–M	L11, Conv. Center	Rock and Roll Through Earth Science as You Connect Science and Mathematics in Your Classroom (p. 109)
11:00 AM–12 Noon	E–H	L8, Conv. Center	NASA CERES S'COOL Project: Cloud Observation Is S'COOL! (p. 110)
11:00 AM–12 Noon	M	L9, Conv. Center	Get Your Feet Wet! (p. 110)
11:00 AM–12 Noon	I	L5, Conv. Center	Saving Energy, Saving Our Night Sky (p. 112)

Schedule at a Glance Environmental Science

Environmental Science

Thursday

8:00–9:00 AM	E–H	L8, Conv. Center	Students Committed to Saving Energy (p. 43)
8:00–9:00 AM	E	L11, Conv. Center	Student Motivation and Worms (p. 45)
12:30–1:30 PM	H/S	L11, Conv. Center	Focus on Forests: Project Learning Tree’s New Secondary Curriculum (p. 53)
12:30–1:30 PM	M–H	L3, Conv. Center	Making the Burning of Coal Visible to Students (p. 53)
12:30–1:45 PM	6–9	209, Conv. Center	Environmental Issues—What Can Students Really Do to Help? (p. 54)
5:00–6:00 PM	M–H	L3, Conv. Center	How Healthy Is Your Stream? (p. 67)

Friday

8:00–9:00 AM	I	L6, Conv. Center	Care About an Earth Square (p. 71)
8:00–9:00 AM	P–E	L11, Conv. Center	How Does Your Garden Grow? (p. 71)
8:00–9:15 AM	6–12	209, Conv. Center	Pollution and Acid Rain Activities (p. 73)
9:30–10:30 AM	I	L6, Conv. Center	GreenSchools! (p. 80)
10:00–11:15 AM	6–12	214/215, Conv. Center	Exploring STEM Careers: Water and Our Environment (p. 82)
11:00 AM–12 Noon	E–M/I	L11, Conv. Center	Taking Science Outdoors with Outdoor Biology Instructional Strategies (OBIS) (p. 85)
12:30–1:30 PM	I	L6, Conv. Center	The Carbon Cycle and Bioenergy: Quantitative Modeling with Poker Chips and Student Monitoring of CO ₂ (p. 90)
12:30–1:30 PM	M–H	112, Conv. Center	Facing the Future: Fueling the Future (p. 90)
1:00–2:15 PM	K–6	110/111, Conv. Center	Technological Design Standards Meet the STEM Initiative (p. 91)
2:00–3:00 PM	M–H	L6, Conv. Center	Teaching About Our Human-made World (p. 94)
2:00–3:00 PM	E–H	Marriott VII, Marriott	SYM-1 Follow-Up Session: Monarch Life Cycles and Raising Monarchs in Captivity (p. 94)
3:30–4:30 PM	M–H	L6, Conv. Center	Facing the Future: Global Connections and Sustainability (p. 98)
3:30–4:30 PM	P–M/I	L10, Conv. Center	Facilitating Early Childhood Education with Project Learning Tree (p. 99)
3:30–4:30 PM	E–H	Marriott VII, Marriott	SYM-1 Follow-Up Session: Classroom Lessons with Monarchs (p. 99)
4:00–5:15 PM	9–12	102/103, Conv. Center	Exploring Renewable Energy: A Hands-On STEM Investigation (p. 99)
4:00–5:15 PM	9–12	211, Conv. Center	Hands-On Activities to Explore Environmental Change (p. 100)
5:00–6:00 PM	E–H	L4, Conv. Center	Forests, Carbon, and Climate Change (p. 101)

Saturday

8:00–9:00 AM	E	203/205, Conv. Center	Breathe Fresh Air into Your Curriculum Using Environmental Education (p. 103)
9:30–10:30 AM	M/I	203/205, Conv. Center	Food Chains: Using Field Surveys That Give Real Numbers (p. 107)

Integrated/General

Thursday

8:00–9:00 AM	E	208, Conv. Center	Let’s Give ‘em Something to Talk (Write) About! (p. 44)
8:00–9:00 AM	P–E	109, Conv. Center	Literature to Engage Early Childhood Learners for Science (p. 43)
8:00–9:00 AM	G	L6, Conv. Center	ASEE Session: ASEE’s K–12 Outreach Program eGFI: Engineering, Go For It and the Marshmallow Challenge (p. 44)
8:00–9:00 AM	G	Marriott V, Marriott	Is This Your First NSTA Conference? (p. 45)
8:00–9:00 AM	M–H	Marriott I/II, Marriott	CSSS Session: Connecting with the Common Core State Standards (CCSS) for English Language Arts and Literacy (p. 43)
8:00–9:00 AM	G	Kentucky A/B, Marriott	NMLSTA Session: Grant Proposal Writing—Step by Step (p. 45)
8:00–9:00 AM	M–H	Kentucky C/D, Marriott	Promoting Scientific Literacy Through the Use of Novels (p. 43)

