NSTA 2009 Area Conference on Science Education

PHOENIX

RISING THROUGH RIGOR, RELEVANCE, AND RELATIONSHIPS

NSTA National Science Teachers Association

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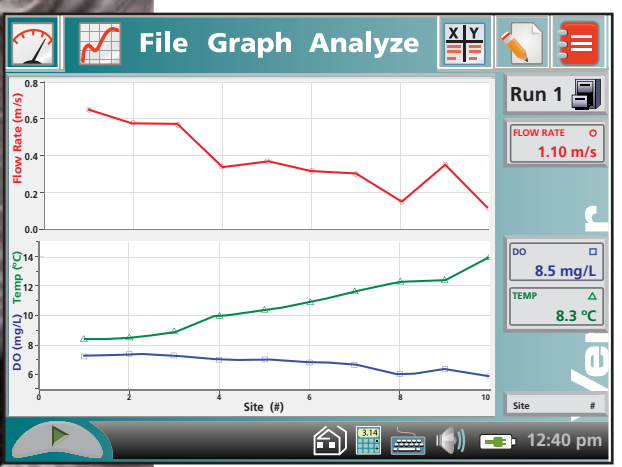

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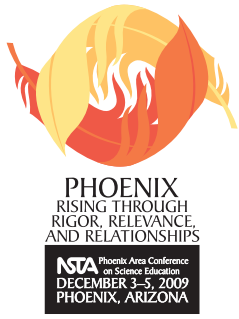
Stop by the OHAUS booth at your 2009 NSTA Area Conference!



NSTA 2009 Conference on Science Education

Phoenix, Arizona • December 3–5, 2009

Registration, Travel, and Hotels

Conference Resources

Conference Resources, cont.

Conference Program

Indexes

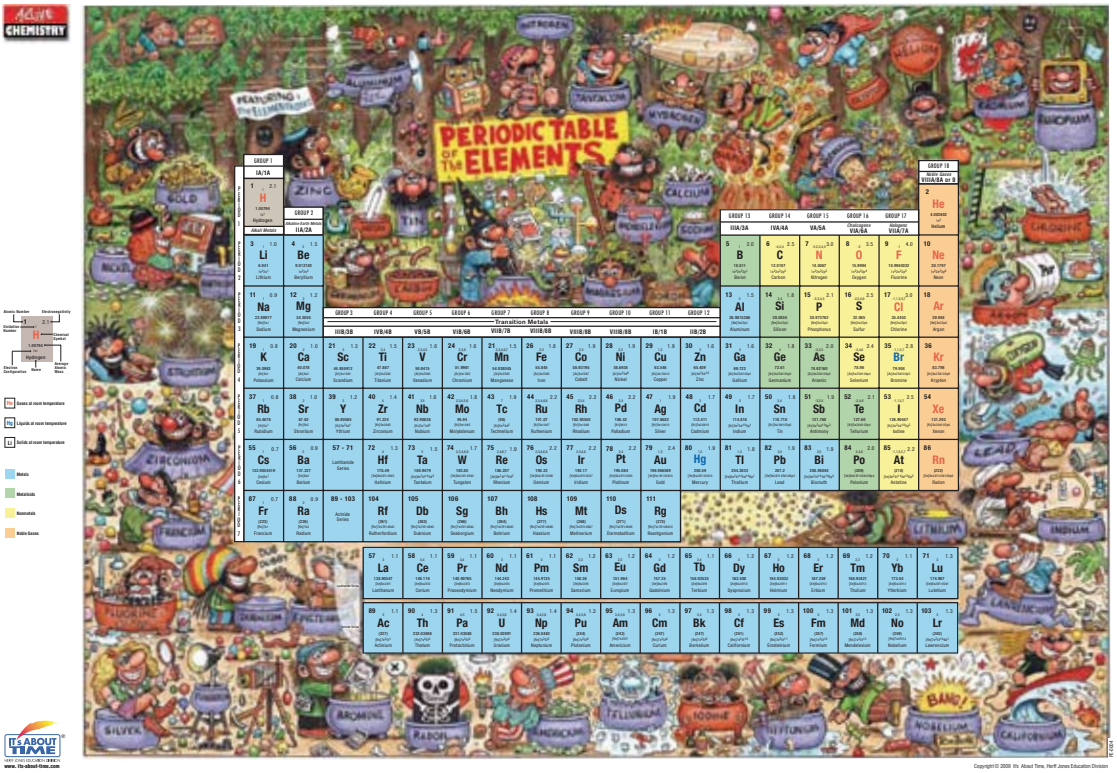
Cover photo courtesy of the Arizona Science Center

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

NSTA Affiliates

Association for Multicultural Science Education (AMSE)
Association for Science Teacher Education (ASTE)
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)

Win a Tomas Bunk Periodic Table!



What Elements Do You See?

A picture is worth a thousand words, or it can mean the difference between whether or not a student is engaged in learning science. That's why at *It's About Time* we focus on engaging and challenging students in science. *And, it works*. Research has proven that one of the most important features of a good science program is to first engage students in wanting to learn science.

To see how we accomplish this in our curricula attend one of our workshops or visit our booth #400. Fill out an entry form to win a Tomas Bunk Periodic Table. At the NSTA conference one winner will be drawn at each workshop and each day of the show.

Tomas Bunk, is a renowned illustrator and artist. He has been featured in Mad Magazine for more than 15 years and was one of the Garbage Pail Kids artists.

IT's ABOUT TIME®
HERFF JONES EDUCATION DIVISION

What Inquiry Should Be

Visit our booth # 400 or web site at www.its-about-time.com

Welcome to Phoenix

Jackie Menasco, Janey Kaufmann, and Xan Simonson

Welcome to Phoenix! The theme of this conference—Rising Through Rigor, Relevance, and Relationships—sends a strong message to science educators. The Conference Committee has planned a wide range of professional learning experiences for science educators at all levels. Don't miss our outstanding keynote speaker, Ira Flatow. Update your content knowledge at one of four all-day programs—Physics Day, Chemistry Day, Biology Day, or Physical Science Day. Take a field trip or network with colleagues Thursday evening at the Arizona Science Center (Ticket M-2)

We would like to thank all the committee members who have worked so hard to produce this wonderful conference. Like the rising Phoenix bird, an understanding of science must be in the forefront when preparing our young people for their world.

2009 Phoenix Conference Committee Leaders

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Janey Kaufmann
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Program Coordinator
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Local Arrangements Coordinator
Xan Simonson
Director
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Mesa, AZ 85204
nxsimons@mpsaz.org

Phoenix Conference Committee

Program Committee

Strand Leader
Rigor Without Mortis: Challenging and Accessible Content
Lacey Wieser
Arizona Dept. of Education
Phoenix, AZ

Strand Leader
Relevance: Science as an Authentic Context for Using the Skills of Literacy and Mathematics
Susan Sprague
National Science Education Leadership Association
Prescott, AZ

Strand Leader
Relationships: Building Professional Relationships for Transformative Learning
Joan Gilbert
Tucson Unified School District
Tucson, AZ

District XIV Director
Susan Van Gundy
National Science Digital Library
Boulder, CO

Local Arrangements Committee

Exhibits Liaison
Cheryl Dunham
Scottsdale Unified School District
Phoenix, AZ

Field Trips Manager
Kenneth Costenson
Science Consultant
Chandler, AZ

Guides Manager
Amanda Grimes
Mesa Biotechnology Academy
Mesa, AZ

Manager of Services for People with Disabilities
Linda Coyle
Paradise Valley Unified School District #69
Phoenix, AZ

Publicity Manager
Tina Skjerping Drews
Salt River Project
Phoenix, AZ

Social Functions Manager
Dianne McKee
Arizona Science Center
Phoenix, AZ

Volunteers Manager
Vicki Massey
Mesa Public Schools
Mesa, AZ

ASTA President
Mary Lara
Flagstaff Unified School District
Flagstaff, AZ

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

NSTA Membership

Become the Best Teacher You Can Be

Members enjoy the best teaching resources, plus online and face-to-face professional development to build skills and improve performance.

- Award winning journals, grade-specific and filled with teaching strategies.
- National and regional conferences for the best face-to-face, hands-on learning across the nation—institutes, symposia, workshops, and presentations.
- Online Learning Center, interactive and topical, to build content knowledge and teaching skills.
- E-newsletters and listservs—stay informed and current, daily, weekly and monthly.
- Web seminars and short courses to build your science knowledge.
- NSTA books just for science educators—topical, strategic, and pedagogical.
- Get connected with NSTA Communities—a unique networking platform developed just for science educators. Create your profile today and meet colleagues, friends and professional contacts that share your passion.

For more information or to become a member, visit *www.nsta.org/membership* or call 1.800.722.6782

NSTA National Science Teachers Association

President's Welcome

The 3 R's of Science Teacher Retention: Resources, Respect, and Renewal

Welcome to the NSTA Phoenix Area Conference on Science Education. As suggested by my presidential theme—The 3 R's of Science Teacher Retention: Resources, Respect, and Renewal—this conference will provide you with the *resources* you need to grow professionally, help you earn the *respect* you deserve, and *renew* yourself as a professional. Our conference theme—Rising Through Rigor, Relevance, and Relationships—reflects our focus on challenging our students in science. Three program strands—Rigor Without Mortis: Challenging and Accessible Content, Relevance: Science as an Authentic Context for Using the Skills of Literacy and Mathematics, and Relationships: Building Professional Relationships for Transformative Learning—will help you get the most from your conference attendance.

In the spirit of David Letterman, following are the top 10 benefits of attending the Phoenix conference and why you will take away so much from this experience:

1. Performance—You and your students deserve to be excellent in science.
2. Leadership—Because new skills, knowledge, and activities help build educational leaders who influence others to do extraordinary things.
3. Discovery—Because looking at the world with a new perspective brings innovation and creativity in the classroom.
4. Motivation—Because expert speakers, educators, and scientists serve to inspire and stimulate.
5. Passion—Because sharing with your peers, your mentors, and the leaders in science education is contagious.
6. Expertise—Because educators are best when they are well versed in their field.
7. Inspiration—Because you will be moved to act by such presenters as Ira Flatow, Jo Anne Vasquez, Matthew Kaplan, Jacqueline Barber, Gina Cervetti, and Page Keeley.
8. Growth—Because your conference experience will expand your world personally and professionally.
9. Freebies—Because exhibiting companies from across the nation will offer you hundreds of classroom giveaways, new products, and samples.
10. Connections—Because you'll meet peers, mentors, leaders, and acquaintances for support and friendship.

So, enjoy the conference! I look forward to meeting you.

Pat Shane
2009–2010 NSTA President

Contributors to the Phoenix Conference

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

American 3B Scientific
Arizona Section of the American Association of Physics Teachers (AAPT)
American Chemical Society (ACS)
American Physical Society (APS)
Arizona Science Center
Arizona Science Teachers Association
Carolina Biological Supply Co.
CPO Science/School Specialty
ExxonMobil Foundation
Kendall Hunt Publishing Co.
National Association of Biology Teachers (NABT)
PBS
VWR Education–WARD's Natural Science, Science Kit & Boreal Laboratories, Sargent-Welch
WGBH Teachers' Domain

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

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interact with your world

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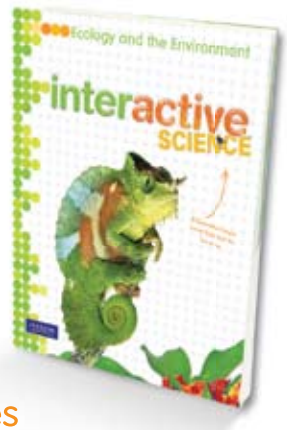

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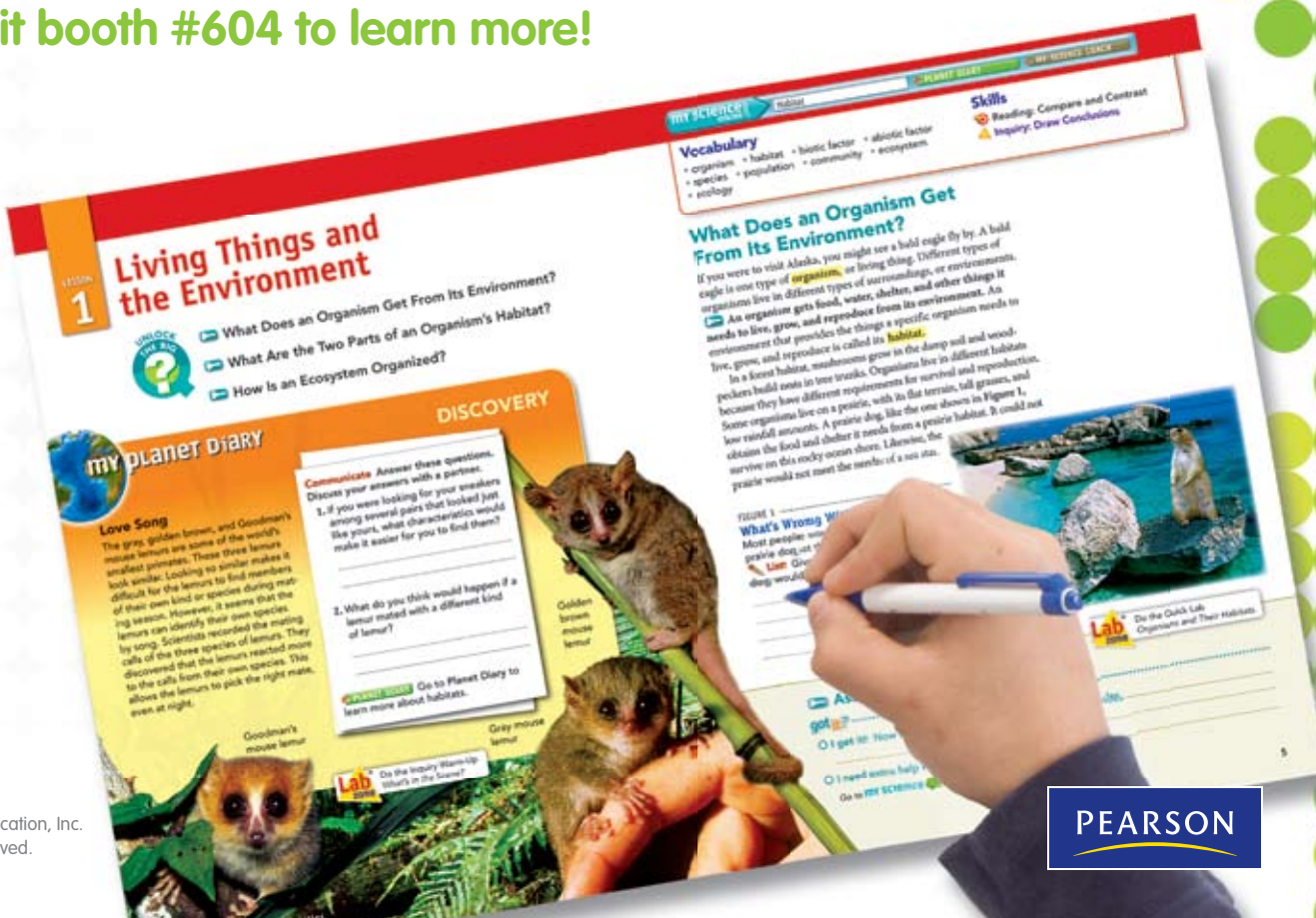
Students' eyes will light up when teachers tell them "This is your book. You can write in it!" With *Interactive Science*, students become the lead authors by recording their discoveries directly in the book.

Visit booth #604 to learn more!



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PEARSON

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 mailing requirements.

Recycled Paper and Sustainable Print Services

Conference previews and final conference programs are now printed on recycled paper. In addition, IPC Print Services, the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, IPC Print Services 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. IPC Print Services has also obtained chain-of-custody certification for paper products to ensure they are being harvested from environmentally responsible sources.

Eco-friendly Exhibition Practices

Our conference partner, GES Exposition Services, consistently looks for ways to deliver sustainable solutions. They offer many green product options and services at our conference exhibitions, including 100% recyclable carpet and padding, biodegradable trash bags and wastebaskets made from recycled materials, and recycled exhibit structures. Their green efforts are extended operationally with energy-efficient lighting, materials recycling, and use of recycled paper and signage products.

Green Initiatives at the Phoenix Convention Center

One of the greenest convention centers in the world, the Phoenix Convention Center is certified by the U.S. Green Building Council with LEED silver rating.

- A photovoltaic solar energy plant is installed atop the West Building, which generates enough electricity to power 12–14 Phoenix homes per year. The plant will reduce the convention center's carbon dioxide emissions by 95 metric tons per year.
- The facility is constructed using wood products that encourage environmentally responsible forest management practices; carpets, paint, and other products with low emissions of volatile organic compounds; Energy Star–compliant roofing and underground parking; and curbside access to public transportation.
- The facility uses mechanical and electrical equipment that dramatically reduces the building's energy consumption. Low-flow lavatories and water-saving landscaping reduce the facility's impact on scarce water resources.
- The convention center practices comprehensive recycling that includes the collection of paper, plastic, cardboard, and glass materials. In addition, biodegradable and recycled materials are used in daily operations and work with clients.

"Go Green" at the Phoenix Conference!

- Recycle your conference programs in the clearly marked recycle bins located throughout the convention center.
- Recycle or re-use your plastic badge holders—you can either turn them in at the NSTA Registration Counter or use them at future conferences.
- Use double-side printing and/or recycled paper for session handouts and other conference materials.
- Walk or use public transportation when possible at the conference.
- Bring your own refillable water bottle to the conference.
- In advance of the conference, presenters are encouraged to post their presentations and handouts on NSTA Communities, the NSTA online professional learning community.

Going digital has never been easier

Turn your classroom into a ...

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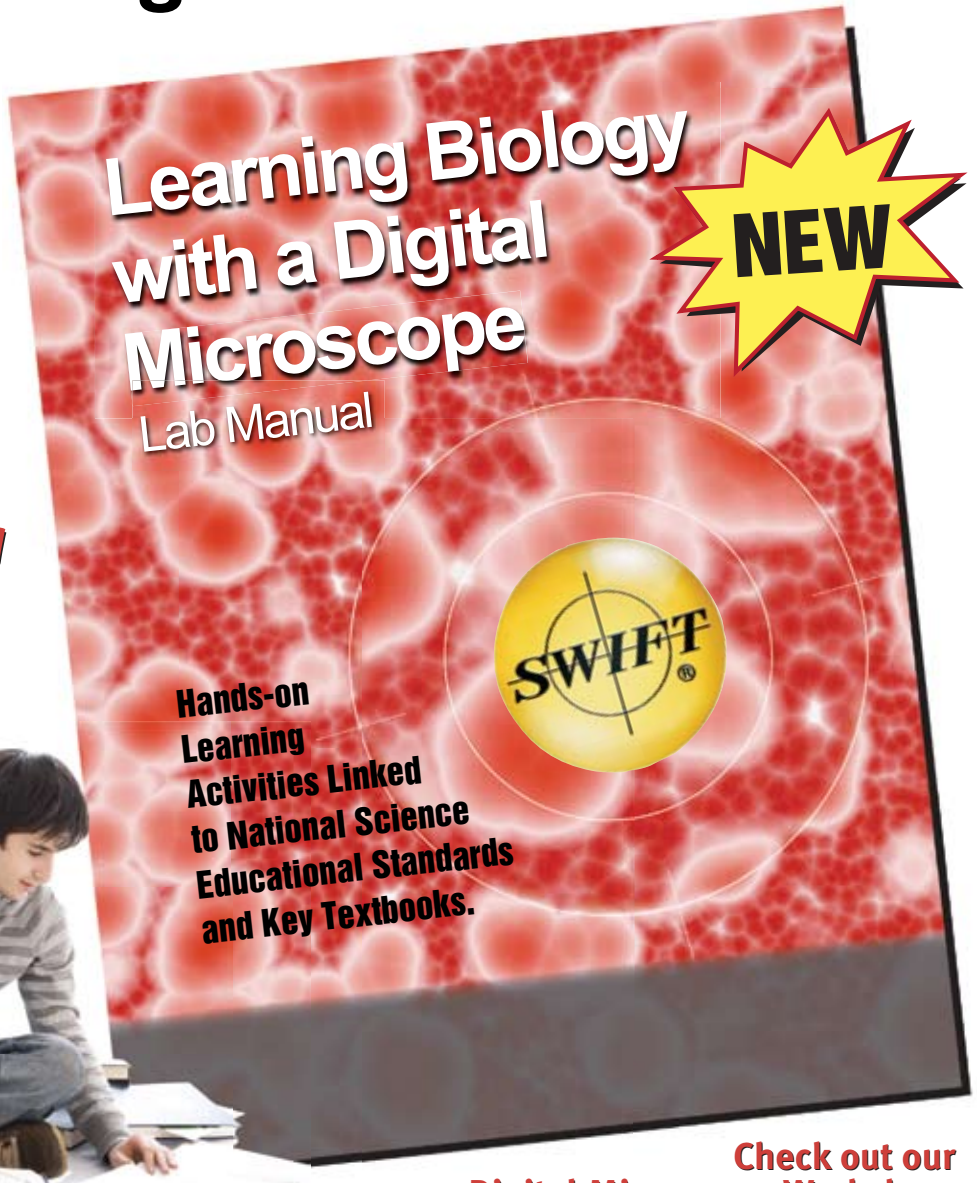
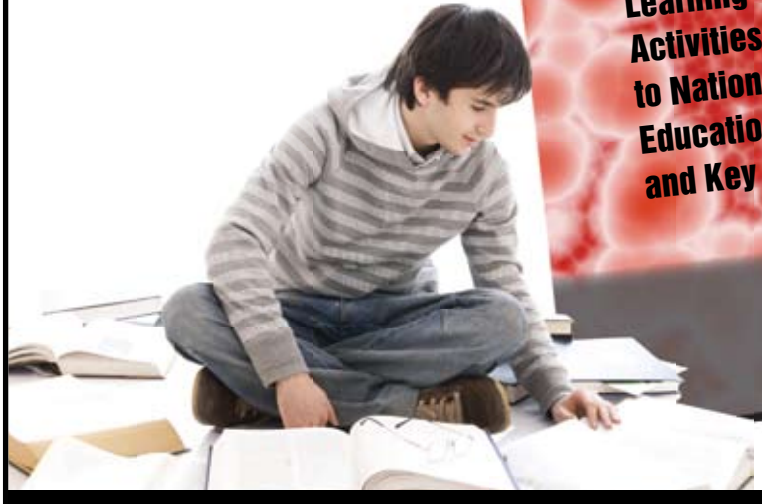


Swift – expanding possibilities & solutions



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—Usery Mountain Regional Park

Meeting Location and Times

The conference headquarters hotel is the Sheraton Phoenix Downtown Hotel. Conference registration, the exhibits, the NSTA Avenue, the NSTA Science Bookstore, and some sessions will be located at the Phoenix Convention Center. Other events will be held at the Sheraton Phoenix. The conference will begin on Thursday, December 3, at 8:00 AM and end on Saturday, December 5, 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 ticketed events for which a separate fee is stated.

The NSTA Registration Area, located in the lobby outside Exhibit Hall E, will be open during the following hours:

Wed., Dec. 2	5:00–7:00 PM
Thu., Dec. 3	7:00 AM–5:00 PM
Fri, Dec. 4	7:00 AM–5:00 PM
Sat, Dec. 5	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 Phoenix Planning Committee has scheduled a variety of ticketed events (short courses, field trips, and social functions). 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 28) for details.

Hotels

See page 12 for a map of NSTA hotels and contact information.

Airlines

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

AirTran	866-683-8368	Event Code SCIENCE09
American	800-433-1790	NSTA Index No. A28D9AA
Continental	800-468-7022	NSTA Agreement Code AKYZQS
Midwest	800-452-2022	Discount Code CMZ7139
Northwest	800-328-1111	WorldFile NY22V
United	800-521-4041	Meeting ID Code 510CK

Ground Transportation to/from Airport

Ground transportation options include taxis and SuperShuttle®. Also, a METRO light rail stop is conveniently located close to the Convention Center. For more information on getting to the aiport ask your concierge or visit the Sky Harbor website *(http://skyharbor.com)* or the Phoenix Convention Center website *(http://phoenix.gov/extranet/pccd/att_transportation.html).*

Getting Around Town/Parking

The convention center and NSTA hotels are located in the heart of Copper Square, 90 blocks of restaurants, attractions, and businesses that make up downtown Phoenix. Getting around is easy. Don't want to walk? Hop on Valley Metro or grab a free lift on Copper Square DASH, Phoenix's new downtown area shuttle. Parking is plentiful—there are more than 31,000 parking spots in Copper Square. For more information, visit *www.coppersquare.com.*

Discounted Rental Cars

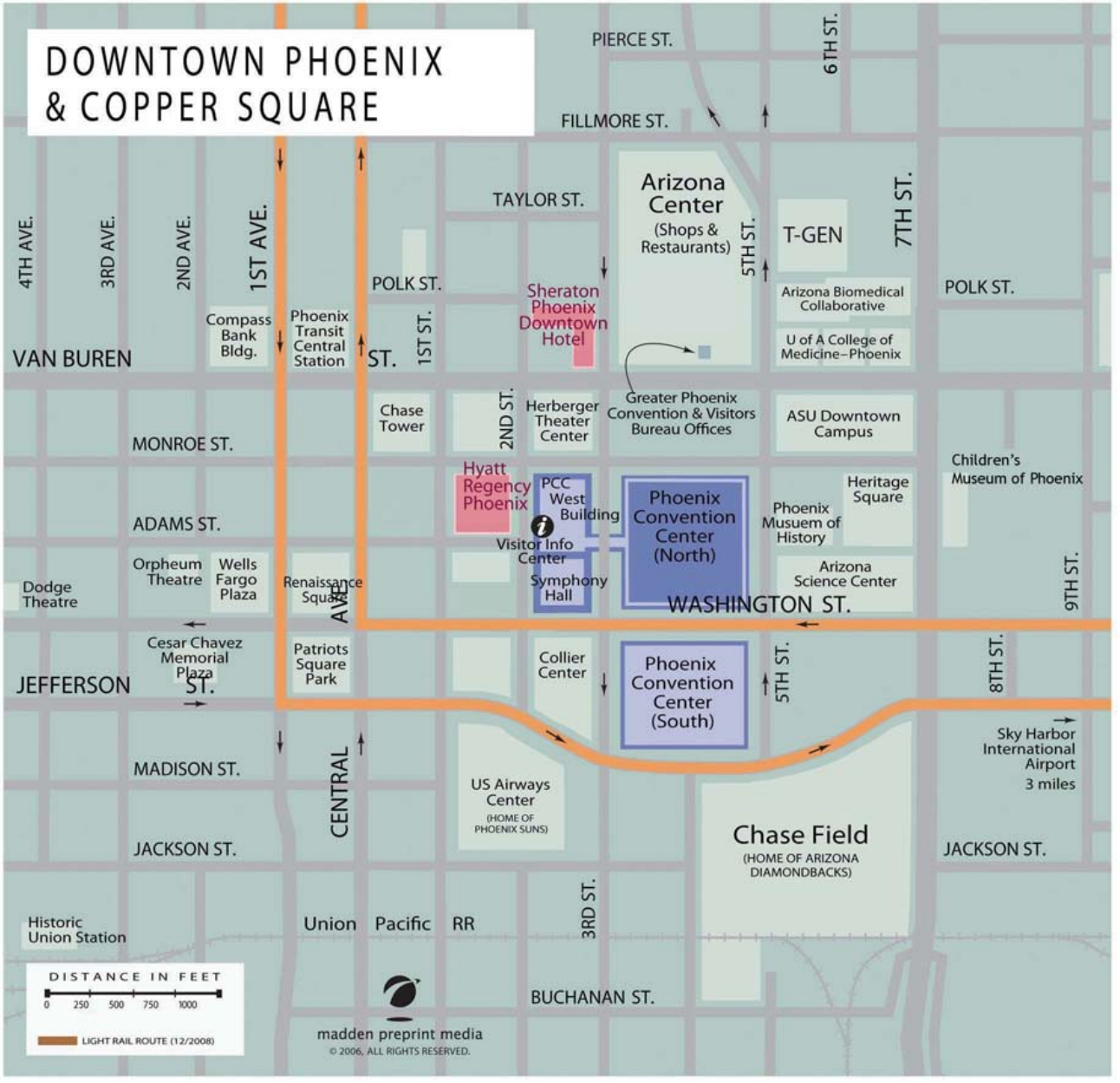
Special car rental rates for conference attendees have been negotiated with Enterprise Rent-A-Car. Make your reservation in one of three ways: book on the internet, call 1-800-Rent-A-Car, or contact your local branch directly. You must use the NSTA corporate number 16AH230 to receive these special rates.

To make your reservation online, log on to *www.enterprise.com.* Enter your destination and dates of car rental and enter the NSTA corporate number 16AH230. Click on "search." At the prompt, enter PIN "NST" and you're on your way!

NSTA Hotels

1. Sheraton Phoenix Downtown Hotel
(Headquarters Hotel)
340 N. Third St.
602-262-2500

2. Hyatt Regency Phoenix
122 N. Second St.
602-252-1234



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NSTA Exhibits

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

The lapel badge mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. A complete list of exhibitors and contact information starts on page 123. A foldout map of the Exhibit Hall floor plan is available at Program Pickup.

Exhibit Hall Hours. Located at the Phoenix Convention Center (Exhibit Hall E), exhibits will be open for viewing during the following hours:

Thu., Dec. 3	11:00 AM–5:00 PM
Fri., Dec. 4	9:00 AM–5:00 PM
Sat., Dec. 5	9:00 AM–12 Noon

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

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 booth. 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 135 for a complete list of exhibitor workshops.

NSTA Avenue

Stop by the NSTA Avenue and learn about NSTA's benefits, services, programs, and partners…all created for you! Share with others, expand your knowledge, and earn rewards for you and your students. See page 130 for a complete list of NSTA services and programs.

NSTA Science Bookstore

Don't miss the opportunity to shop and browse the NSTA Science Bookstore for hundreds of the best books and resources in science education. The Science Bookstore is located in the NSTA Registration Area. NSTA members save 20% on all NSTA Press® products and 10% on products by other publishers. Enjoy our free shipping option as an added attendee benefit!

The Science Bookstore has very convenient hours—it's open Wednesday evening and early in the morning before the Exhibit Hall opens.

Wed., Dec. 2	5:00–7:00 PM
Thu., Dec. 3	7:00 AM–5:00 PM
Fri., Dec. 4	7:00 AM–5:00 PM
Sat., Dec. 5	7:30 AM–12 Noon

Welcome and Information Center

A Welcome and Information Center is located at the Program Pickup Kiosk. Here you'll find information on conference activities, tourist attractions, transportation, and program changes. The center will be staffed during registration hours.

ASTA Booth

The Arizona Science Teachers Association (ASTA) booth is located in the NSTA Registration Area. Stop by for information about Arizona and the benefits of becoming an ASTA member. Membership forms and information on association activities will be available.

Evaluation Booth/Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in and pick up your ribbon at the Evaluation Booth in the Registration Area after you have registered for the conference and received your name badge. Session presenters should also pick up an evaluation packet for each session presented (see page 16).

Conference Evaluation

All conference attendees are invited to complete a conference evaluation form online at *http://ecommerce.nsta.org/2009pho/conference_evaluation.asp.*

First Aid Services

The First Aid room is located in Hall C near the roll-up door on the loading dock side of the hall.

Lost and Found

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

Audiovisual Needs

NSTA will provide an LCD projector if it was requested on the original proposal form. Microphones are also provided in large rooms. For any other AV needs, presenters must arrange and pay for their own equipment. Technology Express, Inc., the designated AV company on-site, will be located in the following rooms:

Convention Center	Room 131A
Sheraton	Arcadia

Business Services

The UPS Store®, located in the Phoenix Convention Center, offers complete business services, including photocopying and printing, document finishing, fax services, and packing and shipping. Self-serve copies are also available. The UPS Store is located in the West Building in Suite 110 and is open Monday–Friday, 7:00 AM–6:00 PM, and Saturday, 8:00 AM–2:00 PM. For more information, call 251-0135 or visit the store online at *www.theupsstorelocal.com/5750.*

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.

Conference attendees:

Enjoy complimentary admission to Arizona Science Center and experience a cutting-edge presentation in the Dorrance Planetarium for FREE anytime during the National Science Teachers Association Area Conference, Dec. 3–5, 2009.

Arizona Science Center is open 10 a.m. to 5 p.m. daily, and is located on the east side of the Phoenix Convention Center on 5th Street. To redeem your free admission and planetarium presentation, please present this ticket to the Admissions counter located in the Center's lobby.

Courtesy of

3B® WARD'S Natural Science SK Science Kit & Boreal Laboratories Sargent-Welch VWR

Valid Dec. 3-5. Limit 1. Planetarium seating is limited and based on availability.
Not valid with any other offer or discount. Additional fee applies for special ticketed exhibitions.
Code: 466 (GA) & 467 (PLA).

AZSCIENCE.ORG
600 E. WASHINGTON ST. • PHOENIX, AZ 85004 • 602-716-2000

ARIZONA SCIENCE CENTER

Session Evaluations and Tracking Professional Development

All attendees can now evaluate sessions while simultaneously tracking professional development certification (based on clock hours).

Session presenters (teacher presentations and workshops) are required to check in at the Presenters/Presiders/Evaluation booth in the NSTA Registration Area and pick up a session evaluation packet.

Each exhibitor workshop provider is required to check in at the Exhibitor Registration counter in the NSTA Registration Area and pick up his or her company's workshop evaluation packets. All presenters then distribute evaluation forms to attendees at the latter part of the session.

Attendees will complete this short evaluation and deposit the form in the evaluation drop-off boxes located in the Convention Center. Since these forms will be used to "track" professional development hours, all evaluations must be placed in these drop-off boxes no later than 12:30 PM on Saturday.

Note: You MUST enter your badge number accurately (up to seven digits) on the evaluation form to have your attendance at the session documented.

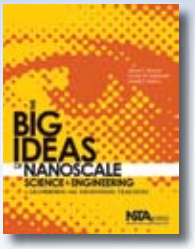
Concurrent session presenters may also complete evaluation forms for their own sessions in order to track professional development credit.

Three weeks after the last day of the conference, an attendee can visit the NSTA website *http://ecommerce2.nsta.org/transcript/* to access a transcript of his or her attendance at specific sessions and to document credit for other activities that are not being evaluated (e.g., field trips, short courses, Exhibit Hall visits, featured speakers, and meetings) or sessions for which the presenter does not provide an evaluation form. Each attendee is responsible for tracking his/her own attendance at such events.

A Professional Development Documentation Form is included following page 32 to help attendees keep track of sessions/events attended that were NOT evaluated.

The transcript can be printed from the NSTA website *http://ecommerce2.nsta.org/transcript/* 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.

Explore NEW Resources from NSTA Press!



The Big Ideas of Nanoscale Science and Engineering
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Nonmember: $27.95

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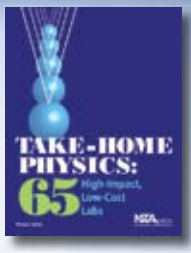
Grades K–8
Member: $19.96
Nonmember: $24.95



Take-Home Physics
Grades 9–12
Member: $19.96
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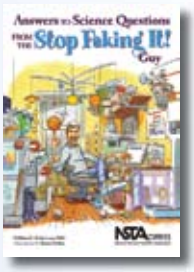

Answers to Science Questions From the *Stop Faking It!* Guy
Grades K–8
Member: $19.16
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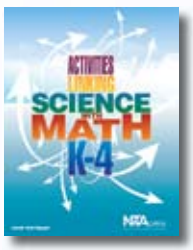
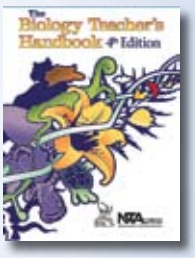


Activities Linking Science With Math, 5–8
Grades 5–8
Member: $22.36
Nonmember: $27.95



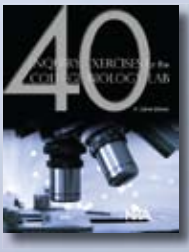
The Biology Teacher's Handbook, 4th Edition
Grades 6–College
Member: $23.96
Nonmember: $29.95

Uncovering Student Ideas in Science, Volume 4
Grades K–12
Member: $22.36
Nonmember: $27.95

Forestry Field Studies
Grades 9–12
Member: $19.96
Nonmember: $24.95

Lecture-Free Teaching
College
Member: $26.36
Nonmember: $32.95

Designing Effective Science Instruction
Grades K–12
Member: $24.76
Nonmember: $30.95



40 Inquiry Exercises for the College Biology Lab
College
Member: $27.96
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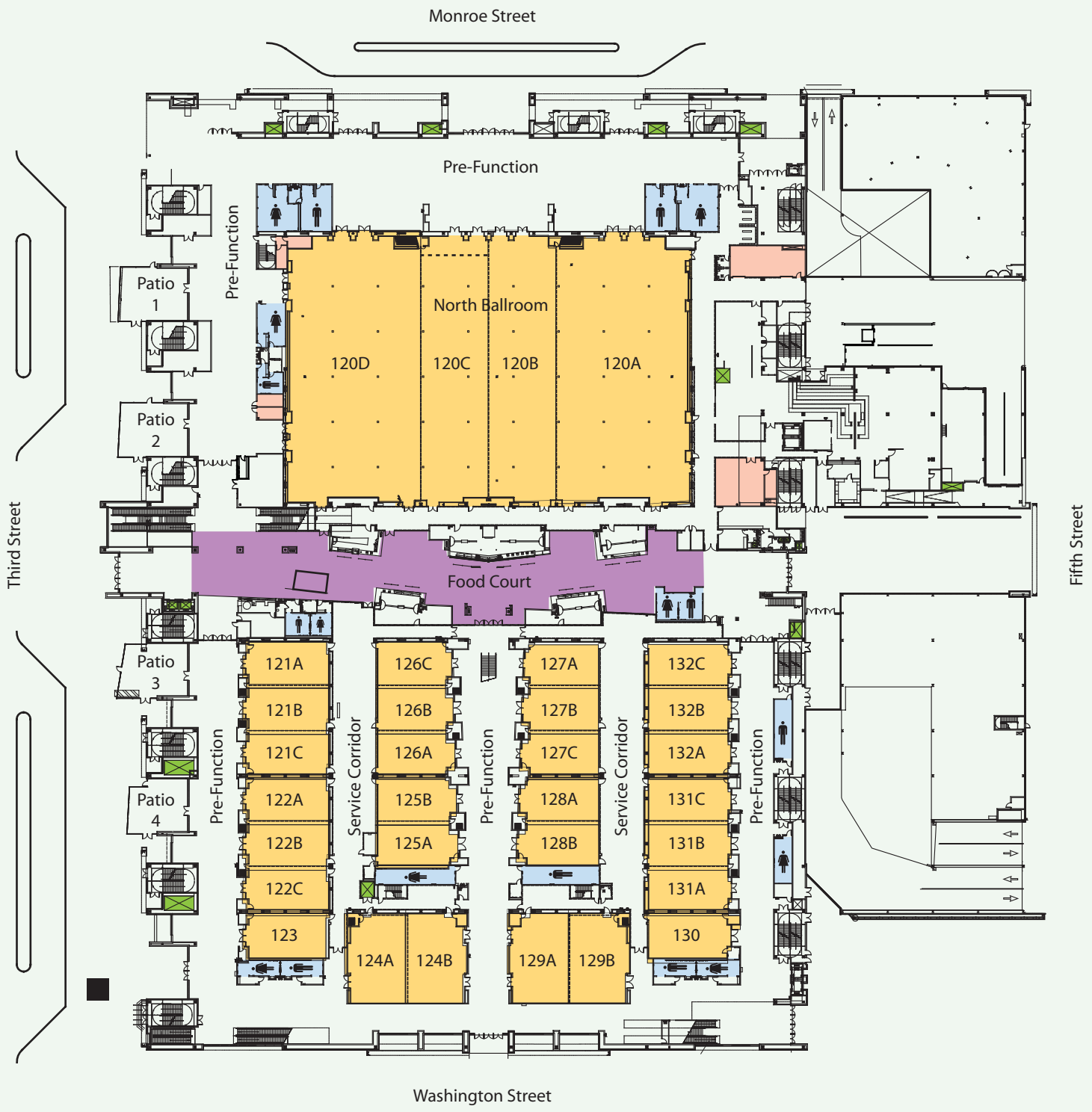
NSTA press
National Science Teachers Association

Phoenix Convention Center

North Building, 100 Level

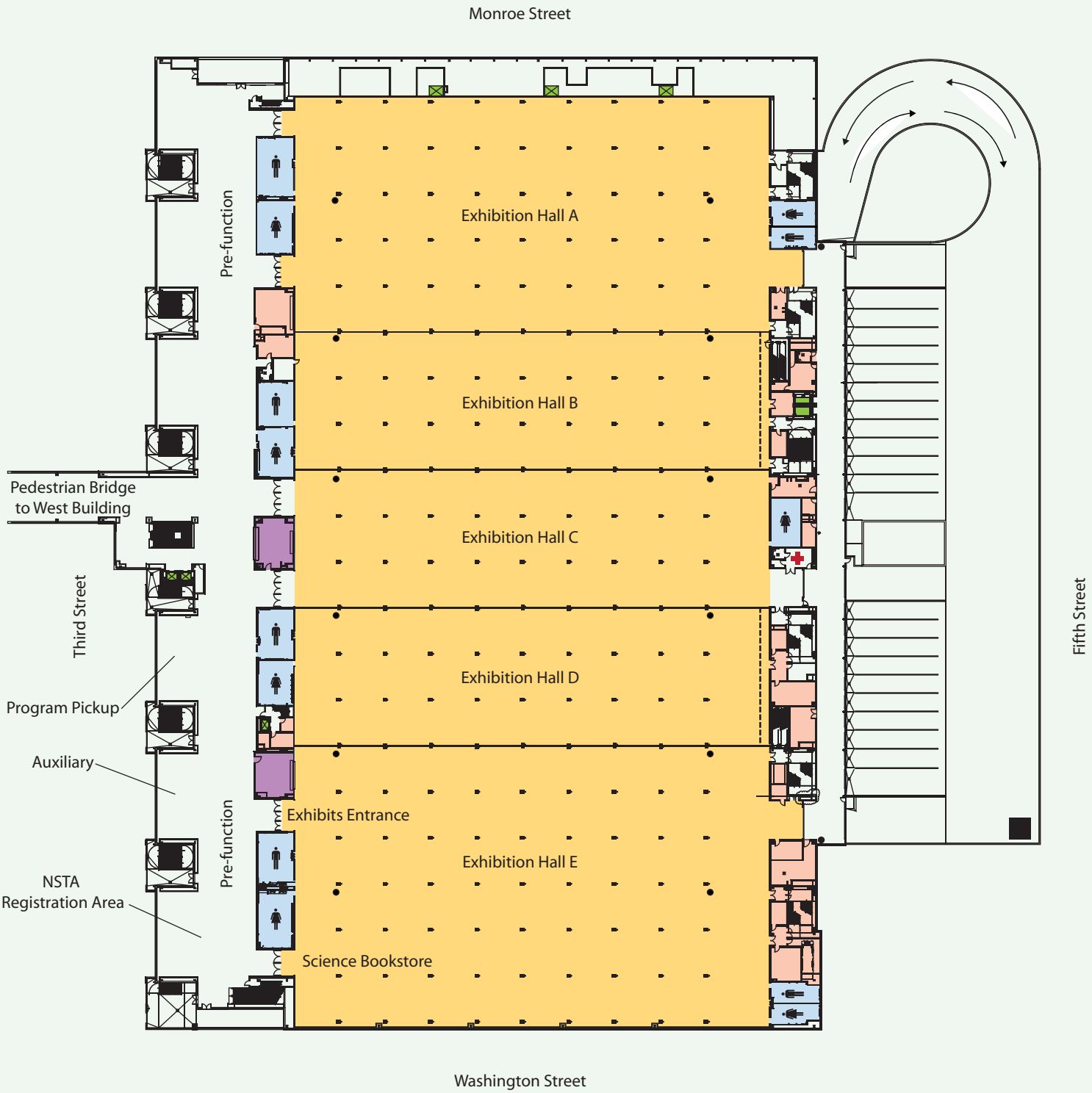


Phoenix Convention Center

North Building, 200 Level

Phoenix Convention Center

North Building, 300 Level

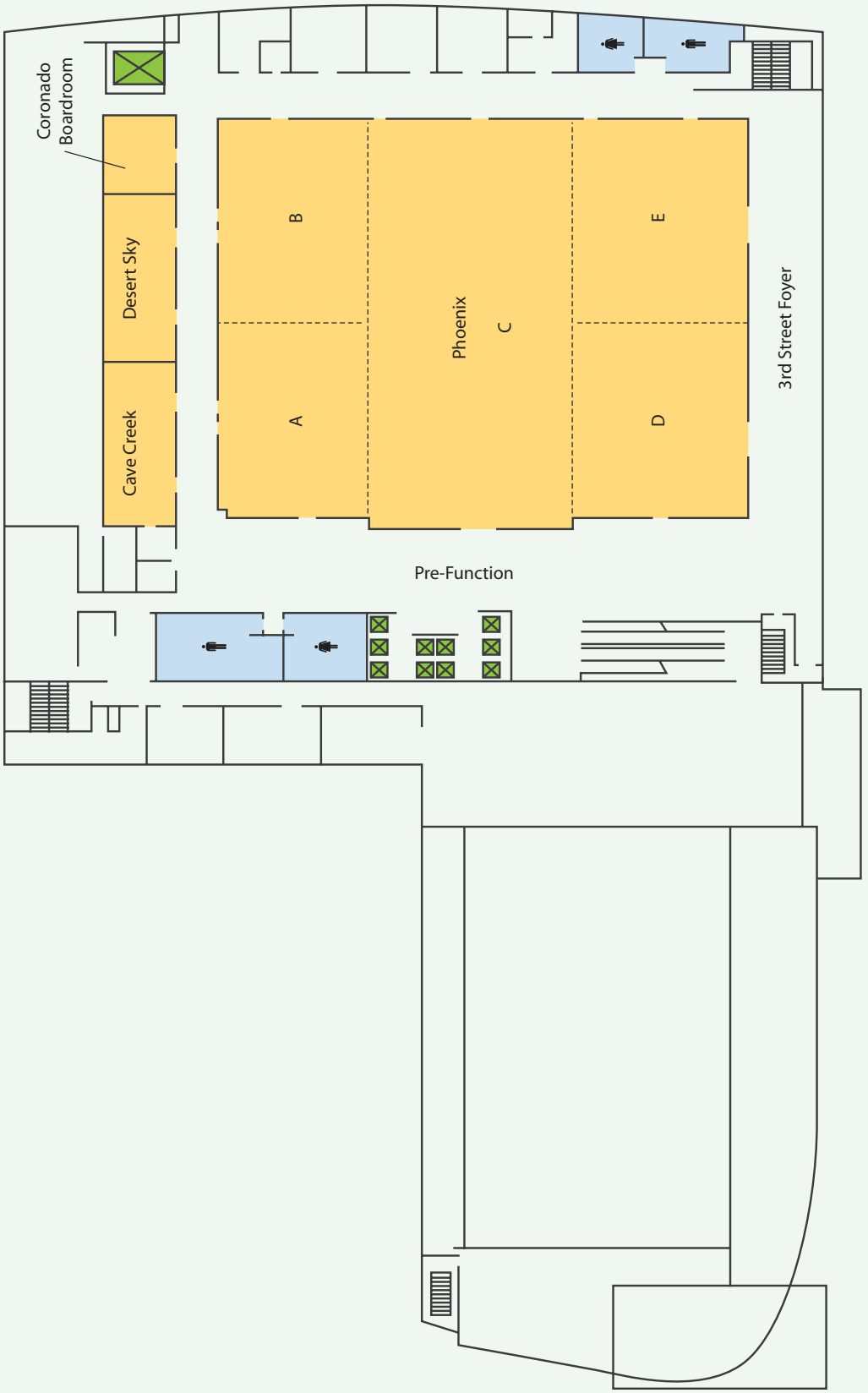


Sheraton Phoenix Downtown

Second Level

Sheraton Phoenix Downtown

Third Level



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NSTA Mission Statement

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

All cities are subject to change pending final negotiation.