Schedule at a Glance Integrated/General

8:00–9:00 AM	G	L3, Conv. Center	Planning and Designing Safe, Sustainable, and Flexible Facilities for STEM-based Science (Science Facilities 101) (p. 44)
8:00–9:15 AM	9–12	102/103, Conv. Center	A Simple Connection Between STEM and Data Logging (p. 46)
8:00–9:15 AM	K–6	110/111, Conv. Center	Inquiring Minds Provide Spark for Science Lessons (p. 46)
8:00–10:00 AM	K–8	106/107, Conv. Center	Science-centered Language Development with FOSS (p. 46)
9:15–10:30 AM	G	Cascade A/B, Conv. Center	Updating the Development of the Next Generation Science Standards (p. 47)
10:00–11:15 AM	K–6	110/111, Conv. Center	DSM and STEM: Challenges for the Elementary Student (p. 47)
11:00 AM–12 Noon	G	L6, Conv. Center	ASEE Session: Introducing Engineering to Elementary School Students (p. 50)
11:00 AM–12 Noon	G	L3, Conv. Center	The Architects Have Started Without Me—What Do I Do Now? (Science Facilities 102) (p. 50)
11:00 AM–12 Noon	M	Kentucky C/D, Marriott	Science Skills Toolkit (p. 49)
12 Noon–1:15 PM	9–12	102/103, Conv. Center	STEM: The Game Changer in Science Lab Design (p. 50)
12:30–1:00 PM	S	104, Conv. Center	Building a STEM Pipeline (p. 51)
12:30–1:30 PM	G	L6, Conv. Center	ASEE Session: Engineering the Future with <i>TeachEngineering.org</i> (p. 53)
12:30–1:30 PM	E	109, Conv. Center	SOS: Save Our Science—Integrating Across the Curriculum (p. 52)
12:30–1:30 PM	E–M	Conf. Theatre, Conv. Center	NSTA Press Session: Bringing Outdoor Science In (p. 52)
12:30–1:30 PM	G	Kentucky C/D, Marriott	Teaching Problem-Solving Strategies in the Elementary Classroom: Helping Students See the Interconnectedness of Science, Technology, Engineering, and Mathematics (p. 52)
12:30–1:30 PM	G	Kentucky F, Marriott	The Maryland Green Schools Program: Connections Between Environmental Education and Student Achievement (p. 52)
12:30–1:30 PM	M–H	Kentucky A/B, Marriott	Iteration in Engineering (p. 53)
12:30–1:45 PM	K–12	105, Conv. Center	Stand Back! We're Using Discovery Education Science Techbook for Grades K–12 (p. 54)
12:30–2:00 PM	K–8	110/111, Conv. Center	Laurel and Hardy and the Laws of Science (p. 55)
1:30–3:00 PM	K–6	106/107, Conv. Center	Engage Students with Active Learning Through FOSS, 3rd Edition (p. 55)
2:00–3:00 PM	G	101, Conv. Center	Engineering-enhanced Science, Inquiry, and Problem Solving (p. 55)
2:00–3:00 PM	P–E	L10, Conv. Center	Linking Home and School with P.A.S.S. (Portable Affordable Simple Science) (p. 58)
2:00–3:00 PM	G	L6, Conv. Center	ASEE Session: NASA's BEST Students (Beginning Engineering, Science, and Technology): Build a Buggy to Explore Mars! (p. 58)
2:00–3:00 PM	P–E	L11, Conv. Center	<i>Science & Children</i> —A Year of Inquiry (p. 58)
2:00–3:00 PM	G	203/205, Conv. Center	Improve Administrator Effectiveness: Use the NSTA Learning Center Accountability System (p. 56)
2:00–3:00 PM	S	112, Conv. Center	CRaTE-ing Success in the Science Classroom (p. 56)
2:00–3:00 PM	G	Kentucky F, Marriott	Standards-based Grading in the Science Classroom (p. 57)
2:00–3:00 PM	E	Kentucky C/D, Marriott	Differentiating K–6 Science Instruction to Enable All Students to Inquire, Explore, Participate, and Achieve Success (p. 57)
2:00–5:00 PM	G	Kentucky G, Marriott	Implication of the NRC <i>Framework</i> and the Highly Anticipated NGSS for Teaching and Learning (p. 59)
2:15–3:30 PM	K–8	211, Conv. Center	What Quality Science Instruction Has to Do with Raising Achievement Scores K–8 (p. 60)
2:15–3:30 PM	7–C	113, Conv. Center	Create a Digital Classroom...Using 21st-Century STEM Initiatives! (p. 59)
3:00–4:30 PM	K–8	110/111, Conv. Center	What's Going on in There? NGSS Inquiry Science for Supervisors, Trainers, and Teachers (p. 60)
3:30–4:30 PM	G	L6, Conv. Center	ASEE Session: Scientific Inquiry and the Engineering Design Process—How Are They Similar and Different? (p. 63)
3:30–4:30 PM	E	L10, Conv. Center	Cutting Across the Curriculum: Examining Lessons That Integrate Science, Literacy, and Mathematics (p. 63)
3:30–4:30 PM	M	109, Conv. Center	Integrating Theater Arts Through Color Mixing with Light (p. 62)
3:30–4:30 PM	K	106/107, Conv. Center	Materials in Our World: STEM for Early Childhood (p. 63)
3:30–4:30 PM	E–M	112, Conv. Center	Bringing Tropical Rain Forest Research to the Urban Classroom (p. 60)
3:30–4:30 PM	G	203/205, Conv. Center	Before and After Retirement: Practicalities and Possibilities (p. 60)
3:30–4:30 PM	S	L3, Conv. Center	A BLAST from the Past—Discipline for a Less Explosive Classroom (p. 62)
3:30–4:30 PM	G	Kentucky F, Marriott	Bringing Your Classroom Alive: Active Learning in the Science Classroom (p. 62)

Schedule at a Glance Integrated/General

3:30–4:30 PM	H	Kentucky C/D, Marriott	The Tablet Computer in the Science Classroom (p. 62)
3:30–4:30 PM	G	Kentucky A/B, Marriott	Is a PhD in Science Education the Right Next Step for Me? (p. 62)
4:00–5:15 PM	2–6	214/215, Conv. Center	Integrate! A Better Way to Teach and Learn (p. 64)
4:00–5:15 PM	7–C	113, Conv. Center	Forensic Digital Microscopy and Inquiry Learning (p. 63)
4:00–5:15 PM	K–12	105, Conv. Center	Science Projects and Notebooking (p. 63)
5:00–6:00 PM	E–M	L10, Conv. Center	Putting STEM to Work in an Elementary STEM Lab (p. 65)
5:00–6:00 PM	M–H	109, Conv. Center	Implementing Literacy Standards in Science (p. 64)
5:00–6:00 PM	G	L6, Conv. Center	ASEE Session: Developing and Publishing Standards for Professional Development for K–12 Teachers of Engineering (p. 67)
5:00–6:00 PM	G	Conf. Theatre, Conv. Center	NSTA Press Session: Connecting with Special Education Students (p. 65)
5:00–6:00 PM	E–M	112, Conv. Center	Planning to Make Sure Inquiry = Learning (p. 67)
5:00–6:00 PM	G	Kentucky A/B, Marriott	Aligning STEM Theory and Application Through Community-based Partnerships (p. 65)
5:00–6:00 PM	H	Kentucky C/D, Marriott	Making the Leap to a Textbook-less Course (p. 66)
5:00–6:00 PM	G	Kentucky F, Marriott	21st-Century Teachers Learning 21st-Century Skills (p. 66)
5:00–6:00 PM	E–H	Kentucky F, Marriott	What Middle School Students Want You to Know (p. 66)

Friday

8:00–8:30 AM	M	L2, Conv. Center	Merging Inquiry and Creativity—with Data Loggers (p. 69)
8:00–9:00 AM	G	Kentucky G, Marriott	Standards-based Assessment for Inquiry-based Classrooms (p. 70)
8:00–9:00 AM	E–H	Kentucky F, Marriott	Science Notebooking Across the Grades (p. 70)
8:00–9:00 AM	M–H	Kentucky A/B, Marriott	Developing Skepticism as an Essential Strategy for Science (p. 72)
8:00–9:00 AM	E–M	104, Conv. Center	Danger Will Robinson... Danger! Your Students May Start to Love Science! (p. 70)
8:00–9:00 AM	G	112, Conv. Center	Beyond the Humanities: Bringing Creativity to the Science Classroom (p. 69)
8:00–9:00 AM	E	Conf. Theatre, Conv. Center	NSTA Press Session: Authors Share Favorite Lessons from Teaching Science Through Trade Books (p. 70)
8:00–9:00 AM	G	101, Conv. Center	Preparing for NGSS—Exploring the Scientific and Engineering Practices (p. 69)
8:00–9:00 AM	E	L10, Conv. Center	Bring Literacy and Science Together: B.L.A.S.T.© for Success at School and Home (p. 71)
8:00–9:15 AM	K–12	102/103, Conv. Center	Equip Your iPad for Science with SPARKvue® HD, a Full-featured Science Application for the iPad (p. 72)
8:00–9:15 AM	K–6	110/111, Conv. Center	Science: The Literacy Connection and the Core Curriculum (p. 72)
8:00–9:15 AM	1–6	214/215, Conv. Center	33 Strategies for Integrating Science (p. 74)
8:00–9:30 AM	3–C	219, Conv. Center	Integrating Your iPad or Mobile Device with Vernier Technology (p. 74)
8:00–10:00 AM	K–8	106/107, Conv. Center	Using Science Notebooks to Impact Student Learning with FOSS (p. 75)
9:30–10:30 AM	G	101, Conv. Center	A Theory of Everything: How Models Define Science and Other Fields (p. 77)
9:30–10:30 AM	G	204/206, Conv. Center	NARST Session: Case Studies in Teacher Content Learning in a Problem-Based Learning Professional Development Setting (p. 77)
9:30–10:30 AM	G	203/205, Conv. Center	NSTA Teacher and Principal Awards and Recognition (p. 77)
9:30–10:30 AM	E	112, Conv. Center	Exploring the Science Encountered in the Young Child's World: Nurturing, Observing, Questioning, Investigating, Thinking, and Talking About Science (p. 79)
9:30–10:30 AM	E	Conf. Theatre, Conv. Center	NSTA Press Session: <i>More Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, K–4</i> (p. 80)
9:30–10:30 AM	6–8	201/202, Conv. Center	<i>PBIS™</i> —Moving Beyond “What Is Science?” to Being Scientists Through Science and Engineering Practices (p. 80)
9:30–10:30 AM	M–H	Kentucky A/B, Marriott	NASA's HIAD Program: Engineering Design in Action (p. 80)
9:30–10:30 AM	G	Entrance to Exhibit Hall	Meet the Presidents and Board/Council (p. 77)
9:30–10:30 AM	G	Kentucky F, Marriott	Effective Professional Development with NSTA Resources (p. 78)
9:30–10:30 AM	E–H	Kentucky G, Marriott	Literacy to Learn Science (p. 78)
9:30–10:30 AM	G	L2, Conv. Center	Social Media for Scientists: How Social Media Can Be Used for Research (p. 78)
9:30–10:30 AM	G	Marriott V, Marriott	NSTA Student Chapter Share-a-Thon (p. 78)
9:30–10:30 AM	G	Marriott IX/X, Marriott	The Scientific Method vs. Scientific Practices—Who Will Survive? (p. 78)
10:00–11:15 AM	K–8	211, Conv. Center	Engineering, Technology, and the Application of Science K–8 (p. 82)