National Conferences on Science Education

Philadelphia, Pennsylvania
March 18–21, 2010

San Francisco, California
March 10–13, 2011

Area Conferences on Science Education

2010 Area Conferences

Kansas City, Missouri
October 28–30

Baltimore, Maryland
November 11–13

Nashville, Tennessee
December 2–4

2011 Area Conferences

Hartford, Connecticut
October 27–29

To Be Determined

Seattle, Washington
December 8–10

www.nsta.org/conferences

Submit a session proposal for an NSTA conference…

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2010 Area Conferences on Science Education
Deadline: January 15, 2010

Kansas City, MO
October 28–30, 2010

Baltimore, MD
November 11–13, 2010

Nashville, TN
December 2–4, 2010

2011 National Conference on Science Education
Deadline: April 15, 2010

San Francisco, CA
March 10–13, 2011

NSTA National Science Teachers Association

Science Educators—Advance Your Career

NSTA's National Conference on Science Education

Philadelphia, PA
March 18–21, 2010

Who Should Attend?

- Elementary Teachers of Science
- Science Teachers
- Preservice Teachers
- Science Coordinators
- Curriculum Specialists
- Administrators
- Principals
- College Methods Professors
- College Science Educators
- Policymakers

And Why?

- In-depth programs on physics, chemistry, biology, and physical science.
- Personal and professional growth Develop content knowledge, new teaching strategies, best practices.
- Expertise and inspiration
- Presentations, workshops, and sessions in your discipline and grade band
- Competence on relevant issues—literacy, assessment, inquiry—and more
- Networking with peers and professionals
- Exhibition Hall: Top companies, top products, top giveaways.

Professional Development Strands

- Meeting the Unique Needs of Urban and Rural Science Learners
- Connecting Content: Between, Within, and Among Subjects
- Closing the Digital Generation Gap Between Teachers and Students
- Rekindling the Fires of Science Teaching and Learning

Connecting SCIENCE PAST With SCIENCE FUTURE
NSTA National Conference on Science Education

Visit *www.nsta.org/philadelphia*
or call 1-800-328-8998 for more information.

NSTA National Science Teachers Association

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 47 for details.

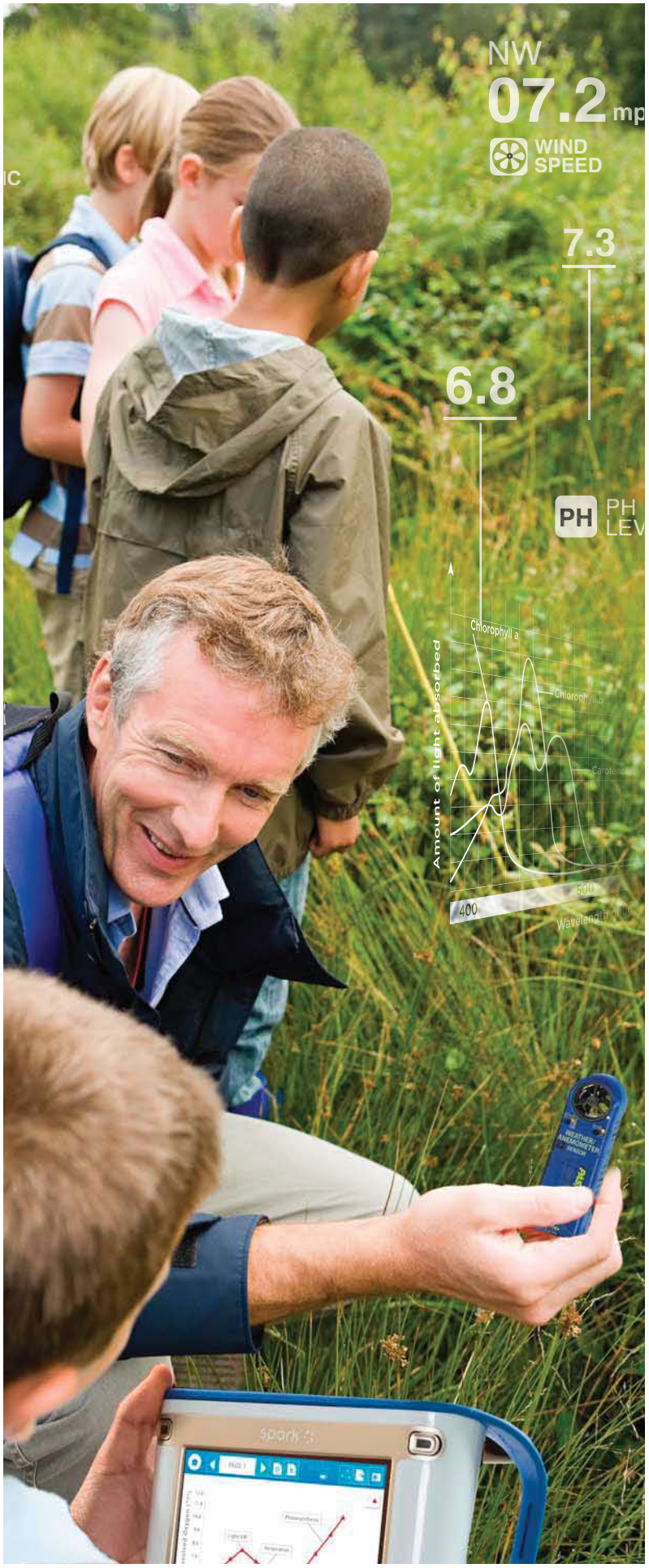
Ribbon-cutting Ceremony

An opening ceremony is scheduled on Thursday at 11:00 AM at the main entrance to the Exhibit Hall.

Thursday, December 3

Friday, December 4

Saturday, December 5



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The Phoenix 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.

Rigor Without Mortis: Challenging and Accessible Content

Many educators do not agree on what rigor is and what it looks like in the classroom. Rigor involves the deep, intellectual engagement in content in a rich and robust curriculum. Rigor cannot exist unless content is accessible to all students. To engage learners in a more rigorous curriculum, teachers must understand what rigor is, what it looks like, and how to make the content accessible. This strand will provide tools, resources, and strategies to promote rigor in science teaching and learning.

Relevance: Science as an Authentic Context for Using the Skills of Literacy and Mathematics

Engaging in science investigations provides learners with rich context and authentic opportunities to learn and use literacy and mathematics skills. A growing body of research indicates that the acquisition of language and mathematics skills and abilities is fundamental to developing deep conceptual understanding in science. Likewise, another growing body of research suggests that learners' literacy and mathematics knowledge, skills, and scores improve when practiced in meaningful and authentic contexts. Teachers are challenged to provide instruction that forges explicit and complementary connections between science and other curricular areas. This strand will provide strategies and techniques for engaging learners in authentic pursuits of science learning with applied literacy and mathematics skills.

Relationships: Building Professional Relationships for Transformative Learning

Building collaborative relationships that transform and sustain professional learning in science is essential for improved practice. This strand will provide strategies, tools, and successful models for teachers, teacher-leaders, administrators, and professional developers to support science teacher learning.

Relationships: Building Professional Relationships for Transformative Learning

Thursday, December 3

8:00–9:00 AM
University Science Faculty Benefit from K–12 Outreach

12:30–1:30 PM
Building Productive Relationships with the Society of Women Engineers

2:00–3:00 PM
Science Night for Dummies

4:00–4:30 PM
Using Achievements in Science to Build a Community of Learners

5:00–6:00 PM
Building Partnerships to Improve Teacher Quality and Student Outcomes: The Cleveland Math and Science Partnership

Friday, December 4

8:00–8:30 AM
Using Authentic Research Experiences to Increase Relevance of Science Instruction

8:30–11:30 AM
Short Course: Designing Professional Development for Scientific Classroom Discourse Communities (By Ticket: SC-5)

9:30–10:30 AM
Collaborative Inquiry in Professional Learning Communities: Linking Inquiry Questions, Learning Expectations, and Classroom-based Data Collection

12:30–1:30 PM
Action Research and Beyond: Professional Learning Communities

2:00–3:00 PM
Featured Presentation: Putting the "Science" into Professional Learning Communities: Building Group Capacity to Transform Science Teaching and Learning
(Speaker: Page Keeley)

2:00–3:00 PM
Bringing Biomedical and Genomics Research into the High School Classroom

3:30–4:30 PM
Keeping Middle School Science Alive: A Professional Development Model

Saturday, December 5

9:30–10:30 AM
Collaborative Inquiry in Professional Learning Communities: Using Focus Questions and Classroom-based Data to Improve Learning and Teaching

11:00 AM–12 Noon
The Impact of Collective Efficacy on High School Science Achievement

Relevance: Science as an Authentic Context for Using the Skills of Literacy and Mathematics

Thursday, December 3

8:00–9:00 AM
Whiteboarding in Science

8:30–9:00 AM
On Solid Ground: Integrating Science and Reading Skills

12:30–1:30 PM
Stirring Up Reading in Chemistry

Science Notebooking in the Elementary Classroom

12:30–3:30 PM
Short Course: Using Notebooks to Enhance Learning in a Science Classroom
(By Ticket: SC-3)

2:00–3:00 PM
ELD Strategies in Science

Forensic Science: The Context for Integration

3:30–4:30 PM
Observing and Analyzing Patterns in Nature to Strengthen Literacy and Mathematical Skills

Magical Illusions Workshop for K–8 Teachers

5:00–6:00 PM
Academic Vocabulary Development Strategies for the Science Classroom

Black Holes and Supernovae: The Hidden Universe

Friday, December 4

8:00–9:00 AM
An Integrated Program Based on *The Story of Science*

11:00 AM–12 Noon
Featured Presentation: Using Text to Support Firsthand Science Inquiry
(Speakers: Jacqueline Barber and Gina Cervetti)

12:30–1:30 PM
Say What You Mean! Strategies to Help Students Better Communicate Science

Using Science Notebooks in the Elementary Classroom

1:00–4:00 PM
Short Course: Using Graphic Organizers to Increase Students' Understanding and Retention of Science Concepts
(By Ticket: SC-7)

2:00–3:00 PM
Math Activities in the Earth Sciences Using Interactive Multimedia from Windows to the Universe

3:30–4:30 PM
Using Science as the Focus for Literacy Learning

Saturday, December 5

8:00–9:00 AM
The "Take Action!" Project

10:00 AM–12 Noon
Going Batty: Using Research Simulations in the Classroom

Rigor Without Mortis: Challenging and Accessible Content

Thursday, December 3

12:30–3:30 PM
Short Course: Transforming Teaching: Project-Based Learning (PBL) in the 21st-Century Science Classroom
(By Ticket: SC-2)

2:00–3:00 PM
Climate Change: Global Connections and Sustainable Solutions

Friday, December 4

8:00–9:00 AM
Imaging the Invisible

8:30 AM–12:30 PM
Short Course: Misconceptions: What Do You Do with Them? (By Ticket: SC-6)

9:30–10:30 AM
Featured Presentation: DNA: The Strand That Connects Us All
(Speaker: Matthew E. Kaplan)

9:30–10:30 AM
Using Scaffolded Inquiry to Promote Rigor in Learning Science

11:00 AM–12 Noon
Using Inquiry-based Activities to Teach the Principles of Chemistry

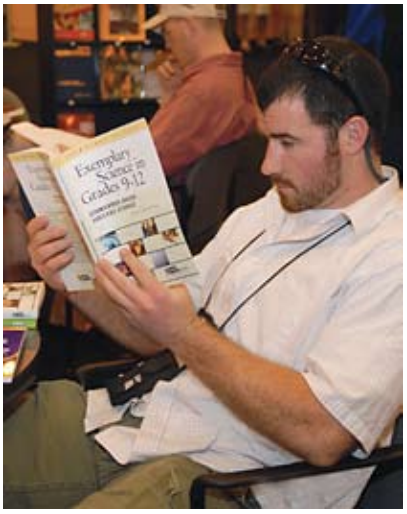
2:00–3:00 PM
Academic Rigor, Authentic Assessment, and Astrobiology for All Students

Saturday, December 5

8:00–9:00 AM
Reality Check: STEM Misconceptions

9:30–10:30 AM
Web Inquiry Projects: Making the Most of Online Data

11:00 AM–12 Noon
Theory into Practice: Modeling Effective Practices Based on Learning Theory



NSTA Exemplary Science Program (ESP) was initiated to highlight programs that have been proven to produce superior student learning. Five monographs have been produced thus far—PreK–4, 5–8, 9–12, Informal Education, and Best Practices in Professional Development—each detailing exemplary programs selected by a national advisory board of NSES and NSTA leaders. These exemplary programs are shared with attendees at NSTA conferences.

NSTA Exemplary Science Program (ESP)

Realizing the Visions of the National Science Education Standards

Thursday, Dec. 3 – Saturday, Dec. 5 • Convention Center

ESP symposia were organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program. These sessions will include brief descriptions of programs that exemplify how the four NSES goals have been met. Discussion will center on how NSES *More Emphasis* suggestions have guided instruction. Participants in these symposia will include the following authors from specific monographs in the series.

Thursday, Dec. 3, 12:30–1:30 PM

Symposium I *(page 56)*

Coordinator: Robert E. Yager, 1982–1983 NSTA President, and The University of Iowa, Iowa City

Exemplary Science Programs in Informal Education Settings

Exemplary Science Programs: Best Practices in Professional Development

Friday, Dec. 4, 9:30–11:30 AM

Symposium II *(page 90)*

Coordinator: Robert E. Yager, 1982–1983 NSTA President, and The University of Iowa, Iowa City

Exemplary Science Programs: Inquiry: The Key to Exemplary Science

Saturday, Dec. 5, 11:00 AM–12 Noon

Symposium III *(page 119)*

Coordinator: Robert E. Yager, 1982–1983 NSTA President, and The University of Iowa, Iowa City

Exemplary Science Programs in Grades 9–12

Exemplary Science Programs in Grades 5–8

It Takes ESP to Find Exemplary Sience Programs!

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

NSTA 2009 Phoenix Area Conference
Professional Development Documentation Form

All attendees can evaluate concurrent teacher and exhibitor sessions while simultaneously tracking professional development certification (based on clock hours). Use this form to keep track of events attended at the Phoenix conference that were NOT evaluated (field trips, short courses, featured speakers, the General Session, meetings, and exhibit hall visits) or sessions for which the presenter did not provide an evaluation form.

Beginning January 4, 2009, Phoenix transcripts can be accessed at *http://ecommerce2.nsta.org/transcript/* by logging on with your Phoenix Badge ID#. Keep this form and use it to add the following activities to your Phoenix 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.

Be sure to place your session evaluation forms in the designated drop-off boxes no later than 12:30 PM on Saturday, December 5.

First Name: _____ **Last Name:** _____ **Badge ID#** _____

Wednesday, December 2 8:00 AM–5:00 PM

Start Time	End Time	Activity/Event Title

Thursday, December 3 8:00 AM–10:00 PM

Start Time	End Time	Activity/Event Title

Friday, December 4 6:00 AM–10:30 PM

Start Time	End Time	Activity/Event Title

Saturday, December 5 7:30 AM–6:30 PM

Start Time	End Time	Activity/Event Title

Chemistry Day at NSTA

Chemical Bonding and Its Consequences

Friday, December 4, 8:00 AM–4:30 PM

Room 127 A/B, Convention Center

Sponsored by the American Chemical Society

Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter.

Education research indicates a positive correlation between teacher content knowledge and student learning. The goals of this daylong program are to enhance and enrich secondary chemistry teachers' knowledge of chemical bonding and its effects on the properties of matter and to engage participants in activities, discussion, and analyses that demonstrate how lessons on chemical bond properties can be presented in a way that stimulates student thinking and prompts exploration of the complexity of the concepts in advanced and honors-level courses.

The content and structure of the program draw on several decades of experience the American Chemical Society has in activity-based curricula development. The program consists of a series of lessons on the chemical bond and its relationship to the properties and reactions of molecules—topics central to understanding the behavior of matter and chemical change. A complementary theme of the program is incorporating activities as part of the assessment of student learning.

8:00–9:00 AM	**What's Matter Made Of**? (p. 79)
9:30–10:30 AM	**What Holds Molecules Together?** (p. 87)
11:00 AM–12 Noon	**Why Is Water Different?** (p. 94)
12:30–1:30 PM	**Bond Connections in More Complex Molecules** (p. 99)
2:00–3:00 PM	**Chemistry of Aqueous Solutions of Gases** (p. 103)
3:30–4:30 PM	**Coupled Reactions, Energetics, and Chemical Bonds** (p. 108)

Physics Day at NSTA

Friday, December 4, 8:00 AM–4:30 PM

Room 226C, Convention Center

Sponsored by the American Association of Physics Teachers

The American Association of Physics Teachers offers a full day of physics content at each NSTA area conference. Physics Day consists of presentations on physics topics of current interest, physics demonstrations for the precollege classroom, and a make and take session where participants can construct a piece of physics apparatus for use as a demonstration or laboratory experiment. Physics Day in Phoenix is being organized by the Arizona Section of the American Association of Physics Teachers.

8:00–9:00 AM	**Music in Motion: Teaching Science and Math Through Musical Instrument Design and Construction** (p. 78)
9:30–10:30 AM	**Symmetry and Patterns in Rangolee Art from India** (p. 86)
11:00 AM–12 Noon	**Make and Take Fun and Deep Physics Activities That Illuminate Newton's Laws** (p. 95)
12:30–1:30 PM	**Data Collection and Analysis Using Technology in the Physics Classroom** (p. 100)
2:00–3:00 PM	**Discourse Management** (p. 103)
3:30–4:30 PM	**Informal Science: The Tucson Physics Factory** (p. 107)

Biology Day at NSTA

Friday, December 4, 8:00 AM–4:30 PM

Room 226B, Convention Center

Sponsored by the National Association of Biology Teachers

NABT is proud to present Biology Day, a full day of programs designed exclusively for life science/biology teachers. Featuring dynamic speakers, hands-on workshops, and informative presentations, Biology Day offers content information and pedagogy for every biology teacher at every level. Highlighted sessions include Infect Your Biology Classroom with Math and Mechanisms of Evolution: Genetic Switches and Natural Selection.

Engage your students and enhance your teaching—join NABT for Biology Day!

8:00–9:00 AM	**Using Free Online Games to Teach Science Process and Science Content** (p. 78)
9:30–10:30 AM	**Infect Your Biology Classroom with Math** (p. 86)
12:30–1:30 PM	**Mechanisms of Evolution: Genetic Switches and Natural Selection** (p. 100)
2:00–3:00 PM	**Using Hardy-Weinberg Equilibrium to Illustrate Evolutionary Change** (p. 103)
3:30–4:30 PM	**How to Estimate the Size of a Population** (p. 108)

Physical Science Day

Matter, Energy, and Interactions: A Day of Physical Science for Elementary and Middle School Teachers

Friday, December 4, 8:00 AM–4:30 PM

Room 225B, Convention Center

Sponsored by the Education Divisions of the American Chemical Society (ACS) and American Physical Society (APS)

Based on the National Science Education Standards for Inquiry and Physical Science, this all-day program features six sessions focusing on inquiry-based activities to teach basic topics in chemistry and physics. The Education Divisions of the American Chemical Society (ACS) and the American Physical Society (APS) will facilitate these sessions in which elementary and middle school teachers will participate in activities to improve their own content knowledge, discuss and share ideas about how to conduct the activities with students, and receive free resources for physical science teaching. These sessions are open to all conference attendees.

8:00–9:00 AM	**Laser Light: What Makes It So Special?** (p. 80)
9:30–10:30 AM	**Index of Refraction: Follow a New Path with the Refraction of Light** (p. 88)
11:00 AM–12 Noon	**Diffraction: Using Light to Measure** (p. 95)
12:30–1:30 PM	**Chemical Change: The Breaking and Making of Bonds** (p. 100)
2:00–3:00 PM	**There's More to Dissolving Than Meets the Eye** (p. 103)
3:30–4:30 PM	**Evaporation, Condensation, and the Structure of the Water Molecule** (p. 108)

NSTA Press Sessions

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

Thursday, December 3

12:30–1:30 PM	Science Teaching as a Profession—Why It Isn't; How It Could Be (p. 58)
	Stop Faking It! Finally Understand ELECTRICITY and MAGNETISM So You Can Teach It (p. 60)
2:00–3:00 PM	So You Want New Science Facilities: Science Facilities 101 (p. 64)

Friday, December 4

8:00–9:00 AM	Stop Faking It! Finally Understand CHEMISTRY So You Can Teach It (p. 80)
9:30–10:30 AM	Stop Faking It! Finally Understand AIR, WATER, and WEATHER So You CanTeach It (p. 88)
11:00 AM–12 Noon	Activities Linking Science with Math, K–8 (p. 95)
2:00–3:00 PM	I See What You Mean: Developing Visual Literacy for Science Learning (p. 104)

Saturday, December 5

8:00–9:00 AM	The Architects Have Started Without Me! What Do I Do Now? (Science Facilities 102) (p. 115)

NSTA Avenue Sessions

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

Thursday, December 3

8:00–9:00 AM	Is This Your First NSTA Conference? (p. 47)
2:00–3:00 PM	SciLinks: Using the Online Assignment Tool (p. 62)
3:30–4:30 PM	Toshiba/NSTA ExploraVision Awards Program (p. 68)

Friday, December 4

9:30–10:30 AM	Toyota TAPESTRY Grants for Science Teachers = $$$ for Your School! (p. 85)
12:30–1:30 PM	The NSTA Learning Center: Free Classroom Resources and Professional Development for Educators (p. 98)
3:30–4:30 PM	More and Muir Tech Tips for Teaching About a Greener Tomorrow (p. 106)

Saturday, December 5

9:30–10:30 AM	Pete Conrad Spirit of Innovation Awards (p. 117)

—*Photo courtesy of David Birchfield*

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

Teaching Inquiry and Using Inquiry to Teach Science (SC-1)

Jane Kirkley *(jane.kirkley@nau.edu)* and **Lori Hare** *(lori.hare@nau.edu),* Center for Science Teaching and Learning, Northern Arizona University, Flagstaff
Level: Grades K–12
Date/Time: Thursday, December 3, 12:30–3:30 PM
Location: Alhambra, Sheraton
Limit: 40
Registration Fee: $33

What is inquiry? Why should it be part of the science education lexicon? Examine what research says about the use of inquiry in science instruction, how to develop inquiry lessons, and how inquiry impacts student learning. We will explore the development of inquiry-based lessons and how they impact student learning. Using the NSTA publication *Everyday Science Mysteries: Stories for Inquiry-based Science Teaching* as a resource, discover how you and your students can have a foundation for classroom discussion and inquiry as students deepen their understanding and develop the capacity to deliver inquiry-based science instruction.

Transforming Teaching: Project-Based Learning (PBL) in the 21st-Century Science Classroom (SC-2)

Julianne Webb *(julianne.webb@esc20.net),* Transformation 2013, San Antonio, Tex.
Level: Grades K–12
Date/Time: Thursday, December 3, 12:30–3:30 PM
Location: Camelback A, Sheraton
Limit: 40
Registration Fee: $42

Understanding and using Project-Based Learning (PBL) is critical to STEM (science, technology, engineering, and mathematics) education. Rigor and relevance are also key components of school reform movements. PBL units engage students in real-world projects that require application of content and making cross-curricular connections. Students are taught creativity, problem solving, critical thinking, communication, technological literacy, and collaboration. Teachers move from the role of lead instructor to facilitator of knowledge.

Learn to develop projects that bundle science content, 21st-century skills, cross-curricular connections, and real-world applications. The 5E model of instruction and the engineering design process will be explored and integrated, and resources and a template for PBL lesson planning will be provided. *www.transformation2013.org/designchallenges.html*

Using Notebooks to Enhance Learning in a Science Classroom (SC-3)

Joan Gilbert *(joan.gilbert@tusd1.org)* and **Meg Gebert** *(margaret.gebert@tusd1.org),* Tucson (Ariz.) Unified School District
Level: Grades K–8 **SOLD OUT**
Date/Time: Thursday, December 3, 12:30–3:30 PM
Location: Camelback B, Sheraton
Limit: 25
Registration Fee: $37

The use of science notebooks is encouraged under the Arizona Science Standard for grades 1–12 and is instrumental in supporting the development of students' content knowledge, academic vocabulary, and scientific habits of mind. In this short course, you will be immersed in the use of a science notebook that you create yourself. Through a guided-inquiry investigation, you will learn the elements of a science notebook and how students develop scientific literacy and content knowledge while using science notebooks. Examine and analyze actual K–8 student notebooks to see the many forms a science notebook can take and the many ways it can be used in all science content areas.

SMALLab: A Mixed-Reality Environment for Learning (SC-4)

David Birchfield, Mina Johnson-Glenberg *(mina.johnson@asu.edu),* **Lisa Tolentino** *(lisa.tolentino@asu.edu),* and **Christopher Martinez** *(christopher.m.martinez@asu.edu),* Arizona State University, Tempe
Colleen Megowan-Romanowicz *(megowan@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa
Level: Middle Level–High School
Date/Time: Friday, December 4, 8:00 AM–1:00 PM
Location: Off-site (Coronado High School)
Limit: 20
Registration Fee: $32

Explore SMALLab (Situated Multimedia Arts Learning Laboratory), an emerging technology that bridges the physical/digital realms and enables collaborative learning. SMALLab is an extensible platform for semi-immersive, mixed-reality learning.

Semi-immersive means that the mediated space of SMALLab is physically open on all sides to the larger environment. Participants can freely enter and exit the space without the need for wearing specialized display or sensing devices. Those in proximity to SMALLab can see and hear the dynamic media and can directly communicate with peers within the active space.

Mixed-reality refers to how this system integrates physical objects, 3-D physical gestures, and digitally mediated components. Researchers, teachers, and students can create new learning scenarios in SMALLab using custom-designed authoring tools and programming interfaces. Come explore this novel learning environment and take part in an actual curriculum scenario design exercise.

★ Designing Professional Development for Scientific Classroom Discourse Communities (SC-5)

Michael Lang *(mike.lang@domail.maricopa.edu),* National Center for Teacher Education, Tempe, Ariz.
Level: Middle Level–College
Date/Time: Friday, December 4, 8:30–11:30 AM
Location: South Mountain, Sheraton
Limit: 25
Registration Fee: $24

Learn how the Communication in Science Inquiry Project (CISIP) professional development program can be used to create scientific classroom discourse communities. CISIP is a research-based professional development program for middle level, high school, and college science and English faculty that was created with funding from the National Science Foundation. CISIP increases teachers' instructional capacity to teach science and results in increased student knowledge of science and capacity to talk and write scientifically. Learn how to obtain CISIP professional development materials through a partnership with the National Center for Teacher Education.

Misconceptions: What Do You Do with Them? (SC-6)

Barbara A. Austin *(baa49@nau.edu),* **Trenda Vannette, Lori Hare** *(lar5@nau.edu),* and **Kristi Fredrickson** *(kmf38@nau.edu),* Center for Science Teaching and Learning, Northern Arizona University, Flagstaff
Level: Upper Elementary–Middle Level
Date/Time: Friday, December 4, 8:30 AM–12:30 PM
Location: Estrella, Sheraton
Limit: 35
Registration Fee: $14

Since "A Private Universe," the science education community has been aware of the role that misconceptions play in student understanding. However, there are few lesson models that teachers can use to adapt the lessons they are already teaching in order to explicitly address students' misconceptions. In this short ourse, we will present one such model that we have used to teach sound, nature of science, and biotechnology.

First, you'll participate in a model lesson about sound beginning with a pre-test, then rotating through activity stations, and finishing with an examination of what each station demonstrated about sound. Through diagrams and picture walks, you'll experience the powerful role of formative assessment in promoting self-regulation of learning as a pathway to meet desired learning outcomes.

In part two, we examine the design of the lesson and how assessment was used to promote conceptual change. We'll finish with a discussion on adapting other content to this model.

Using Graphic Organizers to Increase Students' Understanding and Retention of Science Concepts (SC-7)

Joan Gilbert *(joan.gilbert@tusd1.org)* and **Meg Gebert** *(margaret.gebert@tusd1.org),* Tucson (Ariz.) Unified School District
Level: Grades K–8
Date/Time: Friday, December 4, 1:00–4:00 PM
Location: South Mountain, Sheraton
Limit: 25
Registration Fee: $34

Current educational practice recognizes the importance of organizing information to promote student learning. Graphic organizers help students "get" the science content we are teaching. Come construct and analyze a variety of graphic organizers as a way to support students' acquisition and retention of science content knowledge. We'll also use graphic organizers as a springboard to writing in the science classroom. By interacting with information in a nontraditional manner, students are engaged and motivated!

See the Universe with Infrared Eyes with NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) (SC-8)

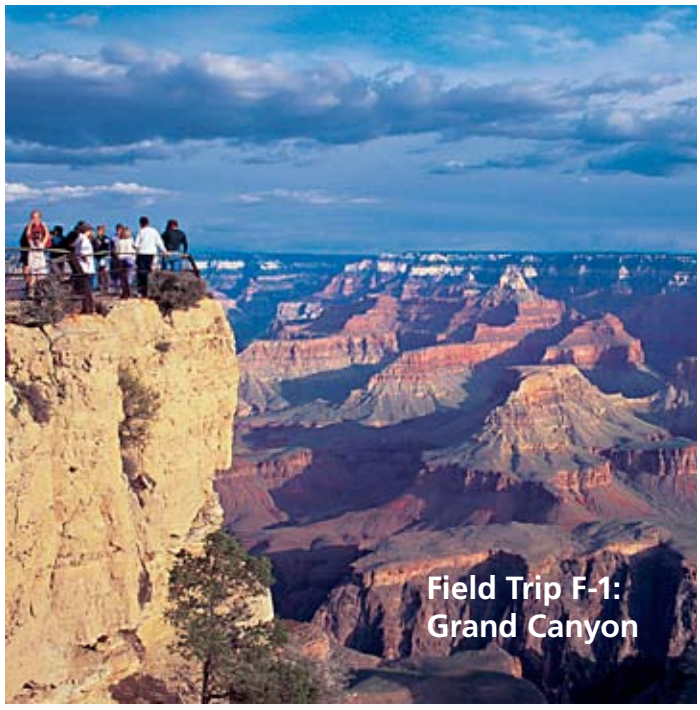
Dana E. Backman *(dbackman@sofia.usra.edu),* SOFIA Science Center, Universities Space Research Association, Moffett Field, Calif.
Edna DeVore *(edevore@seti.org),* SETI Institute, Mountain View, Calif.
Level: Grades 7–14
Date/Time: Saturday, December 5, 8:00–11:00 AM
Location: South Mountain, Sheraton
Limit: 30
Registration Fee: $65

Join SOFIA program leaders as they present infrared astronomy science and images. Participants will practice hands-on activities and take home Active Astronomy materials kit, lesson plans, and mission poster.

Building Professional Relationships for Transformative Learning (SC-9)

Jane Kirkley *(jane.kirkley@nau.edu)* and **Kristi Fredrickson** *(kristi.fredrickson@nau.edu),* Center for Science Teaching and Learning, Northern Arizona University, Flagstaff
Level: Grades K–12 Administrators or Science Specialists
Date/Time: Saturday, December 5, 8:30–11:00 AM
Location: Alhambra, Sheraton
Limit: 40
Registration Fee: $33

Support your teachers in building effective science instruction in K–12 classrooms. Using *Ready, Set, Science! Putting Research to Work in K–8 Science Classrooms* as a resource, you'll learn how to identify, promote, and support strong science instruction. We will use an inquiry-based interactive approach to guide you through the components of the book, engage in discourse, and collaborate on strategies to improve science instruction. *www4.nau.edu/cstl*



—©Grand Canyon Railway

Tickets for field trips can be purchased (space permitting) at the Ticket Sales Counter in the NSTA Registration Area. Meet your field trip leader at the pull-in area in front of the Convention Center 15 minutes before departure time.

Heard Museum — $20

T-1	Thursday, December 3	1:00–4:00 PM
F-6	Friday, December 4	1:00–4:00 PM

Since its founding by Dwight and Marie Heard in 1929, the Heard Museum has earned international recognition for the quality of its collections, its educational programming, and its festivals. Dedicated to the sensitive and accurate portrayal of Native American arts and cultures, the Heard Museum successfully combines the stories of Native American people from a personal perspective with the beauty of art through its partnerships with native artists and tribal communities, especially those of the Southwest.

Experience all of the Heard's 10 spectacular exhibition galleries, featuring an array of artists and art forms from ancestral artifacts and historical drawings to contemporary jewelry and artwork. Several of the loveliest areas of the museum are located outdoors in the museum's courtyards. No food, beverages, backpacks, or flash photography are allowed in the galleries.

Desert Discovery Tour — $43

T-2	Thursday, December 3	1:00–4:30 PM

Enjoy a private guided tour of the Desert Botanical Garden *(www.dbg.org)*. Centrally located in beautiful Papago Park, the Desert Botanical Garden is a captivating way to experience the beauty of the desert without leaving Phoenix. Accredited by the American Association of Museums, the garden is a nonprofit living museum internationally renowned for its plant collections, research, and educational programs.

Showcasing 50 acres of beautiful outdoor exhibits, the garden is home to 139 rare, threatened, and endangered plant species from around the world. On our tour we'll enjoy many interactive exhibits as well as different calls of the garden's resident birds. Bring your camera and wear comfortable shoes! After the guided tour, explore the garden on your own and spend some time in the gift shop.

Lost Dutchman State Park Moonlight Hike — $26

T-3	Thursday, December 3	5:45–10:00 PM

SOLD OUT

Enjoy a moonlight stroll along a desert trail in Lost Dutchman State Park. Located in the Sonoran Desert 40 miles east of Phoenix, the park derives its name from the fabled Lost Dutchman Mine. The Superstition Mountains, where the park is located, have been a source of mystery since early times. According to legend, a fabulously rich gold mine lies buried somewhere in the mountains, and many lives have been squandered or lost in its pursuit.

Here is a unique opportunity to experience the mystique of the area. Hiking the park in the moonlight will give you an entirely different perspective on the desert. A variety of desert animals inhabit the park, and most are nocturnal. Keep your eye out for deer, coyote, javelina, bobcat, and jackrabbits! Be sure to wear comfortable shoes and dress in layers. Also, bring plenty of water.

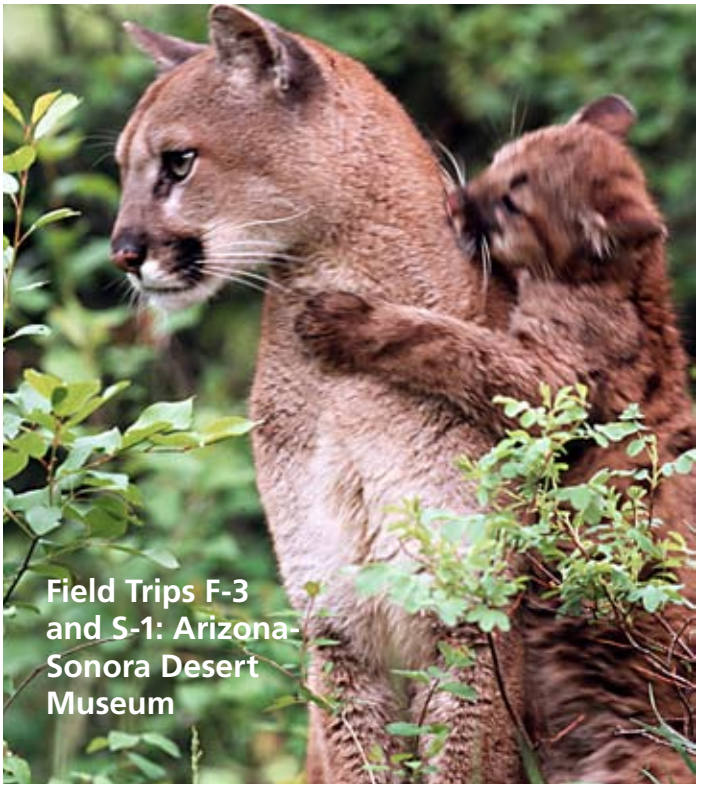
Grand Canyon Railway Resort and Bus Tour — $142

F-1	Friday, December 4	6:00 AM–9:00 PM

All aboard to Grand Canyon National Park! The Grand Canyon Railway made its first journey to the South Rim of the Grand Canyon in 1901, long before Arizona was dubbed "The Grand Canyon State." Today, you can travel to the Grand Canyon along the same rail line as these early visitors and enjoy one-of-a-kind vintage train service. The railway now carries well over 200,000 people to the canyon each year.

We'll depart from historic Williams Depot, the southern terminus of the railway, and travel north across 65 miles of classic Wild West territory, including high-desert plains, arroyos, and ponderosa pine forest. Our destination is the Grand Canyon Depot, the last operating log depot in the United States. A Wild West shootout at the Williams Depot starts our adventure off with a bang. Aboard the train we'll enjoy live-action Wild West entertainment, including strolling musicians and a train robbery by the infamous Cataract Creek Gang.

At the canyon we'll board a bus for a narrated rim tour of canyon highlights and enjoy a hot buffet lunch, included in the tour price, at Maswik Lodge. Nestled in a forest of pines, the lodge is just one-fourth mile from the canyon's edge. Don't forget your camera!



Field Trips F-3 and S-1: Arizona-Sonora Desert Museum

—©*Paul and Joyce Berquist*

Biosphere 2 **$51**

F-2	Friday, December 4	7:30 AM–3:00 PM

Biosphere 2 *(www.b2science.org)* was opened to the public in 1990. This unique structure was created to better understand how natural environments create habitable conditions for human sustainability. The facility contains re-creations of five of Earth's biomes, plus a human habitat and a large ecological facility for experiments.

Our tour begins in the human habitat, where we'll see the living area, farm area, and kitchen. We'll then enter the wilderness areas, where we will experience a tropical savanna, 40-foot ocean cliff, coastal fog desert, and tropical rain forest. We'll also tour the technosphere, where mechanical systems make control of the Biosphere 2 environments possible, and the large geodesic domes that originally prevented Biosphere 2 from exploding or imploding.

A snack shop is available onsite. Be sure to wear comfortable walking shoes. A hat is also recommended. Participants will walk one and a half miles, including inclines and stairs, in humid conditions. This tour is not walker, stroller, or wheelchair accessible.

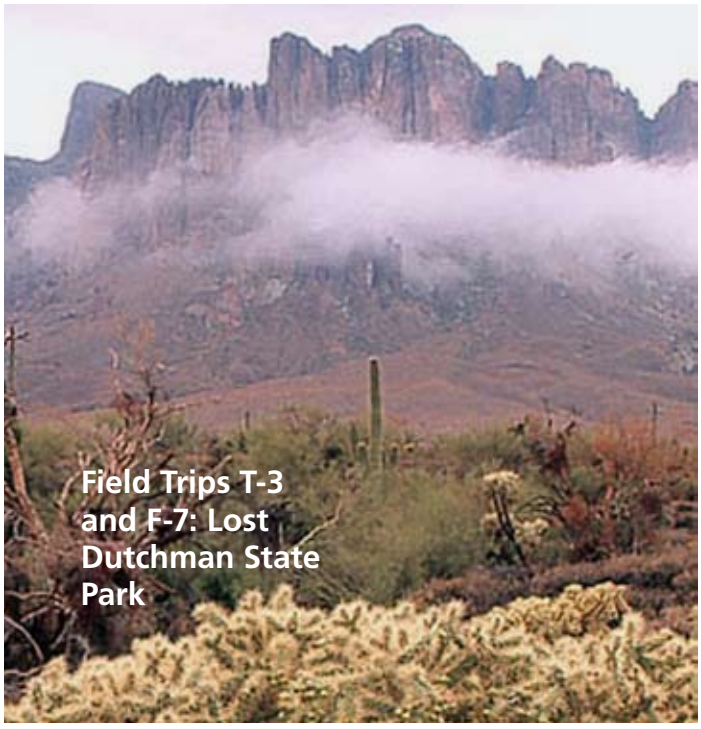
Arizona-Sonora Desert Museum and Saguaro National Park **$65**

F-3	Friday, December 4	7:30 AM–6:30 PM
S-1	Saturday, December 5	7:30 AM–6:30 PM

The Arizona-Sonora Desert Museum *(www.desertmuseum.org)* is a world-renowned zoo, natural history museum, and botanical garden. Located near Tucson, the museum offers interpretive displays of native animals and plants so realistically visitors find themselves eye to eye with mountain lions, prairie dogs, Gila monsters, and more. In fact, the museum is home to more than 300 animal species and 1,200 kinds of plants. Almost two miles of paths traverse 21 acres of museum grounds. While at the museum, enjoy lunch on your own at one of several dining facilities.