Schedule at a Glance Integrated/General

10:00–11:15 AM	K–12	105, Conv. Center	You're NOT Gonna Believe What We Did in Science Class Today! (p. 81)
10:00–11:15 AM	9–12	102/103, Conv. Center	Achievable Inquiry in AP* Biology and Chemistry (p. 80)
10:00–11:15 AM	K–6	110/111, Conv. Center	Identifying, Clarifying, and Designing Experiments (p. 81)
10:00–11:15 AM	4–12	115, Conv. Center	Detecting Radiation in Our Radioactive World (p. 81)
10:00–11:30 AM	3–C	219, Conv. Center	Introducing the Vernier LabQuest 2! (p. 82)
10:30 AM–12:30 PM	K–6	106/107, Conv. Center	FOSS Formative Assessment: Making Student Thinking Visible (p. 82)
11:00–11:30 AM	G	Kentucky F, Marriott	Knowing What We Don't Know: A Formative Process (p. 82)
11:00 AM–12 Noon	M–C	Kentucky G, Marriott	Teaching Climate and Energy with the CLEAN Collection: Peer-reviewed Climate and Energy Resources at Your Fingertips! (p. 84)
11:00 AM–12 Noon	P–M	Marriott V, Marriott	CESI Session: Council for Elementary Science International Share-a-Thon (p. 86)
11:00 AM–12 Noon	9–12	201/202, Conv. Center	Engineering the Future: A Practical Approach to STEM for High School (p. 86)
11:00 AM–12 Noon	H	Kentucky C/D, Marriott	Science Fair—Not Just the Science Classroom (p. 84)
11:00 AM–12 Noon	M–H	109, Conv. Center	Shifting Our Thinking: The Benefits of Standards-based Grading (p. 83)
11:00 AM–12 Noon	H–C/S	104, Conv. Center	Putting It All Together—Community Campus PLTW STEM Academy: A Western Kentucky Regional Initiative (p. 83)
11:00 AM–12 Noon	E	Conf. Theatre, Conv. Center	NSTA Press Session: <i>Picture-Perfect Science Lessons: Using Children's Books to Guide Inquiry, 3–6</i> (p. 85)
11:00 AM–12 Noon	E–M	L10, Conv. Center	Learning Science Content Through Teaching Practice (p. 84)
11:00 AM–12 Noon	G	101, Conv. Center	How to Engage Science Educators in the Public Review of NGSS (p. 83)
11:00 AM–12 Noon	G	112, Conv. Center	Gray Matter: Learning and Teaching Science with the Brain in Mind (p. 85)
11:00 AM–12 Noon	G	204/206, Conv. Center	NSELA Session: Tools for Science Leaders, Part I (p. 83)
11:00 AM–12 Noon	G	203/205, Conv. Center	Creative Problem Solving with Toshiba/NSTA ExploraVision (p. 83)
12 Noon–1:15 PM	K–12	105, Conv. Center	Building and Assessing Academic Vocabulary Using Notebook Foldables® (p. 86)
12 Noon–1:15 PM	6–12	102/103, Conv. Center	STEM: Meeting the Standards in Your Classroom (p. 86)
12:30–1:30 PM	G	Conf. Theatre, Conv. Center	NSTA Press Session: Implementing Student Research Projects: Tips for Organization and Assessment (p. 88)
12:30–1:30 PM	E–M	L11, Conv. Center	Help! Putting Literacy into Science (p. 90)
12:30–1:30 PM	E–M	104, Conv. Center	Put the “E” in STEM Using Lessons You May Already Have! Real-World Applications to Science Are Everywhere! (p. 90)
12:30–1:30 PM	G	101, Conv. Center	Kentucky's Science Standards—Looking Forward to 2013 (p. 87)
12:30–1:30 PM	H–C	L9, Conv. Center	Crossing Across STEM Silos: An Integrated Approach to Global Health (p. 88)
12:30–1:30 PM	G	109, Conv. Center	Data: It's Not a Four-Letter Word (p. 87)
12:30–1:30 PM	G	204/206, Conv. Center	NSELA Session: Tools for Leaders, Part II (p. 88)
12:30–1:30 PM	H	Kentucky C/D, Marriott	Hawaii Marine Science Seminar (p. 89)
12:30–1:30 PM	G	Kentucky G, Marriott	The Ohio Performance Assessment Pilot Project (p. 89)
12:30–1:30 PM	M–C	Kentucky A/B, Marriott	5E Learning Cycle (p. 91)
1:00–2:30 PM	K–6	106/107, Conv. Center	Taking Science Outdoors with FOSS K–6 (p. 91)
2:00–3:00 PM	G	101, Conv. Center	Product Design and Robots Applied to Health Care Problems: A Recipe for Joy and Passion for K–12 Science and Engineering Education? (p. 92)
2:00–3:00 PM	E	L11, Conv. Center	Science at Home: Take-Home Inquiry Kits for Elementary Children (p. 94)
2:00–3:00 PM	M	L2, Conv. Center	Arguing Both Sides: Literacy and Science (p. 93)
2:00–3:00 PM	G	109, Conv. Center	Leaving No Child Inside: Using Outdoor Spaces for Instruction (p. 92)
2:00–3:00 PM	G	203/205, Conv. Center	Authors Needed! Write for an NSTA Journal (p. 92)
2:00–3:00 PM	P–M	112, Conv. Center	A Buyer's Guide...and Gourmet Menu! Selecting and Using Outstanding Trade Books (p. 93)
2:00–3:00 PM	E–H	Kentucky G, Marriott	Building a Strong Foundation for Energy Literacy Through Integration of Instruction Across Content Areas and Grade Levels with “EnergyDay”! (p. 93)
2:00–3:00 PM	G	Kentucky A/B, Marriott	Elevate Student Success Through a Brain-friendly Classroom (p. 94)
2:00–3:00 PM	M–H	Kentucky C/D, Marriott	Engaging Young People in STEM Through Service Learning (p. 93)
2:00–3:00 PM	E–H	Kentucky F, Marriott	Get SIMulated! (p. 93)
2:00–3:00 PM	6–8	201/202, Conv. Center	How Do Scientists Work Together to Answer Big Questions and Solve Big Problems in <i>PBIS</i> ™? (p. 94)
2:00–3:15 PM	6–9	209, Conv. Center	Student Collaboration in the Science Classroom (p. 95)
2:00–3:15 PM	5–C	105, Conv. Center	STEM Engineering for Science (p. 95)
3:30–4:30 PM	E–M	L11, Conv. Center	Mapping for Meaning (p. 99)

Schedule at a Glance Integrated/General

3:30–4:30 PM	G	204/206, Conv. Center	Linking Science Writing and Research Through the DuPont Challenge (p. 97)
3:30–4:30 PM	E	112, Conv. Center	Preparing Today's Students for Tomorrow's Challenges Through Creative Problem Solving (p. 98)
3:30–4:30 PM	G	109, Conv. Center	Music to Enhance Content Memory (p. 97)
3:30–4:30 PM	G	203/205, Conv. Center	The NSTA Learning Center: Free Professional Development Resources and Opportunities for Educators (p. 97)
3:30–4:30 PM	H	Kentucky C/D, Marriott	What's the Big Idea? Standards-based Teaching and Grading (p. 97)
3:30–4:30 PM	G	Kentucky A/B, Marriott	January and May Terms: A Novel Way to Incorporate Project Based Learning (PBL) into the Middle School Curriculum (p. 97)
3:30–4:30 PM	G	Kentucky G, Marriott	NOAA in Your Backyard (p. 98)
3:30–4:30 PM	G	Kentucky F, Marriott	Leveraging Web 2.0 to Teach Science (p. 98)
3:30–4:30 PM	6–12	201/202, Conv. Center	Your Technology Solution for STEM and the Highly Anticipated Next Generation Science Standards (p. 99)
5:00–6:00 PM	M	Kentucky F, Marriott	Formative Assessment Strategies Designed to Scaffold Student Learning (p. 100)
5:00–6:00 PM	G	Kentucky C/D, Marriott	AMSE Session: Literacy in the Science Classroom to Create a Balanced Program (p. 100)