After our museum tour, we will board the bus for Saguaro National Park, where we'll enjoy a genuine field experience. Learn about one of the park's signature species, the Sonoran desert tortoise *(Gopherus agassizii),* desert ecology, plant and animal adaptations, and National Park Service conservation efforts. Accompanied by a park ranger, we will then radio-track tortoise shells. The desert tortoise spends the winter in an underground den, precluding tracking of live animals. Hiking will be in a sandy wash and off trail through desert scrub for a distance of two to three miles. Bring a snack and drink if you like.

Participants should be comfortable with off-trail hiking. Wear long pants and appropriate shoes and clothing. Weather in December can be cool in the evenine. We will also visit the park bookstore/gift shop, where educators receive a 20% discount.



—©Arizona State Parks

Montezuma Castle and Montezuma Well $66

F-4 Friday, December 4 11:00 AM–6:30 PM

On this trip to Montezuma Castle National Monument, we'll gaze through ancient windows into one of the best-preserved cliff dwellings in North America. This 20-room, high-rise apartment nestled into a towering limestone cliff tells a 1,000-year-old story of the ingenuity and survival of the Sinagua people in an unforgiving desert landscape. A short loop trail leads us past the cliff dwelling through a beautiful sycamore grove and along spring-fed Beaver Creek, one of only a few perennial streams in Arizona.

Montezuma Well, part of the monument, is a place like no other in the world. This unique geological feature is home to species of plants and animals found nowhere else on the planet. Formed long ago by the collapse of a limestone cavern, over one million gallons of water a day flow into the well. This constant supply of warm, fresh water provides an aquatic habitat that has served as an oasis for wildlife and humans for thousands of years. Interestingly, no fish live in the waters, but there are plenty of amphipods, leeches, and water scorpions!

A box lunch is included in the ticket price. Be sure to wear comfortable walking shoes and bring plenty of water to keep yourself hydrated. The visitor center and most of the paved trail are accessible to wheelchairs. A portion of the trail at the castle and well are too steep for wheelchairs.

Lowell Observatory $52

F-5 Friday, December 4 12 Noon–10:30 PM

Lowell Observatory *(www.lowell.edu)* is located one mile west of downtown Flagstaff. The scenic campus is home to the Steele Visitor Center, the historic Clark and Pluto Discovery telescopes, and the fascinating Rotunda Museum. We'll enjoy an afternoon tour of the campus and two multimedia presentations. In the Visitors Center, we'll explore the Discover the Universe Exhibit Hall. The observatory's history, current research, and stellar future offer a wonderful educational experience.

This tour requires some walking, so please wear comfortable shoes. Most areas are handicapped accessible. As the campus is at an elevation of 7,200 feet, the tour may present some breathing difficulties for people not accustomed to the elevation. Photography is permitted, so bring your camera!

After our afternoon visit to the observatory, we'll head over to Flagstaff to do some brief sightseeing and dine on our own at one of the local restaurants. We'll return to the observatory at 6:00 PM for an exciting evening program. Weather permitting, we'll view the evening sky through one of the observatory telescopes. The Discover the Universe Exhibit Hall remains open, and a multimedia show, Holiday Skies, will be featured in the lecture hall. This fun program is highlighted by a discussion of the Star of Bethlehem and what astronomers believe was its true nature.

Lost Dutchman State Park Day Hike $29

F-7 Friday, December 4 1:00–6:15 PM

Located in the Sonoran Desert 40 miles east of Phoenix, Lost Dutchman State Park derives its name from the fabled Lost Dutchman Mine. The Superstition Mountains, where the park is located, have been a source of mystery since early times. According to legend, a fabulously rich gold mine lies buried somewhere in the mountains, and many lives have been squandered or lost in its pursuit. Several trails lead from the park into the Superstition Mountain Wilderness Area and surrounding Tonto National Forest. We'll take a two-three hour guided stroll along one of these trails, learning about native plants and animals and the history of the area as we go.

Be sure to wear comfortable shoes and dress in layers. Don't forget your camera. Also, bring plenty of water!

Wednesday, December 2

Delta Education K–6 Meeting
(By Invitation Only)
Camelback A, Sheraton ..... 8:00 AM–5:00 PM

Delta Education 6–8 Meeting
(By Invitation Only)
Camelback B, Sheraton ..... 8:00 AM–5:00 PM

Delta Education Luncheon
(By Invitation Only)
Alhambra, Sheraton ..... 12 Noon–1:00 PM

Thursday, December 3

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

Evening at the Arizona Science Center
(Tickets required; M-2; $30)
Off-site ..... 6:30–9:30 PM

Friday, December 4

Campaign Briefing
(By Invitation Only)
Suite 3141, Sheraton ..... 9:00–10:30 AM

Informal Science Networking Meeting
Camelback B, Sheraton ..... 10:00 AM–12 Noon

PreK–8 CESI Luncheon
(Tickets required; M-3; $50)
Laveen A, Sheraton ..... 12 Noon–2:00 PM

National Science Education Leadership Association (NSELA) Open Meeting
Camelback A, Sheraton ..... 2:00–3:00 PM

School Specialty/CPO District XIV/XV Reception
Maryvale B, Sheraton ..... 5:00–6:00 PM

Student Chapter and Student Members Reception
(By Invitation Only)
Laveen B, Sheraton ..... 5:00–6:30 PM

Saturday, December 5

Arizona Science Teachers Association Annual Business Meeting and Breakfast
(Tickets required; M-4; $37)
Laveen A/B, Sheraton ..... 7:30–9:30 AM

Multicultural/Equity in Science Education Committee Meeting
(Open to All NSTA Members)
Camelback B, Sheraton ..... 9:00 AM–12 Noon

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NSTA National Science Teachers Association

Council for Elementary Science International (CESI)

President: Kay Atchison Warfield

Thursday, December 3

12:30–1:30 PM	Get the Scoop on CESI	Room 228B, Convention Center

Friday, December 4

8:00–9:00 AM	CESI Make and Take	Room 229B, Convention Center
12 Noon–2:00 PM	PreK–8 CESI Luncheon (Ticket M-3) Speaker: Alan J. McCormack, NSTA President-Elect, and San Diego State University, San Diego, Calif.	

National Association for Research in Science Teaching (NARST)

President: Rick Duschl

Friday, December 4

9:30–10:30 AM	Science Teachers and Scientific Argumentation: Trends in Practice and Beliefs	Room 222A, Convention Center
11:00 AM–12 Noon	Data Logging in Senior High Science: Are We Disadvantaging Girls?	Room 222A, Convention Center
	Swirling Discourses: Using a Discourses and Communities Framework to Situate Elementary Preservice Teacherrs' Use of an Instructional Model to Plan and Teach Science	Room 222A, Convention Center

National Science Education Leadership Association (NSELA)

President: Brenda Wojnowski

Friday, December 4

2:00–3:00 PM	National Science Education Leadership Association Open Meeting	Camelback A, Sheraton

Society for College Science Teachers (SCST)

President: Connie Russell

Friday, December 4

8:00–9:00 AM	Nature of Science Understanding Among Southern Utah University Graduating Science Majors	Room 222A, Convention Center
	GOBs of Information: Evaluation of a One-Semester General, Organic, and Biochemistry Course for the Allied Health Field	Room 222A, Convention Center
9:30–10:30 AM	Bacteria, Blogs, Bioinformatics, and More: Using Technology to Enhance a College Microbiology Course	Room 222B, Convention Center

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Pick up your "NSTA Roadmap" to guide you through member benefits, products, services, programs and partners. We're offering a great gift!

Share with Others

- ***NSTA Membership.*** Access high-quality educational materials and professional development opportunities. Pick up a sample journal, your district ribbon, and a free lapel pin. If you're a student, ask about Student Chapters. If you'd like to volunteer, submit your name for nomination to become a candidate on a committee, review board, or the NSTA Board of Directors and Council.

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.

- ***Web Seminars.*** Update your content knowledge with these free, 90-minute, live online presentations. 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.

Expand Your Mind

- ***NSTA Press***® publishes 25 new titles each year that offer professional development to science educators. Visit the Science Bookstore to view new releases, best sellers, and titles that help performance in the classroom. Connect with authors to have your new book signed. Submit your new book idea to *http://mc.manuscriptcentral.com/nstapress.*

- ***SciLinks***®. Link to science resources on the internet, with sites recommended by science educators. Find accurate information and effective pedagogy—the best content available online.

Add Your Voice

- ***Science Matters*** is a major public awareness and engagement campaign designed to rekindle a national sense of urgency and action among schools and families about the importance of science education and science literacy.

- **The John Glenn Center for Science Education Campaign.** NSTA's five year, $43 million national campaign to make excellence in science teaching and learning a reality for all will fund a series of forward-thinking programs and a state of the art facility designed to promote leadership, learning, and advocacy in science education.

Distinguish Yourself

- ***NSTA Awards.*** 17 programs offer awards to science teachers, K–College.

- ***Toshiba/NSTA ExploraVision***® is a team-based K–12 competition that awards up to $240,000 in savings bonds annually.

- ***Toyota TAPESTRY*** awards $550,000 in grants for science teachers, K–12, each year.

- ***THE DUPONT CHALLENGE© Science Essay Competition*** is for grades 7–12 with cash prizes and an expenses-paid trip to The Walt Disney World® Resort and the Kennedy Space Center.

- ***Siemens We Can Change the World Challenge,*** sponsored by Siemens, Discovery Education, and NSTA, offers a national student sustainability competition that encourages students to develop actionable local solutions for a "greener" world.

- ***Disney's Planet Challenge*** is a project-based environmental competition for grades 4–6 meant to empower students to make a difference in their homes, schools, and communities.

- The ***Conrad Foundation*** presents the ***2010 Spirit of Innovation Awards,*** a competition that challenges teams of high school students to create innovative products in four categories: aerospace exploration, space nutrition, renewable energy and green schools.

NSTA National Science Teachers Association

—Greater Phoenix Convention and Visitors Bureau

8:00–9:00 AM Presentations

SESSION 1

NSTA Avenue Session: Is This Your First NSTA Conference? (Gen)

(General) *127 A/B, Convention Center*

NSTA Board and Council

Feeling overwhelmed by all there is to see and do at an NSTA Conference on Science Education? Join us for an interactive and participatory (fun!) 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 experience. Hot beverages courtesy of Carolina Biological Supply Company.

SESSION 2

Before and After Retirement: Practicalities and Possibilities (Gen)

(General) *127C, Convention Center*

Howard Wahlberg *(hwahlberg@nsta.org),* Assistant Executive Director, Member, Chapter, and Customer Relations, NSTA, Arlington, Va.

The NSTA Retired Advisory Board invites you to an information-sharing session. Join your fellow active colleagues and share ideas about staying active in and out of the profession.

SESSION 3

University Science Faculty Benefit from K–12 Outreach (Bio)

(High School–College/Supervision) *221B, Convention Center*

Michael J. Dougherty *(mdougherty@ashg.org),* American Society of Human Genetics, Bethesda, Md.

K–12 outreach is generally not encouraged by university science departments. An NSF partnership project demonstrates that this need not be the case.

SESSION 4

Using Science Exploration Stations in the Classroom (Chem)

(Elementary–Middle Level) *222A, Convention Center*

DeLene Hoffner, NSTA Director, Preschool/Elementary, and The da Vinci Academy, Colorado Springs, Colo.

Presider: John Skowlund, World Discovery Box, Durango, Colo.

Learn three ways to add science exploration stations to your classroom. Stations offer simple five-minute exercises, full-inquiry lessons, and discovery time to inspire kids to explore and wonder.

SESSION 5

Engaging Upper Elementary and Middle School Students in International Science Inquiry (Earth)

(Elementary–Middle Level) *227B, Convention Center*

Walter S. Smith *(walter.smith@ttu.edu),* NSTA Director, College Science Teaching, and Texas Tech University, Lubbock

Involve your gifted or all grades 4–8 students in free standards-based, international science through the MOON Project. Participation requires only eyes and internet access.

SESSION 6

The School Water Audit Project: Authentic and Integrative Project-Based Learning (Env)

(Elementary–High School) *227C, Convention Center*

Nancy R. Crocker *(ncrocker@cals.arizona.edu),* The University of Arizona, Phoenix

The School Water Audit Project engages learners in science, literacy, and mathematics to determine the amount of water used in their school and to implement conservation.

SESSION 7

Bringing Diversity into the Science Classroom (Gen)

(Elementary–High School) *228A, Convention Center*

Alison B. Seymour *(seymoura@pvpusd.k12.ca.us),* Ridgecrest Intermediate School, Rancho Palos Verdes, Calif.

Learn about contributions made by various scientists and some strategies for bringing these interesting people into your classroom as you build students' literacy skills.

SESSION 8

National Board Certification for Teachers of Science: You Can Do It! Funding, Process, and Benefits (Gen)

(Elementary–High School) *228B, Convention Center*

Laurie Cale NBCT, University High School, Tucson, Ariz.

Cheryl Dow *(cheryl.dow@tusd1.org),* Carson Middle School, Tucson, Ariz.

Peggy Herron *(peggy.herron@tusd1.org)* and **Debbie Hobbs** *(deborah.hobbs@tusd1.org),* Tucson (Ariz.) Unified School District

Presider: Debbie Hobbs

Join a group of Arizona National Board Certified Teachers of science to discuss sources of funding for the NBC process, candidacy support during the process, and how becoming a National Board Certified Teacher can offer opportunities for professional advancement in many districts.

SESSION 9

Earth Science: Hands On and Minds On (Earth)

(Middle Level–High School) *231A, Convention Center*

Thomas McGuire *(cavecreekdigital@msn.com),* Cave Creek, Ariz.

Carol Ticiho *(cavecreekdigital@msn.com),* Arcadia High School, Phoenix, Ariz.

We will share two dozen inexpensive demonstrations and student labs that explore the physical systems of planet Earth.

8:00–9:00 AM Workshops

Whiteboarding in Science (Gen)

(General) *221A, Convention Center*

Vicki M. Massey *(vmmassey@mpsaz.org),* Mesa (Ariz.) Public Schools

Use group whiteboards to engage students in science content as they strengthen problem-solving/literacy skills.

Facing the Future (Env)

(Middle Level–High School) *222B, Convention Center*

Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.

Explore sustainability issues and the incorporation of literacy in the science classroom through hands-on, inquiry-based activities. CD-ROM provided.

What Is Your Cosmic Connection to the Elements? (Chem)

(Middle Level–High School) *222C, Convention Center*

Cheryl Niemela *(niemelcl@puyallup.k12.wa.us),* Gov. John R. Rogers High School, Puyallup, Wash.

Explore the origin of the periodic elements with these activities and curricula from NASA. Take home a workbook, poster, and *Imaging the Universe* CD.

Managing Whiteboard-mediated Classroom Discourse (Phys)

(Middle Level–High School) *223, Convention Center*

Colleen Megowan-Romanowicz *(megowan@asu.edu),* Arizona State University, Polytechnic Campus, Mesa

Gain a window on student thinking! Have groups work collaboratively to prepare whiteboards that they then share with the class at a "board meeting."

Collaboration: A Beautiful Engineering Principle (Phys)

(Elementary) *224A, Convention Center*

Carolyn W. Jacobs *(carolyn_jacobs@wgbh.org),* WGBH Educational Foundation, Boston, Mass.

A science museum, a public television station, and a state college take the mystery out of engineering instruction for elementary teachers.

Ice Core Records—From Volcanoes to Stars (Earth)

(High School–College/Informal Ed.) *227A, Convention Center*

Donna L. Young *(donna.young@tufts.edu),* The Wright Center for Science Education, Tufts University, Medford, Mass.

Use absolute and relative dating techniques with high-resolution ice core data and historic volcanic eruptions to correlate and date supernova events from nitrate anomalies.

Activities from Across the Earth System (Earth)
(Elementary–High School) 229A, Convention Center
Roberta M. Johnson *(rmjohnsn@ucar.edu),* **Randy Russell, Susan Foster, Lisa Gardiner, Becca Hatheway, Julia Genyuk,** and **Marina LaGrave,** University Corporation for Atmospheric Research, Boulder, Colo.
David F. Mastie, Retired Educator, Chelsea, Mich.
Jennifer Bergman, Curiosity Consulting, Atlanta, Ga.
Educators and scientists share their repertoire of hands-on, inquiry-based activities spanning the five "spheres" of Earth system science. Handouts!

8:00–9:00 AM Exhibitor Workshop

American Geological Institute: Whom Else Would You Ask About Earth Science? (Env)
(Grades 6–12) 126 B/C, Convention Center
Sponsor: It's About Time
Cheryl A. Mosier, Columbine High School, Littleton, Colo.
Participate in activities and real-world Investigating Earth Systems and EarthComm challenges that have been developed for middle and high school students by the education experts at the American Geological Institute. This workshop will include overviews of both programs, web links, materials, and professional development opportunities.

First-Time Attendee Session

Is This Your First NSTA Conference?

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

Thursday, December 3
8:00–9:00 AM
Phoenix Convention Center
Room 127 A/B

This session is generously supported by Carolina Biological Supply Company.

CAROLINA
World-Class Support for Science & Math

NSTA National Science Teachers Association

8:00–9:15 AM Exhibitor Workshops

Inquiring with Interactive Science (Gen)
(Grades 6–8) *121 A/B, Convention Center*
Sponsor: Pearson
Zipporah Miller, Author, Bowie, Md.
More inquiry in more places. Whether you're a lab-oriented teacher or a textbook-focused teacher, these hands-on/minds-on inquiry options will keep all your students engaged.

Evidence for the Ice Ages: An Inquiry Approach (Earth)
(Grades 9–12) *121C, Convention Center*
Sponsor: Kendall Hunt Publishing Co.
Paul Beardsley, BSCS, Colorado Springs, Colo.
BSCS Science: An Inquiry Approach is a three-year multidisciplinary high school program that uses inquiry-based activities and constructivist learning strategies. Students learn content by asking questions, conducting experiments, gathering data, and forming explanations. Participate in activities designed to help students explain the evidence for ice ages.

A Closer Look at Biology, Chemistry, and Earth Science Virtual Labs (Gen)
(Grades 6–12) *122A, Convention Center*
Sponsor: Frey Scientific/School Specialty Science
Vince Zaccardi, Ken Rainis, Carole Andreasson, and **Lisa Bowman,** Frey Scientific/School Specialty Science, Naperville, Ill.
Learn how virtual labs constitute a "laboratory experience" while exploring unique, object-manipulative, network-capable virtual labs for general and AP subjects. Perform actual lab investigations on-screen and view, record, analyze, and report results. Ideas to create custom web content and individualized assessment also provided. Take home various software samplers.

Experimental Design (Gen)
(Grades 1–6) *123, Convention Center*
Sponsor: Delta Education/School Specialty Science
Johanna Strange, Consultant, Richmond, Ky.
Tom Graika, Consultant, Lemont, Ill.
Having trouble getting students ready for science fairs? Learn how to take students from guided investigations to open inquiries. This strategy helps students develop investigative questions, learn the process of experimental design, and implement the scientific method. Delta products will be featured and teacher resources will be provided.

Force! Momentum! Energy Kids Discover More with the STC Program™: Motion and Design (Phys)
(Grades 4–6) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Learn how this hands-on unit helps students explore force, momentum, and energy, and how design affects motion, all while using K'NEX® pieces. We'll start with an overview of the NSRC-developed STC Program. You will also learn how literacy connects with these science units.

Teaching About the Rock Cycle and Earth Times (Earth)
(Grades 6–9) *125A, Convention Center*
Sponsor: Lab-Aids, Inc.
Mark Koker, Lab-Aids, Inc., Ronkonkoma, N.Y.
Do your middle level students have trouble with complex concepts like the rock cycle and geologic time? Maybe it has something to do with understanding small, incremental changes that take place over millions of years. Experience motivating hands-on techniques and strategies for learning about these and related topics, like plate tectonics and continental drift.

EDVOTEK Biotechnology—Teaching DNA Forensics (Bio)
(Grades 6–College) *126A, Convention Center*
Sponsor: EDVOTEK
Jack Chirikjian *(info@edvotek.com),* EDVOTEK, Bethesda, Md.
Learn how to teach students this core concept of molecular biology with fun pre-lab exercises and a hands-on experiment to increase comprehension. This workshop will introduce applications of DNA analysis using restriction enzymes and PCR specifically designed for general and upper-level biology. Participants are automatically entered into a raffle for a FREE classroom electrophoresis setup (a $500 value)!

8:00–9:30 AM Exhibitor Workshop

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

(Grades 5–12) *124A, Convention Center*

Sponsor: CPO Science/School Specialty Science

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

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

8:00–11:00 AM Exhibitor Workshop

Using Science Notebooks with FOSS Middle School (Gen)

(Grades 5–8) *122C, Convention Center*

Sponsor: Delta Education/School Specialty Science–FOSS

Virginia Reid, Consultant, Olympia, Wash.

Jessica Penchos, Lawrence Hall of Science, University of California, Berkeley

Chris Sheridan, Consultant, Sammamish, Wash.

Learn about the benefits of science notebooks by engaging in proven strategies for helping students produce effective notebooks. Experience the notebook as a learning tool, a vehicle for communication, and an assessment and reflection medium. Sample materials provided.

Age is just a number.
Life is what you make of it.

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.

Before and After Retirement: Practicalities and Possibilities

Thursday, December 3, 2009
8:00–9:00 AM
Phoenix Convention Center
Room 127C

For information on the Retired Members Advisory Board, contact Marily DeWall, chair, at *mdewall@cox.net*.

NATIONAL SCIENCE TEACHERS ASSOCIATION NSTA

8:30–9:00 AM Presentation

SESSION 1

On Solid Ground: Integrating Science and Reading Skills (Gen)

(Elementary) *221C, Convention Center*

RESCHEDULED (See Program Changes)

Christine Anne Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

There is a strong research base to suggest that science and reading have many similar skills. We'll look at some strategies.

9:00–11:00 AM Exhibitor Workshop

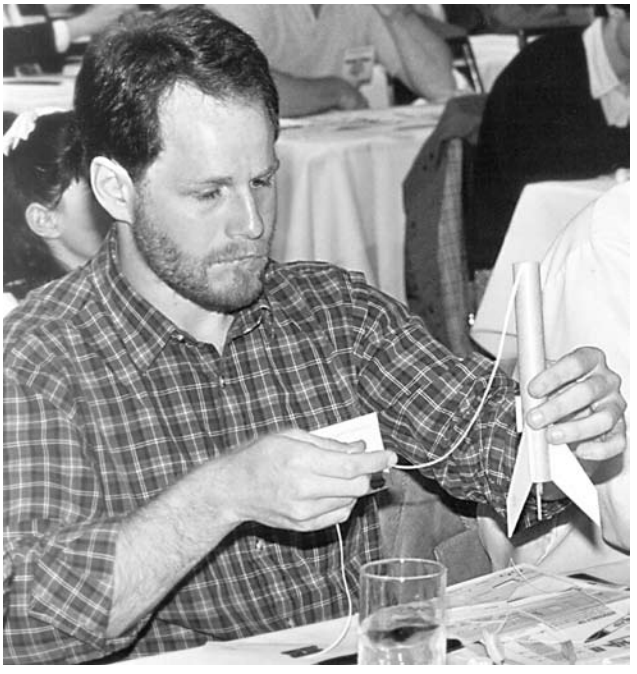
Seeds of Science/Roots of Reading: Integrating Science and Literacy at the Elementary Level (Gen)

(Grades 2–6) *122B, Convention Center*

Sponsor: Delta Education/School Specialty Science–Seeds

Jen Tilson, Suzy Loper, Jonathan Curley, Traci Wierman, and **Carrie Strohl,** Lawrence Hall of Science, University of California, Berkeley

Learn about a new program that enables you to increase the amount of time for science in the crowded curriculum by addressing science and literacy standards simultaneously. Hands-on activities, specially written science books, and compelling research will be shared. Walk away with samples from the Variation and Adaptation unit.



—*Steve Schneider*

9:15–10:30 AM General Session

Talking Science in a Science-challenged World

(General) *Ballroom 120A, Convention Center*

Ira Flatow *(iflatow@iraflatow.com),* Host, NPR's *Science Friday*®, Stamford, Conn.

Presider and Introduction of Speaker: Pat Shane, NSTA President, and The University of North Carolina at Chapel Hill

Welcoming Remarks: Janey Kaufmann, Chairperson, NSTA Phoenix Area Conference, and K–12 Science Coordinator, Scottsdale (Ariz.) Unified School District

Platform Guests: Ira Flatow; Pat Shane; Janey Kaufmann; Page Keeley, NSTA Retiring President, and Maine Mathematics and Science Alliance, Augusta; Alan J. McCormack, NSTA President-Elect, and San Diego State University, San Diego, Calif.; Mary Lara, President, Arizona Science Teachers Association, Flagstaff; Beverly DeVore-Wedding, NSTA Director, District XIV, and Meeker High School, Meeker, Colo.; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Jackie Menasco, Program Coordinator, NSTA Phoenix Area Conference, and Northern Arizona University, Flagstaff; Xan Simonson, Local Arrangements Coordinator, NSTA Phoenix Area Conference, and Mesa Biotechnology Academy, Mesa, Ariz.

While President Obama has stated that he will try to "restore science to its rightful place," the job faced by science communicators is daunting. Presented here are the challenges faced by communicators in a society where even the most educated among us don't have a basic understanding of nature, where the media is "dumbing down" science news, and where the public believes more in science fiction than fact. One solution offered by the programmers at NPR's *Science Friday*—use the various new social communities to break through the barriers.

Veteran NPR science correspondent and award-winning TV journalist Ira Flatow is the host of NPR's Science Friday, *bringing radio and internet listeners worldwide a lively, informative discussion on science, technology, health, space, and the environment. Ira is also founder and president of the Science Friday Initiative, a 501(c)(3) nonprofit company dedicated to creating radio, TV, and internet projects that make science "user friendly."*

9:30–10:30 AM Exhibitor Workshop

Project-Based Inquiry Science (PBIS): A New Generation of Life, Earth, and Physical Science (Gen)
(Grades 6–8) *126 B/C, Convention Center*
Sponsor: It's About Time
Mary Starr, The University of Michigan, Ann Arbor
PBIS teachers tell us they've "never seen students this excited about science." Watch what happens when students get a chance to flex their creative muscles on projects that they care about—the excitement is contagious…and the learning is sustained.

10:00–11:15 AM Exhibitor Workshops

Inquiry in the Chemistry Classroom (Chem)
(Grades 9–12) *121 A/B, Convention Center*
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
Join high school teacher and author Ed Waterman to explore simple yet effective ways to teach chemistry through inquiry using small-scale labs and virtual chemistry laboratories. Learn effective and time-efficient ways to allow students to design and carry out experiments to solve problems while learning chemistry content.

Building Inquiry with *BSCS Biology: A Human Approach* (Bio)
(Grades 9–12) *121C, Convention Center*
Sponsor: Kendall Hunt Publishing Co.
Paul Beardsley, BSCS, Colorado Springs, Colo.
BSCS Biology: A Human Approach is based on constructivist learning strategies and inquiry-based activities. Students transition from activities that explicitly guide their inquiry to doing their own inquiry. Along their journey, students learn how asking questions, conducting experiments, gathering data, forming explanations, and communicating their explanations are valuable skills.

Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (Gen)
(Grades 7–10) *122A, Convention Center*
Sponsor: Frey Scientific/School Specialty Science
Ken Rainis, Carole Andreasson, Lisa Bowman, and **Vince Zaccardi,** Frey Scientific/School Specialty Science, Naperville, Ill.
Explore this new active learning science series that is geared for students in grades 7–10. See how technology and inquiry help students understand essential science content in 10 science areas: Forensics, Physical Science, Cellular World, Biotechnology, Genetics, Life's Kingdoms, Environmental Issues and Solutions, Chemistry, Earth's Resources, and Human Biology. Participants receive various software samplers.

Inquiry and Literacy: Grades 5–8 (Gen)
(Grades 5–8) *123, Convention Center*
Sponsor: Delta Education/School Specialty Science
Tom Graika, Consultant, Lemont, Ill.
Johanna Strange, Consultant, Richmond, Ky.
Participate in investigations involving magnetism and electricity to learn how to turn guided investigations into challenge and open inquiries. You will also learn how to extend science knowledge and skills through Delta literacy connections that improve language arts skills. Leave with a resource packet and related Delta products.

"Finding Solutions" for Your Chemistry Labs with Carolina's New Inquiries in Science™ Chemistry Units (Chem)
(Grades 9–12) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Kelly Branchaud, Carolina Biological Supply Co., Burlington, N.C.
Increase student understanding of difficult concepts such as solubility, freezing point, boiling point, molar mass, and pressure by using a guided inquiry approach. Carolina's Inquiries in Science chemistry units provide hands-on activities and supplies that make teaching challenging topics effortless. Free teacher materials and door prizes.

Understanding Mendelian and Non-Mendelian Inheritance (Bio)
(Grades 6–9) *125A, Convention Center*
Sponsor: Lab-Aids, Inc.
Mark Koker, Lab-Aids, Inc., Ronkonkoma, N.Y.
Middle level students have many misconceptions associated with genetics-related concepts. What is a gene? How are genes expressed? What is the difference between dominant and recessive traits? How does incomplete or co-dominance differ from "simple" dominant/recessive patterns? Examine activities in which students build "critters" to understand principles of Mendelian and non-Mendelian inheritance. Take home materials to use in class next week!

Learning Chemistry with Software for Molecular-Level Visualization (Chem)

(Grades 9–College) *126A, Convention Center*

Sponsor: Wavefunction, Inc.

Jurgen Schnitker *(sales@wavefun.com),* Wavefunction, Inc., Irvine, Calif.

Do you see students struggle with the key concepts of molecular science? Would you like to engage your students with state-of-the-art simulations that are scientifically sound? Attend this hands-on workshop using notebook computers and learn how to remove misconceptions and teach more effectively. Free take-home CD with select demonstrations.

Fantastic Physical Science Demonstrations from Flinn Scientific (Chem)

(Grades 6–12) *129 A/B, Convention Center*

Sponsor: Flinn Scientific, Inc.

Janet Hoekenga, Flinn Scientific, Inc., Batavia, Ill.

Amaze your students with quick demonstrations that teach common physical science topics, including sound, color dynamics, energy, pressure, density, rotation, and scientific inquiry. Over a dozen effective demonstrations will be performed.

10:00–11:30 AM Exhibitor Workshop

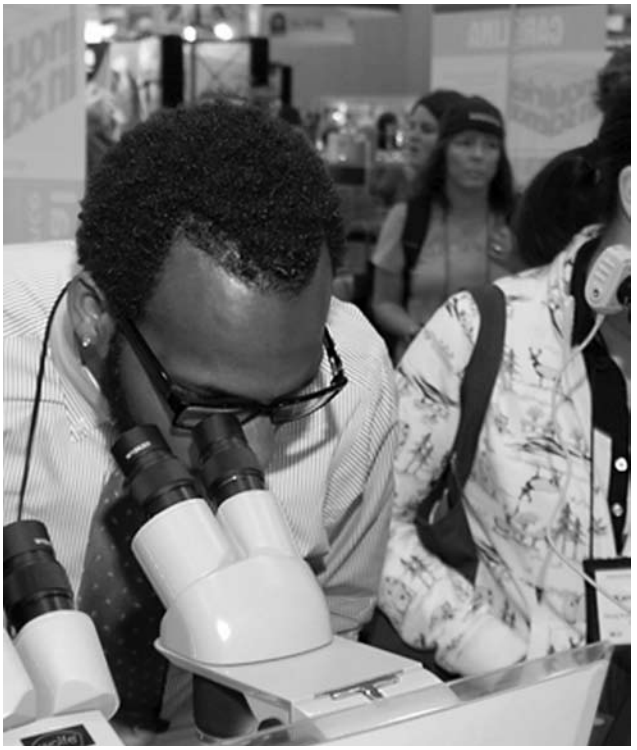
Genetics: Crazy Traits and Adaptation Survivor (Bio)

(Grades 5–12) *124A, Convention Center*

Sponsor: CPO Science/School Specialty Science

Scott Eddleman, CPO Science/School Specialty Science, Nashua, N.H.

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



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

NSTA Exhibits Entrance, North Hall E, Convention Center

Presider and Introductions: Pat Shane, NSTA President, and The University of North Carolina at Chapel Hill

Welcoming Remarks: Michael Cowan, Superintendent, Mesa (Ariz.) Public Schools

Special Guests: Pat Shane; Michael Cowan; Page Keeley, NSTA Retiring President, and Maine Mathematics and Science Alliance, Augusta; Alan J. McCormack, NSTA President-Elect, and San Diego State University, San Diego, Calif.; Mary Lara, President, Arizona Science Teachers Association, Flagstaff; Francis Q. Eberle, NSTA Executive Director, Arlington, Va.; Janey Kaufmann, Chairperson, NSTA Phoenix Area Conference, and Scottsdale (Ariz.) Unified School District; Jackie Menasco, Program Coordinator, NSTA Phoenix Area Conference, and Northern Arizona University, Flagstaff; Xan Simonson, Local Arrangements Coordinator, NSTA Phoenix Area Conference, and Mesa Biotechnology Academy, Mesa, Ariz.; Rick Smith, Director, Exhibits and Advertising Sales, NSTA, Arlington, Va.

Musical Entertainment: Latin Jazz performed by Tolleson Elementary School District's Tolleson Band, under the direction of Todd Burke.

11:00 AM–12 Noon Exhibitor Workshop

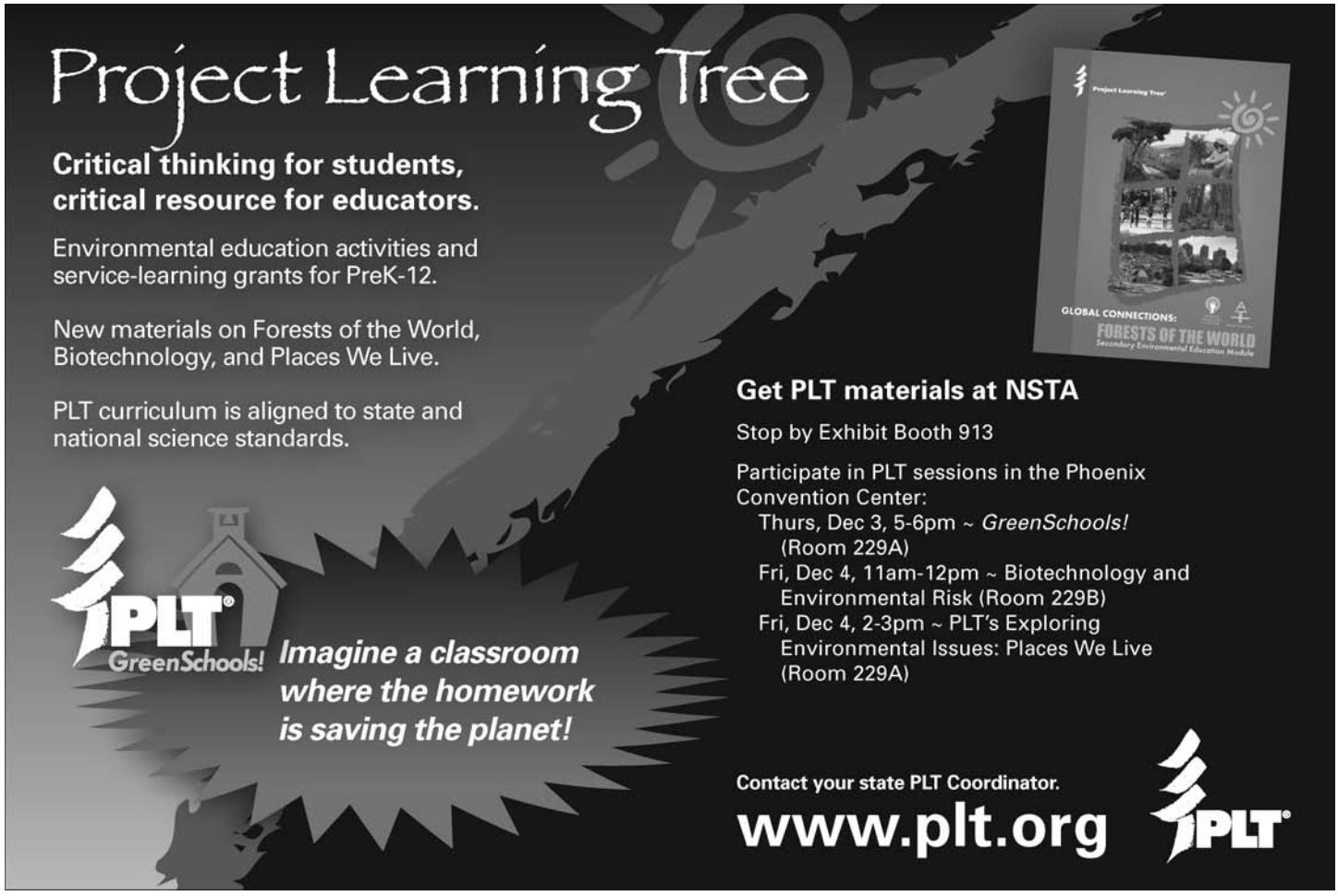
Active Chemistry: Your Students Will React to Chemistry Like You Have Never Seen Before (Chem)
(Grades 9–12) *126 B/C, Convention Center*
Sponsor: It's About Time
Arthur Eisenkraft, 2000–2001 NSTA President, and University of Massachusetts, Boston
Active Chemistry is an NSF inquiry-based curriculum that can make chemistry accessible to ALL high school students. Join us and learn how Active Chemistry can enhance your chemistry instruction and how your students can become artists using chemistry, cooks using chemistry, and game developers using chemistry. We will also discuss how Active Chemistry support materials will assist you with differentiated instruction in the classroom.

11:05 AM–5:00 PM Exhibits

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

11:30 AM–1:00 PM Exhibitor Workshop

Taking Science Outdoors with FOSS K–8 (Bio)
(Grades K–8) *122C, Convention Center*
Sponsor: Delta Education/School Specialty Science–FOSS
Joanna Snyder and **Erica Beck Spencer,** Lawrence Hall of Science, University of California, Berkeley
Learn about the ground-breaking work done by the Boston Schoolyard Initiative (BSI) and other projects. Explore how to use effective strategies to engage children in powerful science learning experiences in their own schoolyards and local outdoor environments. We will go outside, so dress accordingly. Sample materials provided.



11:30 AM–1:30 PM Exhibitor Workshop

Seeds of Science/Roots of Reading: Integrating Science and Literacy at the Elementary Level (Gen)
(Grades 2–6) *122B, Convention Center*
Sponsor: Delta Education/School Specialty Science–Seeds
Jen Tilson, Suzy Loper, Jonathan Curley, Traci Wierman, and **Carrie Strohl,** Lawrence Hall of Science, University of California, Berkeley
Learn about a new program that enables you to increase the amount of time for science in the crowded curriculum by addressing science and literacy standards simultaneously. Hands-on activities, specially written science books, and compelling research will be shared. Walk away with samples from the Variation and Adaptation unit.

12 Noon–1:15 PM Exhibitor Workshop

Educational Science Lab Design and Implementation for the 21st Century Made Easy (Gen)
(Grades K–12) *122A, Convention Center*
Sponsor: Frey Scientific/School Specialty Science
Gordon Strohminger and **John Flockenzier,** Frey Scientific/School Specialty Science, Mansfield, Ohio
Explore the process of designing and implementing educational science labs. See how technology and room design can push conventional boundaries to help students better understand science concepts. We'll discuss the lab design process, furniture and equipment basics, safety and accessibility, integration of technology, and 21st-century trends. Participants receive Lab Planning CD and Implementation Guide.

12 Noon–1:30 PM Luncheon

Preservice and New Teachers Luncheon (M-1)
(Tickets Required; $12) *North Mountain, Sheraton*
Sponsored by Kendall Hunt Publishing Co.

New to the profession? Join us for this lively and interactive function where you'll learn about all the NSTA resources at your fingertips for your science classroom, your career, and your own content knowledge. Enjoy a complete luncheon (generously sponsored by Kendall Hunt Publishing Company) while networking with other teachers new to the profession.

Tickets, if still available, must be purchased at the Ticket Sales Counter in the NSTA Registration Area before 7:00 PM on Wednesday.

Note: Tickets will be provided only to preservice teachers or teachers with up to five years of teaching experience.

12 Noon–1:30 PM Exhibitor Workshop

Collision Physics: A Smashing Good Time! (Phys)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Patsy Eldridge, CPO Science/School Specialty Science, Nashua, N.H.
What happens when you launch a car on a track system and hit another car? You can change the force used to launch the moving car and the mass of both the moving car and target car. See how concepts can meet mathematics and accurate data collection in a SMASHING investigation.

12:30–1:30 PM NSTA ESP Symposium I

NSTA Exemplary Science Program (ESP)…Realizing the Visions of the National Standards: It Takes ESP to Find Exemplary Science Programs (Gen)
(General) *229A, Convention Center*
Organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program, The University of Iowa, Iowa City
Coordinator: Robert E. Yager

This session will include brief descriptions of programs that exemplify how the four NSES goals have been met. Discussion will center on how NSES *More Emphasis* suggestions have guided instruction. Participants in this symposium will include the following authors from specific monographs in the series.

Exemplary Science Programs in Informal Education Settings
Elizabeth Mulkerrin *(elizabethm@omahazoo.com),* NSTA Director, Informal Science, and Omaha's Henry Doorly Zoo, Omaha, Neb.
Stephen M. Pompea *(spompea@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.

Exemplary Science Programs: Best Practices in Professional Development
Susan B. Koba *(skoba@cox.net),* Retired Educator, Omaha, Neb.

12:30–1:30 PM Presentations

SESSION 1

Stirring Up Reading in Chemistry (Chem)
(Middle Level–College) *221B, Convention Center*
Willard Brown *(wbrown@wested.org),* Strategic Literacy Initiative/WestEd and Oakland (Calif.) Unified School District
Experience an inquiry and apprenticeship approach to science reading that helps students develop the knowledge, strategies, and dispositions of powerful readers of science.

SESSION 2

Building Productive Relationships with the Society of Women Engineers (Gen)
(General) *221C, Convention Center*
Presenter to be announced
Learn about the tools and resources available nationwide from the Society of Women Engineers (SWE). Get the scientific support you need in your classrooms and labs.

SESSION 3

Chemistry Is Cooking: Cooking Is Chemistry (Chem)
(High School/Supervision) *222A, Convention Center*
Lehaman J. Burrow *(jburrow@pageud.k12.az.us),* **Mark Lomeland** *(mlomeland@pageud.k12.az.us),* and **Wayne Duncan** *(wduncan@pageud.k12.az.us),* Page High School, Page, Ariz.
Presider: Lehaman J. Burrow
This cross-curricular, standards-based event linking chemistry and culinary arts simultaneously enhances relevance and rigor for both courses while facilitating relationships.

Tickets Required (M-1; $12 on-site) and, if still available, must be purchased at the Registration Area by 7:00 PM on **Wednesday, December 2.**

This event is generously sponsored by Kendall Hunt Publishing Company.

Kendall Hunt publishing company

NSTA National Science Teachers Association

SESSION 4

Reading and Writing Happen in Science, Too! (Gen)

(Middle Level) *225A, Convention Center*

Patricia B. Hurley *(patricia.hurley@tusd1.org)* and **Andrea J. Smith** *(andrea.smith@tusd1.org),* Tucson (Ariz.) Unified School District

Enhance student literacy with easy-to-incorporate reading and writing strategies—Bull's Eye, Chalk Talk, and Talking to the Text.

SESSION 5

NSTA High School Committee Share Session (Gen)

(High School) *226 A–C, Convention Center*

Jean Tushie *(jtushie@comcast.net),* NSTA Director, High School Science Teaching, and Eden Prairie High School, Eden Prairie, Minn.

The NSTA High School Committee highlights excellent presenters sharing inquiry and assessment through best practices, teaching tips, labs, and activities. Join us for some GREAT ideas!

SESSION 6

Best Practices in Molecular Biology: Efficient Transformations, Faster Gels, Stronger Science (Bio)

(High School–College) *227B, Convention Center*

Simon D. Holdaway, Quinnipiac University, Hamden, Conn.

Learn how to link three molecular biology labs (transformations, restriction digests, and gel electrophoresis) into a single cohesive unit using new—and faster—reagents and techniques.

SESSION 7

NSTA Press Session: Science Teaching as a Profession—Why It Isn't; How It Could Be (Gen)

(High School/Supervision) *227C, Convention Center*

Sheila Tobias, Consultant/Author, Tucson, Ariz.

Anne Baffert *(azchemmom@yahoo.com),* Salpointe Catholic High School, Tucson, Ariz.

What will it take to professionalize your tasks as a science teacher, your work life as a science teacher, and your status as a science teacher?

SESSION 8

Exploring Our Universe on a Beam of Light (Earth)

(General) *228A, Convention Center*

Don W. McCarthy *(dmccarthy@as.arizona.edu),* and **Larry A. Lebofsky** *(lebofsky@lpl.arizona.edu),* The University of Arizona, Tucson

Nancy R. Lebofsky *(lebofsky@comcast.net),* Retired Educator, Tucson, Ariz.

Michelle Higgins *(mlhiggins4@gmail.com),* Sahuaro Girl Scout Council, Tucson, Ariz.

Scientists and educators from NASA's James Webb Space Telescope will use interactive activities to explain how they study the formation of stars and galaxies.

SESSION 9

CESI Session: Get the Scoop on CESI (Gen)

(General) *228B, Convention Center*

Kay Atchison Warfield *(kaw@alsde.edu),* Alabama State Dept. of Education, Montgomery

Barbara Z. Tharp *(btharp@bcm.edu),* Baylor College of Medicine, Houston, Tex.

Mary Beth Katz *(mbkatz@bellsouth.net),* Alabama Science Teachers Association, Birmingham

Join the international conversation and learn how you can walk the red carpet as a member of CESI! Special awards, newsletters, committee appointments, and much more are waiting for you.

SESSION 10

Assessment for Dummies (Gen)

(General) *231A, Convention Center*

Steve Canipe *(steve.canipe@waldenu.edu),* Walden University, Minneapolis, Minn.

Get a humorous look at assessment implementation using the irreverent model of the *Books for Dummies* series mixed with gems of wisdom.

SESSION 11

Moving from Science Anchors to Common State Standards **(Gen)**

(General) *Ballroom 120B, Convention Center*

Page Keeley, NSTA Retiring President, and Maine Mathematics and Science Alliance, Augusta

Cary I. Sneider *(csneider@pdx.edu),* Portland State University, Portland, Ore.

The issue of national standards has gained considerable attention in recent months. Both President Obama and key thought leaders such as the Council of Chief State School Officers and the National Governors Association are signaling support for national standards and are urging states to adopt rigorous common standards in all major subjects. NSTA has been ahead of this curve with Science Anchors—an initiative to bring greater focus, clarity, and coherence to science education. This session will provide an overview of the Science Anchors initiative and an update on our progress.

12:30–1:30 PM Workshops

Houston, We Have a Solution **(Earth)**

(Elementary–Middle Level) *132 A/B, Convention Center*

Colleen Howard *(choward@mpsaz.org)* and **Karri L. West** *(klwest@mpsaz.org),* Mesa (Ariz.) Public Schools

Take one small step for teachers and one giant leap for STEM education! Experience an amazing journey as you sit in the command module, talk to mission control, and take part in a space simulation that will leave your students wanting more.

Science Notebooking in the Elementary Classroom **(Gen)**

(Elementary) *221A, Convention Center*

Korin Forbes *(klforbes@mpsaz.org)* and **Cheryl McCaw** *(cdmccaw@mpsaz.org),* Mesa (Ariz.) Public Schools

Notebooks are a natural way to integrate and differentiate instruction, making learning more meaningful and authentic. Join us to start your notebook today!

Inquiry Matters **(Chem)**

(Elementary–Middle Level) *222B, Convention Center*

Patti Galvan *(p_galvan@acs.org),* American Chemical Society, Washington, D.C.

Conduct two tests on four look-alike household liquids, then use their characteristic properties to identify unknowns. Free molecular model animations explain observations on the molecular level. Take home a handout with activities.

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

(High School) *222C, Convention Center*

Kristen R. Dotti *(kristen.dotti@catalystlearningcurricula.com),* Christ School, Arden, N.C.

Writing lab experiments can be a huge leap for students accustomed to cookbook-style labs. Learn strategies to help your students develop high-quality scientific experiments.

Biotech in a Virtual World **(Bio)**

(High School) *223, Convention Center*

Lisa M. Byers, Maricopa High School, Maricopa, Ariz.

Reta Yanik *(rdyanik@mpsaz.org),* Westwood High School, Mesa, Ariz.

Anne English *(anne.english@srpmic-ed.org),* Salt River High School, Scottsdale, Ariz.

Believe it or not, your students can clone a mouse, make a microarray, BLAST a gene, and even take a field trip. We'll show you how, when, where, and why you should conduct these virtual field trips in your classroom. Please bring your laptop.

Incredible Invisible Soil Robots **(Env)**

(Middle Level–High School) *224B, Convention Center*

John W. Fedors *(jfedors@wavecable.com),* Science Activities, Lincoln, Calif.

Soil robots are microbes that use the abundant locked-up energy in organic/inorganic waste and maintain our food web.

A Journey into Caves: A Curriculum Guide to Illuminate the Dark and Excite Your Students! **(Earth)**

CANCELED

(Middle Level–High School) *227A, Convention Center*

Patsy Jones, Higley High School, Gilbert, Ariz.

Explore the fascinating ecosystems of caves with these interactive labs and activities. Take home a curriculum guide with activities and internet-based research projects.

NSTA Press Session: Stop Faking It! Finally Understand ELECTRICITY and MAGNETISM So You Can Teach It (Phys)

(Elementary–Middle Level) *231B, Convention Center*

Bill Robertson *(wrobert9@ix.netcom.com),* NSTA Press Author, Woodland Park, Colo.

Join the author of the *Stop Faking It!* books for a hands-on workshop covering key basic content in electricity and magnetism. Knowledge given away free to all participants. Lame jokes quite probable.

12:30–1:30 PM Exhibitor Workshop

***Active Physics*® Third Edition: Newly Revised with More Content, More Math, More Physics (Phys)**

(Grades 9–12) *126 B/C, Convention Center*

Sponsor: It's About Time

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

Join us as we perform a series of guided inquiry activities that prepare students to do a voice-over of a sports video and explain the physics of the action appearing on the screen. Watch what happens to the quality of students' work when they take ownership of real-world scientific challenges that matter to them. Leave with a practical hands-on activity you can do in your own classroom.

12:30–1:45 PM Exhibitor Workshops

Wow! Realistic Laboratory Simulations for the Entire High School Science Curriculum You Have to See to Believe! (Gen)

(Grades 9–12) *121 A/B, Convention Center*

Sponsor: Pearson

Brian Woodfield, Brigham Young University, Provo, Utah

Come see a one-of-a-kind demonstration of these amazingly realistic laboratory simulations for chemistry, physics, physical science, and our newest simulations for biology. Dr. Woodfield will demo a variety of innovative labs and show how they help students develop critical-thinking skills.

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

(Grades K–8) *121C, Convention Center*

Sponsor: Houghton Mifflin Harcourt

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

Join Houghton Mifflin Harcourt and Michael DiSpezio for an entertaining and eye-opening survey of common misconceptions in science. Not only will you expand your awareness of science myths through game show–style interactions, you'll engage in a variety of easy-to-repeat and inexpensive activities that address misunderstandings about gravity, electricity, sound, and light.

Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (Bio)

(Grades 6–12) *124B, Convention Center*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Experience a far superior and safer alternative to formaldehyde with Carolina's Perfect Solution specimens. Participants dissect a sheep brain, cow eye, pig heart, and pig kidney and observe major internal and external structures to gain a better understanding of these mammalian organs. An excellent comparative dissection with Carolina's best specimens!

Sustainable Energy: The Green Path to STEM Integration (Gen)

(Grades 7–12) *125A, Convention Center*

Sponsor: Pitsco Education

Ashlei Bockover, Pitsco Education, Pittsburg, Kans.

Bundle the power of the Sun and the force of the wind into a popular workshop about sustainable energy. By building a wind generator and SunEzoon car, several STEM concepts are highlighted throughout the presentation.

The Physics Behind the Roller Coaster (Phys)

(Grades 9–12) *125B, Convention Center*

Sponsor: Sargent-Welch

Jessica Norcia, American 3B Scientific, Tucker, Ga.

This workshop will offer an in-depth look into the concepts behind this modern phenomenon that includes eddy currents, induction of a magnetic field, and Lorentz force. The basic mechanics of roller coasters, such as gravity propulsion and friction braking, will also be presented.

Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (Chem)
(Grades 9–College) *126A, Convention Center*
Sponsor: Wavefunction, Inc.
Jurgen Schnitker *(sales@wavefun.com),* Wavefunction, Inc., Irvine, Calif.
Widely recognized as a powerful teaching tool, molecular modeling is now a common component of introductory chemistry classes at the college level. Join us for this hands-on workshop using notebook computers and learn how to integrate state-of-the-art modeling into your teaching of AP chemistry. Free take-home CD with select demonstratons.

Using Dinah Zike's Foldables to Teach Science More Effectively (Gen)
(Grades K–12) *129 A/B, Convention Center*
Sponsor: Dinah-Might Adventures, LP
Dinah Zike, Dinah-Might Adventures, LP, San Antonio, Tex.
Transform basic classroom materials into memorable and useful 3-D interactive graphic organizers. Learn from Dinah Zike, the creator of Foldables, as you make and take learning and assessment tools that are evidence based, kinesthetic, and integrative.

12:30–3:30 PM Short Courses

Teaching Inquiry and Using Inquiry to Teach Science (SC-1)
(Grades K–12) *Alhambra, Sheraton*
Tickets Required; $33
Jane Kirkley *(jane.kirkley@nau.edu)* and **Lori Hare** *(lori.hare@nau.edu),* Center for Science Teaching and Learning, Northern Arizona University, Flagstaff
For description, see page 34.

Transforming Teaching: Project-Based Learning (PBL) in the 21st-Century Science Classroom (SC-2)
(Grades K–12) *Camelback A, Sheraton*
Tickets Required; $42
Julianne Webb *(julianne.webb@esc20.net),* Transformation 2013, San Antonio, Tex.
For description, see page 34.

Using Notebooks to Enhance Learning in a Science Classroom (SC-3)
SOLD OUT
(Grades K–8) *Camelback B, Sheraton*
Tickets Required; $37
Joan Gilbert *(joan.gilbert@tusd1.org)* and **Meg Gebert** *(margaret.gebert@tusd1.org),* Tucson (Ariz.) Unified School District
For description, see page 34.

1:00–2:30 PM Exhibitor Workshop

What's Going On in There? Inquiry Science for Administrators, Trainers, and Teachers (Gen)
(Grades K–12) *123, Convention Center*
Sponsor: Delta Education/School Specialty Science
John Cafarella, Consultant, Canadensis, Pa.
How can you support and evaluate an inquiry-based science lesson/program? What should you look for while observing a science lesson? During this session we'll define inquiry and look at the use of process skills, standards-based content and materials, notebooking, and assessment while engaging in interactive inquiry-based activities.

2:00–3:00 PM Featured Presentation

Transforming to the 21st-Century Global Classroom **(Gen)**

(General) *Ballroom 120B, Convention Center*

Jo Anne Vasquez *(jvasquez@helios.org),* 1996–1997 NSTA President, and Vice President and Program Director, Arizona Transition Years Teacher and Curriculum Initiatives, Helios Education Foundation, Phoenix

Presider: Beverly DeVore-Wedding, NSTA Director, District XIV, and Meeker High School, Meeker, Colo.

"Would you tell me, please, which way I ought to go from here?" said Alice. "That depends a good deal on where you want to get to," said the Cat. When Alice landed in Wonderland, she had to navigate through her new environment and, like Alice, we as educators are still trying to find our way in learning how to construct the 21st-century science classroom. We've had the naysayers, the doubters, and the policy push-backers; however, now that STEM education has become an economic reality, we have the believers! This is not just an academic issue but a matter of equity as well, and how the country responds to it is important for us all. Let's look at the national landscape and where we want to go and how we might get there by transforming one classroom at a time.

Dr. Vasquez is an experienced science educator, science author, and professional development consultant. She was a presidential appointee to the National Science Board, governing board of the National Science Foundation, becoming the first and only K–12 educator to ever hold a seat on this prominent board. She was named the 2006 recipient of the Robert H. Carlton Award, the nation's most prestigious honor in science education, for her outstanding contributions to, and leadership in, science education at the local, state, and national levels.

Dr. Vasquez retired from Mesa Public Schools in Arizona, where she was lead curriculum developer and science specialist for Mesa's award-winning elementary science program. She is currently vice president and program director for the Transition Years Teacher and Curriculum Initiatives with the Helios Education Foundation.

2:00–2:30 PM Presentation

SESSION 1

I Love Symbiosis **(Bio)**

(Middle Level–High School) *222A, Convention Center*

Irfan Kula *(irfankula@gmail.com),* Arizona State University, Scottsdale

Presider: Peter Rillero, Arizona State University West, Phoenix

Experience symbiotic relationships in ecosystems and analyze the results using three interactive and challenging activity objects on the web.

2:00–3:00 PM Presentations

SESSION 1

NSTA **NSTA Avenue Session: SciLinks: Using the Online Assignment Tool** **(Gen)**

(Elementary–High School) *127C, Convention Center*

Virginie L. Chokouanga, Customer Service and Database Administrator, SciLinks, NSTA, Arlington, Va.

Tyson Brown *(tbrown@nsta.org),* Director, SciLinks, NSTA, Arlington, Va.

The SciLinks Assignment Tool allows students to show what they have learned from the web resources SciLinks provides. Learn to create and distribute assignments.

SESSION 2

Climate Change: Global Connections and Sustainable Solutions **(Env)**

(Elementary–High School) *221B, Convention Center*

Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.

Experience hands-on lessons that demonstrate the interconnections between natural cycles/systems and human choices/actions using carbon footprint, emissions trading, and energy policy. Free curriculum included.

SESSION 3

Science Night for Dummies **(Gen)**

(General) *221C, Convention Center*

Molina Walters *(drmo@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa

Lyana Guevara, Frank School, Tempe, Ariz.

Engage the entire community in the processes and discoveries of science with family science night. We'll look at activities, themes, who should be involved, and advertising.

SESSION 4

Linking Science, Social Studies, and Sustainability Through NSF Research on Mediterranean Landscapes (Env)

(Middle Level–High School) *225A, Convention Center*

Maggie C. McGraw and **Laura Swantek** *(lswantek@asu.edu),* Arizona State University, Tempe

Can modeling the past help our students make sustainable decisions tomorrow? These lessons have students thinking about the long-term impacts of human decisions.

SESSION 5

ELD Strategies in Science (Gen)

(General) *227B, Convention Center*

Michael Klentschy *(mpkdr@aol.com),* San Diego State University–Imperial Valley Campus, Calexico, Calif.

Learn research-based classroom strategies designed to provide English learners with the support necessary to effectively learn science and close achievement gaps.

SESSION 6

The DNA Shoah Project: A Unique Forensic Reconstruction (Bio)

(High School/Informal Ed) *227C, Convention Center*

Barbara Fransway *(bbf@email.arizona.edu)* and **Matthew E. Kaplan** *(mkaplan@email.arizona.edu),* The University of Arizona, Tucson

This unique curriculum uses modern forensic science to bring the lessons of the Holocaust into the biology classroom, creating a lesson with both contemporary and historic ramifications.

SESSION 7

Measuring the Integration of Science and Mathematics (Gen)

(General) *228A, Convention Center*

Eugene Judson *(eugene.judson@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa

Learn how to use a newly developed instrument to assess the degree to which an integrated science/math lesson is truly integrated and student centered.

SESSION 8

Developing a Network of Teacher Leaders in Science (Gen)

(Middle Level/Supervision) *228B, Convention Center*

Stephen Best *(sdbest@umich.edu),* University of Michigan, Ann Arbor

Walt Rathkamp *(rathkamp@svsu.edu),* Saginaw Valley State University, University City, Mich.

See how the Michigan Mathematics and Science Teacher Leadership Collaborative created a professional development program to address critical science instruction, inquiry learning, and leadership issues.

SESSION 9

Bring the Science of Cars into the Classroom (Chem)

(Middle Level–High School) *231A, Convention Center*

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

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

Students love cars but dislike science? Here are some lessons that use cars to teach major science concepts…yes, even if you are mechanically challenged!

2:00–3:00 PM Workshops

Forensic Science: The Context for Integration (Gen)

(Middle Level–High School) *221A, Convention Center*

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

See how forensic cases can set the stage for integration in your curriculum and motivate your students with real-world applications.

Modeling the Spectrum (Phys)

(Middle Level–High School) *222C, Convention Center*

Christine Anne Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.

Engage in a unit that examines the EMS—from pre- to post-assessment activities.

Sorting Out the Galaxy Zoo (Earth)

(Middle Level–College) *223, Convention Center*

Robert T. Sparks *(rsparks@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.

Learn how your students can participate in authentic scientific research by classifying galaxies for the Galaxy Zoo project. Free teacher's guide.

Switched at Birth: Are Todd's Parents His Biological Parents? (Bio)

(Middle Level) *224A, Convention Center*

Nadja Anderson *(nadja@email.arizona.edu)* and **Stacey Forsyth** *(forsyth@bio5.org),* The University of Arizona, Tucson

Bring biotechnology into the middle school classroom. Todd's siblings teased that he was switched at birth. Learn genetics and use DNA fingerprinting to determine Todd's parentage.

Integrating Nonfiction Reading and Writing While Teaching About Energy (Gen)

(Preschool/Elementary) *224B, Convention Center*

Karen Reagor *(kreagor@need.org),* The NEED Project, Covington, Ky.

Integrate reading and writing in an energy unit with the use of science notebooks. Come get some practical experience you can apply in your classroom right away.

Inquiry-based Biotechnology on a Budget (Bio)

(Middle Level–College) *227A, Convention Center*

Julia L. Smith *(julia_smith@bigbear.k12.ca.us)* and **Ken E. Nettlebeck** *(ken_nettlebeck@bigbear.k12.ca.us),* Big Bear High School, Big Bear Lake, Calif.

Try some abbreviated labs for teaching biotechnology on a budget. We will also do several paper demonstrations of biotechnology techniques.

NSTA Press Session: So You Want New Science Facilities: Science Facilities 101 (Gen)

(General) *231B, Convention Center*

LaMoine L. Motz *(llmotz@comcast.net),* 1988–1989 NSTA President, and Oakland County Schools, Waterford, Mich.

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

Sandra West Moody *(sw04@txstate.edu),* Texas State University–San Marcos

Presider: LaMoine L. Motz

Join the co-authors of *NSTA Guide to Planning School Science Facilities* (Second Edition) and learn the basics of science facility design and budgeting so you can guide your school toward improvements in functionality, safety, and sustainability. Take home a materials packet.

2:00–3:00 PM Exhibitor Workshop

InterActions in Physical Science: When Your Students Interact with Science They Discover (Phys)
(Grades 7–9) *126 B/C, Convention Center*
Sponsor: It's About Time
Robert H. Poel, Western Michigan University, Kalamazoo
Build your students' content knowledge with a structured program that provides motivating, relevant activities; expository readings; and computer simulations. At the same time you will be building students' skills in measurement, scientific thinking, cooperative learning—problem-solving skills that will help them handle the rigors of science.

2:00–3:15 PM Exhibitor Workshop

Doing DNA Electrophoresis Simply—with E-Gels®! (Gen)
(Grades 7–10) *122A, Convention Center*
Sponsor: Frey Scientific/School Specialty Science
Ken Rainis, Carole Andreasson, Lisa Bowman, and **Vince Zaccardi,** Frey Scientific/School Specialty Science, Naperville, Ill.
See how fast and simple it is to load, run, and analyze DNA using E-Gels. Discover our new Inquiry Investigations™ biotechnology series, learn about DNA forensic technology, and solve a murder mystery by imaging and analyzing DNA. Participants will receive a program resource CD and correlations.

2:00–3:30 PM Exhibitor Workshop

Fun with Electricity and Circuits (Phys)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Patsy Eldridge, CPO Science/School Specialty Science, Nashua, N.H.
In this hands-on, inquiry-based workshop, participants use electric circuit kits and digital meters to explore the basic concepts of electricity. A thorough understanding of types of circuits, charge, voltage, current, and resistance are uncovered during the quest to discover how to build and analyze circuits that perform simple tasks.

2:00–4:00 PM Exhibitor Workshop

FOSS Assessment: Valuing Academic Progress in Grades 3–6 (Gen)
(Grades 3–6) *122C, Convention Center*
Sponsor: Delta Education/School Specialty Science–FOSS
Kathy J. Long, Larry Malone, and **Brian T. Campbell,** Lawrence Hall of Science, University of California, Berkeley
The ASK (Assessing Science Knowledge) Project has developed a system for determining levels of understanding of complex scientific ideas. We will introduce benchmark assessments developed for FOSS modules, grades 3–6, and the tools you can use to analyze student work. Sample materials provided.

2:15–3:30 PM Exhibitor Workshops

Meet the Untamed Science Crew and Learn How to Make Your Own Science Videos! (Gen)
(Grades 6–12) *121 A/B, Convention Center*
Sponsor: Pearson
Danni Washington and **Hazen Audel,** Untamed Science, Oregon, Wis.
Join the Untamed Science crew as they discuss how the video revolution can be used to motivate today's science students. The Ecogeeks will then walk you through 10 tricks to make your own science films and show you ways to empower your students with filmmaking prowess. Finally, interested participants will be given the chance to join the Untamed Science initiative.

Bring Biology to Life (Bio)
(Grades 9–12) *121C, Convention Center*
Sponsor: Houghton Mifflin Harcourt
Jeannie Dennard, Houghton Mifflin Harcourt, Boston, Mass.
One of the most effective strategies for engaging and motivating students is to connect the subject to students' daily lives. All too often students think that success in a biology course comes from memorizing facts and terms, yet they have no personal connection to inspire their interest or imagination. Biology offers a unique opportunity to engage students because almost everything in today's world is affected by biological discoveries.

Amplify Your Genetics Teaching Skills with Carolina's New Inquiries in Science™ Biology Units (Bio)

(Grades 9–12) *124B, Convention Center*

Sponsor: Carolina Biological Supply Co.

Kelly Branchaud, Carolina Biological Supply Co., Burlington, N.C.

Want to crack the mystery of genetics for your students? Increase student achievement on difficult concepts such as nucleic acids, genetic inheritance, and biotechnology by using a guided inquiry approach. Carolina's Inquiries in Science biology units provide hands-on activities to make teaching challenging topics effortless. Free teacher materials and door prizes!

It's Easy to Go Digital! (Gen)

(Grades 4–College) *125A, Convention Center*

Sponsor: Swift Optical Instruments, Inc.

David Doty and **Cynthia Syverson-Mercer,** Swift Optical Instruments, Inc., San Antonio, Tex.

Make science come alive by turning your classroom into a digital classroom. We'll show you simple and affordable techniques, using microscopes and digital imaging products, that you can use every day. Learn how easy it is to use software and make it work with interactive whiteboards and other technology.

WARD'S Presents: DNA on a Chain—Extraction and Isolation with a New Twist (Bio)

(Grades 6–12) *125B, Convention Center*

Sponsor: WARD's Natural Science

Amy Kasianowicz, VWR Education, West Henrietta, N.Y.

New from WARD's…a tasty and trendy new protocol for extracting your own DNA. Using a simple and safe procedure, participants will extract and isolate DNA from their own cheek cells, then save and display it in a necklace.

Enhancing Your Cell Unit with Models and Manipulatives (Bio)

(Grades 7–12) *126A, Convention Center*

Sponsor: Speak Easies

Paula Fogarty *(info@speakeasies.biz),* Speak Easies, Santa Rosa, Calif.

Want a way to increase rigor for your cell unit—even with your challenged learners? It's easier than you think with Speak Easies teaching aids. Try out our manipulatives as we share clever ideas and strategies for teaching the cell and related topics. Each participant receives a Desk Kit.

A to Z Activities for the Primary Classroom (Gen)

(Grades K–2) *129 A/B, Convention Center*

Sponsor: Macmillan/McGraw-Hill and Glencoe

Frankie Troutman, Bright Beginnings School, Chandler, Ariz.

Primary teachers have a tough time fitting good inquiry science into their busy day. Experience integrated science activities that provide quality science plus reinforcement of basic skills. This interactive workshop will bring out every child's curiosity in science. Handouts and prizes.

—Craig Stout

2:30–4:00 PM Exhibitor Workshop

FOSS and DSM Kit Refurbishment/Material Management (Gen)

(Grades K–8) *122B, Convention Center*

Sponsor: Delta Education/School Specialty Science

Kyle Gibson, Delta Education/School Specialty Science, Nashua, N.H.

Science kit materials management is a significant challenge for many districts. Our Delta Science Resource Service (DSRS) is a cost-effective way to manage your science kit program. A teacher's valuable time is better spent teaching science than chasing science materials, so join us to learn how DSRS can benefit your science program.

3:00–4:30 PM Exhibitor Workshop

Science Gnus: The Stories of Science in the Stories of Scientists and Process Skills (Gen)

(Grades K–6) *123, Convention Center*

Sponsor: Delta Education/School Specialty Science

John Cafarella, Consultant, Canadensis, Pa.

Join us for fascinating stories of scientists, their discoveries, and process skills, plus the sometimes fine line between being famous (Alexander Graham Bell) or being forgotten by history (Antonio Meucci). We'll replicate some famous experiments, too. Liberal doses of Science Gnus humor.

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3:30–4:30 PM Presentation

SESSION 1

NSTA Avenue Session: Toshiba/NSTA ExploraVision Awards Program (Gen)

(General) *127C, Convention Center*

Brian P. Short *(exploravision@nsta.org),* Assistant Director, Science Education Competitions, NSTA, Arlington, Va.

ExploraVision is a K–12 competition that motivates students and challenges them to think creatively about scientific innovation 20 years into the future. Discover how students can win up to $240,000 in savings bonds for envisioning new technologies. Learn how ExploraVision supports classroom goals; illustrates connections between science and technology; and offers recognition, computers, and other prizes for schools, students, teachers, and mentors. Session participants have a chance to win a Toshiba product!

SESSION 2

Physical Science on a Shoestring (Phys)

(Elementary–Middle Level) *222A, Convention Center*

Antonio M. Niro, Jr. *(tonyniro@comcast.net),* Retired Educator, Milford, Mass.

These high-interest hands-on physical science activities/demonstrations are designed for use by middle level grades. We'll focus on low- and no-cost materials and how to get them.

SESSION 3

Basic Polymer Chemistry for the High School Classroom (Chem)

(High School) *225A, Convention Center*

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

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

Bring polymers into your curriculum with these simple demonstrations, labs, and activities focusing on formation, classification, structure, and properties. Handouts.

SESSION 4

Inquiring Minds Need to Know: Making Scientific Connections Through People, Invention, and Literature (Gen)

(Middle Level–High School) *227C, Convention Center*

Leslie A. Birdon *(lesliebirdon@advancebr.org),* Prescott Middle School, Baton Rouge, La.

Explore techniques and strategies for organizing literature reviews of science fiction novels, creating a public exhibit poster, and analyzing invention designs such as drugs and video games.

SESSION 5

Asking the Right Questions (Gen)

(General) *228A, Convention Center*

Eugene Judson *(eugene.judson@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa

Through a series of simple activities, we will examine the questions teachers ask in classrooms and how best to promote participation and inquiry.

SESSION 6

The Good, the Bad, and the Ugly: Using Digital Video Editing for Reflection on Teaching Practice (Gen)

(General) *231A, Convention Center*

Philip Molebash *(pmolebash@loyolahs.edu),* Loyola Marymount University, Los Angeles, Calif.

Craig Bouma, Margaret A. Matthews *(maggie.matthews@gmail.com),* and **Robb Gorr** *(rgorr@loyolahs.edu),* Loyola High School of Los Angeles, Calif.

Presider: Robb Gorr

Learn how digital video editing can serve as the main venue for fostering deep and meaningful reflection on teaching practice.

3:30–4:30 PM Workshops

Observing and Analyzing Patterns in Nature to Strengthen Literacy and Mathematical Skills (Gen)
(General) *221A, Convention Center*
Diana Wehrell-Grabowski *(drdianascience@bellsouth.net),* Mobile Science Education, Cocoa Beach, Fla.
Strengthen literacy and mathematics skills by observing and analyzing patterns in nature using eye loupes, magnifying lenses, and microscopes.

Fight Bac! Integrating Food Safety into Your Elementary Classroom (Gen)
(Elementary) *222B, Convention Center*
Laurie A. Hayes *(lhayes@cart.org),* Center for Advanced Research and Technology, Clovis, Calif.
Susan E. Hartley *(susan.hartley@nisd.us),* Navarro High School, Geronimo, Tex.
Explore the FDA's FREE hands-on curriculum that integrates science and health standards while teaching students about the importance of hand washing and food safety.

It's a Bird, It's a Plane…Observations of the Wright Brothers (Gen)
(Middle Level) *222C, Convention Center*
Eric M. Proctor *(eproctor@azgfd.gov),* Arizona Game and Fish Department, Phoenix
In this unique integration of wildlife biology, physical science, and history, we will explore the nature of science and biomimicry while using primary source documents.

Cosmic Times: Astronomy History and Science for the Classroom (Earth)
(Middle Level–High School) *223, Convention Center*
Cheryl Niemela *(niemelcl@puyallup.k12.wa.us),* Gov. John R. Rogers High School, Puyallup, Wash.
Discover NASA's Cosmic Times, a series of curriculum support materials and classroom activities for grades 7–12. Students experience the process of science by studying the history of our understanding of the universe through literature.

JetStream: An Online School for Weather (Earth)
(Informal Education) *224A, Convention Center*
Dennis R. Cain *(dennis.cain@noaa.gov),* National Weather Service, Fort Worth, Tex.
Teach about the weather with JetStream, a free online resource from the National Weather Service. Modules are designed with both text and graphical displays and include classroom experiments that use common household items.

Teaching Astronomy Is Out of This World! (Earth)
(Middle Level) *224B, Convention Center*
Nancy R. Parra-Quinlan and **Kendis Hannah,** Kino Junior High School, Mesa, Ariz.
The teaching of astronomy does not lend itself well to lab activities. Join us for some ideas on how to incorporate hands-on activities in your teaching.

National Earth Science Teachers Association Earth Science Share-a-Thon (Earth)
(Elementary–High School) *226 A–C, Convention Center*
Michael J. Passow *(michael@earth2class.org),* Dwight Morrow High School, Englewood, N.J.
Roberta M. Johnson *(rmjohnsn@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.
Bruce Boyce *(bboyce@pvschools.net),* Mountain Trail Middle School, Phoenix, Ariz.
Bonnie J. Brunkhorst *(bbrunkho@csusb.edu),* 1990–1991 NSTA President, and California State University, San Bernardino
Jerry Robert Cook *(jerry.cook@pcds.org),* Phoenix Country Day School, Paradise Valley, Ariz.
Pamela K. Harman, SETI Institute, Mountain View, Calif.
Thomas McGuire *(cavecreekdigital@msn.com),* Amsco School Publications, Cave Creek, Ariz.
Joseph Monaco, Redlands East Valley High School, Redlands, Calif.
Susan W. Moore *(susan.w.moore@nasa.gov),* Science Systems and Applications, Inc./NASA Langley Research Center, Hampton, Va.
Robert Myers *(bob_myers@strategies.org),* Institute for Global Environmental Strategies, Arlington, Va.
Graciela Rendón-Coke *(ch_rendon@hotmail.com),* Retired Educator, Yuma, Ariz.
Rhonda Spidell *(spidellr@hotmail.com),* Albuquerque Academy, Albuquerque, N.Mex.
Wendy E. Van Norden *(wvannorden@hw.com),* Harvard-Westlake School, North Hollywood, Calif.
Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.
Presider: Roberta M. Johnson
Join NESTA members and other education specialists as they share their favorite classroom activities. Lots of free handouts!

Using Rain Forests to Teach Across Disciplines: Educational Resources on Forestry in Guatemala (Env)
(Elementary–High School) *227A, Convention Center*
Al Stenstrup *(astenstrup@forestfoundation.org),* American Forest Foundation, Washington, D.C.
Sample multidisciplinary lessons by Rainforest Alliance and Project Learning Tree created to teach about rain forests and the importance of sustainable forestry in protecting Guatemala's resources.

Magical Illusions Workshop for K–8 Teachers (Gen)
(Preschool-Middle Level/Informal Ed) *228B, Convention Center*
Alan J. McCormack *(amccorma@mail.sdsu.edu),* NSTA President-Elect, and San Diego State University, San Diego, Calif.
Storylines, discrepant events, and magic develop concepts in both physical and biological sciences, pique children's interest and imagination, and build creative and logical-thinking skills.

Stellar Evolution: From Stellar Nurseries to Black Holes (Earth)
(General) *229A, Convention Center*
Donna L. Young *(donna.young@tufts.edu),* The Wright Center for Science Education, Tufts University, Medford, Mass.
Use beautiful multi-wavelength images of stellar nurseries, proto-stars, supernova remnants, planetary nebulae, neutron stars, pulsars, and black holes to investigate the processes of stellar evolution.

3:30–4:30 PM Exhibitor Workshop

Project-Based Inquiry Science (PBIS): A New Generation of Life, Earth, and Physical Science (Gen)
(Grades 6–8) *126 B/C, Convention Center*
Sponsor: It's About Time
Mary Starr, The University of Michigan, Ann Arbor
PBIS teachers tell us they've "never seen students this excited about science." Watch what happens when students get a chance to flex their creative muscles on projects that they care about—the excitement is contagious…and the learning is sustained.

4:00–4:30 PM Presentations

SESSION 1

Using Achievements in Science to Build a Community of Learners (Bio)
(Elementary–High School) *221C, Convention Center*
Cheryl L. Dunham, Scottsdale Unified School District, Phoenix, Ariz.
Margie Gustafson *(mgustafson@susd.org),* Tavan Elementary School, Phoenix, Ariz.
Learn how National DNA Day was turned into a weeklong series of events to help build a community of educators, parents, and students.

SESSION 2

Reflective Assessment Technique: Fifteen Minutes to Improved Instruction (Phys)
(Elementary–Middle Level) *227B, Convention Center*
Cathleen A. Kennedy *(cathy@kacgroup.com),* Education Research Consultant, San Carlos, Calif.
Kathy J. Long *(klong@berkeley.edu),* Lawrence Hall of Science, University of California, Berkeley
Arthur H. Camins *(arthurcamins@gmail.com),* Jefferson County Public Schools, Louisville, Ky.
Learn a quick assessment technique that pinpoints what students need to learn next—without giving a quiz. See how it improved student performance and teacher practice in a national study.

4:00–5:15 PM Exhibitor Workshops

Planet Diary: Web-based Science News and Activities Engage Students in Science (Gen)
(Grades 6–8) *121 A/B, Convention Center*
Sponsor: Pearson
Jack Hankin, Pacifica, Calif.
Jack Hankin, creator of the beloved (and free!) PlanetDiary.com, will discuss how to use Earth's Journal, Earth's Calendar, and many of the site's rich activities to increase student engagement and achievement in science. Learn how to use Planet Diary to introduce concepts and demonstrate student mastery in a way that both captivates and helps students see the science in their everyday lives.

***Living by Chemistry:* What Is the Shape of That Smell? (Chem)**
(Grades 9–11) *121C, Convention Center*
Sponsor: Key Curriculum Press
Jeffrey Dowling *(jdowling@keypress.com),* Key Curriculum Press, Emeryville, Calif.
Teach rigorous chemistry with guided inquiry. Teaching students about molecules through a smell context makes more advanced chemistry concepts easier to grasp. Explore activities that help students understand molecular structure and other core chemistry concepts. Take home lesson materials from the *Living by Chemistry* curriculum.

Inquiry Investigations™ Forensics Science Curriculum Module (Gen)
(Grades 7–10) *122A, Convention Center*
Sponsor: Frey Scientific/School Specialty Science
Ken Rainis, Carole Andreasson, Lisa Bowman, and **Vince Zaccardi,** Frey Scientific/School Specialty Science, Naperville, Ill.
With our new Inquiry Investigations forensic series, students learn foundational analysis skills that help them solve multifaceted cases. See how program software allows the preparation of web-based content along with individualized assessment. Participants will perform skill-based investigative techniques and case investigations, and receive a program resource CD and correlations.

Hands-On Science with Classroom Critters (Bio)
(Grades K–12) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Here's a sure-fire boost to your class—live organisms. Whether you use hands-on curricula (e.g., STC®, FOSS®) or develop your own lessons, animals broaden students' inquiry-based explorations and increase their interest in science. Participate in fun, simple hands-on activities and learn about care and handling. Receive free product samples and literature.

Galileo Skies (Earth)
(Grades 5–College) *125A, Convention Center*
Sponsor: Starry Night Education
Herb Koller *(hkoller@simcur.com),* Starry Night Education, New York, N.Y.
It's been 400 years since Galileo! This workshop will use technology to show participants how they can simulate Galileo's observations. Lessons, exercises, simulations, and classroom activities allow students to see what Galileo saw when and where he saw it.

WARD'S Presents Sherlock Bones: Identification of Skeletal Remains (Bio)
(Grades 7–12) *125B, Convention Center*
Sponsor: WARD's Natural Science
Amy Kasianowicz, VWR Education, West Henrietta, N.Y.
Integrate math, observation, and analytical skills in your science classroom. This fascinating lab introduces forensic techniques used to identify and assess skeletal indicators. With the help of measuring tools and international standards, we will determine sex, height, race, and approximate age at time of death from skeletal remains.

Cross-curriculum Integration Using Space as a Theme (Gen)
(Grades K–8) *126A, Convention Center*
Sponsor: Space Foundation
Bryan DeBates *(bdebates@spacefoundation.org),* Space Foundation, Colorado Springs, Colo.
Space is a subject area that gets most students excited about learning. Learn how to integrate many subject areas using topics such as rocketry as a theme for learning.

I See What You Mean—Developing Visual Literacy (Gen)

(Grades 1–8) *129 A/B, Convention Center*

Sponsor: Macmillan/McGraw-Hill and Glencoe

Jo Anne Vasquez, 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.

Interpreting and understanding the visuals and illustrations students encounter in their science texts is more than just luck. See what current research says and experience some new strategies for improving student understanding. Activities, handouts, and prizes.

4:00–5:30 PM Exhibitor Workshop

Light and Optics: A Series of EnLIGHTening Experiments! (Phys)

(Grades 5–12) *124A, Convention Center*

Sponsor: CPO Science/School Specialty Science

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

Experience the Optics with Light and Color kit, with LED flashlights, filters, a laser, and more. Try color mixing, relate it to human vision, and see different spectra of light with diffraction glasses. See the phenomenon of internal reflection by shining a laser through a prism and tracing incident and refracted rays.

5:00–5:30 PM Presentation

SESSION 1

School Visits by Veterinarians: More Than Just Career Day (Bio)

(Middle Level–High School) *222A, Convention Center*

William R. Klemm *(wklemm@cvm.tamu.edu),* Texas A&M University, College Station

A new educational outreach and partnership program at Texas A&M University creates biomedical science presentations for veterinarians to use in school visits.

—Elizabeth McNeil

5:00–6:00 PM Presentations

SESSION 1

★ **Building Partnerships to Improve Teacher Quality and Student Outcomes: The Cleveland Math and Science Partnership (Gen)**

(Supervision/Administration) *221B, Convention Center*

Bill Badders *(baddersw@cmsdnet.net),* Cleveland Metropolitan School District, Cleveland, Ohio

Julie Gielow *(julie.a.gielow@cmsdnet.net),* H. Barbara Booker K–8 Academy, Cleveland, Ohio

The Cleveland Metropolitan School District, with funding from the National Science Foundation, has developed and sustained a partnership with John Carroll University, Cleveland State University, Case Western Reserve University, and the Education Development Center focused on improving teacher quality through rigorous university coursework and a content-based mentoring program for middle and high school teachers. We'll share lessons learned on developing partnerships and the impact on teachers, university faculty, and students.

SESSION 2

Become a Teacher at Sea with NOAA Scientists (Gen)

(General) *221C, Convention Center*

Kirk Beckendorf *(kirk.beckendorf@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

NOAA's Teacher at Sea program provides all teachers with the opportunity to work with scientists on board a NOAA research ship. Come learn how to apply and participate.

SESSION 3

Teaching the Simple Science of Flight (Phys)

(High School–College) *225A, Convention Center*

David L. Esker *(david_esker@ymail.com),* The Solution is Science, Colorado Springs, Colo.

Explore the simple science of flight—how wings generate lift, how to calculate cruising speeds and power requirements, and how to successfully apply these flight equations to various planes and flying animals.

SESSION 4

Let's Look at How Science REALLY Works! (Gen)

(General) *227B, Convention Center*

Judy Scotchmoor *(jscotch@berkeley.edu)* and **Anna Thanukos** *(thanukos@berkeley.edu),* University of California Museum of Paleontology, Berkeley

Want your students to deeply engage science content and develop scientific-thinking skills? Understanding Science, a new online resource, has the solution! Explore a new approach for K–16 teachers.

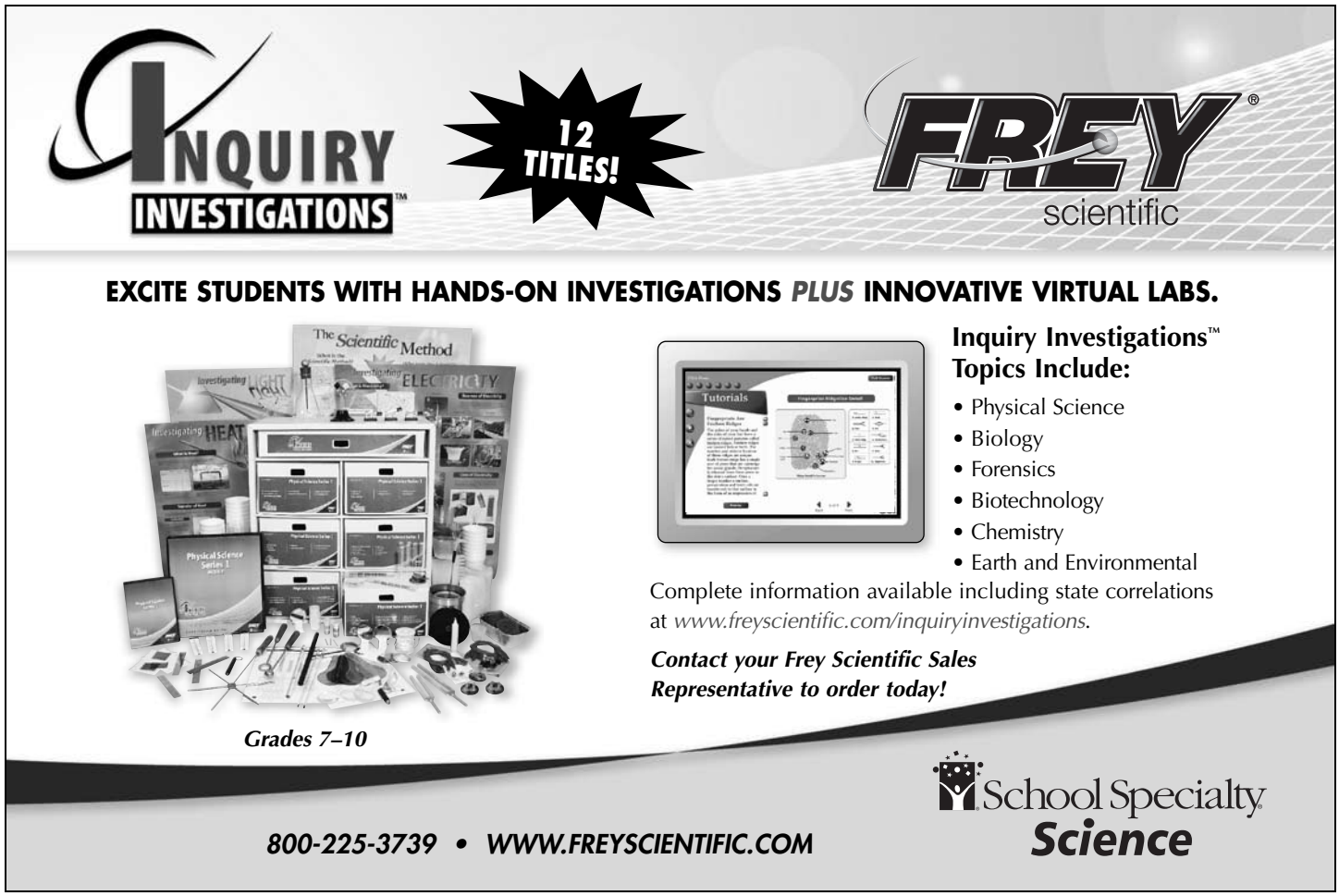
SESSION 5

Sixty Labs You Can Do with Little or No Budget (Chem)

(Middle Level–College) *227C, Convention Center*

Ted Koehn *(tkoehn@lps.org),* Lincoln East High School, Lincoln, Neb.