Saturday

8:00–9:00 AM	G	Kentucky F, Marriott	Bringing Problem-based Writing Assignments to Life in the Science Classroom (p. 103)
8:00–9:00 AM	E–H	Kentucky G, Marriott	Chefs Don't Use Cookbooks—Why Should Students? (p. 106)
8:00–9:00 AM	M	Kentucky A/B, Marriott	STEM Projects for the Middle School Science Classroom (p. 103)
8:00–9:00 AM	E–H	112, Conv. Center	Standards and Content and Inquiry, Oh My! Creative Strategies to Integrate the Three! (p. 103)
8:00–9:00 AM	M–H	104, Conv. Center	STEM Through Aviation and Aerospace (p. 104)
8:00–9:00 AM	E	L11, Conv. Center	STEM Activities: Animal Pictures, WebQuest, Boat Constructions, and Pumpkingrams (p. 106)
9:30–10:30 AM	E	L10, Conv. Center	These Are Not Your Parents' LEGOs®! (p. 109)
9:30–10:30 AM	E	207, Conv. Center	NSTA Press Session: Inquiring Scientists, Inquiring Readers: Using Nonfiction to Promote Science Literacy, Grades 3–5 (p. 108)
9:30–10:30 AM	H–C	216/217, Conv. Center	SCST Session: Converting Activities from Cookbook to Inquiry (p. 109)
9:30–10:30 AM	E–H	Kentucky G, Marriott	How Dirty Is Your Windshield? Using Foldable Formative Assessments (p. 109)
9:30–10:30 AM	G	Kentucky F, Marriott	Scientists Write and Read, Too! Exploring Reading and Writing Strategies in the Science Classroom (p. 108)
11:00 AM–12 Noon	E–H	Kentucky G, Marriott	Moving from Misconceptions to Conceptual Change (p. 112)
11:00 AM–12 Noon	G	Kentucky A/B, Marriott	You Are Certifiable! National Board Certifiable, That Is (p. 111)
11:00 AM–12 Noon	G	Kentucky F, Marriott	Laughing and Learning: How to Use Humor in Science Lessons (p. 111)
11:00 AM–12 Noon	M/I	109, Conv. Center	Using NASA Press Releases to Develop Literacy in Integrated Science Lessons (p. 111)
11:00 AM–12 Noon	E–M	112, Conv. Center	Interactive Journals (p. 111)
11:00 AM–12 Noon	P–E	L11, Conv. Center	Teaching Younger Students About Energy Outside the Science Classroom (p. 112)
11:00 AM–12 Noon	E	L10, Conv. Center	EiE I Know...I Can Be an Engineer...EiE I Know! (p. 112)

Physics/Physical Science

Thursday

11:00 AM–12 Noon	E	109, Conv. Center	Shine the Light on Inquiry Science (p. 50)
12 Noon–1:30 PM	5–12	108, Conv. Center	STEM Approach to Teaching Electricity and Magnetism (p. 50)
12:30–1:30 PM	M–H	208, Conv. Center	Seeing the Invisible: Making the Electromagnetic Spectrum Concrete (p. 52)
2:00–3:00 PM	H–C	104, Conv. Center	POGIL (Process-Oriented Guided Inquiry Learning) for the AP Physics Classroom (p. 56)

Schedule at a Glance Physics/Physical Science

2:00–3:00 PM	E	109, Conv. Center	Using Data to Move the Common Core into Science Inquiry (p. 58)
2:00–3:00 PM	G	Conf. Theatre, Conv. Center	NSTA Press Session: Uncovering Physical Science Core Ideas in the NGSS Using Formative Assessment Probes (p. 56)
2:00–3:30 PM	5–12	108, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 59)
3:30–4:30 PM	H	104, Conv. Center	Putting the “E” in Your STEM Courses (p. 60)
3:30–4:30 PM	P–M	208, Conv. Center	CESI Session: Power Paper Projects for Physical Science (p. 62)
4:00–5:30 PM	5–12	108, Conv. Center	Sound, Waves, and Music (p. 64)
5:00–6:00 PM	P–M	104, Conv. Center	Technological Design for Elementary Students (p. 64)
5:00–6:00 PM	M–H	208, Conv. Center	Understanding the School Building as a System (p. 67)

Friday

8:00–9:00 AM	M–H	208, Conv. Center	AAPT Session: Newton’s Laws Explained; Centripetal Motion Examined (p. 70)
9:30–10:30 AM	M–H	L9, Conv. Center	Teaching to the Test: Standards-based Grading in the Physics Classroom (p. 78)
9:30–10:30 AM	E–M	L11, Conv. Center	Elastic Power: Wind Up Your Engines and Explore (p. 80)
9:30–10:30 AM	M–H	109, Conv. Center	Space Rescue Design Challenge (p. 79)
11:00 AM–12 Noon	M–H/I	208, Conv. Center	AAPT Session: The Light Fantastic: Demonstrations of Light and Radiation (p. 85)
12 Noon–1:30 PM	5–12	108, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 87)
12:30–1:30 PM	M–H/I	208, Conv. Center	AAPT Session: Making Magnetism Visible (p. 90)
12:30–1:30 PM	8–12	201/202, Conv. Center	Active Physics—Ahead of Its Time in Capturing the Essence of the Highly Anticipated NGSS and STEM (p. 91)
2:00–2:30 PM	H	L8, Conv. Center	Physics Essential Curriculum and Assessment (p. 91)
2:00–3:00 PM	E–M	L10, Conv. Center	Learning Progression for Force and Motion K–8 (p. 94)
2:00–3:00 PM	M–H	104, Conv. Center	The Science of Seat Belts (p. 93)
2:00–3:00 PM	I	208, Conv. Center	AAPT Session: Fun with Elastic Energy (p. 93)
2:00–3:15 PM	7	114, Conv. Center	NGSS and Scientific Practices—More Than Photoshopping Models’ Flaws (p. 95)
2:00–3:15 PM	6–12	102/103, Conv. Center	Investigating Motion: Understanding and Interpreting Graphs (p. 95)
2:00–3:30 PM	5–12	108, Conv. Center	Sound, Waves, and Music (p. 96)
2:00–3:30 PM	9–C	219, Conv. Center	Physics and Physical Science with Vernier (p. 96)
3:30–4:30 PM	M–C	208, Conv. Center	AAPT Session: Gathering Evidence for the Wave Nature of Light (p. 98)

Saturday

8:00–9:00 AM	G	208, Conv. Center	WonderWorks in the Classroom (p. 104)
8:00–9:00 AM	E–H	Conf. Theatre, Conv. Center	NSTA Press Session: Classroom Activities for <i>Stop Faking It! Force & Motion</i> (p. 104)
9:30–10:30 AM	E–H	Conf. Theatre, Conv. Center	NSTA Press Session: Classroom Activities for <i>Stop Faking It! Energy</i> (p. 109)
9:30–10:30 AM	H	208, Conv. Center	Exploring What Affects the Strength of a Solenoid (p. 108)
9:30–10:30 AM	M–H	109, Conv. Center	Music and Physics: Magnetism, Electricity, Vibration, and How to Build an Electric Guitar (p. 107)
11:00 AM–12 Noon	M–H	104, Conv. Center	Waves and Technology of Modern Communications (p. 110)

Index of Participants

A

Albrecht, Helmut 51, 83
Allan, Elizabeth 76, 83, 88
Allen, Jackie 70
Andrew, Keith 90
Ansberry, Karen 41, 70, 80, 85
Arnold, Tonya L. 50, 58
Arts, Robert W. 93
Atherton, Elizabeth R. 93

B

Badders, Bill 47, 49
Balentine, Shannon 52
Barstow, Norm B. 80
Baughman, Graham 95
Baxter, David M. 69
Beavers, Amy 70
Beharka, Alison A. 97
Bell, Jerry 70, 79, 85, 90, 93, 98
Bell, Nathaniel 51, 83
Bell, Tara 65, 86
Bennett, Jeffrey 96
Benton, Erik 46, 59, 64, 87, 96
Bernhisel, Steven M. 94
Bertino, Anthony J. 84, 88
Bertino, Patricia Nolan 84, 88
Biehle, James T. 44, 50
Birchler, David 99
Birriel, Ignacio 85
Birriel, Jennifer 85
Birts, Teshia 78
Bishop, Toni 81
Bolenbaugh, Todd 43, 49, 104
Bonham, Scott 98
Bonneau, Jacklyn 53, 67
Bowden, Raymond 47, 49
Bowers, Grant 75, 94, 99
Bowers, Sharon 111
Bowles, Vivian L. 92
Bowling, Ella F. 57, 108
Bowman, Michael T. 89
Brackman, Thomas B. 90, 109
Brazas, Julia 70
Brey, James A. 77
Brimeyer, Ashley 94
Britschgi, Theresa B. 58, 88, 97
Brock, Martin 63, 94
Brown, Laura L. 69
Brown, Leigh 74, 82, 96, 106, 110
Brown, Sherri L. 62
Buchler, Davida 53, 58, 62
Bunn, Leigh 43

C

Cafarella, John 55, 60
Cain, Dennis 67
Campbell, Brian 46, 55, 82
Canipe, Steve 98
Carpenter, Marcia Kuegel 83
Carrico, Tim 70
Carter, David 74, 82, 87, 96
Cartwright, Tina J. 53
Cesa, Irene 47, 72
Chandran, Haridas 110
Chirikjian, Jack 73, 81, 87, 95
Chuboff, Mary H. 66
Clark, Ted M. 76
Clay, Susan 111
Coats-Haan, Sandee J. 56
Code, Steven T. 97
Constant, Matthew D. 56, 108
Cook, Laurie 58
Cooper, Robin L. 44, 53, 100
Coyle, Erin M. 70, 109, 112
Crocker, Betty 86, 106
Culbertson, Britta 87, 98, 112
Culen, Chris M. 98
Cumiskey, Sharon L. 111
Cummings, Dennis 44
Cunningham, Christine M. 55
Curless, Melinda N. 55, 87
Cynkar, Tom 73, 81, 87, 95

D

Davids, Mark J. 110
Davis, David M. 108
Day, Martha M. 55, 91, 108
De Lucchi, Linda 55, 63
Delesbore, Sharon J. 100
Dell, Katie 52
DeSoto, Brian 99
Devoe, Sasha 62
Dick, Kevin D. 108
Dodd, Greg 44, 52
Dodge, Susan 84, 104, 112
Dorman, Jessica 88
Dotti, Kristen R. 63, 67, 108
Doty, David 54, 59, 63
Duncan, Patti 54
Dunlap, Candace 84

E

Eckels, Lacey D. 100
Eisenhut, Christina 58
Eisenkraft, Arthur 72, 91
Elkins, Sean 43, 87
English, Peter 109
Escudero, Edmund J. 67

F

Farmer, Cheryl 67
Fields, Ashley C. 84
Fields, Ronda K. 84
Finch, Jan 87
Flack, Margaret 81
Fleming, Teri 73
Forist, Melinda 93
Fries-Gaither, Jessica 108
Froschauer, Linda 58
Fulkerson, Clara Mackin 47, 49

G

Gelderman, Richard 79
George, Michael S. 78
Ghiso, Maria 101
Gianelloni, Marcelle 76
Gifford, Nancy 93
Gilbert, Steven W. 77
Gilchrist, Michael R. 103
Gillham, Doug 73
Gmurczyk, Marta U. 51, 52, 56
Godlesky, Frank J. 52
Goforth, Rod 111
Good, Jennifer M. 103
Goodwin, Debbie 43, 49, 104
Graika, Tom 46, 47, 72, 81, 91
Gran, Susan 62
Greenler, John M. 90
Grogan, Marian 84

H

Hafell, Belinda H. 84
Haines, Sarah 52
Hambrick, Pamela 43
Hampton, Lisaann 78
Hargis, Brandon M. 91, 108, 110
Harland, Darci J. 88
Harmon, Stephanie L. 64, 83
Hart, Reeda 90, 109
Haudenschild, Candace 62
Hauray, David L. 77
Hayes, Carolyn A. 85
Hazel-Skrodenis, Molly 53
Helm, David 47, 49, 55, 77, 92
Helm, Sabrina M. 61
Hennings, Allison 88
Henry, Laurie 90
Herrold, Ardis 72, 80, 85, 91, 101, 107
Hesson, Nicole 93
Higgins, Lynn 101, 108
Hilborn, Robert 109
Hodges, Georgia W. 43

Hoekzma, Katie 109
Hollenbeck, James E. 69
Holsinger, Rachel C. 44, 53, 100
Holt, Susan 59, 64, 73, 81, 94
Horton, Darleen 103
Humber, Rachael 103
Hunn, Diana M. 45, 79, 104, 111
Hunt, Maureen 59