I will share more than 60 chemistry/physics labs that can be done with low-cost or homemade equipment, including light boxes, parallax viewers, marshmallow catapults, atom electron structures, and much more.



5:00–6:00 PM Workshops

Academic Vocabulary Development Strategies for the Science Classroom (Gen)
(Elementary–Middle Level) *221A, Convention Center*
Meg Gebert *(margaret.gebert@tusd1.org)* and **Kathy Lloyd** *(kathy.lloyd@tusd1.org),* Tucson (Ariz.) Unified School District
Joan Gilbert *(joan.gilbert@tusd1.org),* David T. Smith Science Resource Center, Tucson, Ariz.
Increase your students' academic vocabulary in six steps! Come try some linguistic and nonlinguistic games and strategies that support students' vocabulary development and increase engagement.

Using Engaging Chemistry Games to Help Students Learn the Periodic Table (Chem)
(High School–College) *222B, Convention Center*
Kerry L. Cheesman *(kcheesma@capital.edu),* Capital University, Columbus, Ohio
Learn to play Elemental Scrabble® and other engaging games that promote the learning of periodic table elements.

Technology Binds Mathematics and Science (Chem)
(Middle Level–High School) *222C, Convention Center*
Greg Dodd *(gbdodd@gmail.com),* George Washington High School, Charleston, W.Va.
Use the multiple representations provided by technology to integrate mathematics and science. Multiple representations allow students to truly understand science concepts through links between data and graphical representations.

Black Holes and Supernovae: The Hidden Universe (Earth)
(Middle Level–High School) *223, Convention Center*
Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.
Black holes, exploding stars, time, space warping—the universe is far more mysterious than e'er man dreamt. Come explore the universe with a NASA Educator Ambassador and take home a CD-ROM.

Interactive Student-based Science (Gen)
(Middle Level–High School) *224A, Convention Center*
Caysie H. Heil, Malden High School, Malden, Mo.
Students enjoy learning while playing. Incorporate interactive games and activities into your science classroom, such as Whiteboard Dash, BIOphone, and Immunity Dodgeball.

Inquiry-based Hands-On Activities and Demonstrations (Gen)
(Elementary–High School) *224B, Convention Center*
John W. Fedors *(jfedors@wavecable.com),* Science Activities, Lincoln, Calif.
Try some hands-on activities and demonstrations on energy, magnetism, diffusion, heat transfer, hydrophilic/hydrophobic materials, and forensic potentials.

National Earth Science Teachers Association Rock and Mineral Raffle (Earth)
(General) *226 A–C, Convention Center*
Wilene Rigsby, Retired Educator, North Little Rock, Ark.
Roberta M. Johnson *(rmjohnsn@ucar.edu),* University Corporation for Atmospheric Research, Boulder, Colo.
Michael J. Passow *(michael@earth2class.org),* Dwight Morrow High School, Englewood, N.J.
Here's your chance to win display-quality specimens of rocks, minerals, fossils, and other earth science–related materials from areas other than your own.

Linking Home and School with P.A.S.S.© (Portable Affordable Simple Science) (Gen)
(Preschool/Elementary) *227A, Convention Center*
Renee G. O'Leary and **Margaret Dee** *(drpeggydee@verizon.net),* Caravel Academy, Bear, Del.
Presider: Margaret Dee
Discover simple, multisensory, hands-on explorations—in zippered plastic bags— for grades preK–2 with take-home and multidisciplinary follow-up. Walk away with sample lesson plans/bags and follow-up.

GreenSchools! (Gen)
(Elementary–High School) *229A, Convention Center*
Al Stenstrup *(astenstrup@forestfoundation.org),* American Forest Foundation, Washington, D.C.
Karen K. Schedler *(karen.schedler@afre.org),* Arizona Foundation for Resource Education, Phoenix
GreenSchools! connects and builds on the success of Project Learning Tree (PLT) Schools, PLT Classroom Activities, and GreenWorks! service learning grants. Receive the GreenSchools! investigations and get your school involved!

6:30–9:30 PM Social

Evening at the Arizona Science Center (M-2)
(Tickets Required; $30) *Off-site*

Sponsored in part by VWR Education and the Arizona Science Center

Join us for an amazing science-filled evening at the Arizona Science Center. Explore the Center's newest galleries—experience earthquakes and hurricanes in the award-winning Forces of Nature Gallery, lay on a bed of nails in Get Charged Up!, and use your shadow to catch virtual falling sand in My Digital World. Visit with fellow educators as you enjoy punch and coffee and a decadent dessert buffet complete with a chocolate fountain!

Note: The Arizona Science Center is within easy walking distance of the Convention Center and conference hotels. Pick up a walking map at the Ticket Sales counter.

—Arizona Science Center

—McDowell Mountain Regional Park

8:00–8:30 AM Presentation

SESSION 1

Using Authentic Research Experiences to Increase Relevance of Science Instruction (Bio)

(Middle Level–College/Supervision) *221C, Convention Center*

Lisa K. Elfring *(elfring@email.arizona.edu),* The University of Arizona, Tucson

Teachers who have participated in an intensive summer research internship program will discuss how their experiences have impacted their teaching.

—*Greater Phoenix Convention & Visitors Bureau*

8:00–9:00 AM Presentations

SESSION 1

Starting an NSTA Student Chapter: Student and Faculty Perspectives (Gen)

(General) *127C, Convention Center*

Howard Wahlberg *(hwahlberg@nsta.org),* Assistant Executive Director, Member, Chapter, and Customer Relations, NSTA, Arlington, Va.

Interested in getting your preservice teachers more involved in the profession as they prepare to enter the classroom? Join NSTA student chapter advisors to discuss the advantages of starting an NSTA student chapter at your college or university.

SESSION 2

An Integrated Program Based on *The Story of Science* (Gen)

(Middle Level–High School) *221B, Convention Center*

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

Joy Hakim *(joyhakim@aol.com),* Englewood, Colo.

The Story of Science reflects a multidisciplinary approach to developing programs that include science, language arts, social studies, and the humanities. NSTA has developed two free publications of activities and curriculum materials to facilitate such programs. Come see how to build such a program, explore free resources from NSTA, and meet the authors.

SESSION 3 (two presentations)

(General) *222A, Convention Center*

Presider: Kathryn Sorensen, American River College, Sacramento, Calif.

SCST Session: Nature of Science Understanding Among Southern Utah University Graduating Science Majors (Chem)

John R. Taylor *(taylorjr@suu.edu),* Southern Utah University, Cedar City

Science teachers of all ages will benefit from these results, receiving insight on how science curricula are being understood.

SCST Session: GOBs of Information: Evaluation of a One-Semester General, Organic, and Biochemistry Course for the Allied Health Field (Gen)

Deboleena Roy *(royd@arc.losrios.edu),* American River College, Sacramento, Calif.

We introduced a one-semester integrated chemistry course to prepare students for three biology courses, Anatomy and Physiology 1 and 2 and Microbiology. Join me for a brief review of the curriculum and a look at its effectiveness.

SESSION 4

NSTA High School Committee Presents Leading Beyond the Classroom (Gen)

(High School) *225A, Convention Center*

Jean Tushie *(jtushie@comcast.net),* NSTA Director, High School Science Teaching, and Eden Prairie High School, Eden Prairie, Minn.

While science teachers enjoy their classroom experience, many look for opportunities to expand their leadership outside the classroom. In this session we will share strategies for being an effective leader in your school. Additionally, we will share leadership opportunities with NSTA.

SESSION 5

NABT Session: Using Free Online Games to Teach Science Process and Science Content (Bio)

(Middle Level) *226B, Convention Center*

Leslie M. Miller *(lmm@rice.edu),* Rice University, Houston, Tex.

Lynn Lauterbach *(lynnlauterbach@gmail.com),* Loveland, Colo.

Excite students about science while reinforcing the scientific method. Explore a variety of free online games that have been proven effective.

SESSION 6

AAPT Session: Music in Motion: Teaching Science and Math Through Musical Instrument Design and Construction (Phys)

(General) *226C, Convention Center*

Robert Culbertson, Arizona State University, Tempe

An integrated course of study including math, science, and English was developed for college freshmen built around a theme of studying and building musical instruments. We will discuss how this might be adapted to K–12 classrooms.

SESSION 7

Learning Science in Informal Environments (Gen)

(General) *227B, Convention Center*

Jennifer L. Childress *(childressj@si.edu),* National Science Resources Center, Washington, D.C.

Andrew Shouse *(awshouse@uw.edu),* University of Washington, Seattle

Presider: Andrew Shouse

We'll look at the latest research from the National Research Council about improving science education in informal environments—media, libraries, museums, nature centers, and others.

SESSION 8

Web 2.0 in the Classroom: Collaborative Learning Tools for Science (Gen)

(General) *228A, Convention Center*

Stephen Best *(sdbest@umich.edu),* University of Michigan, Ann Arbor

See how Web 2.0 tools can support inquiry and problem solving in science. I'll provide an overview, samples, and tutorials for dozens of these tools.

SESSION 9

NASA's GLOBE Program: U.S. Regional GLOBE Networking Session (Env)

(General) *228B, Convention Center*

Teresa J. Kennedy, University Corporation for Atmospheric Research, Boulder, Colo.

Nandini McClurg *(mcclurg@globe.gov),* Colorado State University, Fort Collins

GLOBE (Global Learning and Observations to Benefit the Environment) involves primary and secondary students from 110 countries in collaborations on inquiry-based scientific investigations. Join GLOBE teachers and partners in a networking session.

SESSION 10

Understanding Sustainability: A Two-Week Unit for the Middle School Science Classroom (Env)

(Middle Level–High School) *231A, Convention Center*

Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.

Develop understanding about global interdependency by integrating sustainability concepts into your science classes. Global sustainability is an engaging context for science skills and content. Receive a free curriculum!

8:00–9:00 AM Workshops

ACS Session One: What's Matter Made Of? (Chem)
(High School) *127 A/B, Convention Center*
Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.
Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Imaging the Invisible (Gen)
(High School–College/Informal Ed.) *221A, Convention Center*
Donna L. Young *(donna.young@tufts.edu),* The Wright Center for Science Education, Tufts University, Medford, Mass.
Learn how scientists use technologically advanced detectors to "measure" invisible sources, record the measurements, and transform the measurements into increasingly detailed "representative color" images.

Desert Reach...Bring the Desert to Your Classroom (Env)
(Elementary) *224A, Convention Center*
Diane A. Vaszily *(dvaszily@deserteyeeducation.com),* Science Eye School of Experiential Science, Southwest Ranches, Fla.
Engage in a simulated scientific exploration of the Sonoran Desert. "Research stations" are visited by teams of desert explorers (grades 3–5) who collect data for interpretation.

Infusing Literacy and Mathematics Skills in the Science Content of the Elementary School (Gen)
(Elementary) *224B, Convention Center*
Ava F. Pugh *(apugh@ulm.edu)* and **Jerrilene Washington** *(washington@ulm.edu),* The University of Louisiana at Monroe
Presider: Ava F. Pugh
Create homemade ice cream, build molecular structures, and integrate elementary trade books. Handouts.

Starting an NSTA Student Chapter:
Faculty & Student Perspectives

Friday
December 4
8:00–9:00 AM
Phoenix Convention Center
Room 127C

Interested in getting your preservice teachers more involved in the profession? You won't want to miss this must-see panel discussion conducted by NSTA student chapter advisors on the advantages of starting an NSTA student chapter at your college or university.

National Science Teachers Association NSTA

PSD Session: Laser Light: What Makes It So Special? (Phys)
(Elementary–Middle Level) *225B, Convention Center*
Becky Thompson-Flagg *(flagg@aps.org),* American Physical Society, College Park, Md.
Learn how the properties of a laser make it different from a regular flashlight and why lasers are so important in current research. Take home a handout of all activities.

Teaching AP Biology Using Games and Models (Bio)
(High School) *227A, Convention Center*
Kristen R. Dotti *(kristen.dotti@catalystlearningcurricula.com),* Christ School, Arden, N.C.
Water noodle operons, human protein chains, carrying capacity scurry games—could this be AP science? I'll share hands-on learning with rigorous AP content.

NASA's Planet Hunting Mission (Earth)
(Middle Level–High School) *229A, Convention Center*
Pamela K. Harman *(pharman@seti.org)* and **Edna K. DeVore** *(edevore@seti.org),* SETI Institute, Mountain View, Calif.
The Kepler Mission will search for extra-solar Earth-size planets by detecting winks in brightness as planets transit. Practice modeling and interpretation of light vs. time graphs.

CESI Session: Make and Take (Gen)
(General) *229B, Convention Center*
Mary Lara, DeMiguel Elementary School, Flagstaff, Ariz.
Barbara Z. Tharp *(btharp@bcm.edu),* Baylor College of Medicine, Houston, Tex.
Kay Atchison Warfield *(kaw@alsde.edu),* Alabama State Dept. of Education, Montgomery
Mary Beth Katz *(mbkatz@bellsouth.net),* Alabama Science Teachers Association, Birmingham
Betty Crocker *(crocker@unt.edu),* University of North Texas, Denton
Renee G. O'Leary and **Margaret Dee** *(drpeggydee@verizon.net),* Caravel Academy, Bear, Del.
Join exemplary teachers around the globe for science engagements to stimulate student learning and network with K–8 teachers. Learn how you also can walk the red carpet with CESI!

NSTA Press Session: Stop Faking It! Finally Understand CHEMISTRY So You Can Teach It (Chem)
(Elementary–Middle Level) *231B, Convention Center*
Bill Robertson *(wrobert9@ix.netcom.com),* NSTA Press Author, Woodland Park, Colo.
Quit having your students memorize the periodic table. Instead, learn how you and your students can understand atomic structure so that the periodic table becomes an organizational tool instead of an end in itself. Join the author of the *Stop Faking It!* books for hands-on activities and irreverence.

8:00–9:00 AM Exhibitor Workshop

Tough Topics in Physics and Physical Science: Motion (Phys)
(Grades 6–12) *126 B/C, Convention Center*
Sponsor: PASCO Scientific
Jeff Bush, Rancho Bernardo High School, San Diego, Calif.
Brett Sacket, PASCO Scientific, Roseville, Calif.
Let's explore PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of high school physics and middle school physical science investigations—motion. Participate in standards-based probeware lab activities from PASCO's new physics curriculum. Experience how the SPARK Science Learning System can enhance your teaching practice and improve student understanding of core topics.

8:00–9:15 AM Exhibitor Workshops

The Origin After 50 Years: Teaching the Science of Darwin's Great Idea in a Climate of Controversy (Bio)
(Grades 9–12) *121 A/B, Convention Center*
Sponsor: Pearson
Kenneth Miller, Brown University, Providence, R.I.
Evolution remains a contentious part of the biology curriculum in many states and school districts. Having dealt with these issues as an author and expert witness in the Kitzmiller v. Dover trial, I will suggest ways in which teachers can present Darwin's great idea in a climate of controversy.

Teaching Chemistry Without Hearing "When Am I Ever Going to Need to Know This?" (Chem)
(Grades 9–12) *121C, Convention Center*
Sponsor: Kendall Hunt Publishing Co.
Kelly Deters, Shawnee Heights High School, Tecumseh, Kans.
Learn how a rigorous, thematic chemistry curriculum increases student motivation and attitude, inquiry skills, and content knowledge. Developed by a classroom teacher to interest her students while maintaining high academic standards, this chemistry program is based on chemistry education research and efficient instructional design principles.

Bio-Rad Light Up Your Classroom with Nobel Prize–winning Science (Bio)
(Grades 6–College) *122 A/B, Convention Center*
Sponsor: Bio-Rad Laboratories
Essy Levy *(biotechnology_explorer@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
What happens when you cross a jellyfish with *E. coli?* You can create your own pGLO green glowing bacteria. By the end of this workshop you'll become an actual genetic engineer—modifying genes and transforming bacteria with the Green Fluorescent Protein (GFP) (AP Biology Lab 6). Take home a free UV pen light and lab prep DVD.

Put Some Spark into Science Investigations (Gen)
(Grades 1–5) *123, Convention Center*
Sponsor: Delta Education/School Specialty Science
Tom Graika, Consultant, Lemont, Ill.
Johanna Strange, Consultant, Richmond, Ky.
Using the science topics of magnetism and electricity, learn how to turn guided investigations into challenge investigations and open inquiries. These strategies will help your students become independent thinkers and inquirers. Participants will receive a complimentary resource packet and related Delta products.

AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (Bio)
(Grades 9–12) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Are you ready for a cutting-edge forensic dissection activity? Engage students and revitalize your instruction of mammalian structure and function with a "real" classroom autopsy! Participants, working in pairs, dissect a pig by modeling the autopsy protocols of a forensic pathologist.

Discover the Solar System and Beyond with GEMS® Space Science Sequences (Earth)
(Grades 3–8) *125A, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
GEMS, along with Carolina Curriculum, is launching the innovative Space Science Sequences, which provide a coherent, standards-based curriculum while addressing key space science concepts for grades 3–8.

Detecting Radiation in Our Radioactive World (Gen)
(Grades 5–12) *126A, Convention Center*
Sponsor: American Nuclear Society
Toni Bishop, American Nuclear Society, La Grange Park, Ill.
Learn how to use Geiger counters to detect radioactivity, teach the principles of nuclear science, and explore ways nuclear technology is applied in our everyday lives.

Get Charged Up with Educational Innovations! (Phys)
(Grades 3–9) *129 A/B, Convention Center*
Sponsor: Educational Innovations, Inc.
EI Staff
Join us for fun activities with static electricity. Make your own Franklin static motor and discover a plethora of activities to get your class charged up. Make and take and door prizes!

Where Words Touch Earth: Native Voices on Climate Change (Earth)
(Grades 5–12) *226A, Convention Center*
Sponsor: WGBH/Teachers' Domain
Carolyn W. Jacobs *(carolyn_jacobs@wgbh.org),* WGBH Educational Foundation, Boston, Mass.
Come learn about a collaboration between WGBH Education Foundation, the NASA Goddard Space Flight Center, and Haskell Indian Nations University to document climate change in native lands. Experience an integrated set of media-based online resources featuring indigenous as well as Western science perspectives on global climate change. Share your ideas of how to integrate American Indian elder views and tribal knowledge into your classroom. There will be a drawing for a four-DVD set of the WGBH American Experience production, *We Shall Remain.*

8:00–9:30 AM Exhibitor Workshops

Genetics: Crazy Traits and Adaptation Survivor (Bio)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Scott Eddleman, CPO Science/School Specialty Science, Nashua, N.H.
Students learn new vocabulary when they study genetics, such as traits, alleles, and genotypes. How can you predict the traits of offspring when you know the genetic makeup of the parents? These ideas will come alive as you create crazy creatures with a unique kit and study the resulting population.

K–8 Science with Vernier (Gen)
(Grades K–8) *125B, Convention Center*
Sponsor: Vernier Software & Technology
David Braunschweig *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
In this demonstration workshop you will learn how easy it is for your students to collect temperature data, heart rates, magnetic field data, and more. Try experiments from our popular *Elementary Science with Vernier* and *Middle School Science with Vernier* lab books using LabQuest or our low-cost line of Go! products on a computer.

FREE HANDS-ON WORKSHOPS

VERNIER DATA-COLLECTION TECHNOLOGY

FRIDAY • December 4th • Workshop Room 125B

8:00 – 9:30 A.M.	K-8 SCIENCE WITH VERNIER
10:00 – 11:30 A.M.	DEVELOPING 21ST-CENTURY MINDS WITH VERNIER
12:00 – 1:30 P.M.	DEVELOPING 21ST-CENTURY MINDS WITH VERNIER
2:00 – 3:30 P.M.	DEVELOPING 21ST-CENTURY MINDS WITH VERNIER

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8:00–10:00 AM Exhibitor Workshop

Introducing Science Notebooks with FOSS K–6 (Gen)

(Grades K–6) *122C, Convention Center*

Sponsor: Delta Education/School Specialty Science–FOSS

Ellen Mintz, Consultant, Charleston, S.C.

Brian T. Campbell, Kimi Hosoume, and **Natalie Yakushiji,** Lawrence Hall of Science, University of California, Berkeley

Jeri Calhoun, Science Associate, Isle of Palms, S.C.

Learn the essential elements for creating and effectively using science notebooks with your students. Through a hands-on FOSS investigation, you'll discover how science notebooks can be used to impact student achievement and how to use science notebooks as an effective tool for building conceptual understanding. Sample materials provided.

8:00 AM–1:00 PM Short Course

SMALLab: A Mixed-Reality Environment for Learning (SC-4)

(Middle Level–High School) *Off-site*

Tickets Required; $32

David Birchfield, Mina Johnson-Glenberg *(mina.johnson@asu.edu),* **Lisa Tolentino** *(lisa.tolentino@asu.edu),* and **Christopher Martinez** *(christopher.m.martinez@asu.edu),* Arizona State University, Tempe

Colleen Megowan-Romanowicz *(megowan@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa

For description, see page 37.

8:30–11:30 AM Short Course

★ **Designing Professional Development for Scientific Classroom Discourse Communities (SC-5)**

(Middle Level–College) *South Mountain, Sheraton*

Tickets Required; $24

Michael Lang *(mike.lang@domail.maricopa.edu),* National Center for Teacher Education, Tempe, Ariz.

For description, see page 37.

8:30 AM–12:30 PM Short Course

Misconceptions: What Do You Do with Them? (SC-6)

(Upper Elementary–Middle Level) *Estrella, Sheraton*

Tickets Required; $14

Barbara A. Austin *(baa49@nau.edu),* **Trenda Vannette, Lori Hare** *(lar5@nau.edu),* and **Kristi Fredrickson** *(kmf38@nau.edu),* Center for Science Teaching and Learning, Northern Arizona University, Flagstaff

For description, see page 37.

9:00–10:30 AM Meeting

Campaign Briefing

(By Invitation Only) *Suite 3141, Sheraton*

9:00 AM–5:00 PM Exhibits

North Hall E, 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

DNA: The Strand That Connects Us All (Bio)

(General) *Ballroom 120B, Convention Center*

Matthew E. Kaplan *(mkaplan@email.arizona.edu),* Associate Staff Scientist and Project Lead, Human Origins Genotyping Laboratory, Arizona Research Laboratories, Division of Biotechnology, University of Arizona, Phoenix

Presider: Lacey Wieser, Arizona Dept. of Education, Phoenix

Learn how the methods and discoveries of human population genetics are applied for personal genealogical reconstruction and anthropological testing. I will start with a short general review of human genetics and the biology behind this form of DNA testing. We will look at how DNA testing is performed and how samples are processed in our laboratory. We will also examine personal genealogical results from Family Tree DNA and personal anthropological results from the Genographic Project. Finally, I will describe the newest project in our laboratory, the DNA Shoah Project.

Matt Kaplan is the project lead of the Human Origins Genotyping Laboratory, which currently provides all of the testing services for the public participants of National Geographic's and IBM's Genographic Project, as well as the genealogical DNA testing for Family Tree DNA, the leader in the genetics-based genealogical reconstruction industry. For over 10 years, Matt has worked with Dr. Michael Hammer on research projects using the Y chromosome and mitochondrial DNA to investigate the genetics and history of Jewish populations. They are currently working together on the DNA Shoah Project. This project seeks to use DNA testing to reunite families separated by the Holocaust.

9:30–10:30 AM Presentations

SESSION 1

NSTA Avenue Session: Toyota TAPESTRY Grants for Science Teachers = $$$ for Your School! (Gen)
(Elementary–High School) *127C, Convention Center*
Eric V. Crossley *(ecrossley@nsta.org),* Director, Science Education Competitions, NSTA, Arlington, Va.
Susan Holiday *(sholiday@fusd1.org),* Sinagua Middle School, Flagstaff, Ariz.
Paul McElligott *(pmcelligott@fhusd.org),* Fountain Hills High School, Fountain Hills, Ariz.
Find out how to increase your chances of winning a Toyota TAPESTRY $10,000 Large Grant or a $2,500 Mini-Grant in 2010!

SESSION 2

Dark Skies as a Universal Resource (Earth)
(Elementary–High School) *221B, Convention Center*
Constance E. Walker *(cwalker@noao.edu)* and **Robert T. Sparks** *(rsparks@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.
Presider: Constance E. Walker
Learn about the importance of dark skies and how your students can help preserve them through a unique citizen science project called Globe at Night.

SESSION 3

Professional Development Providers: What You Should Know and Be Able to Do (Gen)
(General) *221C, Convention Center*
Christine Anne Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.
Expanding on your professional development? NSTA's Professional Development Committee offers planning, delivery, and evaluation ideas for discussion and reflection.

Build your content knowledge through NSTA's Online Learning Center

- **Quality**—The Learning Center's online professional development materials have been researched, field-tested, and reviewed for content, accuracy and pedagogy by experts.
- **Accountability to Administrators**—With visible and integrated tracking and documentation tools, administrators can view, evaluate, and report the accomplishments of a teacher's PD experience online.
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- **Research-based and Proven to Build Content Knowledge**—Teachers who participated in PD through the Learning Center showed significant content knowledge gains and identified themselves as "very confident" in their ability to teach the science content learned.*

To view, try, and buy individual resources visit: *http://learningcenter.nsta.org/*

To purchase unlimited access to the NSTA Learning Center for your school or district, contact us at: 1-800-722-6782 or *sales@nsta.org*

*Formative Research conducted by external experts to ensure scientific accuracy and credibility. Research Results to be published in an upcoming article in the Journal of Science Education and Technology titled "Evaluation of Online, On-Demand Science Professional Development Materials Involving Two Different Implementation Models.

SESSION 4

NARST Session: Science Teachers and Scientific Argumentation: Trends in Practice and Beliefs (Gen)

(General) *222A, Convention Center*

Victor Sampson *(vsampson@fsu.edu),* Florida State University, Tallahassee

Examine teachers' understanding of scientific argumentation and their beliefs about the value of scientific argumentation as a way to promote student learning in the classroom.

SESSION 5

NMLSTA Session: Learn Chemistry Using the Hands On Plastics 2 Kit (Chem)

CANCELED

(General) *222C, Convention Center*

Rajeev Swami, West Harrison, Ind.

Learn how to use the free Hands On Plastics kit to teach chemistry concepts such as density, properties of matter, and polymer structure. I'll share inquiry-based investigations, assessments, and enrichment activities. Order it here or online.

SESSION 6

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

(High School) *225A, Convention Center*

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

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

Make reactivity, oxidation/reduction, solution chemistry, and corrosion prevention contextual and exciting using these inquiry-based labs. Handouts.

SESSION 7

NABT Session: Infect Your Biology Classroom with Math (Bio)

(Middle Level–High School) *226B, Convention Center*

Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.

Integrating biology and mathematics is not just a good idea, it's the law—well, it should be, anyway! Come learn how easy it is to collect and analyze data.

SESSION 8

AAPT Session: Symmetry and Patterns in Rangolee Art from India (Phys)

(Informal Education) *226C, Convention Center*

Madhuri Bapat *(madhur.bapat@eac.edu),* Eastern Arizona College, Thatcher

The education value of this traditional Indian art form is demonstrated through activities and math models.

SESSION 9

NASA eClips for Secondary Students: Using Video Segments to Engage Millennial Learners (Earth)

(General) *227B, Convention Center*

Becky Jaramillo *(rebecca.jaramillo@nianet.org),* National Institute of Aerospace, Hampton, Va.

NASA eClips are short educational video segments designed to inspire students. Learn how to integrate NASA eClips into standards-based curricula, highlighting real-world applications of science, technology, engineering, and mathematics (STEM).

SESSION 10

Infrared Astronomy with NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) (Earth)

(Middle Level–High School) *228A, Convention Center*

Dana E. Backman *(dbackman@sofia.usra.edu),* SOFIA Science Center, Moffett Field, Calif.

See astronomical images from across the electromagnetic spectrum, learn about NASA's infrared observatory, compare and contrast infrared with visible light, and take home lesson plans.

SESSION 11

A Tree Grows in Phoenix: What's New from PLT? (Gen)

(General) *228B, Convention Center*

Karen K. Schedler *(karen.schedler@afre.org),* Arizona Foundation for Resource Education, Phoenix

Experience activities from Project Learning Tree's new module, learn about GreenSchools! and GreenWorks!, and take home great resources!

SESSION 12

Bring the Year of Science into Your Classroom with NOAA Resources (Gen)

(General) *231A, Convention Center*

Kirk Beckendorf *(kirk.beckendorf@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

In celebration of the 2009 Year of Science, NOAA has compiled a DVD of top resources. Come get a copy and an overview of its contents.

9:30–10:30 AM Workshops

ACS Session Two: What Holds Molecules Together? (Chem)
(High School) *127 A/B, Convention Center*
Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.
Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Using Scaffolded Inquiry to Promote Rigor in Learning Science (Gen)
(General) *221A, Convention Center*
Karen L. Ostlund *(klostlund@mail.utexas.edu),* Retired Professor, Austin, Tex.
Learn how scaffolded inquiry (directed to guided to full) provides essential support to help students construct the skills and knowledge needed for inquiry.

SCST Session: Bacteria, Blogs, Bioinformatics, and More: Using Technology to Enhance a College Microbiology Course (Bio)
(College) *222B, Convention Center*
Kelly McDonald *(mcdonald@csus.edu),* California State University, Sacramento
Ken Kubo *(kubok@arc.losrios.edu),* American River College, Sacramento, Calif.
Learn how to enhance your class with blogs, student-response technology, and scenario-based computer modules. We'll describe activities and share lessons learned.

NSTA wishes to thank Toyota for our 20 year partnership on the Toyota TAPESTRY Grants for Science Teachers Program.

For the past 20 years, Toyota has awarded over $8.6 million to 1,068 teams of teachers in all 50 U.S. states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands and the Northern Mariana Islands. Toyota has made a huge difference in the lives of thousands of science teachers and hundreds of thousands of students.

TOYOTA
20th Anniversary
TAPESTRY
GRANTS FOR SCIENCE TEACHERS

For information on the $550,000 in grants available in 2010, please visit *http://www.nsta.org/pd/tapestry.* The deadline for entries is January 18, 2010.

★ **Collaborative Inquiry in Professional Learning Communities: Linking Inquiry Questions, Learning Expectations, and Classroom-based Data Collection (Gen)**
(Supervision/Administration) *224A, Convention Center*
Tamara Holmlund-Nelson *(tnelson@vancouver.wsu.edu),* Washington State University, Vancouver
Explore strategies for collecting and using classroom-based data. We'll use samples of inquiry questions from science PLCs to explore possible data sources that are relevant to understanding students' needs.

Introduction to Heredity: What Traits Do I Have and Where Do They Come From? (Bio)
(Elementary–Middle Level) *224B, Convention Center*
Molly A. Malone *(mmalone@genetics.utah.edu),* University of Utah, Salt Lake City
Introduce basic concepts about traits, inheritance, and DNA as you integrate math and science. I will share five student and three take-home family activities, all in English and Spanish.

PSD Session: Index of Refraction: Follow a New Path with the Refraction of Light (Phys)
(Elementary–Middle Level) *225B, Convention Center*
Becky Thompson-Flagg *(flagg@aps.org),* American Physical Society, College Park, Md.
Learn how light behaves as it travels from one medium to another. See how things can "disappear" and use gelatin and lasers to discover how this happens. Take home a handout of all activities.

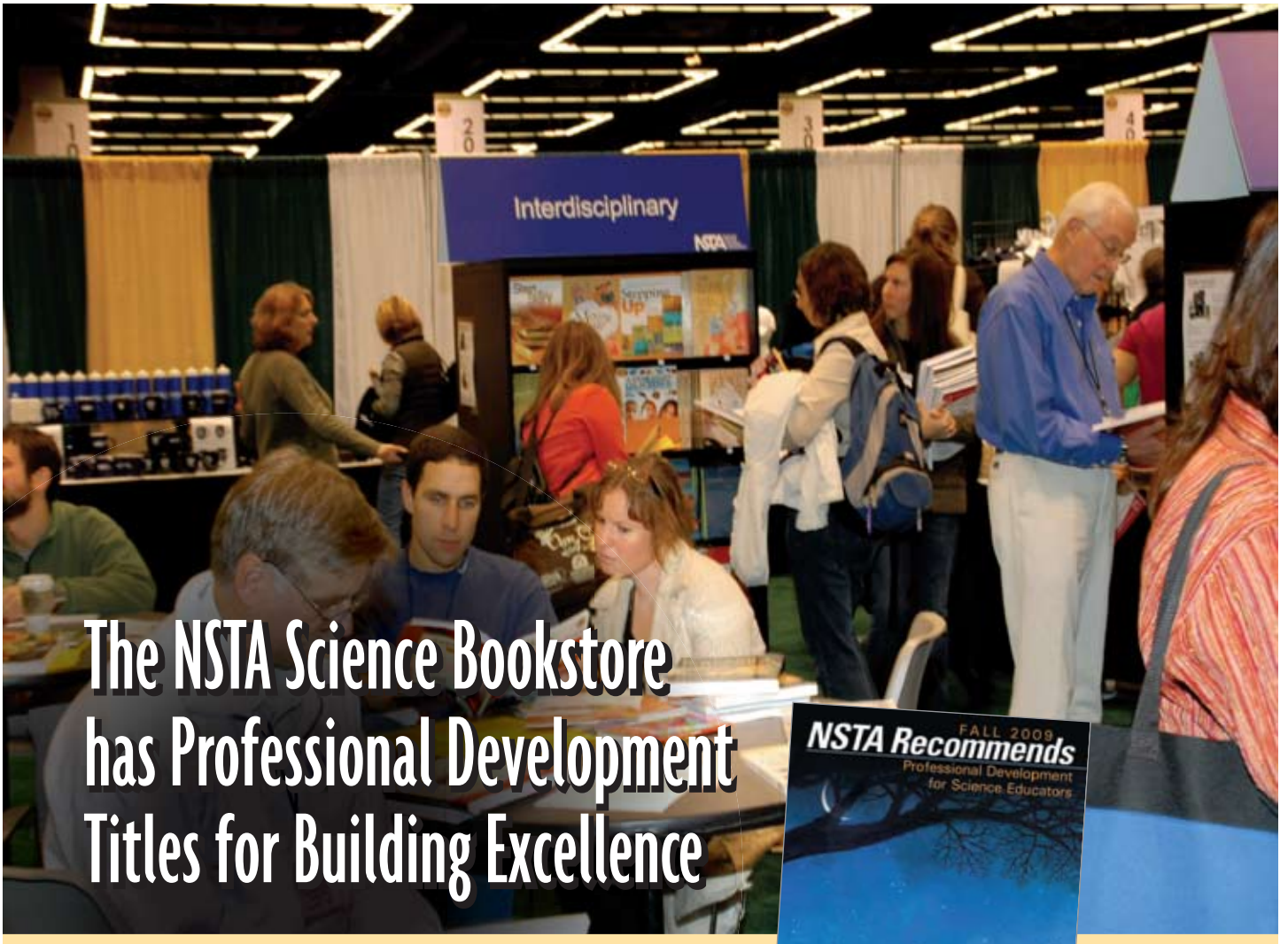
Tracking Wildlife: Using Real Data to Guide Inquiry (Bio)
(Middle Level–High School) *227A, Convention Center*
Eric M. Proctor *(eproctor@azgfd.gov),* Arizona Game and Fish Department, Phoenix
Try some inquiry activities using data from real wildlife populations. Will you come to the same conclusions as the biologists?

Sweet Multidisciplinary Education Resources: Bananas and Rain Forest Conservation in Honduras (Env)
(Elementary–High School) *229B, Convention Center*
Al Stenstrup *(astenstrup@forestfoundation.org),* American Forest Foundation, Washington, D.C.
These lessons by Rainforest Alliance and Project Learning Tree are designed to teach the wonders of rain forests and the importance of sustainable agriculture in protecting Honduran resources.

NSTA Press Session: Stop Faking It! Finally Understand AIR, WATER, and WEATHER So You Can Teach It (Earth)
(Elementary–Middle Level) *231B, Convention Center*
Bill Robertson *(wrobert9@ix.netcom.com),* NSTA Press Author, Woodland Park, Colo.
Tired of teaching a subject you don't fully understand yourself? Did you know that hot air doesn't rise by itself and that gases don't necessarily expand when you heat them? Join the author of the *Stop Faking It!* books for a hands-on workshop that explains why.

9:30–10:30 AM Exhibitor Workshop

Tough Topics in Biology: Cell Respiration (Bio)
(Grades 6–12) *126 B/C, Convention Center*
Sponsor: PASCO Scientific
Kelcey Burris, Union High School, Camas, Wash.
Let's explore PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of biological investigations—cell respiration. Participate in standards-based probeware lab activities from PASCO's new biology curriculum. Experience how the SPARK Science Learning System can enhance your teaching practice and improve student understanding of core topics.



The NSTA Science Bookstore has Professional Development Titles for Building Excellence

Pick up the new Fall NSTA catalog!

- Award-winning PD books filled with best practices, science content, teaching tips, and lesson plans
- Pick up *Answers to Science Questions from the Stop Faking It! Guy, Lecture Free Teaching*, or *The Big Idea of Nanoscale* to name a few new titles.
- Check out our "New Teacher Welcome Packs"—grade-specific, hand-picked titles designed to serve as your science survival resource.
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Thursday	7:00 a.m. – 5:00 p.m.
Friday	7:00 a.m. – 5:00 p.m.
Saturday	7:30 a.m. – Noon

NSTA National Science Teachers Association

9:30–11:30 AM NSTA ESP Symposium II

NSTA Exemplary Science Program (ESP)…Realizing the Visions of the National Standards: It Takes ESP to Find Exemplary Science Programs (Gen)

(General) *128 A/B, Convention Center*

Organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program, The University of Iowa, Iowa City

Coordinator: Robert E. Yager

This session will include brief descriptions of programs that exemplify how the four NSES goals have been met. Discussion will center on how NSES *More Emphasis* suggestions have guided instruction. Participants in this symposium will include the following authors from specific monographs in the series.

Exemplary Science Programs: Inquiry—The Key to Exemplary Science

Erin Baumgartner *(baumgare@wou.edu),* Western Oregon University, Monmouth

Shari L. Britner (*sbritner@bradley.edu)* and **Robert J. Wolffe** *(rjwolffe@bradley.edu),* Bradley University, Peoria, Ill.

Ellen Ebert *(ekebert@interact.ccsd.net),* Clark County School District, Las Vegas, Nev.

Craig Wilson *(cwilson@science.tamu.edu),* Texas A&M University, College Station

Thomas Lord *(trlord@iup.edu),* Indiana University of Pennsylvania, Indiana, Pa.

10:00–11:00 AM Exhibitor Workshop

How to Start a Biotech Program (Bio)

(Grades 6–College) *122 A/B, Convention Center*

Sponsor: Bio-Rad Laboratories

Essy Levy *(biotechnology_explorer@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.

Biotech is where it's at! Hear the words of wisdom from the nation's leading biotech programs and find out how they got to where they are now. Learn how to set the foundation for engaging students using relevant real-world lab experiences and what building blocks will allow you to continue to address the world's rapidly changing scientific landscape.

10:00–11:15 AM Exhibitor Workshops

Inquiry, Evidence, and Thinking: The Heart of Science Teaching (Gen)

(Grades 5–8) *121 A/B, Convention Center*

Sponsor: Pearson

Michael Padilla, 2005–2006 NSTA President, and Clemson University, Clemson, S.C.

Inquiry continues to be a major thrust in science education as entities like the Partnership for 21st Century Skills call for improved student thinking across all disciplines. This session will develop an understanding of inquiry and evidence and outline teaching strategies that teachers can use to develop these important ideas.

***Forensic Science for High School:* An Inquiry-rich Curriculum (Chem)**

(Grades 9–12) *121C, Convention Center*

Sponsor: Kendall Hunt Publishing Co.

Kate Livson, San Leandro High School, San Leandro, Calif.

Kendall Hunt's *Forensic Science for High School* is a hands-on, integrated science course that focuses on the practices and analyses of physical evidence found at crime scenes. Participants will be actively engaged in investigations from this exciting curriculum.

Integrating Science and Literacy: Grades 1–6 (Gen)

(Grades 1–6) *123, Convention Center*

Sponsor: Delta Education/School Specialty Science

Johanna Strange, Consultant, Richmond, Ky.

Tom Graika, Consultant, Lemont, Ill.

We'll show you various strategies and Delta products that can help integrate reading and language arts into your science programs. Learn how your students can experience the enjoyment of learning science with Delta Science Modules and make the literacy connection. Receive a workshop packet and related Delta materials.

Strawberry DNA and Molecular Models (Bio)

(Grades 8–12) *124B, Convention Center*

Sponsor: Carolina Biological Supply Co.

Carolina Teaching Partner

Introduce students to the fascinating world of DNA through age-appropriate, hands-on activities designed to make biology fun. The activities—from a kit series developed in cooperation with the DNA Learning Center, Cold Spring Harbor Laboratory—use DNA models and real DNA from strawberries to present genetic studies.

STC/MS™: Energy, Machines, and Motion (Phys)
(Grades 6–8) *125A, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Get yourself in gear with this hands-on module that explores energy, work, and force, and how they interact to influence motion and machine design. We'll start with an overview of the NSRC-developed STC/MS curriculum, followed by sample module investigations.

Learning Chemistry with Software for Molecular-Level Visualization (Chem)
(Grades 9–College) *126A, Convention Center*
Sponsor: Wavefunction, Inc.
Jurgen Schnitker *(sales@wavefun.com),* Wavefunction, Inc., Irvine, Calif.
Do you see students struggle with the key concepts of molecular science? Would you like to engage your students with state-of-the-art simulations that are scientifically sound? Attend this hands-on workshop using notebook computers and learn how to remove misconceptions and teach more effectively. Free take-home CD with select demonstrations.

Teaching Inquiry Science with Toys and Treats (Gen)
(Grades 3–12) *129 A/B, Convention Center*
Sponsor: Macmillan/McGraw-Hill and Glencoe
Ralph Feather, Bloomsburg University, Bloomsburg, Pa.
Sandy Feather, Bloomsburg, Pa.
Learn fun, practical, and engaging hands-on inquiry teaching ideas using toys and treats. Everyone is a winner, with strategies you can use immediately. The positive reputation of this workshop precedes itself.

Hands-On Teaching with the Anatomy in Clay® Learning System (Bio)
(Grades 6–College) *226A, Convention Center*
Sponsor: Hands & Minds Inc.
Myles Crane *(mylesc@anatomyinclay.com),* Hands & Minds Inc., Loveland, Colo.
Enhance your instruction of anatomy by increasing student engagement to 100%. Experience how easy and fun it is to teach the Anatomy in Clay system. By actively building in clay, students retain more and really "know" body structure, location, and function, and how they work together. Less memorization, more learning that sticks.

10:00–11:30 AM Exhibitor Workshops

Light and Optics: A Series of EnLIGHTening Experiments! (Phys)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
Experience the Optics with Light and Color kit, with LED flashlights, filters, a laser, and more. Try color mixing, relate it to human vision, and see different spectra of light with diffraction glasses. See the phenomenon of internal reflection by shining a laser through a prism and tracing incident and refracted rays.

Developing 21st-Century Minds with Vernier (Gen)
(Grades 7–College) *125B, Convention Center*
Sponsor: Vernier Software & Technology
David Braunschweig *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Discover how technology can transform your classroom into a 21st-century laboratory. Explore state-of-the-art probeware solutions that help teach core science topics in physics, chemistry, biology, earth science, and environmental science. Learn tips and tricks from master teachers and technology experts and receive hands-on training with both Logger Pro and Vernier's LabQuest application.

10:00 AM–12 Noon Meeting

Informal Science Networking Meeting
Camelback B, Sheraton

11:00–11:30 AM Presentation

SESSION 1
Extreme Exploration: Journey to Earth's Radiation Belts (Earth)
(General) *227B, Convention Center*
Dawn Turney *(dawn.turney@jhuapl.edu),* The Johns Hopkins Applied Physics Laboratory, Laurel, Md.
Learn how the radiation environment surrounding Earth can affect us and about the new mission that will explore the mysteries of this dangerous region.