I

Ising, Tracy E. 52, 97, 111

J

Jackson, Caryn 43, 49, 104
Jackson, Kevin 100
James, Amy 64
Jaramillo, Rebecca L. 80
Johnson, Diane 44, 47, 49, 63, 78, 94
Johnson, Michelle J. 92
Johnson, Roberta 72, 80, 85, 91, 94, 101, 107
Jones, Glenda 111
Jones, Julie 43

K

Kaleuati, Karen 56
Kasparie, Diane L. 93
Keeley, Page 56, 61, 92
Keeling, Laura G. 109, 112
Kelp, Lisa 87, 110
Kessler, James H. 44, 71, 80, 85, 90, 94, 98
Kingham, Brian E. 84
Klein-Gardner, Stacy S. 50, 53, 63, 67
Knoell, Donna L. 52, 57, 79
Koenig, Elizabeth A. 93
Koker, Mark 73, 106
Koller, Herb 48, 60, 96
Krall, Rebecca M. 44, 53, 100
Kruisenga, Kathy 109

L

Lane, Lynette M. 62
Lang, Robert E. 60, 91
Lechleiter, Dave 97
Lee, Kenny 70
Lindblom, Keith 56
Lineberry, Mary 69
Linz, Ed 65
Logsdon, Tresine 43
Long, Kathy 55, 82
Lord, Thomas R. 76, 88
Lukens, Jeff 104, 109

- M**
- Maier, Frederick E. 107
 Mai, Khuyen 73, 81, 87, 95
 Majors, Twanelle Walker 81
 Makurat, Steve 89
 Malone, Larry 48, 50, 63
 Markowitz, Dina 94
 Marshall, Robert 82
 Mattingly, Ken 57, 83
 Mattox, Steve R. 53
 Maxwell, Marge 56
 Mayo, Susan 44, 53, 78, 100
 McConnell, Tom J. 77
 McCoy, William “Doug” D. 76
 McDaniel, Kerrie 103
 McDilda, Katie 53
 McKay, Trinna S. 43
 Melville, John 74, 82, 87, 96
 Messer, Miranda 52, 97, 111
 Metz, William C. 72, 106, 112
 Mintz, Ellen 75
 Mohsen, J.P. 44, 50, 53, 58, 63, 67
 Monowar-Jones, Lauren V. 89
 Monroe, Marc 49
 Morgan, Emily R. 41, 70, 80, 85
 Motz, LaMoine L. 44, 50
 Mury, Michael 59, 103
 Myka, Jennifer Leigh 97, 104
- N**
- Nagle, Barbara 48, 54, 60, 64
 Nail, Kelly 75, 94, 99
 Neher, Krista 78
 Nichols, Sherry 71
 Nickerson, Lee Ann 52, 97
 Nydam, Andrew G. 43, 49, 104
- O**
- Ohlinger, Sean 48, 73, 81
 O’Leary, Jim 75, 94, 99
 O’Leary, Renee G. 58, 71
 Olsson, Nathan 48, 50, 74, 82, 100
 Ostlund, Karen L. 47, 49
 Oszuscik, Sarah 60
- P**
- Pages, Patrice 52
 Pannuti, Thomas G. 84
 Parrent, Sue 112
 Passow, Michael J. 103
 Payne, Melissa K. 69
 Penchos, Jessica 48, 50, 96
 Phillipson-Mower, Teddie 76
 Pietrucha, Barbara R. 83, 97
 Popish, Lisa 52
 Postel, Natalie C. 90
 Pratt, Harold 69, 83
 Pruitt, Stephen L. 47
 Pugh, Ava F. 106
 Pulis, Lee 86
- R**
- Raymond, Wendy 99
 Reagor, Karen 67, 76, 98, 112
 Reed, Terry 46, 47
 Reichmuth, Janet 97, 111
 Reid, Virginia 48, 50, 75, 96
 Rice, Elizabeth 84, 104, 112
 Richards, Jennifer 70
 Rich, Steve A. 52, 71, 78
 Riley, Vicki 92
 Rivoli, Gary J. 51
 Roberts, Ken 92
 Robertson, Bill 104, 109, 111
 Robinson, Theresa Y. 60
 Roland, Elizabeth A.E. 84
 Royce, Christine A. 52, 63, 70, 82, 93
 Rukes, Sherri Conn 51, 65, 88
 Rutledge, Sally 93
- S**
- Sampson, Victor 44
 Sanders, Beth 100
 Schleigh, Sharon 44
 Schneider, Scott 52, 97, 111
 Schoeffler, Anne Farley 49, 110
 Sharpe, Tanya 70, 78, 84
 Shelton, Catherine P. 83
 Sherman-Morris, Kathleen M. 73
 Shiflett-Fitton, Deborah 93
- Shirley, Melissa L. 62
 Shiverdecker, Terry 108
 Short, Brian P. 54, 78, 95
 Short, Carol F. 92
 Shumack, Kellie A. 103
 Silverthorn, Dee 109
 Simmons, Patricia 47
 Singh, Abha 43, 64
 Slone, Katrina A. 44, 67, 70
 Smanik, Jim 70, 78, 84
 Smith, Jennifer S. 69
 Smith, Rick 49
 Sneddon, Jan 65
 Snyder, Joanna 46, 85, 91
 Sparks, Robert T. 53, 58, 112
 Spencer, Erica Beck 46, 85, 91
 Stallard, Jaclyn 53, 80, 99
 Starr, Mary 59, 80, 94
 Stenstrup, Al 53, 80, 99, 101
 Stokes, Brenda D. 45, 103
 Strange, Johanna 46, 47, 72, 81, 91
 Strite, Amy 100
 Strohl, Carrie 64, 74
 Strohmingier, Gordon 50
 Sundberg, Cheryl W. 71
 Sutherland, LeeAnn 95
 Swami, Rajeev 78, 92
 Syverson-Mercer, Cynthia 54, 59, 63
- T**
- Taylor, Sara C. 93
 Taylor, Terri M. 103
 Texley, Juliana 44, 50, 71, 93
 Tharp, Barbara Z. 62, 86
 Thomas, Christie 70
 Thomas, Jeff A. 62
 Thompson, Bryan 103
 Tilson, VeAnn 95
 Tison, Jack 107
 Todd, Rebecca 94
 Tomaselli, Lauren 64
 Tretter, Thomas R. 62
 Tushie, Jean 77
 Tyler, Rico 55, 77, 91
- U**
- Underwood, Amanda R. 90
 Underwood, Joshua C. 111
 Uno, Gordon 70, 78, 84
 Urbanowski, Vin 96, 107
- V**
- Vaughn, Sarah Elizabeth 69
 Vavalla, Peggy 58, 71
 Voll, Martha 99
- W**
- Wahlberg, Howard 60, 78
 Walker, Caryn S. 50, 58, 99, 103
 Walker, Constance E. 112
 Watters, Brandon 46, 81, 95, 99
 Webb, Andi 52
 Wehn, Judith A. 79, 104
 Wehunt, David 109
 Weiland, Ingrid 62
 Wellman, Lora 108
 West, DJ 62, 103
 Wheeler, Gerry 47, 49, 83
 Wheeler, Winn 93
 Whiffen, Pamela 90, 98, 104
 Wierman, Traci 64, 74
 Wiley, Catherina L. 69
 Wisker, Nancy F. 86, 109
 Wyman, Debbi 50, 58
- Y**
- Yager, Robert E. 76
 Yeiser, Aaron N. 83
 Young, Donna L. 63, 67, 90
 Yule, Sheila 112
- Z**
- Zeidler-Watters, Kim 44, 53, 100
 Zenchak, Kristi A. 98
 Zike, Dinah 63