11:00 AM–12 Noon Featured Presentation

Using Text to Support Firsthand Science Inquiry (Gen)
(General) *Ballroom 120B, Convention Center*


Jacqueline Barber


Gina Cervetti

Jacqueline Barber *(jbarber@berkeley.edu),* Associate Director, Lawrence Hall of Science, University of California, Berkeley
Gina Cervetti *(gina.cervetti@colorado.edu),* Assistant Professor of Education, University of Colorado, Boulder

Presider: Susan Sprague, NSELA Executive Director, Prescott, Ariz.

Reading is not what typically comes to mind when thinking about science inquiry, and yet scientists use text in a variety of ways in the context of their investigation of the natural world. Learn about a framework for the authentic use of text in science in ways that expand students' opportunities for learning and support rather than eclipse discovery.

Over the past 30 years, Jacqueline Barber has been involved in K–12 science and mathematics education, promoting teaching and learning among children, teachers, families, and parents. She currently serves as associate director of the Lawrence Hall of Science and is responsible for the Hall's Curriculum Center. Barber is the founding director of the successful Great Explorations in Math and Science (GEMS) Program. In the past six years, she has collaborated with a team of literacy educators led by P. David Pearson and Gina Cervetti to launch Seeds of Science/Roots of Reading, a new curriculum research and development program focused on the integration of science and literacy.

Dr. Gina Cervetti is a professor at the University of Colorado, Boulder. Cervetti worked with P. David Pearson at the Graduate School of Education, University of California, Berkeley, and at Lawrence Hall of Science, where she served as literacy specialist, project coordinator, and researcher for Seeds of Science/Roots of Reading, a research and development program focused on the interface of science and literacy. She continues to serve as Seeds/Roots Research Director. Her current research agenda concerns the role of text in learning science and the potential of science-literacy integration to support students' development of academic literacy.

11:00 AM–12 Noon Presentations

SESSION 1
Simple Sustainability Lessons for the Classroom (Env)
(Elementary–High School) *221C, Convention Center*
Monica Elser *(mmelser@asu.edu),* **Maggie McGraw, Erin Frisk** *(erin.frisk@asu.edu),* and **Laura Swantek** *(lswantek@asu.edu),* Arizona State University, Tempe
Educators associated with Arizona State University's School of Sustainability will share K–12 activities that explore basic sustainability concepts: environmental quality, social equity, and economic performance.

SESSION 2 (two presentations)
(General) *222A, Convention Center*
NARST Session: Data Logging in Senior High Science: Are We Disadvantaging Girls? (Phys)
Ronald J. MacDonald and **Angela F. Larter,** University of Prince Edward Island, Charlottetown, Canada
Steven Wynne, Morell Regional High School, Morell, P.E.I., Canada,
David Ramsay, Three Oaks Senior High School, Summerside, P.E.I., Canada
Does student inquiry, aided by handheld data loggers, reduce self-efficacy gender gaps? A mixed-method study involving 300 science students in Prince Edward Island, Canada, addressed this question.

NARST Session: Swirling Discourses: Using a Discourses and Communities Framework to Situate Elementary Preservice Teachers' Use of an Instructional Model to Plan and Teach Science (Gen)
Kristin L. Gunckel *(kgunckel@email.arizona.edu),* University of Arizona, Tucson
I will provide an overview of five community discourses that emerged as sources of mediators for three preservice teachers learning to use science curriculum materials.

SESSION 3

City of Materials: Connecting Science to the "Stuff" in Kids' Lives (Gen)

(Middle Level) *225A, Convention Center*

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

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

Discover a free new website for middle school students that connects science and engineering to their everyday world. We'll share correlating demonstrations and labs. Handouts.

SESSION 4

Wind Turbine Challenge: How to Hold One in Your State or Region (Env)

(Middle Level–High School/Informal Ed.) *227C, Conv. Center*

Michael Arquin *(michael@kidwind.org),* KidWind Project, St. Paul, Minn.

Learn how to hold a Wind Turbine Challenge in your classroom, region, or state. These student-driven, open-ended, design-driven events generate student excitement while allowing teachers to address inquiry and design skills.

SESSION 5

Engaging K–8 Science Students with Hands-On Investigations and Inquiry (Gen)

(General) *228A, Convention Center*

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

Hands-on investigative science, supported by literacy strategies and quality resources, engages students and enhances learning. I will share strategies that enable students to learn science skills and concepts, develop their literacy skills, and develop and apply their higher-level thinking skills.

TEACHERS IN GEOSCIENCES

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

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SESSION 6

Revising the NSTA Preservice Teacher Program Standards (Gen)

(College) *228B, Convention Center*

David A. Wiley *(david.wiley@lr.edu),* NSTA Director, Preservice Teacher Preparation, and Lenoir-Rhyne University, Hickory, N.C.

Herbert K. Brunkhorst, California State University, San Bernardino

Kathy I. Norman *(knorman@csusm.edu),* California State University, San Marcos

Elizabeth Allan *(eallan@uco.edu),* University of Central Oklahoma, Edmond

Jon Pedersen *(jep@unl.edu),* University of Nebraska–Lincoln

Francis Q. Eberle *(feberle@nsta.org),* Executive Director, National Science Teachers Association, Arlington, Va.

This presentation will cover the status and draft of the revisions to the NSTA Science Teacher Preparation standards used in the accreditation process.

SESSION 7

Using Classroom-based Data to Inform Teaching (Bio)

(General) *231A, Convention Center*

Tamara Holmlund-Nelson *(tnelson@vancouver.wsu.edu),* Washington State University, Vancouver

Charlotte Waters *(charlottesswebb@hotmail.com),* Heritage High School, Vancouver, Wash.

We'll share the methods and results of a collaborative inquiry by a group of high school teachers focused on improving students' representation and interpretation of scientific data and their written conclusions.

11:00 AM–12 Noon Workshops

ACS Session Three: Why Is Water Different? (Chem)

(High School) *127 A/B, Convention Center*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Using Inquiry-based Activities to Teach the Principles of Chemistry (Chem)

(High School) *221A, Convention Center*

Margaret A. Matthews *(maggie.matthews@gmail.com),* Loyola High School of Los Angeles, Calif.

Present chemistry concepts using real-world situations. These inquiry activities and challenges provide students with the knowledge and skills to master the chemistry standards.

CSI Forensics: A Campus Murder Mystery (Chem)

(Middle Level) *222B, Convention Center*

Diane J. de Sequera *(ddesequera@ljcds.org),* La Jolla Country Day School, La Jolla, Calif.

Create a campus murder mystery scenario, engaging students in fingerprinting, hair and fiber examination, blood typing, blood spattering, and more.

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

(Elementary) *222C, Convention Center*

Margaret Dee *(drpeggydee@verizon.net)* and **Renee G. O'Leary,** Caravel Academy, Bear, Del.

These simple, multisensory hands-on explorations for grades 2–5 use fairy tales as catalysts and include take-home and language arts follow-up. Leave with sample plans and materials.

Learning with the Brain in Mind! (Gen)

(General) *223, Convention Center*

Kirsten Smith *(ksmith@lps.org),* Pound Middle School, Lincoln, Neb.

Ron Bonnstetter *(rjb@unl.edu)* and **Sara Yendra** *(syendra2@unl.edu),* University of Nebraska–Lincoln

Fred Goerisch *(fgoerisch@yahoo.com),* Jerome Middle School, Jerome, Idaho

A must attend for everyone who wants to understand student learning, emotions, and motivations, plus ways to incorporate all of this into your teaching on Monday!

Gardening in Your Classroom (Bio)
(Elementary) 224A, Convention Center
Monica K. Pastor *(mpastor@cals.arizona.edu),* University of Arizona, Phoenix
I'll share literature and lessons for teaching about the science and social studies of agriculture with an emphasis on incorporating gardening in the curricula. Lessons and other handouts.

Magnetism Activities, Earth's Magnetism, and Space Weather from Windows to the Universe (Earth)
(Informal Education) 224B, Convention Center
Roberta M. Johnson *(rmjohnsn@ucar.edu),* **Randy Russell, Susan Foster, Lisa Gardiner, Becca Hatheway, Julia Genyuk,** and **Marina LaGrave,** University Corporation for Atmospheric Research, Boulder, Colo.
David F. Mastie, Retired Educator, Chelsea, Mich.
Jennifer Bergman, Curiosity Consulting, Atlanta, Ga.
Experience tested hands-on activities and resources about the basics of magnetism, Earth's magnetic field and poles, and space weather. Handouts.

PSD Session: Diffraction: Using Light to Measure (Phys)
(Elementary–Middle Level) 225B, Convention Center
Becky Thompson-Flagg *(flagg@aps.org),* American Physical Society, College Park, Md.
Use a laser and diffraction to measure the width of a human hair and learn how laser light behaves when it interacts with something tiny such as a razor edge or a hair. Take home a handout of all activities.

AAPT Session: Make and Take Fun and Deep Physics Activities That Illuminate Newton's Laws (Phys)
(High School–College/Informal Ed.) 226C, Convention Center
Karie A. Meyers *(kameyers1@pima.edu),* Pima Community College, Tucson, Ariz.
Demian Quiroz *(dquiroz@amphi.com),* Canyon del Oro High School, Tucson, Ariz.
Presider: Karie A. Meyers
Create a set of engaging, portable physics demonstrations, including the Inertia Hat, Upside Down Cup of Water, gravity demos, and more. A standard, relatively easy-to-make hovercraft will be demonstrated, with associated plans and activities available.

Epigenetics: Beyond the Central Dogma (Bio)
(High School–College) 227A, Convention Center
Louisa A. Stark *(louisa.stark@utah.edu),* University of Utah, Salt Lake City
The environment interacts with the epigenome to control gene expression. Experience some interactive activities that explore epigenetics and how it confounds conventional notions of inheritance. Free activities at *http://learn.genetics.utah.edu.*

Cruising to Food Safety: Integrating Food Safety into Your Science Curriculum (Bio)
(Middle Level–High School) 229A, Convention Center
Laurie A. Hayes *(lhayes@cart.org),* Center for Advanced Research and Technology, Clovis, Calif.
Susan E. Hartley *(susan.hartley@nisd.us),* Navarro High School, Geronimo, Tex.
Presider: Susan E. Hartley
Explore the FDA's free hands-on curriculum that teaches students the importance of food safety and nutrition while integrating science and health standards.

Biotechnology and Environmental Risk: Project Learning Tree's (PLT) New Secondary Program (Env)
(General) 229B, Convention Center
Jackie Stallard *(jstallard@forestfoundation.org)* and **Al Stenstrup** *(astenstrup@forestfoundation.org),* American Forest Foundation, Washington, D.C.
Karen K. Schedler *(karen.schedler@afre.org),* Arizona Foundation for Resource Education, Phoenix
Explore biotechnology from an environmental and societal perspective using these new activities and case studies. Each participant will receive the PLT environmental risk module and biotechnology supplement.

NSTA Press Session: Activities Linking Science with Math, K–8 (Gen)
(Elementary–Middle Level) 231B, Convention Center
John Eichinger *(jeichin@calstatela.edu),* California State University, Los Angeles
We'll engage in several hands-on activities from my new NSTA Press books *Activities Linking Science with Math, K–4* and *Activities Linking Science with Math, 5–8.*

11:00 AM–12 Noon Exhibitor Workshop

Tough Topics in Chemistry: States of Matter (Chem)
(Grades 6–12) *126 B/C, Convention Center*
Sponsor: PASCO Scientific
Jeff Bush, Rancho Bernardo High School, San Diego, Calif.
Let's explore PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of chemistry—states of matter. Participate in standards-based probeware lab activities from PASCO's new chemistry curriculum. Experience how the SPARK Science Learning System can enhance your teaching practice and improve student understanding of core topics.

11:00 AM–1:00 PM Exhibitor Workshop

FOSS Chemical Interactions for Middle School Students (Chem)
(Grades 5–8) *122C, Convention Center*
Sponsor: Delta Education/School Specialty Science–FOSS
Terry J. Shaw, Larry Malone, and **Jessica Penchos,** Lawrence Hall of Science, University of California, Berkeley
Join FOSS developers for an introduction to the particulate nature of matter. We'll investigate substances to learn about properties of matter, changes in matter, and energy interaction and transfer. Student books and course CD-ROMs will be distributed.

12 Noon–1:15 PM Exhibitor Workshops

Reasons Why Teaching Earth Science Will Save Your Life! (Earth)
(Grades 6–8) *121 A/B, Convention Center*
Sponsor: Pearson
Michael Wysession, Washington University in St. Louis, Mo.
Many of the major challenges we face today are based in earth science: resource availability, energy sources, dwindling water supplies, global climate change, and increased risks from natural hazards due to human activities. In this presentation, Professor Wysession will show how the history of humanity has been drastically shaped by geological forces and events and how our survival, as individuals and nations, hinges upon our understanding of these forces.

***Living by Chemistry:* Feeling Under Pressure (Chem)**
(Grades 9–11) *121C, Convention Center*
Sponsor: Key Curriculum Press
Jeffrey Dowling *(jdowling@keypress.com),* Key Curriculum Press, Emeryville, Calif.
Teach rigorous chemistry with guided inquiry. The gas laws can be challenging for students, but hands-on experiences can help them to make sense of gas behavior. Explore activities that help students understand gas behavior and gas laws through a weather context. Sample lessons from *Living by Chemistry* provided.

Introduction to Wisconsin Fast Plants® (Bio)
(Grades K–12) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Kelly Branchaud, Carolina Biological Supply Co., Burlington, N.C.
Students can actively take part in science with new hands-on activities using Wisconsin Fast Plants. These minuscule and quick-growing plants are ideal classroom tools for exploring environmental effects, variation, life cycle, and nutrient cycling. Participants work with hands-on activities that include planting and pollinating seeds. Free materials.

Pluto Yet Again! (Earth)
(Grades K–12) *125A, Convention Center*
Sponsor: Starry Night Education
Herb Koller *(hkoller@simcur.com),* Starry Night Education, New York, N.Y.
This session will explore the unique aspects of Pluto that have led to its reclassification. Learn how you can explain Pluto's unique orbit, structure, and size using contemporary simulation tools.

EDVOTEK Biotechnology—Biotechnology on a Budget (Bio)
(Grades 6–College) *126A, Convention Center*
Sponsor: EDVOTEK
Jack Chirikjian *(info@edvotek.com),* EDVOTEK, Bethesda, Md.
Bring DNA, genetics, and biotechnology to life in your classroom with exciting, affordable, and ready-to-use activities, including genetics games, DNA extraction, spooling, and DNA electrophoresis using fluorescent dyes. Participants are automatically entered into a raffle for a FREE classroom electrophoresis setup (a $500 value!).

Teaching Inquiry Science with Toys and Treats (Gen)
(Grades 3–12) *129 A/B, Convention Center*
Sponsor: Macmillan/McGraw-Hill and Glencoe
Ralph Feather, Bloomsburg University, Bloomsburg, Pa.
Sandy Feather, Bloomsburg, Pa.
Learn fun, practical, and engaging hands-on inquiry teaching ideas using toys and treats. Everyone is a winner, with strategies you can use immediately. The positive reputation of this workshop precedes itself.

12 Noon–1:30 PM Exhibitor Workshops

Music, Sound, and Waves (Phys)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
The tabletop Sound and Waves machine enables participants to explore standing wave patterns on a vibrating string. This experiment builds a foundation for activities in which a classroom synthesizer is used to explore the nature of sound and music. You can even play music yourself on PVC palm pipes!

Developing 21st-Century Minds with Vernier (Gen)
(Grades 7–College) *125B, Convention Center*
Sponsor: Vernier Software & Technology
David Braunschweig *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Discover how technology can transform your classroom into a 21st-century laboratory. Explore state-of-the-art probeware solutions that help teach core science topics in physics, chemistry, biology, earth science, and environmental science. Learn tips and tricks from master teachers and technology experts and receive hands-on training with both Logger Pro and Vernier's LabQuest application.

12 Noon–2:00 PM PreK–8 CESI Luncheon

Science and Magic from Hogwart's Academy (M-3)
(Tickets Required; $50) *Laveen A, Sheraton*

Alan J. McCormack, NSTA President-Elect, and Professor of Science Education, San Diego State University, San Diego, Calif.

Enjoy a delicious luncheon and a magical presentation by Alan McCormack, professor of science education at San Diego State University. Dr. McCormack is a lifelong member of the International Brotherhood of Magicians and a former junior high science teacher. His research—Project Wizard—involves the invention of illusions simulating fictional events from the Rowlings books and use of these illusions as springboards into grades K–9 science investigations.

12:30–1:30 PM Presentations

SESSION 1

NSTA Avenue Session: The NSTA Learning Center: Free Classroom Resources and Professional Development for Educators (Gen)
(Supervision/Administration) *127C, Convention Center*
Flavio Méndez *(fmendez@nsta.org),* Senior Director, NSTA Learning Center, NSTA, Arlington, Va.
Lost when it comes to finding online resources for your classroom? With over 2,400 resources (25% of which are free) and quality professional development opportunities to assist educators with core subject content, the NSTA Learning Center has the answers!

SESSION 2

Say What You Mean! Strategies to Help Students Better Communicate Science (Gen)
(Middle Level–High School/Supv.) *221B, Convention Center*
Stephen Best *(sdbest@umich.edu),* University of Michigan, Ann Arbor
Do your students know the difference between a definition, description, and explanation? We'll explore strategies to help students effectively communicate their understanding of science.

SESSION 3

Using Science Notebooks in the Elementary Classroom (Gen)
(Elementary) *221C, Convention Center*
Michael Klentschy *(mpkdr@aol.com),* San Diego State University–Imperial Valley Campus, Calexico, Calif.
Learn strategies for using science notebooks in the elementary classroom, with a special focus on English learners. Learn about the seven essential components of science notebooks and the research-based evidence supporting their use.

SESSION 4

Action Research and Beyond: Professional Learning Communities (Gen)
(General) *222A, Convention Center*
Ann Hammersly *(ahammersly@susd.org),* Chaparral High School, Scottsdale, Ariz.
Erika Mills *(emills@susd.org),* Coronado High School, Scottsdale, Ariz.
Professional learning communities (PLCs) for science teachers allow educators to collaborate in a creative, supportive, and professionally challenging atmosphere. We will share models and tools.

SESSION 5

Incorporating Social Networking and Gaming in the Classroom (Earth)
(Middle Level) *225A, Convention Center*
William Jewell *(bjewell@jason.org),* The JASON Project, National Geographic, Ashburn, Va.
The language of students today is social networking, as represented by iPhones, MySpace, and YouTube. Learn how this language has been adapted for use in science curricula.

SESSION 6

Creating a Responsive Classroom Through Outdoor Education (Bio)
(Preschool–Middle Level) *227B, Convention Center*
Molina Walters *(drmo@asu.edu)* and **Martha Cocchiarella** *(martha.cocchiarella@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa
We'll share strategies for using the outdoors as a responsive setting to address the needs of children with sensory processing disorder.

SESSION 7

Become an Einstein Fellow! (Gen)
(Elementary–High School) *228A, Convention Center*
Kirk Beckendorf *(kirk.beckendorf@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.
Become an Einstein Fellow and spend a year living in Washington, D.C., working on national education programs.

SESSION 8

Integrating Literacy in the Science Classroom: A Model for Deaf, Hard of Hearing, and Hearing Students (Gen)
(General) *228B, Convention Center*
David C. Templeton *(dcnts@rit.edu),* **Todd Pagano,** and **L.K. Quinsland** *(lkq9999@rit.edu),* National Technical Institute for the Deaf, Rochester Institute of Technology, Rochester, N.Y.
We will share teaching methods that promote science and written English literacy at all grade levels. These cognitive and language development strategies transcend the sound barrier and apply to all students—deaf, hard of hearing, and hearing.

12:30–1:30 PM Workshops

ACS Session Four: Bond Connections in More Complex Molecules (Chem)
(High School) *127 A/B, Convention Center*
Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.
Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Examining the Human Footprint: Population, Land Use, and the Global Environment (Env)
(Middle Level) *222B, Convention Center*
Sara Jenkins, Retired Educator, Litchfield Park, Ariz.
Engage in innovative, hands-on activities that explore human evolution and its impacts on ecosystems, biodiversity, climate, and natural resources. Receive extensive lesson plans on CD-ROM.

Activities, Materials, and Resources That Teach Science (Phys)
(Elementary–Middle Level) *222C, Convention Center*
Christine Wheeler *(wheelerc@jlab.org),* **Lisa Surles-Law** *(surles@jlab.org),* **Steve Gagnon** *(gagnon@jlab.org),* and **Jan Tyler** *(tyler@jlab.org),* Thomas Jefferson National Accelerator Facility, Newport News, Va.
Physical science–based activities, equipment, and teaching resources will be presented by teachers who have participated in the Department of Energy's Academies Creating Teacher Scientists program at the Thomas Jefferson National Accelerator Facility. Leave this session with activities to use in class on Monday!

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Easy and Effective Ways to Use PhET's Web-based Interactive Simulations in the Science Classroom (Gen)
(Middle Level–College) *224A, Convention Center*
Stephanie V. Chasteen and **Marjorie Frankel,** University of Colorado at Boulder
PhET's FREE interactive Sims *(http://phet.colorado.edu)* help students understand science. Learn how to design inquiry-based lessons using these Sims.

NASA's Pi in the Sky (Earth)
(Middle Level–High School) *224B, Convention Center*
Janet L. Moore *(janetmoore@gmail.com),* NASA/Illinois State University, Normal
What is pi? What is a radian? Use mathematics to investigate scientific phenomena in astronomy. Free NASA materials!

PSD Session: Chemical Change: The Breaking and Making of Bonds (Chem)
(Elementary–Middle Level) *225B, Convention Center*
James Kessler *(j_kessler@acs.org),* American Chemical Society, Washington, D.C.
Investigate common endothermic and exothermic reactions to better understand energy changes on the molecular level. Take home a handout of all activities.

NABT Session: Mechanisms of Evolution: Genetic Switches and Natural Selection (Bio)
(High School–College) *226B, Convention Center*
Jean Tushie *(jtushie@comcast.net),* NSTA Director, High School Science Teaching, and Eden Prairie High School, Eden Prairie, Minn.
Work through two activities that complement the HHMI DVD *Evolution: Constant Change and Common Threads.* We'll explore the role of gene switch mutations in the evolution of a species as well as the development of gene switch models. Take home classroom-ready activities appropriate for high school honors, AP, and introductory college biology students and two HHMI *Evolution* DVDs.

AAPT Session: Data Collection and Analysis Using Technology in the Physics Classroom (Phys)
(High School) *226C, Convention Center*
Rob Reniewicki *(rreniewicki@susd.org),* Arcadia High School, Phoenix, Ariz.
See how students' lab skills and abilities are affected by the use of new technology in collecting and analyzing data during physics labs.

Using Family History to Improve Your Health (Bio)
(Middle Level–High School) *227A, Convention Center*
Louisa A. Stark *(louisa.stark@utah.edu),* University of Utah, Salt Lake City
Connect heredity and health with these activities, in English and Spanish, profiling common diseases, what being "at risk" means, and the impact of family health history.

Real-World Science for You! (Earth)
(Elementary–High School) *229A, Convention Center*
Stacy DeVeau *(deveaus@erau.edu),* Embry-Riddle Aeronautical University, Prescott, Ariz.
Learn about two NASA education projects that bring real-world science into the classroom, including the integrated use of language arts and math skills.

Exploring Solar Energy (Gen)
(Elementary–High School) *229B, Convention Center*
Karen Reagor *(kreagor@need.org),* The NEED Project, Covington, Ky.
Explore solar energy concepts and photovoltaics through engaging hands-on activities using solar beads, balloons, and ovens; NaturePrint® paper; thermometers; radiometers; and photovoltaic cells.

1:00–1:30 PM Presentation

SESSION 1

Using Student Investigations to Teach Climate Change Science (Env)
(Middle Level–High School) *227C, Convention Center*
Mindy Bell *(mbell@apscc.org),* Flagstaff Arts and Leadership Academy, Flagstaff, Ariz.
Maggie Kane *(slickrocks@cableone.net),* Prescott Mile High Middle School, Prescott, Ariz.
Develop student understandings about climate change through these sequential inquiry lessons using easily accessible and inexpensive materials.

1:00–2:00 PM Exhibitor Workshop

Tough Topics in Environmental Science: Field Data Collection and Water Quality Sampling (Env)
(Grades 6–12) *126 B/C, Convention Center*
Sponsor: PASCO Scientific
Kelcey Burris, Union High School, Camas, Wash.
Explore PASCO's state-of-the-art science teaching solutions to one of the toughest aspects of environmental science investigations—field data collection. Participate in standards-based probeware lab activities from PASCO's new advanced environmental science curriculum. Experience how the SPARK Science Learning System can enhance your teaching practice and improve student understanding of core topics.

1:00–2:15 PM Exhibitor Workshop

Working as One with Hands and Minds (Gen)
(Grades K–8) *123, Convention Center*
Sponsor: Delta Education/School Specialty Science
Tom Graika, Consultant, Lemont, Ill.
Johanna Strange, Consultant, Richmond, Ky.
Students learn best when both their minds and their hands are engaged in classroom activities. A problem-solving approach to teaching promotes this kind of student learning. Delta Science Modules and technological activities will illustrate a variety of problem-solving strategies that lead to real learning. Take home a resource packet.

1:00–3:30 PM Exhibitor Workshop

Bio-Rad Forensic DNA Fingerprinting Kit (Bio)
(Grades 6–College) *122 A/B, Convention Center*
Sponsor: Bio-Rad Laboratories
Essy Levy *(biotechnology_explorer@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Use molecular scissors to create a DNA fingerprint. Restriction enzyme digestion and DNA gel electrophoresis are used to help determine which suspect committed the crime. Extend this kit with a plasmid mapping activity using the plasmid DNA restriction patterns from the experiment (AP Biology Lab 6).

1:00–4:00 PM Short Course

Using Graphic Organizers to Increase Students' Understanding and Retention of Science Concepts (SC-7)
(Grades K–8) *South Mountain, Sheraton*
Tickets Required; $34
Joan Gilbert *(joan.gilbert@tusd1.org)* and **Meg Gebert** *(margaret.gebert@tusd1.org),* Tucson (Ariz.) Unified School District
For description, see page 38.

2:00–3:00 PM Featured Presentation

Putting the "Science" into Professional Learning Communities: Building Group Capacity to Transform Science Teaching and Learning (Gen)
(General) *Ballroom 120B, Convention Center*

Page Keeley *(pkeeley@mmsa.org),* NSTA Retiring President, and Senior Science Program Director, Maine Mathematics and Science Alliance, Augusta

Presider: Katy Wilkins, President-Elect, Arizona Science Teachers Association, and Toltec Middle School, Toltec, Ariz.

To make an impact in science, Professional Learning Communities (PLCs) need to move from a focus on general issues of teaching and learning to recognizing the specific needs of science teachers that are unique to our profession. By situating PLC professional development in the content students are learning and what we know about how students learn science, deep transformative changes in teacher practice can occur that spread beyond the walls of an individual classroom.

Page Keeley is the Senior Science Program Director at the Maine Mathematics and Science Alliance and the 2008–2009 President of the National Science Teachers Association. She has authored several books on science formative assessment, including the popular Uncovering Student Ideas in Science *series.*

As the PI of the NSF-funded Curriculum Topic Study project, she developed a process for creating standards-based assessment probes that reveal commonly held ideas noted in the research literature. She consults with school districts, math-science partnership projects, and professional development programs throughout the U.S. in the areas of formative assessment, leadership, and research-based curriculum and instruction.

2:00–3:00 PM Presentations

SESSION 1

Academic Rigor, Authentic Assessment, and Astrobiology for All Students (Earth)

(Middle Level–High School/Supv.) *221B, 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, rigorous, all-inclusive classroom environment using astrobiology as a unifying theme. Our classes promote problem-solving, communication, and interpersonal skills through differentiated instruction and authentic science learning experiences.

SESSION 2

Bringing Biomedical and Genomics Research into the High School Classroom (Bio)

(High School–College) *221C, Convention Center*

David M. Rhoads *(drhoads@cals.arizona.edu),* University of Arizona, Tucson

Xan Simonson *(nxsimons@mpsaz.org),* Local Arrangements Coordinator, NSTA Phoenix Area Conference, and Mesa Biotechnology Academy, Mesa, Ariz.

Steven C. Slater *(scslater@glbrc.wisc.edu),* University of Wisconsin–Madison

Amanda Cherry Grimes *(aacgrime@mpsaz.org),* Mesa Biotechnology Academy, Mesa, Ariz.

An innovative SFAz grant brings 20 secondary teachers together to learn and apply biotechnology laboratory skills as they share authentic laboratory experiences in biomedical and genomics fields.

SESSION 3

Stand and Deliver! Be a Presenter at NSTA Conferences (Gen)

(Preschool/Elementary) *222A, Convention Center*

DeLene Hoffner *(dhoffner@regis.edu),* NSTA Director, Preschool/Elementary, and The da Vinci Academy, Colorado Springs, Colo.

Members of the NSTA Preschool/Elementary Committee will guide you through the steps necessary to present at NSTA conferences, from filling out forms to making your presentation.

SESSION 4

Read About It: Online Technology Teaches Science! (Bio)

(Middle Level) *225A, Convention Center*

Leslie M. Miller *(lmm@rice.edu),* Rice University, Houston, Tex.

Lynn Lauterbach, Loveland, Colo.

Learn about two free online web adventures that engage students with math and science in an exploration of infectious disease and alcohol's effect on the body.

SESSION 5

Collaborative, Authentic Science and Engineering at the Edge of the Atmosphere (Gen)

(Informal Education) *227B, Convention Center*

Greg J. Mylet *(myletg@loswego.k12.or.us),* Lake Oswego Junior High School, Lake Oswego, Ore.

Meet Dahlia the space cockroach. She and I will share how a group of middle school students and I, in cooperation with a local engineering professor, have become a true community of scientists while designing payloads to be carried by weather balloons to the edge of the atmosphere.

SESSION 6

Effective Team Teaching in Science (Gen)

(Middle Level–High School) *227C, Convention Center*

Ed Linz *(elinz@fcps.edu)* and **Mary Jane Heater** *(maryjane.heater@fcps.edu),* West Springfield High School, Springfield, Va.

A physics teacher and a special education teacher share successful strategies for teaching science to students with special needs.

SESSION 7

Teaching About the Rain Forests of the Oceans Using NOAA Resources (Gen)

(Elementary–High School) *228A, Convention Center*

Kirk Beckendorf *(kirk.beckendorf@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.

Coral reefs are a barometer of our planet's health. Bring coral reefs to life in your classroom with NOAA resources.

SESSION 8

Exploring Systems: Interactive Resources on the Web (Gen)

(General) *231A, Convention Center*

Anne LaVigne *(alavigne@pimaregionalsupport.org),* Systems Thinking in Schools, Waters Foundation, Pima County Regional Support Center, Tucson, Ariz.

What causes a population to decline? How do infections spread? Investigate dynamic systems using online resources—Systems Thinking in Schools WebEd and Systems Simulations.

2:00–3:00 PM Workshops

ACS Session Five: Chemistry of Aqueous Solutions of Gases (Chem)
(High School) *127 A/B, Convention Center*
Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.
Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Math Activities in the Earth Sciences Using Interactive Multimedia from Windows to the Universe (Earth)
(Informal Education) *221A, Convention Center*
Roberta M. Johnson *(rmjohnsn@ucar.edu),* **Randy Russell, Susan Foster, Lisa Gardiner, Becca Hatheway, Julia Genyuk,** and **Marina LaGrave,** University Corporation for Atmospheric Research, Boulder, Colo.
David F. Mastie, Retired Educator, Chelsea, Mich.
Jennifer Bergman, Curiosity Consulting, Atlanta, Ga.
We will share three activities: a very simple climate model, graphing sea ice extent near both poles over time, and virtual ballooning to explore Earth's atmosphere. Handouts.

Using Biofuels as a Context for Teaching About Energy (Gen)
(Elementary–Middle Level) *222B, Convention Center*
Patricia A. Doney, University of Georgia, Athens
Suzanne P. Kral *(spk@cdmfun.org),* Creative Discovery Museum, Chattanooga, Tenn.
Connect environmental issues to the National Science Education Standards and current science research with these inquiry-based activities exploring biofuels as future energy sources.

Thirty-Minute Labs with Maximum Results (Earth)
(Middle Level) *222C, Convention Center*
Michael Apfeldorf *(info@jason.org),* The JASON Project, National Geographic, Ashburn, Va.
Ann Lumm, Maricopa County Superintendent of Schools Office, Mesa, Ariz.
The JASON Project connects students with Great Explorers and Great Events. Come explore Monster Storms through hands-on labs and an online storm tracker video game.

Shear Madness! (Bio)
(Middle Level–High School) *224A, Convention Center*
Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.
Temperature regulation is critical to all animals. Explore this phenomenon in a hands-on data-collection session.

Source of the Soil (Env)
(Middle Level–High School) *224B, Convention Center*
Jacklyn Bonneau *(bonneau@wpi.edu),* Massachusetts Academy of Math & Science, Worcester
Use current technology to analyze soil characteristics and identify the source.

PSD Session: There's More to Dissolving Than Meets the Eye (Chem)
(Elementary–Middle Level) *225B, Convention Center*
James Kessler *(j_kessler@acs.org),* American Chemical Society, Washington, D.C.
Explore the interaction between water and different substances to understand solubility and the energy changes of dissolving on the molecular level. Take home a handout of all activities.

NABT Session: Using Hardy-Weinberg Equilibrium to Illustrate Evolutionary Change (Bio)
(High School–College) *226B, Convention Center*
William H. Leonard *(leonard@clemson.edu),* Clemson University, Clemson, S.C.
Engage in a mathematical and calculator population genetics activity using a single trait that realistically illustrates evolutionary change through Founder Effect and natural selection.

AAPT Session: Discourse Management (Phys)
(High School–College) *226C, Convention Center*
Dwain Desbien, Estrella Mountain Community College, Avondale, Ariz.
Karie Meyers *(kameyers1@pima.edu),* Pima Community College, Tucson, Ariz.
David Weaver *(david.weaver@cgcmail.maricopa.edu),* Chandler-Gilbert Community College, Williams Campus, Mexa, Ariz.
Presider: Karie Meyers
Discourse management is a classroom strategy to improve student learning through managed discourse.

Biotechnology from a Chemistry Teacher's Viewpoint (Chem)
(Middle Level–College) *227A, Convention Center*
Cheri D. Kinney *(ckinney4@cox.net),* Chandler, Ariz.
Chemistry and biotechnology—learn what language they have in common and what tools chemistry teachers can use to prepare students to better understand this fast-emerging field.

PLT's Exploring Environmental Issues: Places We Live (Env)
(General) *229A, Convention Center*
Jackie Stallard *(jstallard@forestfoundation.org)* and **Al Stenstrup** *(astenstrup@forestfoundation.org),* American Forest Foundation, Washington, D.C.
Karen K. Schedler *(karen.schedler@afre.org),* Arizona Foundation for Resource Education, Phoenix
These activities from Project Learning Tree's Exploring Environmental Issues: Places We Live secondary module allow students to investigate changes in their local communities. Take home a copy of the module.

Learning the "Game" of Formulating and Testing Hypotheses and Models (Gen)
(Middle Level–College) *229B, Convention Center*
David P. Maloney *(maloney@ipfw.edu),* Indiana University–Purdue University, Fort Wayne
Learn to use strategy games in a student-friendly activity that introduces the processes of formulating and testing hypotheses and models.

NSTA Press Session: I See What You Mean: Developing Visual Literacy for Science Learning (Gen)
(General) *231B, Convention Center*
Jo Anne Vasquez *(jvasquez@helios.org),* 1996–1997 NSTA President, and Helios Education Foundation, Phoenix, Ariz.
Frankie Troutman *(ftroutman@bbschl.com),* Bright Beginnings School, Chandler, Ariz.
Michael Comer *(michael_comer@mcgraw-hill.com),* Columbus, Ohio
One-dimensional visual learning tools—webs, concept maps, and thinking-process maps—help promote learning. However, these are just a few tools. Come preview a new field guide for using all types of visual tools to promote students' retention and application of science content.

2:00–3:00 PM Meeting

National Science Education Leadership Association Open Meeting
Camelback A, Sheraton
Join us (NSELA) to share your current insights and concerns. Discover this national NSTA affiliate group that is focused to meet the needs of science education leaders.

2:00–3:15 PM Exhibitor Workshops

Ensure Your Students' Success on the AP* Chemistry Exam (Chem)
(Grades 9–12) *121 A/B, Convention Center*
Sponsor: Pearson
Ed Waterman, Retired Educator, Fort Collins, Colo.
Join fellow AP* Chemistry teacher and Pearson author Ed Waterman for tips and tools you can use to ensure student success on the AP* Chemistry exam.

**AP is a registered trademark of the College Board, which was not involved in the production of this product.*

Capturing Attention in the Chemistry Classroom (Chem)
(Grades 9–12) *121C, Convention Center*
Sponsor: Houghton Mifflin Harcourt
Jerry Sarquis, Miami University, Oxford, Ohio
Mickey Sarquis *(sarquiam@muohio.edu),* Miami University, Middletown, Ohio
Modern Chemistry authors Jerry and Mickey Sarquis show you how to spark imagination and interest in chemistry with simple but powerful tricks and tips. The Sarquises are recognized leaders in chemistry education initiatives.

Take the Leap: Carolina's Perfect Solution® Frog Dissection (Bio)
(Grades 6–12) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Carolina Teaching Partner
Frogs are ideal specimens for introducing basic human anatomy and body systems. Experience Carolina's Perfect Solution frogs, the most lifelike and safest preserved frog specimens available. Participants practice basic classroom dissection techniques and explore the anatomy and physiology of the frog. Free dissection supplies and door prizes.

A Natural Approach to Chemistry **(Chem)**
(Grades 9–12) *125A, Convention Center*
Sponsor: Lab-Aids, Inc.
Tom Hsu, Author, Andover, Mass.
Join author Tom Hsu for a special preview and hands-on examination of selected laboratory activities from his new high school book *A Natural Approach to Chemistry.* This course takes a fresh look at how chemistry is used today, in and out of the laboratory. Selected lab activities will feature an innovative new probeware system that is rugged and simple to use and that makes accurate quantitative measurements accessible to all students. Take home selected labs and other materials.

EDVOTEK Biotechnology—New! Achieve Successful PCR in One Lab Session (Bio)
(Grades 8–College) *126A, Convention Center*
Sponsor: EDVOTEK
Jack Chirikjian *(info@edvotek.com),* EDVOTEK, Bethesda, Md.
Come learn about our new technology that makes PCR fast, easy, and affordable. Our unique two-step PCR experiment can be completed in one lab session, and our user-friendly EdvoCycler makes PCR affordable for the classroom. Participants are automatically entered into a raffle for a FREE classroom electrophoresis setup (a $500 value!) OR a credit of the same value toward the purchase of an EdvoCycler.

Teaching Science with Foldables (Gen)
(Grades 3–12) *129 A/B, Convention Center*
Sponsor: Macmillan/McGraw-Hill and Glencoe
Dinah Zike, Dinah-Might Adventures, LP, San Antonio, Tex.
Learn how to improve your students' reading and study skills with Foldables. These interactive, hands-on graphic organizers will revolutionize the way you teach and the way your students study. Make your own examples and learn strategies for implementing this powerful learning tool.

2:00–3:30 PM Exhibitor Workshops

Chemistry and the Atom: Fun with Atom-building Games! (Chem)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.
Our understanding of matter is so abstract that students have a hard time making sense of these fascinating concepts. In this workshop you will experience innovative games and activities that give students with different learning styles opportunities to explore and grasp atomic structure and the periodic table.

Developing 21st-Century Minds with Vernier (Gen)
(Grades 7–College) *125B, Convention Center*
Sponsor: Vernier Software & Technology
David Braunschweig *(info@vernier.com),* Vernier Software & Technology, Beaverton, Ore.
Discover how technology can transform your classroom into a 21st-century laboratory. Explore state-of-the-art probeware solutions that help teach core science topics in physics, chemistry, biology, earth science, and environmental science. Learn tips and tricks from master teachers and technology experts and receive hands-on training with both Logger Pro and Vernier's LabQuest application.

2:00–4:00 PM Workshop

Science, Math, and Literacy: The Three Essentials Needed for Success (Earth)
(Elementary–High School) *223, Convention Center*
Arloa Woolford *(wimef@womeninmining.org),* Women In Mining Education Foundation, Winnemucca, Nev.
Science, math, and literacy are essential for students to meet challenges and demands in the future. A solid basis in earth science will go a long way in providing students with these essential skills. Join me for integrated hands-on activities.

2:00–4:30 PM Exhibitor Workshop

Making Sense of Science Notebooks with FOSS 3–6 (For Experienced Users) (Gen)

(Grades 3–6) *122C, Convention Center*

Sponsor: Delta Education/School Specialty Science–FOSS

Jeri Calhoun, Science Associate, Isle of Palms, S.C.

Joanna Totino, Brian T. Campbell, and **Diana Valez,** Lawrence Hall of Science, University of California, Berkeley

Ellen Mintz, Consultant, Charleston, S.C.

Through a hands-on FOSS investigation, we'll expand on the essential elements of student-centered science notebooks, look for evidence of learning, and explore ways to provide effective feedback. We'll demonstrate how to use notebooks to guide instruction through embedded assessments and next-step strategies. Sample materials provided.

2:30–4:00 PM Exhibitor Workshop

Using SPARK Science Learning System to Enhance Hands-On Science (Gen)

(Grades 6–12) *126 B/C, Convention Center*

Sponsor: PASCO Scientific

Nassim Lewis, PASCO Scientific, Roseville, Calif.

Kelcey Burris, Union High School, Camas, Wash.

To prepare science learners today for the demands of tomorrow, PASCO introduces the SPARK Science Learning System. Join us for an introduction and see how its design can help you transform your classroom into a 21st-century learning environment. Complete one of the 60 pre-installed lab activities and learn how interacting with real-time data collection on a mobile device that delivers full-color touchscreen visualizations can change the experience of science learning for your students.

3:30–4:30 PM Presentations

SESSION 1

NSTA Avenue Session: More and Muir Tech Tips for Teaching About a Greener Tomorrow (Env)

(Elementary–Middle Level) *127C, Convention Center*

Lance Rougeux *(lance_rougeux@discovery.com),* Discovery Education, Silver Spring, Md.

Help your students change the world every day using the digital tools they love, including customized placemarks in Google Earth, digital posters with Glogster, virtual labs about alternative energy sources, and digital storytelling projects with a green screen. We'll also look at the free resources available through the Siemens We Can Change the World Challenge, the first-of-its-kind national K–12 student sustainability competition.

SESSION 2

Keeping Middle School Science Alive: A Professional Development Model (Gen)

(Middle Level) *221B, Convention Center*

Barbara J. Reinert *(breinert@susd.org),* Copper Ridge School, Scottsdale, Ariz.

How does a district continue to provide professional development to teachers and ensure the fidelity of a science program? Find out about a district in Arizona that is doing just that!

SESSION 3

NSTA Teacher and Principal Awards and Recognitions (Gen)

(General) *221C, Convention Center*

Julie Thomas *(julie.thomas@okstate.edu),* Oklahoma State University, Stillwater

NSTA recognizes and rewards exemplary teachers and principals with cash, trips, science materials, and more. Learn how to apply.

SESSION 4

You Want Me to Do What in 40 Minutes!? (Gen)

(Elementary) *222A, Convention Center*

Susan Sain *(ssain@pvschools.net),* Desert Cove Elementary School, Phoenix, Ariz.

Successfully teach inquiry in the elementary classroom with these simple ideas and down-to-Earth tips that will give you back your sanity.

SESSION 5

The Problems with Models and How to Fix Them (Gen)

(General) *225A, Convention Center*

Stephen Best *(sdbest@umich.edu),* University of Michigan, Ann Arbor

Are scientific models causing more problems than benefits? We'll see why and what we can do to use models more effectively in science instruction.

SESSION 6

AAPT Session: Informal Science: The Tucson Physics Factory (Phys)

(General) *226C, Convention Center*

Bruce Bayly *(brucebayly@gmail.com),* University of Arizona, Tucson

Erik Herman *(erik@physicsfactory.org),* The Physics Factory, Tucson, Ariz.