Advertisers

Carolina Biological Supply (Booth #921), www.carolina.com , 800-334-5551	1
CPO Science/School Specialty Science (Booth #720), www.cposcience.com , 800-932-5227	57, 89
Delta Education/School Specialty Science (Booth #820), www.deltaeducation.com , 800-258-1302	57, 101
Frey Scientific/School Specialty Science (Booth #721), www.freyscientific.com , 800-225-3739	57, 65
Fulbright Teacher Exchange Program, www.fulbrightteacherexchange.org	117
It's About Time (Booth #1125), www.its-about-time.com , 888-698-8463	123
Ken-A-Vision Manufacturing Co., Inc. (Booth #928), www.ken-a-vision.com , 800-334-8407	6
Kentucky Science Center (Booth #747), www.kysciencecenter.org/teachers	75
Mississippi State University (Booth #1032), www.distance.msstate.edu	130
National Council of Teachers of Mathematics, www.nctm.org , 800-235-7566	51
PASCO scientific (Booth #1029), www.pasco.com , 800-772-8700	119
Project Learning Tree (Booth #1122), www.plt.org	71
Science First®/STARLAB® (Booth #1043), www.sciencefirst.com ; www.starlab.com , 800-875-3214	42
Swift Optical Instruments, Inc. (Booth #1120), www.swiftoptical.com , 877-967-9438	Cover 3
Texas Instruments, Inc. (Booth #826), http://education.ti.com , 800-TI-CARES (842-2737)	Cover 4
Toshiba/NSTA ExploraVision® (Booth #731), www.exploravision.org , 800-397-5679	4
Vernier Software & Technology (Booth #920), www.vernier.com , 888-837-6437	Cover 2, 25
WARD'S Natural Science, www.wardsci.com , 800-962-2660	15

NSTA Ads

NSTA Avenue (Booth #726), www.nsta.org/louisville	121
NSTA Conferences, www.nsta.org/conferences	13, 22, 23, 24, 45, 105
NSTA Learning Center, http://learningcenter.nsta.org	32
NSTA Member Services (Booth #726: NSTA Avenue), www.nsta.org/membership , 800-722-6782	9, 61, 79
NSTA Press, http://store.nsta.org , 800-277-5300	2
NSTA Science Bookstore, http://store.nsta.org	125

Learn more
at Booth #1120

S.T.E.M.

Smart Teachers Expect More

... and they get it with Swift!

Discover how Swift Microscopes and Digital Products may be used in your STEM classroom.

Swift's line of digital microscopes with solutions software, "Powered by Motic"¹, are designed to meet the ever-increasing, challenging needs of teachers and students.

Go to the head of the class with the Swift M3600 digital series! The M3602C-4DGL model features a new look and a 3.0 megapixel built-in digital camera. Energy-efficient, variable, cordless LED illumination provides white light with virtually no heat. Ideal for capturing images and projecting live specimens.

Swift's constant commitment to enduring quality and technical excellence ensures that you are getting the best product for your budget and application. Our limited lifetime warranty assures that every product is guaranteed against defects in materials or workmanship.



M3602C-4DGL

How will you use Swift in your STEM classroom?²

Science:

- Cell Biology and structure comparisons
- Data Collection
- Inquiry

Technology:

With included Motic imaging software, you can capture still images and video clips which can be used for further data manipulation, assessment and evaluation.

Engineering:

- Quality control
- Examination of components for consistency
- Check for corrosion, damage, erosion

Math:

- Have you discovered that you can compare specimens and use in math calculations? For example, compare glass fragments² and determine cosine and sine.
- Time Lapse Study
- Sequencing

MICROSCOPES ■ DIGITAL IMAGING PRODUCTS

EXCEPTIONAL OPTICS ■ DURABLE CONSTRUCTION ■ INNOVATIVE DESIGNS

For more information, please call 1.877.967.9438 or visit www.swiftoptical.com



^{*}Remember to practice proper safety techniques!

¹. Motic Images Plus software. Windows XP, Vista, 7, and Mac OSX compatible. ². There are many other ways to apply uses of Swift microscopes and digital products into your curriculum.

Wherever your students learn science,
they can use TI-Nspire™ technology.



With TI, you can now offer every student a one-to-one science learning experience every day in the classroom, lab and field. TI-Nspire™ CX handhelds are permitted on many college entrance exams and compatible with more than 50 Vernier Software & Technology™ data collection sensors. TI's interactive science classroom also includes TI-Nspire™ Student Software for creating dynamic lab reports, powerful assessment tools and an extensive library of free customizable online lessons. Learn more at education.ti.com/us/science.

» Visit TI Booth #826 for a TI-Nspire CX technology demonstration and register for a chance to win* a TI-Nspire CX handheld and TI-Nspire™ Teacher Software.