The Physics Factory is a vegetable oil–powered bus filled with engaging physics demonstrations.

SESSION 7

Strategies for Obtaining Grant Funds for New Learning Models (Earth)

(Middle Level/Supervision) *227B, Convention Center*

Eleanor F. Smalley, Darden/Curry Partnership for Leaders in Education, Charlottesville, Va.

Learn successful strategies for working outside established budgets to obtain grant funding for implementing new and supplemental learning experiences for students and teachers.

SESSION 8

Computing Climate Change and Plants (Bio)

(Middle Level–High School) *227C, Convention Center*

Lisa Howells *(lhowells@iplantcollaborative.org),* iPlant Collaborative, Tucson, Ariz.

Michael R. Frank *(frankm@vail.k12.az.us)* and **Mike Carson** *(carsonm@vail.k12.az.us),* Empire High School, Tucson, Ariz.

With volumes of data and cutting-edge tools, biology class promises to be one of the classes your students will go home talking about!

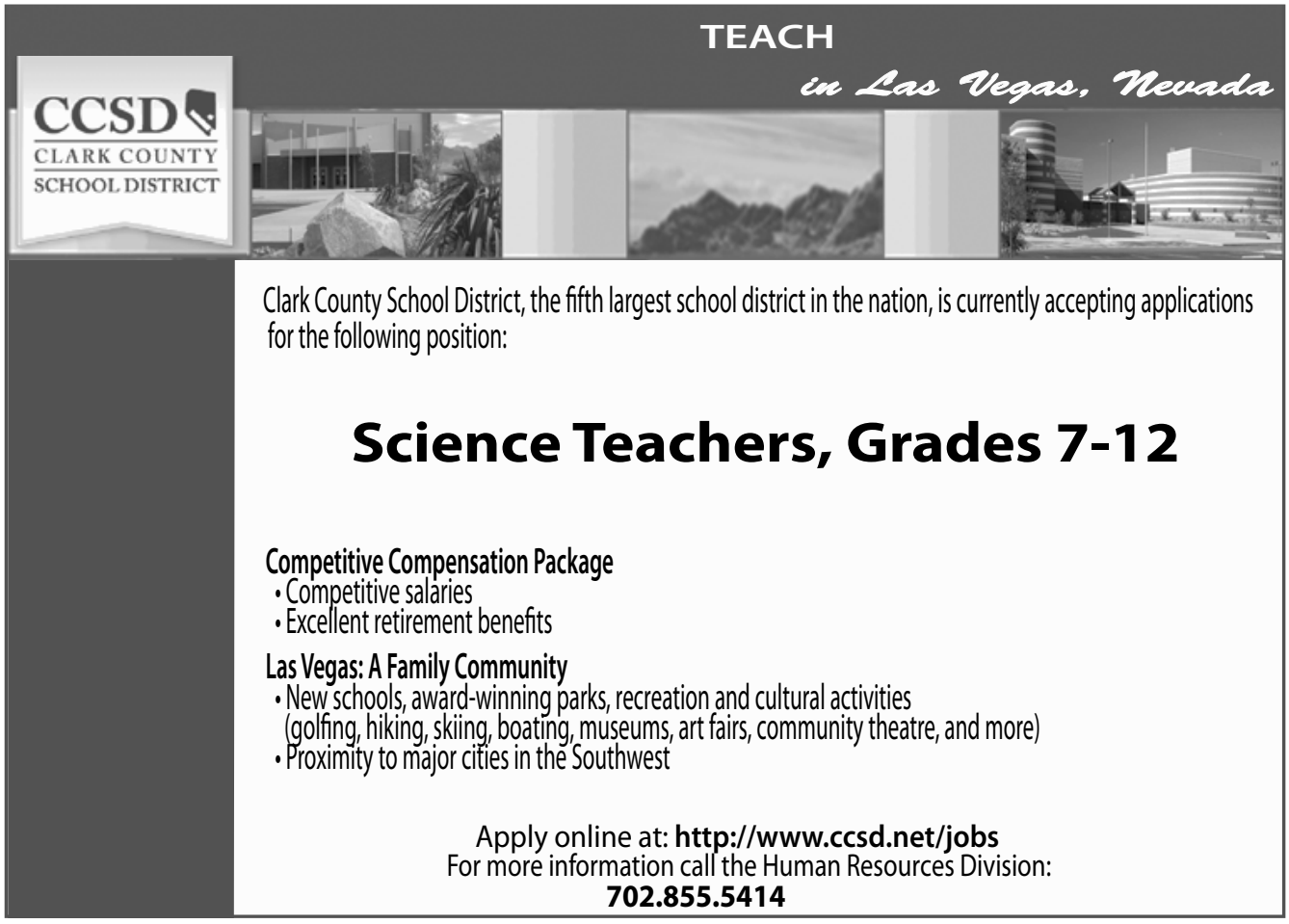
SESSION 9

Building Scientific Discourse Communities for Professionals and the Classroom (Gen)

(Middle Level–College) *228A, Convention Center*

Michael Lang *(mike.lang@domail.maricopa.edu),* Maricopa Community Colleges, Tempe, Ariz.

Learn how to create scientific classroom discourse communities that reflect practices of scientists from the NSF Communication In Science Inquiry Project (CISIP).



SESSION 10

Clickers: A Powerful Tool for Student Engagement and Assessment (Gen)

(Middle Level–College) *228B, Convention Center*

Stephanie V. Chasteen and **Marjorie Frankel,** University of Colorado at Boulder

Learn how to effectively use personal-response systems ("clickers") to increase student engagement and learning through peer instruction and for formative assessment.

SESSION 11

Watershed Visualization: Verde River (Earth)

(General) *231A, Convention Center*

Jim Washburne *(jwash@sahra.arizona.edu),* University of Arizona, Tucson

John Madden *(maddenj1@comcast.edu),* The Ashley Hall School, Charleston, S.C.

Increase your students' hydrologic literacy using the DVD/website *Watershed Visualization.* We will examine the DVD and associated learning activities.

3:30–4:30 PM Workshops

ACS Session Six: Coupled Reactions, Energetics, and Chemical Bonds (Chem)

(High School) *127 A/B, Convention Center*

Jerry A. Bell *(j_bell@acs.org),* American Chemical Society, Washington, D.C.

Engage in activities, discussion, analyses, and assessment that help understanding of the chemical bond and how it is responsible for the properties of matter. Bring your USB flash drive and take away the presentation and activities to use in your classes.

Using Science as the Focus for Literacy Learning (Gen)

(General) *221A, Convention Center*

Emily H. van Zee *(vanzeee@science.oregonstate.edu),* Oregon State University, Corvallis

Deborah Roberts-Harris *(drobert1@umd.edu),* Desert Mountain Elementary School, Queen Creek, Ariz.

How do you get students to say what they think? Listen to others? Write what they know? Understand what they read? We are exploring ways to integrate science and literacy learning in two contexts: an upper elementary classroom and an undergraduate physics course for prospective elementary and middle school teachers.

Fire in the Desert: Exploring How an Ecosystem Recovers from a Natural Disaster (Bio)

(Elementary–Middle Level) *222B, Convention Center*

Eric M. Proctor *(eproctor@azgfd.gov),* Arizona Game and Fish Department, Phoenix

During the summer of 2008 a wildfire burned through a desert river near Phoenix. We will use pictures and the internet to analyze ecosystem recovery.

Integrating Science and Math with Technology (Bio)

(General) *224A, Convention Center*

Jeff Lukens *(jeffrey.lukens@k12.sd.us),* Roosevelt High School, Sioux Falls, S.Dak.

Science and math should be natural curriculum partners. Technology can help to bridge the gaps between these two areas and bring relevance to each classroom.

PSD Session: Evaporation, Condensation, and the Structure of the Water Molecule (Chem)

(Elementary–Middle Level) *225B, Convention Center*

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

Investigate the interaction of energy and water molecules to better understand evaporation and condensation on the molecular level. Take home a handout of all activities.

NABT Session: How to Estimate the Size of a Population (Bio)

(High School–College) *226B, Convention Center*

William H. Leonard *(leonard@clemson.edu),* Clemson University, Clemson, S.C.

John E. Penick *(john_penick@ncsu.edu),* 2003–2004 NSTA President, and North Carolina State University, Raleigh

Teach your students how to estimate the size of any population using proportional reasoning with a capture-mark-recapture method. Easy material set-up. Student handout provided.

Scale the Universe **(Gen)**
(Middle Level–High School) *227A, Convention Center*
Christine Anne Royce *(caroyce@aol.com),* NSTA Director, Professional Development, and Shippensburg University, Shippensburg, Pa.
How big is big? How small is small? Come "scale the universe" as we investigate the powers of 10 and questions of scale.

Beyond Rocks for Jocks—A Mineral Lab for a Rigorous Earth Science Curriculum **(Earth)**
(High School) *229A, Convention Center*
Wendy E. Van Norden *(wvannorden@hw.com),* Harvard-Westlake School, North Hollywood, Calif.
This lab involves testing for physical properties of minerals and relating those properties to their uses. Tests include determination of hardness, streak, specific gravity, magnetism, acid test, and luster, and identification of cleavage planes. Take home samples.

Maximizing Quality Instructional Time: What to Do When You Have Five Minutes Left **(Gen)**
(General) *229B, Convention Center*
Nancy L. Foote *(nancyfootehigley@gmail.com),* Higley Unified School District, Gilbert, Ariz.
Enhance student learning, fun, laughter, and science with these five-minute activities.

4:00–5:00 PM Exhibitor Workshop

Bio-Rad Cloning and Sequencing Explorer Series **(Bio)**
(Grades 6–College) *122 A/B, Convention Center*
Sponsor: Bio-Rad Laboratories
Essy Levy *(biotechnology_explorer@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Get your students published in GenBank. In this unique modular lab series, students are guided through an innovative research workflow identical to those performed in genomics labs worldwide. Learn about this multiple-week lab course, where students combine traditional and cutting-edge molecular biology techniques and bioinformatics to clone, sequence, and analyze a housekeeping gene from a plant of your choice (ensuring each class produces unique and novel data).

4:00–5:15 PM Exhibitor Workshops

From Science to Engineering **(Gen)**
(Grades 6–8) *121 A/B, Convention Center*
Sponsor: Pearson
Kathryn C. Thornton, University of Virginia, Charlottesville
Typical science activities focus on demonstrating a science concept whereas engineering focuses on solving a problem. Brainstorm ideas on how to extend your science activities into engineering design.

Motivating Students Through Project-Based Learning (PBL) **(Gen)**
(Grades K–8) *121C, Convention Center*
Sponsor: Houghton Mifflin Harcourt
Mike Heithaus, Florida International University, North Miami
Join Houghton Mifflin Harcourt and Dr. Mike Heithaus to learn how you can motivate students in the classroom using project-based learning. Dr. Heithaus will demonstrate how you can incorporate just-completed PBL activities designed to take students along for an adventure with scientists. Using high-paced video and exciting research (featured on National Geographic and Discovery Channel), students are challenged to develop their own hypotheses, join research teams as they collect data, and then conduct their own data collection and analysis.

MS Degree in Geosciences via Distance Learning from Mississippi State University (Earth)
(Grades K–12) *123, Convention Center*
Sponsor: Mississippi State University
Keith Thompson *(fzlhntr@yahoo.com)* and **Doug Gillham** *(dmg3@msstate.edu),* Mississippi State University, Mississippi State, Miss.
Discover how you can earn an MS degree in geosciences via distance learning through the 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. Over 250 students from across the country and around the world are enrolled.

Need "Energy" in Your Environmental Classes? Learn About Carolina's NEW Inquiries in Science™ Environmental Series (Env)
(Grades 9–12) *124B, Convention Center*
Sponsor: Carolina Biological Supply Co.
Kelly Branchaud, Carolina Biological Supply Co., Burlington, N.C.
Looking for relevant, exciting lab activities for environmental science? Investigate climate change and explore alternative energy sources in this inquiry-based workshop. This series provides hands-on activities to make teaching challenging topics effortless. Free teacher materials and door prizes!

A Natural Approach to Chemistry **(Chem)**
(Grades 9–12) *125A, Convention Center*
Sponsor: Lab-Aids, Inc.
Tom Hsu, Author, Andover, Mass.
Join author Tom Hsu for a special preview and hands-on examination of selected laboratory activities from his new high school book *A Natural Approach to Chemistry.* This course takes a fresh look at how chemistry is used today, in and out of the laboratory. Selected lab activities will feature an innovative new probeware system that is rugged and simple to use and that makes accurate quantitative measurements accessible to all students. Selected labs and other program materials will be provided for all participants.

Overcoming "Mole-phobicity": Teaching Solution Prep in Biotechnology (Bio)
(Grades 9–12) *126A, Convention Center*
Sponsor: Sargent-Welch
Amy Kasianowicz, VWR Education, West Henrietta, N.Y.
Review the basics of solution prep, including components of a solution, fundamental calculations, how to diagram solution preparation, and how to check prepared solutions using a spectrophotometer. I'll share strategies for presenting solution preparation concepts and skills as well as checking for student understanding.

Teaching Science with Foldables (Gen)
(Grades 3–12) *129 A/B, Convention Center*
Sponsor: Macmillan/McGraw-Hill and Glencoe
Dinah Zike, Dinah-Might Adventures, LP, San Antonio, Tex.
Learn how to improve your students' reading and study skills with Foldables. These interactive, hands-on graphic organizers will revolutionize the way you teach and the way your students study. Participants will make their own examples and learn strategies for implementing this powerful learning tool.

4:00–5:30 PM Exhibitor Workshop

Collision Physics: A Smashing Good Time! (Phys)
(Grades 5–12) *124A, Convention Center*
Sponsor: CPO Science/School Specialty Science
Patsy Eldridge, CPO Science/School Specialty Science, Nashua, N.H.
What happens when you launch a car on a track system and hit another car? You can change the force used to launch the moving car and the mass of both the moving car and target car. See how concepts can meet mathematics and accurate data collection in a SMASHING investigation.

5:00–6:00 PM Reception

School Specialty/CPO District XIV/XV Reception

Maryvale B, Sheraton

Share in the camaraderie with fellow educators. Join us for a District XIV/XV Reception celebrating the accomplishments in science education in Arizona, Colorado, Utah, Idaho, Montana, and Wyoming. This event is sponsored by School Specialty/CPO Science.

5:00–6:30 PM Reception

Student Chapter and Student Members Reception

(By Invitation Only) *Laveen B, Sheraton*

This very special reception for NSTA student members has been created especially to recognize and honor your hard work and enthusiasm as you begin what is hopefully a long and fruitful career toiling in the vineyards of education. If your school has an NSTA Student Chapter, bring examples of the work of your chapter, best practices, and stories to share with students at institutions that don't yet have a chapter. If your school does not yet have an NSTA Student Chapter, hear your future colleagues' best practices and learn about starting and running a successful chapter at your school. Hors d'oeuvres and refreshments will be served as you network with your peers. You'll also get to hear from and share your insights with key NSTA leadership, including NSTA President Pat Shane.

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– Marlene Felix, Director
Elementary History/Social Science and Science
Los Angeles Unified School District

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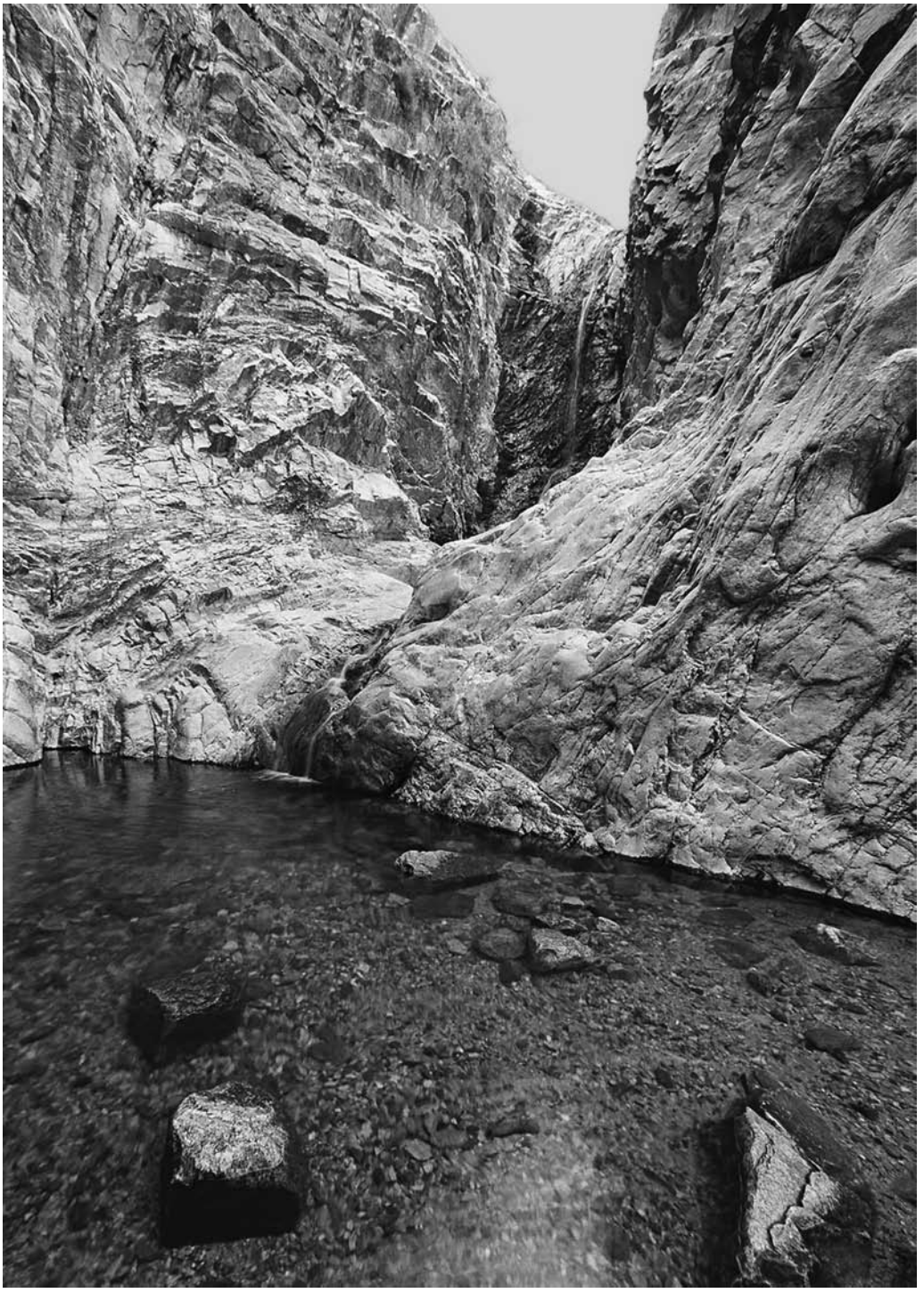

—White Tank Mountain Regional Park

7:30–9:30 AM Breakfast

Arizona Science Teachers Association Annual Business Meeting and Breakfast (M-4)
(Tickets Required; $37) *Laveen A/B, Sheraton*

Julie Gess-Newsome, J. Lawrence Walkup Distinguished Professor of Science Education and Director, Center for Science Teaching and Learning, Northern Arizona University Flagstaff

Join us for our annual business meeting/breakfast. Guest speaker Dr. Julie Gess-Newsome will talk about enhancing and sustaining the science teaching profession. Our Teacher of the Year awards will be presented and we will also have door prizes.

8:00–9:00 AM Presentations

SESSION 1

Reality Check: STEM Misconceptions (Gen)
(Preschool–Middle Level) *221B, Convention Center*
Carolyn W. Jacobs *(carolyn_jacobs@wgbh.org),* WGBH Educational Foundation, Boston, Mass.
Learn how to identify and tackle misconceptions head-on using a variety of rigorous and engaging strategies.

SESSION 2

The "Take Action!" Project (Gen)
(General) *221C, Convention Center*
Susan K. Boudreau *(sueboudreau2004@yahoo.com),* Orinda Intermediate School, Orinda, Calif.
Anne McCarten-Gibbs *(anne@mccarten-gibbs.com),* New Global Citizens, Moraga, Calif.
Presider: Susan K. Boudreau
Empower your students to take informed and effective action on science-related issues of their choice with an exciting and manageable project.

SESSION 3

Using NOAA's Climate Change Resources in Your Classroom (Gen)
(General) *222A, Convention Center*
Kirk Beckendorf *(kirk.beckendorf@noaa.gov),* Einstein Fellow, NOAA, Washington, D.C.
Challenge students to become environmentally informed decision makers. Come explore NOAA research, websites, classroom materials, activities, and curricula dealing with climate change.

SESSION 4

Don't Dump in Our Ocean! (Bio)
(General) *225A, Convention Center*
Anne Marie Wotkyns *(awotkyns@lausd.net),* J.B. Monlux Math/Science Magnet School, Valley Glen, Calif.
Grace Nimnualrat *(ms.nim@prodigy.net),* San Antonio Mathematics, Science, and Technology Magnet Center, Huntington Park, Calif.
"Aquarium dumping" causes ecological and economic harm by releasing invasive species into the marine environment. Come learn about this problem and receive literacy-based materials for grades preK–12.

SESSION 5

Live Wind Data in Your Classroom (Phys)
(Informal Education) 227B, Convention Center
Michael Arquin *(michael@kidwind.org),* KidWind Project, St. Paul, Minn.
Students can explore important wind energy concepts and theories using a wide variety of dynamic web sources. I'll share curriculum materials.

SESSION 6

Size Matters: Dinosaurs to Nanotechnology—Galileo's Revolution (Gen)
(Middle Level–College) 227C, Convention Center
David L. Esker *(david_esker@ymail.com),* The Solution Is Science, Colorado Springs, Colo.
The square-cube law, a fundamental science principle about size first discovered by Galileo, is important to biology, physics, and most other science disciplines.

SESSION 7

21st-Century Skills and Knowledge Applied to Problem-based, Not Product-based, Learning (Bio)
(Middle Level–High School) 228A, Convention Center
Laurie Cale, University High School, Tucson, Ariz.
Combine 21st-century skills and knowledge with Problem-Based Learning strategies to engage students in the exploration of meaningful curriculum topics.

8:00–9:00 AM Workshops

The Galileoscope and the International Year of Astronomy (Earth)
(General) 222B, Convention Center
Robert T. Sparks *(rsparks@noao.edu),* **Constance E. Walker** *(cwalker@noao.edu),* and **Stephen M. Pompea** *(spompea@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.
Presider: Robert T. Sparks
Learn about the optics behind telescopes and how to build the Galileoscope, a small telescope designed for the International Year of Astronomy.

Tackling the Global Warming Challenge in a Rapidly Changing World (Env)
(Middle Level/Informal Education) 222C, Convention Center
Roberta M. Johnson *(rmjohnsn@ucar.edu),* **Randy Russell, Susan Foster, Lisa Gardiner, Becca Hatheway, Julia Genyuk,** and **Marina LaGrave,** University Corporation for Atmospheric Research, Boulder, Colo.
David F. Mastie, Retired Educator, Chelsea, Mich.
Jennifer Bergman, Curiosity Consulting, Atlanta, Ga.
How is Earth changing as the climate warms? Can we stop it? Can we adapt? Help students develop critical-thinking skills, science understanding, and global-warming solutions. Handouts.

Cloud Chambers: How to Make and Use Them in Your Classroom (Chem)
(Middle Level–High School) 223, Convention Center
Walter E. Thomas *(wthomas@wickenburg.k12.az.us),* Wickenburg High School, Wickenburg, Ariz.
Presider: Courtney Lutz, Wickenburg High School, Wickenburg, Ariz.
Learn how to design and build a cloud chamber, a device that allows you to see the pathways of electrons and helium nuclei as they are ejected out of the nucleus of an unstable atom.

Scale the Universe with Fermi (Gen)
(Middle Level–High School) 224B, Convention Center
Sharla Dowding *(sharla@tribcsp.com),* Newcastle High School, Newcastle, Wyo.
Release the power—the power of 10! This activity from NASA engages students in learning about scales and magnitude.

Physics Homework Using Andes (Phys)
(High School–College) 227A, Convention Center
Brett van de Sande *(bvds@asu.edu),* Arizona State University, Tempe
Andes is an intelligent tutor homework system for students taking introductory physics. Learn how to use the system in your physics class.

NASA's Mysteries of the Universe: Dark Matter (Earth)

(High School) *229A, Convention Center*

Janet L. Moore *(janetmoore@gmail.com),* NASA/Illinois State University, Normal

Explore dark matter through mathematical reasoning. Find out what it might be, how we measure it, and how we study it. Free NASA materials!

NSTA Press Session: The Architects Have Started Without Me! What Do I Do Now? Science Facilities 102 (Gen)

(General) *231B, Convention Center*

LaMoineL. Motz *(llmotz@comcast.net),* Oakland County Schools, Waterford, Mich.

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

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

Sandra West Moody *(sw04@txstate.edu),* Texas State University–San Marcos

Presider: LaMoine L. Motz

Is your district designing new science facilities but you are not involved? You need to get involved BEFORE it is too late! In an "advanced course" on science facility and design, the co-authors of *NSTA Guide to Planning School Science Facilities* (Second Edition) will present detailed information and examples of functional and flexible science facilities for inquiry-based science. We'll focus on budgeting, working with an architect, space requirements, flexibility, safety, and spatial adjacencies.

Fossils, Fossils, Fossils...A Look at the Past (Earth)

(Elementary–Middle Level) *231C, Convention Center*

Diane A. Vaszily *(dvaszily@deserteyeeducation.com),* Science Eye School of Experiential Science, Southwest Ranches, Fla.

This hands-on simulated fossil excavation is applicable for the classroom or outdoors. Genuine fossils are screened, identified, and related to the geologic time scale. Highly motivational!

8:00–9:15 AM Exhibitor Workshops

The Digital Path and Essential 21st-Century Skills (Gen)

(Grades 6–8) *121 A/B, Convention Center*

Sponsor: Pearson

Scott Skene, Pearson, Upper Saddle River, N.J.

Learn how Pearson's digital path that accompanies the "write-in student edition" can aid teaching and learning essential 21st-century skills. Key 21st-century skills will be introduced and discussed—including creativity and intellectual curiosity, communication and media literacy skills, interpersonal and collaborative skills, problem identification, formulation and solution, and social responsibility. Learn how these skills can be applied when teaching science using Pearson's digital path.

Bio-Rad Genes in a Bottle™ Kit (Bio)

(Grades 6–College) *122 A/B, Convention Center*

Sponsor: Bio-Rad Laboratories

Essy Levy *(biotechnology_explorer@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.

How do you fit a person in a bottle? Your DNA contains all of the information that makes you who you are. Isolate your own DNA and capture your unique essence in a stylish glass necklace.

Fast and Furious Force and Motion (Chem)
(Grades 6–9) *125A, Convention Center*
Sponsor: Lab-Aids, Inc.
Mark Koker, Lab-Aids, Inc., Ronkonkoma, N.Y.
This engaging middle level unit from SEPUP's Issues and Physical Science course lets students study core force and motion concepts using a scenario of a family who has just survived a serious car accident and is in the market for a safer car. Students learn about Newton's laws, balanced and unbalanced forces, speed and acceleration, friction, and collisions. They then apply this knowledge in practical terms to understand braking distance, safe driving, and SUV-type rollovers.

Cross-curriculum Integration Using Space as a Theme (Gen)
(Grades K–8) *126A, Convention Center*
Sponsor: Space Foundation
Bryan DeBates *(bdebates@spacefoundation.org)*, Space Foundation, Colorado Springs, Colo.
Space is a subject area that gets most students excited about learning. Learn how to integrate many subject areas using topics such as rocketry as a theme for learning.

8:00–11:00 AM Short Course

See the Universe with Infrared Eyes with NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) (SC-8)
(Grades 7–14) *South Mountain, Sheraton*
Tickets Required; $65
Dana E. Backman *(dbackman@sofia.usra.edu),* SOFIA Science Center, Universities Space Research Association, Moffett Field, Calif.
Edna DeVore *(edevore@seti.org),* SETI Institute, Mountain View, Calif.
For description, see page 38.

8:30–11:00 AM Short Course

Building Professional Relationships for Transformative Learning (SC-9)
(Grades K–12 Admin./Science Specialists) *Alhambra, Sheraton*
Tickets Required; $33
Jane Kirkley *(jane.kirkley@nau.edu)* and **Kristi Fredrickson** *(kristi.fredrickson@nau.edu),* Center for Science Teaching and Learning, Northern Arizona University, Flagstaff
For description, see page 38.

9:00–11:00 AM Special Event

***Science Matters* in Phoenix**
(Elementary) *Exhibit Hall, Convention Center*
Sponsored by ExxonMobil Foundation, WGBH Teachers' Domain, and PBS

Learn how to bring science to life for your students and children. The National Science Teachers Association and ASSET/Eight Arizona Public Television are hosting a FREE community science event for all elementary teachers, parents, school officials, and community members. Engage in exciting hands-on activities presented by a variety of science and education organizations and learn about NSTA's newest initiative, *Science Matters,* a major public awareness and engagement campaign designed to rekindle a national sense of urgency and action among schools and families about the importance of science education and science literacy. FREE *Science Matters* tote bags filled with science novelty items and other cool giveaways will be distributed to the first 150 people who attend. Visit *www.nsta.org/sciencematters* for more information.

9:00 AM–12 Noon Exhibits

North Hall E, 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 Meeting

Multicultural/Equity in Science Education Committee Meeting
Camelback B, Sheraton
Teaching science to students in rural areas will be the focus of this official committee meeting called by the Chair for all committee members. Any NSTA member is welcome to attend all or part of this meeting. Please join us!

9:30–10:30 AM Presentations

SESSION 1

NSTA Avenue Session: Pete Conrad Spirit of Innovation Awards (Earth)
(High School) *127C, Convention Center*
Joshua Neubert *(joshua.neubert@conradfoundation.org),* Conrad Foundation, San Francisco, Calif.
Building on astronaut Charles "Pete" Conrad's legacy of innovation and entrepreneurship, the Awards invites teams of high school students, led by their teacher or other coach, to create new products to solve real-world challenges in Aerospace, Renewable Energy, Space Nutrition, and Green Schools. The program connects teams with leading scientists, engineers, and entrepreneurs and awards $100,000 in prizes and grant monies to help take student products to the commercial marketplace.

SESSION 2

Collaborative Inquiry in Professional Learning Communities: Using Focus Questions and Classroom-based Data to Improve Learning and Teaching (Bio)
(Middle Level–High School/Supv.) *221B, Convention Center*
Tamara Holmlund-Nelson *(tnelson@vancouver.wsu.edu),* Washington State University, Vancouver
Charlotte Waters *(charlottesswebb@hotmail.com)* and **Linda LeBard** *(llebard@egreen.wednet.edu),* Heritage High School, Vancouver, Wash.
Sherelle Wanderscheid *(swanderscheid@gsd404.org),* Goldendale Middle School, Goldendale, Wash.
Examples from middle and high school science teachers' PLC processes and outcomes show the impact of their collaborative inquiry on teacher and student learning.

SESSION 3

Accessibility to Science Content and a Means to Promote Science Learning…Partner Up! (Earth)
(Middle Level–High School/Supv.) *222A, Convention Center*
Barry Fried *(bfried@schools.nyc.gov)* and **Honora Dash** *(hdash@schools.nyc.gov),* John Dewey High School, Brooklyn, N.Y.
Our large high school provides an enriched and rigorous elective curriculum that provides authentic science experiences. We partner with a small rural school, allowing the schools to compete in flight design projects through distance-learning technology.

SESSION 4

Arizona Rivers: Transforming Learning Inside and Outside the Classroom (Env)
(General) *227B, Convention Center*
John F. Madden *(maddenj1@comcast.net),* The Ashley Hall School, Charleston, S.C.
Jim Washburne *(jwash@hwr.arizona.edu),* University of Arizona, Tucson
Arizona Rivers is a riparian zone monitoring project that fosters student and classroom studies of stream water quality, macroinvertebrates, plant ecology, and riparian wildlife.

9:30–10:30 AM Workshops

Web Inquiry Projects: Making the Most of Online Data (Gen)
(Middle Level–College) *221A, Convention Center*
Philip Molebash *(pmolebash@loyolahs.edu),* Loyola Marymount University, Los Angeles, Calif.
Get a hands-on experience with Web Inquiry Projects (WIPs), open-inquiry learning activities that leverage the use of uninterpreted online data.

Astonishing Astronomy (Earth)
(Elementary–Middle Level) *222C, Convention Center*
Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.
Join a NASA Educator Ambassador to explore the life cycles of stars, supernovae, and black holes using a hands-on inquiry approach. Take home a NASA CD-ROM.

Amazing Things Cells Can Do (Bio)
(Middle Level–College) 223, Convention Center
Molly A. Malone *(mmalone@genetics.utah.edu),* University of Utah, Salt Lake City
Bring your cell unit alive with a 3-D movie and interactive animations! Online and classroom activities explore organelles and cell communication. Activities available free at *http://learn.genetics.utah.edu.*

Embedded Formative and Summative Assessment (Chem)
(Middle Level–High School) 224A, Convention Center
Greg Dodd *(gbdodd@gmail.com),* George Washington High School, Charleston, W.Va.
Join me for a hands-on experience using formative and summative assessment in the science classroom to evaluate and improve science instruction and student comprehension.

Teaching AP Environmental Science with Games and Models (Env)
(High School) 224B, Convention Center
Kristen R. Dotti *(kristen.dotti@catalystlearningcurricula.com),* Christ School, Arden, N.C.
Congressional cocktail parties, power plant exchange programs, carrying capacity scurry games—could this be AP science? I'll share hands-on learning with rigorous AP content.

AMSE Session: Strategies and Resources: Enhancing the Science Learning of Students from Underrepresented Groups in the Sciences (Gen)
(General) 227A, Convention Center
Cherry C. Brewton *(cbrewton@georgiasouthern.edu),* Georgia Southern University, Statesboro
The Association for Multicultural Science Education will share strategies and resources that utilize skills of literacy and mathematics to enhance the science learning of students from underrepresented groups in the sciences.

The Maury Project: Ocean Waves (Earth)
(High School) 229A, Convention Center
Joseph Monaco, Redlands East Valley High School, Redlands, Calif.
Tom Curley *(tcurley527@aol.com),* Alta Loma High School, Rancho Cucamonga, Calif.
Investigate the characteristics of shallow water and deep water ocean waves and how they affect the coast. Free booklets.

Earth Treasure…The Highlight of Geology! (Earth)
(Elementary–Middle Level) 231C, Convention Center
Diane A. Vaszily *(dvaszily@deserteyeeducation.com),* Science Eye/School of Experiential Science, Southwest Ranches, Fla.
"Mine" and identify genuine minerals and gemstones using shape, color, luster, hardness, and carat value. Motivational geology!

10:00–11:15 AM Exhibitor Workshop

Alternative Energy for Transportation: Hydrogen and Fuel Cells (Chem)
(Grades 6–12) 125A, Convention Center
Sponsor: Lab-Aids, Inc.
Christopher Keller, Lawrence Hall of Science, University of California, Berkeley
Hydrogen fuel cells can be used to teach important topics in environmental science and chemistry. Learn about the production of hydrogen, chemistry of hydrogen fuel cells, and trade-offs of hydrogen fuel cells for transportation. Take home an activity that includes both web-based and hands-on models of fuel cell function.

10:00–11:30 AM Exhibitor Workshop

Finding Funds for Biotech Grant Writing Workshop (Bio)
(Grades 6–College) 122 A/B, Convention Center
Sponsor: Bio-Rad Laboratories
Essy Levy *(biotechnology_explorer@bio-rad.com),* Bio-Rad Laboratories, Hercules, Calif.
Whether you want to introduce a few hands-on labs or build an entire biotechnology program at your school, this workshop will prepare you to get started immediately to turn your dreams into a reality. Pick up a number of grant writing tools, including proposal samples, letters of support, budgets, and justifications to get you started. For a practical application of the new tools, participants are encouraged to submit proposals for a competitive grant from Bio-Rad for $500 in materials.

10:00 AM–12 Noon Workshop

Going Batty: Using Research Simulations in the Classroom (Env)
(Middle Level–High School) *229B, Convention Center*
Robin Kropp *(rkropp@desertmuseum.org),* Arizona-Sonora Desert Museum, Tucson
Learn how to incorporate research simulations in your curriculum. Participate in the Arizona-Sonora Desert Museum's bat research simulation lab, with real data drawn from Sonoran Desert bat population studies. *Note:* This workshop is open to the first 30 participants.

11:00–11:30 AM Presentation

SESSION 1
The Write Now Approach for High-Level Thinking and Learning Science and Math (Gen)
(Middle Level) *227B, Convention Center*
Peter Rillero, Arizona State University West, Phoenix
Start classes with high-cognitive-level questions reviewing material from your last class. Students think, write, and share answers. I'll share research and implementation advice.

11:00 AM–12 Noon NSTA ESP Symposium III

NSTA Exemplary Science Program (ESP)…Realizing the Visions of the National Standards: It Takes ESP to Find Exemplary Science Programs (Gen)
(General) *222C, Convention Center*
Organized by Robert E. Yager, 1982–1983 NSTA President and Editor of the NSTA ESP Program, The University of Iowa, Iowa City
Coordinator: Robert E. Yager

This session will include brief descriptions of programs that exemplify how the four NSES goals have been met. Discussion will center on how NSES *More Emphasis* suggestions have guided instruction. Participants in this symposium will include the following authors from specific monographs in the series.

Exemplary Science Programs in Grades 9–12
Carmela Minaya *(cminaya@hanalai.org),* Hanalani Schools, Mililani, Hawaii
Earl Legleiter *(elegleiter@hotmail.com),* Legleiter Science Consulting, Englewood, Colo.
Judy A. Scheppler *(quella@imsa.edu),* Illinois Mathematics and Science Academy, Aurora

Exemplary Science Programs in Grades 5–8
Barbara Kay Foots *(bkfoots@swbell.net),* Science Education Consultant, Houston, Tex.

11:00 AM–12 Noon Presentations

SESSION 1
The Impact of Collective Efficacy on High School Science Achievement (Gen)
(General) *221B, Convention Center*
Mark W. Burcham *(burchamm@wilkes.k12.nc.us),* Wilkes County Schools, North Wilkesboro, N.C.
Presider: Kristie Burcham, Wilkes County Schools, State Road, N.C.
Collective teacher efficacy plays a major role in high school science achievement. We'll look at strategies conducive to building collective efficacy in high schools.

SESSION 2
Growing a Garden of Words (Bio)
(Preschool/Elementary) *221C, Convention Center*
Molina Walters *(drmo@asu.edu),* Arizona State University at the Polytechnic Campus, Mesa
Jennifer Smith *(jennifer_smith@gilbert.k12.az.us),* Settler's Point Elementary School, Gilbert, Ariz.
Helping young children learn essential and rare vocabulary is best accomplished through exciting content like science. Come explore acquisition of new words and real-world knowledge.

SESSION 3
Urban Heat Island: An Introduction and Activities (Env)
(Middle Level) *222A, Convention Center*
Monica Elser *(mmelser@asu.edu)* and **Lisa Randall** *(lisa.randall8@asu.edu),* Arizona State University, Tempe
These inquiry-based activities cover scientific concepts related to the Urban Heat Island (UHI) effect, its impact on urban dwellers, and possible solutions.

SESSION 4
Inquiry in the Earth Science Classroom (Earth)
(Middle Level–High School) *225A, Convention Center*
Cheryl A. Mosier *(camosier@jeffco.k12.co.us),* Columbine High School, Littleton, Colo.
Inquiry-based teaching and learning CAN be done in earth science. I'll share a hands-on example from an exemplary, field-tested, research-based science program.

SESSION 5

Fueling the Future: Energy Interconnections and Sustainable Choices (Env)

(Elementary–High School) *227C, Convention Center*

Pamela Whiffen *(pwpwr@aol.com),* Mohave Middle School, Scottsdale, Ariz.

Experience hands-on lessons that demonstrate the interconnections between energy sources, human choices, economic challenges, and environmental impacts. Free curriculum.

SESSION 6

BCA Tables: Focusing On the Ratios in Stoichiometry—Not the Labels! (Chem)

(High School) *228A, Convention Center*

Frank M. Hidalgo *(fmhidalgo@cox.net),* Cortez High School, Phoenix, Ariz.

Carmela R. Minaya *(cminaya@hanalani.org),* Hanalani Schools, Miliani, Hawaii

This method of teaching stoichiometry minimizes the use of the factor label method and shifts the focus away from the labels to the molar ratios.

11:00 AM–12 Noon Workshops

Theory into Practice: Modeling Effective Practices Based on Learning Theory (Gen)

(General) *221A, Convention Center*

Jay Whitney *(whitneyj@weston1.k12.wy.us)* and **Doug Scribner** *(scribnerd@weston1.k12.wy.us),* Newcastle High School, Newcastle, Wyo.

Learn how to take your practice into reality based on tried-and-tested classroom experiences from biology, physical science, geology, and physics. Walk away with ready-to-implement strategies.

Free Telescope Access from NASA and the Fermi Space Telescope (Earth)

(Middle Level–College) *222B, Convention Center*

Robert T. Sparks *(rsparks@noao.edu),* National Optical Astronomy Observatory, Tucson, Ariz.

Learn how your students can access robotic telescopes to take their own astronomical images. Free teacher's guide and software to all participants.

The Science of Bread Making (Gen)

(Elementary–High School) *223, Convention Center*

Vaughn Williams *(vk5williams@sbcglobal.net),* St. Philips School, Dallas, Tex.

Bread is a natural polymer. Come investigate bread making as an activity to understand polymer science.

Macroinvertebrates as Indicators of Stream Quality (Bio)

(Middle Level–High School) *224A, Convention Center*

Delena I. Norris-Tull *(d_norris@umwestern.edu),* The University of Montana–Western, Dillon

Come learn how middle school science teachers collaborated on the development of science inquiry activities that explore the impact of mining on local water quality, including the identification of macroinvertebrates.

Brown Bag Projects (Gen)

(High School) *224B, Convention Center*

Susan Poland *(spoland@dysart.org),* Dysart High School, El Mirage, Ariz.

These inexpensive hands-on inquiry-based projects take less than 15 minutes to one hour to complete. We'll share three competition-type activities with real-world context.

Cosmic Rays in the Classroom (Phys)

(High School–College) *227A, Convention Center*

Julie Callahan *(julie@cosmic.utah.edu),* University of Utah, Salt Lake City

Join ASPIRE and learn how to make a tabletop cloud chamber. Students can observe cosmic-ray ionization tracks with this experiment. Visit *http://aspire.cosmic-ray.org* for more information.

Climate Change: Classroom Tools to Explore the Past, Present, and Future (Earth)
(Middle Level/Informal Education) 229A, Convention Center
Roberta M. Johnson *(rmjohnsn@ucar.edu),* **Randy Russell, Lisa Gardiner, Becca Hatheway, Julia Genyuk,** and **Marina LaGrave,** University Corporation for Atmospheric Research, Boulder, Colo.
David F. Mastie, Retired Educator, Chelsea, Mich.
Jennifer Bergman, Curiosity Consulting, Atlanta, Ga.
Explore the scientific foundations of what we know about climate change through hands-on and data-rich classroom activities. Handouts.

Elastic Power: Wind Up Your Engines and Explore! (Phys)
(Elementary–Middle Level) 231C, Convention Center
Norm B. Barstow *(barstow@hartford.edu),* Elementary Science Consultant, Hartford, Conn.
Use an elastic-powered wooden car to explore the concepts of energy transfer and force and motion. Continued exploration focuses on mass, friction, inertia, motion, momentum, and force.

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Phone: 703-312-9364
E-mail: *tnicely@nsta.org*

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The **NSTA Learning Center** offers high-quality, online learning opportunities to build content knowledge. A suite of tools provides easy self-assessment and progress documentation. Web seminars offer additional options for content knowledge development. SciGuides are online resources that are used to locate lesson plans and specific content themes.

NSTA Press publishes 20 to 25 new books each year that offer professional development to science educators. Visit the Science Bookstore to review more than 150 titles that help classroom achievement.

SciLinks offers links to online science resources. Recommended by professionals, the sites provide accurate content and effective pedagogy.

NSTA Initiatives

The John Glenn Center for Science Education Campaign, NSTA's five-year, $43 million national campaign to make excellence in science teaching and learning a reality for all, will fund a series of forward-thinking programs and a state-of-the-art facility designed to promote leadership, learning, and advocacy in science education.

Science Matters is a major public awareness and engagement campaign designed to rekindle a national sense of urgency and action among schools and families about the importance of science education and science literacy.

Awards and Competitions

NSTA provides 19 awards programs for preK–16 teachers to compete for money prizes.
Contact: Amanda Upton
Phone: 703-312-9217
E-mail: *aupton@nsta.org*

Each year **Toyota TAPESTRY Grants for Science Teachers** award $550,000 in grants to K–12 science teachers who have developed innovative, community-based projects. Learn how to participate in this competition.

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PhET Interactive Simulations is an ongoing effort to provide a suite of simulations to improve the way that physics, chemistry, biology, earth science, and math are taught and learned. The free research-based simulations are interactive tools that enable students to make connections between real-life phenomena and the underlying science.

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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.

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American Nuclear Society (Booth No. 617)

Friday, December 4	8:00–9:15 AM	126A, Conv. Center	Detecting Radiation in Our Radioactive World (p. 82)

Bio-Rad Laboratories (Booth No. 513)

Friday, December 4	8:00–9:15 AM	122 A/B, Conv. Center	Bio-Rad Light Up Your Classroom with Nobel Prize–winning Science (p. 81)
Friday, December 4	10:00–11:00 AM	122 A/B, Conv. Center	How to Start a Biotech Program (p. 90)
Friday, December 4	1:00–3:30 PM	122 A/B, Conv. Center	Bio-Rad Forensic DNA Fingerprinting Kit (p. 101)
Friday, December 4	4:00–5:00 PM	122 A/B, Conv. Center	Bio-Rad Cloning and Sequencing Explorer Series (p. 109)
Saturday, December 5	8:00–9:15 AM	122 A/B, Conv. Center	Bio-Rad Genes in a Bottle™ Kit (p. 115)
Saturday, December 5	10:00–11:30 AM	122 A/B, Conv. Center	Finding Funds for Biotech Grant Writing Workshop (p. 118)

Carolina Biological Supply Co. (Booth No. 601)

Thursday, December 3	8:00–9:15 AM	124B, Conv. Center	Force! Momentum! Energy Kids Discover More with the STC Program™: Motion and Design (p. 50)
Thursday, December 3	10:00–11:15 AM	124B, Conv. Center	"Finding Solutions" for Your Chemistry Labs with Carolina's New Inquiries in Science™ Chemistry Units (p. 53)
Thursday, December 3	12:30–1:45 PM	124B, Conv. Center	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (p. 60)
Thursday, December 3	2:15–3:30 PM	124B, Conv. Center	Amplify Your Genetics Teaching Skills with Carolina's New Inquiries in Science™ Biology Units (p. 66)
Thursday, December 3	4:00–5:15 PM	124B, Conv. Center	Hands-On Science with Classroom Critters (p. 71)
Friday, December 4	8:00–9:15 AM	124B, Conv. Center	AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 82)
Friday, December 4	8:00–9:15 AM	125A, Conv. Center	Discover the Solar System and Beyond with GEMS® Space Science Sequences (p. 82)
Friday, December 4	10:00–11:15 AM	124B, Conv. Center	Strawberry DNA and Molecular Models (p. 90)
Friday, December 4	10:00–11:15 AM	125A, Conv. Center	STC/MS™: Energy, Machines, and Motion (p. 91)
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Friday, December 4	4:00–5:15 PM	124B, Conv. Center	Need "Energy" in Your Environmental Classes? Learn About Carolina's NEW Inquiries in Science™ Enviromental Series (p. 110)

CPO Science/School Specialty Science (Booth No. 500)

Thursday, December 3	8:00–9:30 AM	124A, Conv. Center	Chemistry and the Atom: Fun with Atom-building Games! (p. 51)
Thursday, December 3	10:00–11:30 AM	124A, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 54)
Thursday, December 3	12 Noon–1:30 PM	124A, Conv. Center	Collision Physics: A Smashing Good Time! (p. 56)
Thursday, December 3	2:00–3:30 PM	124A, Conv. Center	Fun with Electricity and Circuits (p. 65)
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Friday, December 4	10:00–11:30 AM	124A, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 91)
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Delta Education/School Specialty Science (Booth No. 501)

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Thursday, December 3	1:00–2:30 PM	123, Conv. Center	What's Going On in There? Inquiry Science for Administrators, Trainers, and Teachers (p. 61)
Thursday, December 3	2:30–4:00 PM	122B, Conv. Center	FOSS and DSM Kit Refurbishment/Material Management (p. 67)
Thursday, December 3	3:00–4:30 PM	123, Conv. Center	Science Gnus: The Stories of Science in the Stories of Scientists and Process Skills (p. 67)
Friday, December 4	8:00–9:15 AM	123, Conv. Center	Put Some Spark into Science Investigations (p. 81)
Friday, December 4	10:00–11:15 AM	123, Conv. Center	Integrating Science and Literacy: Grades 1–6 (p. 90)
Friday, December 4	1:00–2:15 PM	123, Conv. Center	Working as One with Hands and Minds (p. 101)

Delta Education/School Specialty Science–FOSS (Booth No. 501)

Thursday, December 3	8:00–11:00 AM	122C, Conv. Center	Using Science Notebooks with FOSS Middle School (p. 51)
Thursday, December 3	11:30 AM–1:00 PM	122C, Conv. Center	Taking Science Outdoors with FOSS K–8 (p. 55)
Thursday, December 3	2:00–4:00 PM	122C, Conv. Center	FOSS Assessment: Valuing Academic Progress in Grades 3–6 (p. 65)
Friday, December 4	8:00–10:00 AM	122C, Conv. Center	Introducing Science Notebooks with FOSS K–6 (p. 84)
Friday, December 4	11:00 AM–1:00 PM	122C, Conv. Center	FOSS Chemical Interactions for Middle School Students (p. 96)
Friday, December 4	2:00–4:30 PM	122C, Conv. Center	Making Sense of Science Notebooks with FOSS 3–6 (For Experienced Users) (p. 106)

Delta Education/School Specialty Science–Seeds (Booth No. 501)

Thursday, December 3	9:00–11:00 AM	122B, Conv. Center	Seeds of Science/Roots of Reading: Integrating Science and Literacy at the Elementary Level (p. 52)
Thursday, December 3	11:30 AM–1:30 PM	122B, Conv. Center	Seeds of Science/Roots of Reading: Integrating Science and Literacy at the Elementary Level (p. 56)

Dinah-Might Adventures, LP (Booth No. 908)

Thursday, December 3	12:30–1:45 PM	129 A/B, Conv. Center	Using Dinah Zike's Foldables to Teach Science More Effectively (p. 61)

Educational Innovations, Inc. (Booth No. 510)

Friday, December 4	8:00–9:15 AM	129 A/B, Conv. Center	Get Charged Up with Educational Innovations! (p. 82)

EDVOTEK (Booth No. 816)

Thursday, December 3	8:00–9:15 AM	126A, Conv. Center	EDVOTEK Biotechnology—Teaching DNA Forensics (p. 50)
Friday, December 4	12 Noon–1:15 PM	126A, Conv. Center	EDVOTEK Biotechnology—Biotechnology on a Budget (p. 97)
Friday, December 4	2:00–3:15 PM	126A, Conv. Center	EDVOTEK Biotechnology—New! Achieve Successful PCR in One Lab Session (p. 105)

Flinn Scientific (Booth No. 809)

Thursday, December 3	10:00–11:15 AM	129 A/B, Conv. Center	Fantastic Physical Science Demonstrations from Flinn Scientific (p. 54)

Frey Scientific/School Specialty Science (Booth No. 504)

Thursday, December 3	8:00–9:15 AM	122A, Conv. Center	A Closer Look at Biology, Chemistry, and Earth Science Virtual Labs (p. 50)
Thursday, December 3	10:00–11:15 AM	122A, Conv. Center	Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing On Technology (p. 53)
Thursday, December 3	12 Noon–1:15 PM	122A, Conv. Center	Educational Science Lab Design and Implementation for the 21st Century Made Easy (p. 56)
Thursday, December 3	2:00–3:15 PM	122A, Conv. Center	Doing DNA Electrophoresis Simply—with E-Gels®! (p. 65)
Thursday, December 3	4:00–5:15 PM	122A, Conv. Center	Inquiry Investigations™ Forensics Science Curriculum Module (p. 71)

Hands & Minds Inc. (Booth No. 827

Friday, December 4	10:00–11:15 AM	226A, Conv. Center	Hands-On Teaching with the Anatomy in Clay® Learning System (p. 91)

Houghton Mifflin Harcourt (Booth No. 418)

Thursday, December 3	12:30–1:45 PM	121C, Conv. Center	Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in Science (p. 60)
Thursday, December 3	2:15–3:30 PM	121C, Conv. Center	Bring Biology to Life (p. 65)
Friday, December 4	2:00–3:15 PM	121C, Conv. Center	Capturing Attention in the Chemistry Classroom (p. 104)
Friday, December 4	4:00–5:15 PM	121C, Conv. Center	Motivating Students Through Project-Based Learning (PBL) (p. 109)

It's About Time (Booth No. 400)

Thursday, December 3	8:00–9:00 AM	126 B/C, Conv. Center	American Geological Institute: Whom Else Would You Ask About Earth Science? (p. 49)
Thursday, December 3	9:30–10:30 AM	126 B/C, Conv. Center	Project-Based Inquiry Science (PBIS): A New Generation of Life, Earth, and Physical Science (p. 53)
Thursday, December 3	11:00 AM–12 Noon	126 B/C, Conv. Center	Active Chemistry: Your Students Will React to Chemistry Like You Have Never Seen Before (p. 55)
Thursday, December 3	12:30–1:30 PM	126 B/C, Conv. Center	Active Physics® Third Edition: Newly Revised with More Content, More Math, More Physics (p. 60)
Thursday, December 3	2:00–3:00 PM	126 B/C, Conv. Center	InterActions in Physical Science: When Your Students Interact with Science They Discover (p. 65)
Thursday, December 3	3:30–4:30 PM	126 B/C, Conv. Center	Project-Based Inquiry Science (PBIS): A New Generation of Life, Earth, and Physical Science (p. 70)

Kendall Hunt Publishing Co. (Booth No. 801)

Thursday, December 3	8:00–9:15 AM	121C, Conv. Center	Evidence for the Ice Ages: An Inquiry Approach (p. 50)
Thursday, December 3	10:00–11:15 AM	121C, Conv. Center	Building Inquiry with *BSCS Biology: A Human Approach* (p. 53)
Friday, December 4	8:00–9:15 AM	121C, Conv. Center	Teaching Chemistry Without Hearing "When Am I Ever Going to Need to Know This?" (p. 81)
Friday, December 4	10:00–11:15 AM	121C, Conv. Center	*Forensic Science for High School:* An Inquiry-rich Curriculum (p. 90)

Key Curriculum Press (Booth No. 517)

Thursday, December 3	4:00–5:15 PM	121C, Conv. Center	*Living by Chemistry:* What Is the Shape of That Smell? (p. 71)
Friday, December 4	12 Noon–1:15 PM	121C, Conv. Center	*Living by Chemistry:* Feeling Under Pressure (p. 96)

Index of Exhibitor Workshops

Lab-Aids, Inc. (Booth No. 411)

Thursday, December 3	8:00–9:15 AM	125A, Conv. Center	Teaching About the Rock Cycle and Earth Times (p. 50)
Thursday, December 3	10:00–11:15 AM	125A, Conv. Center	Understanding Mendelian and Non-Mendelian Inheritance (p. 53)
Friday, December 4	2:00–3:15 PM	125A, Conv. Center	*A Natural Approach to Chemistry* (p. 105)
Friday, December 4	4:00–5:15 PM	125A, Conv. Center	*A Natural Approach to Chemistry* (p. 110)
Saturday, December 5	8:00–9:15 AM	125A, Conv. Center	Fast and Furious Force and Motion (p. 116)
Saturday, December 5	10:00–11:15 AM	125A, Conv. Center	Alternative Energy for Transportation: Hydrogen and Fuel Cells (p. 118)

Macmillan/McGraw-Hill and Glencoe (Booth No. 911)

Thursday, December 3	2:15–3:30 PM	129 A/B, Conv. Center	A to Z Activities for the Primary Classroom (p. 66)
Thursday, December 3	4:00–5:15 PM	129 A/B, Conv. Center	I See What You Mean—Developing Visual Literacy (p. 72)
Friday, December 4	10:00–11:15 AM	129 A/B, Conv. Center	Teaching Inquiry Science with Toys and Treats (p. 91)
Friday, December 4	12 Noon–1:15 PM	129 A/B, Conv. Center	Teaching Inquiry Science with Toys and Treats (p. 97)
Friday, December 4	2:00–3:15 PM	129 A/B, Conv. Center	Teaching Science with Foldables (p. 105)
Friday, December 4	4:00–5:15 PM	129 A/B, Conv. Center	Teaching Science with Foldables (p. 110)

Mississippi State University (Booth No. 820)

Friday, December 4	4:00–5:15 PM	123, Conv. Center	MS Degree in Geosciences via Distance Learning from Mississippi State University (p. 110)

PASCO Scientific (Booth No. 813)

Friday, December 4	8:00–9:00 AM	126 B/C, Conv. Center	Tough Topics in Physics and Physical Science: Motion (p. 80)
Friday, December 4	9:30–10:30 AM	126 B/C, Conv. Center	Tough Topics in Biology: Cell Respiration (p. 88)
Friday, December 4	11:00 AM–12 Noon	126 B/C, Conv. Center	Tough Topics in Chemistry: States of Matter (p. 96)
Friday, December 4	1:00–2:00 PM	126 B/C, Conv. Center	Tough Topics in Environmental Science: Field Data Collection and Water Quality Sampling (p. 101)
Friday, December 4	2:30–4:00 PM	126 B/C, Conv. Center	Using SPARK Science Learning System to Enhance Hands-On Science (p. 106)

Pearson (Booth No. 604)

Thursday, December 3	8:00–9:15 AM	121 A/B, Conv. Center	Inquiring with Interactive Science (p. 50)
Thursday, December 3	10:00–11:15 AM	121 A/B, Conv. Center	Inquiry in the Chemistry Classroom (p. 53)
Thursday, December 3	12:30–1:45 PM	121 A/B, Conv. Center	Wow! Realistic Laboratory Simulations for the Entire High School Science Curriculum You Have to See to Believe! (p. 60)
Thursday, December 3	2:15–3:30 PM	121 A/B, Conv. Center	Meet the Untamed Science Crew and Learn How to Make Your Own Science Videos! (p. 65)
Thursday, December 3	4:00–5:15 PM	121 A/B, Conv. Center	Planet Diary: Web-based Science News and Activities Engage Students in Science (p. 71)
Friday, December 4	8:00–9:15 AM	121 A/B, Conv. Center	The Origin After 50 Years: Teaching the Science of Darwin's Great Idea in a Climate of Controversy (p. 80)
Friday, December 4	10:00–11:15 AM	121 A/B, Conv. Center	Inquiry, Evidence, and Thinking: The Heart of Science Teaching (p. 90)
Friday, December 4	12 Noon–1:15 PM	121 A/B, Conv. Center	Reasons Why Teaching Earth Science Will Save Your Life! (p. 96)
Friday, December 4	2:00–3:15 PM	121 A/B, Conv. Center	Ensure Your Students' Success on the AP* Chemistry Exam (p. 104)
Friday, December 4	4:00–5:15 PM	121 A/B, Conv. Center	From Science to Engineering (p. 109)
Saturday, December 5	8:00–9:15 AM	121 A/B, Conv. Center	The Digital Path and Essential 21st-Century Skills (p. 115)

Pitsco Education (Booth No. 724)

Thursday, December 3	12:30–1:45 PM	125A, Conv. Center	Sustainable Energy: The Green Path to STEM Integration (p. 60)

Sargent-Welch (Booth No. 620)

Thursday, December 3	12:30–1:45 PM	125B, Conv. Center	The Physics Behind the Roller Coaster (p. 60)
Friday, December 4	4:00–5:15 PM	126A, Conv. Center	Overcoming "Mole-phobicity": Teaching Solution Prep in Biotechnology (p. 110)

Space Foundation (Booth No. 527)

Thursday, December 3	4:00–5:15 PM	126A, Conv. Center	Cross-curriculum Integration Using Space as a Theme (p. 71)
Saturday, December 5	8:00–9:15 AM	126A, Conv. Center	Cross-curriculum Integration Using Space as a Theme (p. 116)

Speak Easies (Booth No. 727)

Thursday, December 3	2:15–3:30 PM	126A, Conv. Center	Enhancing Your Cell Unit with Models and Manipulatives (p. 66)

Starry Night Education (Booth No. 416)

Thursday, December 3	4:00–5:15 PM	125A, Conv. Center	Galileo Skies (p. 71)
Friday, December 4	12 Noon–1:15 PM	125A, Conv. Center	Pluto Yet Again! (p. 96)

Swift Optical Instruments, Inc. (Booth No. 412)

Thursday, December 3	2:15–3:30 PM	125A, Conv. Center	It's Easy to Go Digital! (p. 66)

Vernier Software & Technology (Booth No. 610)

Friday, December 4	8:00–9:30 AM	125B, Conv. Center	K–8 Science with Vernier (p. 82)
Friday, December 4	10:00–11:30 AM	125B, Conv. Center	Developing 21st-Century Minds with Vernier (p. 91)
Friday, December 4	12 Noon–1:30 PM	125B, Conv. Center	Developing 21st-Century Minds with Vernier (p. 97)
Friday, December 4	2:00–3:30 PM	125B, Conv. Center	Developing 21st-Century Minds with Vernier (p. 105)

WARD's Natural Science (Booth No. 616)

Thursday, December 3	2:15–3:30 PM	125B, Conv. Center	WARD'S Presents: DNA on a Chain—Extraction and Isolation with a New Twist (p. 66)
Thursday, December 3	4:00–5:15 PM	125B, Conv. Center	WARD'S Presents Sherlock Bones: Identification of Skeletal Remains (p. 71)

Wavefunction, Inc. (Booth No. 629)

Thursday, December 3	10:00–11:15 AM	126A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 54)
Thursday, December 3	12:30–1:45 PM	126A, Conv. Center	Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (p. 61)
Friday, December 4	10:00–11:15 AM	126A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 91)

WGBH Teachers' Domain (Booth No. 923)

Friday, December 4	8:00–9:15 AM	226A, Conv. Center	Where Words Touch Earth: Native Voices on Climate Change (p. 82)

Schedule at a Glance

G = General M = Middle School S = Supervision/Administration T = Teacher Preparation
P = Preschool H = High School I = Informal EducationE = Elementary
C = College R = Research

Biology/Life Science

Thursday

8:00–9:00 AM	H–C/S	221B, Conv. Center	University Science Faculty Benefit from K–12 Outreach (p. 47)
8:00–9:15 AM	6–C	126A, Conv. Center	EDVOTEK Biotechnology—Teaching DNA Forensics (p. 50)
10:00–11:15 AM	9–12	121C, Conv. Center	Building Inquiry with *BSCS Biology: A Human Approach* (p. 53)
10:00–11:15 AM	6–9	125A, Conv. Center	Understanding Mendelian and Non-Mendelian Inheritance (p. 53)
10:00–11:30 AM	5–12	124A, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 54)
11:30 AM–1:00 PM	K–8	122C, Conv. Center	Taking Science Outdoors with FOSS K–8 (p. 55)
12:30–1:30 PM	H	223, Conv. Center	Biotech in a Virtual World (p. 59)
12:30–1:30 PM	H–C	227B, Conv. Center	Best Practices in Molecular Biology: Efficient Transformations, Faster Gels, Stronger Science (p. 58)
12:30–1:45 PM	6–12	124B, Conv. Center	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution® Specimens (p.60)
2:00–2:30 PM	M–H	222A, Conv. Center	I Love Symbiosis (p. 62)
2:00–3:00 PM	M	224A, Conv. Center	Switched at Birth: Are Todd's Parents His Biological Parents? (p. 64)
2:00–3:00 PM	M–C	227A, Conv. Center	Inquiry-based Biotechnology on a Budget (p. 64)
2:00–3:00 PM	H/I	227C, Conv. Center	The DNA Shoah Project: A Unique Forensic Reconstruction (p. 63)
2:15–3:30 PM	9–12	121C, Conv. Center	Bring Biology to Life (p. 65)
2:15–3:30 PM	9–12	124B, Conv. Center	Amplify Your Genetics Teaching Skills with Carolina's New Inquiries in Science™ Biology Units (p. 66)
2:15–3:30 PM	6–12	125B, Conv. Center	WARD'S Presents: DNA on a Chain; Extraction and Isolation with a New Twist (p. 64)
2:15–3:30 PM	7–12	126A, Conv. Center	Enhancing Your Cell Unit with Models and Manipulatives (p. 66)
4:00–4:30 PM	E–H	221C, Conv. Center	Using Achievements in Science to Build a Community of Learners (p. 70)
4:00–5:15 PM	K–12	124B, Conv. Center	Hands-On Science with Classroom Critters (p. 71)
4:00–5:15 PM	7–12	125B, Conv. Center	WARD'S Presents Sherlock Bones: Identification of Skeletal Remains (p. 71)
5:00–5:30 PM	M–H	222A, Conv. Center	School Visits by Veterinarians: More Than Just Career Day (p. 72)

Friday

8:00–8:30 AM	M–C/S	221C, Conv. Center	Using Authentic Research Experiences to Increase Relevance of Science Instruction (p. 77)
8:00–9:00 AM	M	226B, Conv. Center	NABT Session: Using Free Online Games to Teach Science Process and Science Content (p. 78)
8:00–9:00 AM	H	227A, Conv. Center	Teaching AP Biology Using Games and Models (p. 80)
8:00–9:15 AM	9–12	121 A/B, Conv. Center	The Origin After 50 Years: Teaching the Science of Darwin's Great Idea in a Climate of Controversy (p. 80)
8:00–9:15 AM	6–C	122 A/B, Conv. Center	Bio-Rad Light Up Your Classroom with Nobel Prize–winning Science (p. 81)
8:00–9:15 AM	9–12	124B, Conv. Center	AUTOPSY: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 82)
8:00–9:30 AM	5–12	124A, Conv. Center	Genetics: Crazy Traits and Adaptation Survivor (p. 82)
9:30–10:30 AM	G	Blrm. 120B, Conv. Ctr.	Featured Presentation: DNA: The Strand That Connects Us All (Speaker: Matthew E. Kaplan) (p. 84)
9:30–10:30 AM	6–12	126 B/C, Conv. Center	Tough Topics in Biology: Cell Respiration (p. 88)
9:30–10:30 AM	C	222B, Conv. Center	SCST Session: Bacteria, Blogs, Bioinformatics, and More: Using Technology to Enhance a College Microbiology Course (p. 87)
9:30–10:30 AM	E–M	224B, Conv. Center	Introduction to Heredity: What Traits Do I Have and Where Do They Come From? (p. 88)
9:30–10:30 AM	M–H	226B, Conv. Center	NABT Session: Infect Your Biology Classroom with Math (p. 86)

9:30–10:30 AM	M–H	227A, Conv. Center	Tracking Wildlife: Using Real Data to Guide Inquiry (p. 88)
10:00–11:00 AM	6–C	122 A/B, Conv. Center	How to Start a Biotech Program (p. 90)
10:00–11:15 AM	8–12	124B, Conv. Center	Strawberry DNA and Molecular Models (p. 90)
10:00–11:15 AM	6–C	226A, Conv. Center	Hands-On Teaching with the Anatomy in Clay® Learning System (p. 91)
11:00 AM–12 Noon	E	224A, Conv. Center	Gardening in Your Classroom (p. 95)
11:00 AM–12 Noon	H–C	227A, Conv. Center	Epigenetics: Beyond the Central Dogma (p. 95)
11:00 AM–12 Noon	M–H	229A, Conv. Center	Cruising to Food Safety: Integrating Food Safety into Your Science Curriculum (p. 95)
11:00 AM–12 Noon	G	231A, Conv. Center	Using Classroom-based Data to Inform Teaching (p. 94)
12 Noon–1:15 PM	K–12	124B, Conv. Center	Introduction to Wisconsin Fast Plants® (p. 96)
12 Noon–1:15 PM	6–C	126A, Conv. Center	EDVOTEK Biotechnology—Biotechnology on a Budget (p. 97)
12:30–1:30 PM	H–C	226B, Conv. Center	NABT Session: Mechanisms of Evolution: Genetic Switches and Natural Selection (p. 100)
12:30–1:30 PM	M–H	227A, Conv. Center	Using Family History to Improve Your Health (p. 100)
12:30–1:30 PM	P–M	227B, Conv. Center	Creating a Responsive Classroom Through Outdoor Education (p. 98)
1:00–3:30 PM	6–C	122 A/B, Conv. Center	Bio-Rad Forensic DNA Fingerprinting Kit (p. 101)
2:00–3:00 PM	H–C	221C, Conv. Center	Bringing Biomedical and Genomics Research into the High School Classroom (p. 102)
2:00–3:00 PM	M–H	224A, Conv. Center	Shear Madness! (p. 103)
2:00–3:00 PM	M	225A, Conv. Center	Read About It: Online Technology Teaches Science! (p. 102)
2:00–3:00 PM	H–C	226B, Conv. Center	NABT Session: Using Hardy-Weinberg Equilibrium to Illustrate Evolutionary Change (p. 103)
2:00–3:15 PM	6–12	124B, Conv. Center	Take the Leap: Carolina's Perfect Solution® Frog Dissection (p. 105)
2:00–3:15 PM	8–C	126A, Conv. Center	EDVOTEK Biotechnology—New! Achieve Successful PCR in One Lab Session (p. 105)
3:30–4:30 PM	E–M	222B, Conv. Center	Fire in the Desert: Exploring How an Ecosystem Recovers from Natural Disaster (p. 108)
3:30–4:30 PM	G	224A, Conv. Center	Integrating Science and Math with Technology (p. 108)
3:30–4:30 PM	H–C	226B, Conv. Center	NABT Session: How to Estimate the Size of a Population (p. 108)
3:30–4:30 PM	M–H	227C, Conv. Center	Computing Climate Change and Plants (p. 107)
4:00–5:00 PM	6–C	122 A/B, Conv. Center	Bio-Rad Cloning and Sequencing Explorer Series (p. 109)
4:00–5:15 PM	9–12	126A, Conv. Center	Overcoming "Mole-phobicity": Teaching Solution Prep in Biotechnology (p. 110)

Saturday

8:00–9:00 AM	G	225A, Conv. Center	Don't Dump in Our Ocean! (p. 113)
8:00–9:00 AM	M–H	228A, Conv. Center	21st-Century Skills and Knowledge Applied to Problem-based, Not Product-based, Learning (p. 114)
8:00–9:15 AM	6–C	122 A/B, Conv. Center	Bio-Rad Genes in a Bottle™ Kit (p. 115)
9:30–10:30 AM	M–H/S	221B, Conv. Center	Collaborative Inquiry in Professional Learning Communities: Using Focus Questions and Classroom-based Data to Improve Learning and Teaching (p. 117)
9:30–10:30 AM	M–C	223, Conv. Center	Amazing Things Cells Can Do (p. 118)
10:00–11:30 AM	6–C	122 A/B, Conv. Center	Finding Funds for Biotech Grant Writing Workshop (p. 118)
11:00 AM–12 Noon	P/E	221C, Conv. Center	Growing a Garden of Words (p. 119)
11:00 AM–12 Noon	M–H	224A, Conv. Center	Macroinvertebrates as Indicators of Stream Quality (p. 120)

Chemistry/Physical Science

Thursday

8:00–9:00 AM	E–M	222A, Conv. Center	Using Science Exploration Stations in the Classroom (p. 47)
8:00–9:00 AM	M–H	222C, Conv. Center	What Is Your Cosmic Connection to the Elements? (p. 48)
8:00–9:30 AM	5–12	124A, Conv. Center	Chemistry and the Atom: Fun with Atom-building Games! (p. 51)

10:00–11:15 AM	9–12	121 A/B, Conv. Center	Inquiry in the Chemistry Classroom (p. 53)
10:00–11:15 AM	9–12	124B, Conv. Center	"Finding Solutions" for Your Chemistry Labs with Carolina's New Inquiries in Science™ Chemistry Units (p. 53)
10:00–11:15 AM	9–C	126A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 55)
10:00–11:15 AM	6–12	129 A/B, Conv. Center	Fantastic Physical Science Demonstrations from Flinn Scientific (p. 54)
11:00 AM–12 Noon	9–12	126 B/C, Conv. Center	Active Chemistry: Your Students Will React to Chemistry Like You Have Never Seen Before (p. 55)
12:30–1:30 PM	M–C	221B, Conv. Center	Stirring Up Reading in Chemistry (p. 57)
12:30–1:30 PM	H/S	222A, Conv. Center	Chemistry Is Cooking: Cooking Is Chemistry (p. 57)
12:30–1:30 PM	E–M	222B, Conv. Center	Inquiry Matters (p. 59)
12:30–1:45 PM	9–C	126A, Conv. Center	Teaching AP Chemistry with Molecular-Level Visualization and Simulation Tools (p. 61)
2:00–3:00 PM	M–H	231A, Conv. Center	Bring the Science of Cars into the Classroom (p. 64)
3:30–4:30 PM	H	225A, Conv. Center	Basic Polymer Chemistry for the High School Classroom (p. 68)
4:00–5:15 PM	9–11	121C, Conv. Center	*Living by Chemistry:* What Is the Shape of That Smell? (p. 71)
5:00–6:00 PM	H–C	222B, Conv. Center	Using Engaging Chemistry Games to Help Students Learn the Periodic Table (p. 74)
5:00–6:00 PM	M–H	222C, Conv. Center	Technology Binds Mathematics and Science (p. 74)
5:00–6:00 PM	M–C	227C, Conv. Center	Sixty Labs You Can Do with Little or No Budget (p. 73)

Friday

8:00–8:30 AM	G	222A, Conv. Center	SCST Session: Nature of Science Understanding Among Southern Utah University Graduating Science Majors (p. 77)
8:00–9:00 AM	H	127 A/B, Conv. Center	ACS Session One: What's Matter Made Of? (p. 79)
8:00–9:00 AM	E–M	231B, Conv. Center	NSTA Press Session: Stop Faking It! Finally Understand CHEMISTRY So You Can Teach It (p. 80)
8:00–9:15 AM	9–12	121C, Conv. Center	Teaching Chemistry Without Hearing "When Am I Ever Going to Need to Know This"" (p. 81)
9:30–10:30 AM	H	127 A/B, Conv. Center	ACS Session Two: What Holds Molecules Together? (p. 87)
9:30–10:30 AM	H	225A, Conv. Center	Corrosion Is Everywhere: Use It to Make Chemistry Relevant and Fun (p. 86)
10:00–11:15 AM	9–12	121C, Conv. Center	*Forensic Science for High School:* An Inquiry-rich Curriculum (p. 90)
10:00–11:15 AM	9–C	126A, Conv. Center	Learning Chemistry with Software for Molecular-Level Visualization (p. 91)
11:00 AM–12 Noon	6–12	126 B/C, Conv. Center	Tough Topics in Chemistry: States of Matter (p. 96)
11:00 AM–12 Noon	H	127 A/B, Conv. Center	ACS Session Three: Why Is Water Different? (p. 94)
11:00 AM–12 Noon	H	221A, Conv. Center	Using Inquiry-based Activities to Teach the Principles of Chemistry (p. 94)
11:00 AM–12 Noon	M	222B, Conv. Center	CSI Forensics: A Campus Murder Mystery (p. 94)
11:00 AM–1:00 PM	5–8	122C, Conv. Center	FOSS Chemical Interactions for Middle School Students (p. 96)
12 Noon–1:15 PM	9–11	121C, Conv. Center	*Living by Chemistry:* Feeling Under Pressure (p. 96)
12:30–1:30 PM	H	127 A/B, Conv. Center	ACS Session Four: Bond Connections in More Complex Molecules (p. 99)
12:30–1:30 PM	E–M	225B, Conv. Center	PSD Session: Chemical Change: The Breaking and Making of Bonds (p. 100)
2:00–3:00 PM	H	127 A/B, Conv. Center	ACS Session Five: Chemistry of Aqueous Solutions of Gases (p. 103)
2:00–3:00 PM	E–M	225B, Conv. Center	PSD Session: There's More to Dissolving Than Meets the Eye (p. 103)
2:00–3:00 PM	M–C	227A, Conv. Center	Biotechnology from a Chemistry Teacher's Viewpoint (p. 104)
2:00–3:15 PM	9–12	121 A/B, Conv. Center	Ensure Your Students' Success on the AP* Chemistry Exam (p. 104)
2:00–3:15 PM	9–12	121C, Conv. Center	Capturing Attention in the Chemistry Classroom (p. 104)
2:00–3:15 PM	9–12	125A, Conv. Center	*A Natural Approach to Chemistry* (p. 105)
2:00–3:30 PM	5–12	124A, Conv. Center	Chemistry and the Atom: Fun with Atom-building Games (p. 105)
3:30–4:30 PM	H	127 A/B, Conv. Center	ACS Session Six: Coupled Reactions, Energetics, and Chemical Bonds (p. 108)
3:30–4:30 PM	E–M	225B, Conv. Center	PSD Session: Evaporation, Condensation, and the Structure of the Water Molecule (p. 108)
4:00–5:15 PM	9–12	125A, Conv. Center	*A Natural Approach to Chemistry* (p. 110)

Saturday

8:00–9:00 AM	M–H	223, Conv. Center	Cloud Chambers: How to Make and Use Them in Your Classroom (p. 114)
8:00–9:15 AM	6–9	125A, Conv. Center	Fast and Furious Force and Motion (p. 116)
9:30–10:30 AM	M–H	224A, Conv. Center	Embedded Formative and Summative Assessment (p. 118)
10:00–11:15 AM	6–12	125A, Conv. Center	Alternative Energy for Transportation: Hydrogen and Fuel Cells (p. 118)
11:00 AM–12 Noon	H	228A, Conv. Center	BCA Tables: Focusing On the Ratios in Stoichiometry—Not the Labels! (p. 120)

Earth/Space Science

Thursday

8:00–9:00 AM	H–C/I	227A, Conv. Center	Ice Core Records—From Volcanoes to Stars (p. 48)
8:00–9:00 AM	E–M	227B, Conv. Center	Engaging Upper Elementary and Middle School Students in International Science Inquiry (p. 47)
8:00–9:00 AM	E–H	229A, Conv. Center	Activities from Across the Earth System (p. 49)
8:00–9:00 AM	M–H	231A, Conv. Center	Earth Science: Hands On and Minds On (p. 48)
8:00–9:15 AM	9–12	121C, Conv. Center	Evidence for the Ice Ages: An Inquiry Approach (p. 50)
8:00–9:15 AM	6–9	125A, Conv. Center	Teaching About the Rock Cycle and Earth Times (p. 50)
12:30–1:30 PM	E–M	132 A/B, Conv. Center	Houston, We Have a Solution (p. 59)
12:30–1:30 PM	G	228A, Conv. Center	Exploring Our Universe on a Beam of Light (p. 58)
2:00–3:00 PM	M–C	223, Conv. Center	Sorting Out the Galaxy Zoo (p. 64)
3:30–4:30 PM	M–H	223, Conv. Center	Cosmic Times: Astronomy History and Science for the Classroom (p. 69)
3:30–4:30 PM	I	224A, Conv. Center	JetStream: An Online School for Weather (p. 69)
3:30–4:30 PM	M	224B, Conv. Center	Teaching Astronomy Is Out of This World! (p. 69)
3:30–4:30 PM	E–H	226 A–C, Conv. Center	National Earth Science Teachers Association Earth Science Share-a-Thon (p. 69)
3:30–4:30 PM	G	229A, Conv. Center	Stellar Evolution: From Stellar Nurseries to Black Holes (p. 70)
4:00–5:15 PM	5–C	125A, Conv. Center	Galileo Skies (p. 71)
5:00–6:00 PM	M–H	223, Conv. Center	Black Holes and Supernovae: The Hidden Universe (p. 74)
5:00–6:00 PM	G	226 A–C, Conv. Center	National Earth Science Teachers Association Rock and Mineral Raffle (p. 74)

Friday

8:00–9:00 AM	M–H	229A, Conv. Center	NASA's Planet Hunting Mission (p. 80)
8:00–9:15 AM	3–8	125A, Conv. Center	Discover the Solar System and Beyond with GEMS® Space Science Sequences (p. 82)
8:00–9:15 AM	5–12	226A, Conv. Center	Where Words Touch Earth: Native Voices on Climate Change (p. 82)
9:30–10:30 AM	E–H	221B, Conv. Center	Dark Skies as a Universal Resource (p. 85)
9:30–10:30 AM	G	227B, Conv. Center	NASA eClips for Secondary Students: Using Video Segments to Engage Millennial Learners (p. 86)
9:30–10:30 AM	M–H	228A, Conv. Center	Infrared Astronomy with NASA's Stratospheric Observatory for Infrared Astronomy (SOFIA) (p. 86)
9:30–10:30 AM	E–M	231B, Conv. Center	NSTA Press Session: Stop Faking It! Finally Understand AIR, WATER, and WEATHER So You Can Teach It (p. 88)
11:00–11:30 AM	G	227B, Conv. Center	Extreme Exploration: Journey to Earth's Radiation Belts (p. 91)
11:00 AM–12 Noon	I	224B, Conv. Center	Magnetism Activities, Earth's Magnetism, and Space Weather from Windows to the Universe (p. 95)
12 Noon–1:15 PM	6–8	121 A/B, Conv. Center	Reasons Why Teaching Earth Science Will Save Your Life! (p. 96)
12 Noon–1:15 PM	K–12	125A, Conv. Center	Pluto Yet Again! (p. 96)
12:30–1:30 PM	M–H	224B, Conv. Center	NASA's Pi in the Sky (p. 100)
12:30–1:30 PM	M	225A, Conv. Center	Incorporating Social Networking and Gaming in the Classroom (p. 98)
12:30–1:30 PM	E–H	229A, Conv. Center	Real-World Science for You! (p. 100)
2:00–3:00 PM	I	221A, Conv. Center	Math Activities in the Earth Sciences Using Interactive Multimedia from Windows to the Universe (p. 103)

2:00–3:00 PM	M–H/S	221B, Conv. Center	Academic Rigor, Authentic Assessment, and Astrobiology for All Students (p. 102)
2:00–3:00 PM	M	222C, Conv. Center	Thirty-Minute Labs with Maximum Results (p. 103)
2:00–4:00 PM	E–H	223, Conv. Center	Science, Math, and Literacy: The Three Essentials Needed for Success (p. 105)
3:30–4:30 PM	M/S	227B, Conv. Center	Strategies for Obtaining Grant Funds for New Learning Models (p. 107)
3:30–4:30 PM	H	229A, Conv. Center	Beyond Rocks for Jocks—A Mineral Lab for a Rigorous Earth Science Curriculum (p. 109)
3:30–4:30 PM	G	231A, Conv. Center	Watershed Visualization: Verde River (p. 108)
4:00–5:15 PM	K–12	123, Conv. Center	MS Degree in Geosciences via Distance Learning from Mississippi State University (p. 110)

Saturday

8:00–9:00 AM	G	222B, Conv. Center	The Galileoscope and the International Year of Astronomy (p. 114)
8:00–9:00 AM	H	229A, Conv. Center	NASA's Mysteries of the Universe: Dark Matter (p. 115)
8:00–9:00 AM	E–M	231C, Conv. Center	Fossils, Fossils, Fossils...A Look at the Past (p. 115)
9:30–10:30 AM	H	127C, Conv. Center	NSTA Avenue Session: Pete Conrad Spirit of Innovation Awards (p. 117)
9:30–10:30 AM	M–H/S	222A, Conv. Center	Accessibility to Science Content and a Means to Promote Science Learning… Partner Up! (p. 117)
9:30–10:30 AM	E–M	222C, Conv. Center	Astonishing Astronomy (p. 117)
9:30–10:30 AM	H	229A, Conv. Center	The Maury Project: Ocean Waves (p. 118)
9:30–10:30 AM	E–M	231C, Conv. Center	Earth Treasure…The Highlight of Geology! (p. 118)
11:00 AM–12 Noon	M–H	225A, Conv. Center	Inquiry in the Earth Science Classroom (p. 119)
11:00 AM–12 Noon	M–C	222B, Conv. Center	Free Telescope Access from NASA and the Fermi Space Telescope (p. 120)
11:00 AM–12 Noon	M/I	229A, Conv. Center	Climate Change: Classroom Tools to Explore the Past, Present, and Future (p. 121)

Environmental Science

Thursday

8:00–9:00 AM	6–12	126 B/C, Conv. Center	American Geological Institute: Whom Else Would You Ask About Earth Science? (p. 49)
8:00–9:00 AM	M–H	222B, Conv. Center	Facing the Future (p. 48)
8:00–9:00 AM	E–H	227C, Conv. Center	The School Water Audit Project: Authentic and Integrative Project-based Learning (p. 47)
12:30–1:30 PM	M–H	224B, Conv. Center	Incredible Invisible Soil Robots (p. 59)
2:00–3:00 PM	E–H	221B, Conv. Center	Climate Change: Global Connections and Sustainable Solutions (p. 62)
2:00–3:00 PM	M–H	225A, Conv. Center	Linking Science, Social Studies, and Sustainability Through NSF Research on Mediterranean Landscapes (p. 63)
3:30–4:30 PM	E–H	227A, Conv. Center	Using Rain Forests to Teach Across Disciplines: Educational Resources on Forestry in Guatemala (p. 70)

Friday

8:00–9:00 AM	E	224A, Conv. Center	Desert Reach…Bring the Desert to Your Classroom (p. 79)
8:00–9:00 AM	G	228B, Conv. Center	NASA's GLOBE Program: U.S. Regional GLOBE Networking Session (p. 78)
8:00–9:00 AM	M–H	231A, Conv. Center	Understanding Sustainability: A Two-Week Unit for the Middle School Science Classroom (p. 78)
9:30–10:30 AM	E–H	229B, Conv. Center	Sweet Multidisciplinary Education Resources: Bananas and Rain Forest Conservation in Honduras (p. 88)
11:00 AM–12 Noon	E–M	221C, Conv. Center	Simple Sustainability Lessons for the Classroom (p. 92)
11:00 AM–12 Noon	M–H/I	227C, Conv. Center	Wind Turbine Challenge: How to Hold One in Your State or Region (p. 93)
11:00 AM–12 Noon	G	229B, Conv. Center	Biotechnology and Environmental Risk: Project Learning Tree's (PLT) New Secondary Program (p. 95)

12:30–1:30 PM	M	222B, Conv. Center	Examining the Human Footprint: Population, Land Use, and the Global Environment (p. 99)
1:00–1:30 PM	M–H	227C, Conv. Center	Using Student Investigations to Teach Climate Change Science (p. 100)
1:00–2:00 PM	6–12	126 B/C, Conv. Center	Tough Topics in Environmental Science: Field Data Collection and Water Quality Sampling (p. 101)
2:00–3:00 PM	M–H	224B, Conv. Center	Source of the Soil (p. 103)
2:00–3:00 PM	G	229A, Conv. Center	PLT's Exploring Environmental Issues: Places We Live (p. 104)
3:30–4:30 PM	E–M	127C, Conv. Center	NSTA Avenue Session: More and Muir Tech Tips for Teaching About a Greener Tomorrow (p. 106)
4:00–5:15 PM	9–12	124B, Conv. Center	Need "Energy" in Your Environmental Classes? Learn About Carolina's NEW Inquiries in Science™ Environmental Series (p. 110)

Saturday

8:00–9:00 AM	M/I	222C, Conv. Center	Tackling the Global Warming Challenge in a Rapidly Changing World (p. 114)
9:30–10:30 AM	H	224B, Conv. Center	Teaching AP Environmental Science with Games and Models (p. 118)
9:30–10:30 AM	G	227B, Conv. Center	Arizona Rivers: Transforming Learning Inside and Outside the Classroom (p. 117)
10:00 AM–12 Noon	M–H	229B, Conv. Center	Going Batty: Using Research Simulations in the Classroom (p. 119)
11:00 AM–12 Noon	M	222A, Conv. Center	Urban Heat Island: An Introduction and Activities (p. 119)
11:00 AM–12 Noon	E–H	227C, Conv. Center	Fueling the Future: Energy Interconnections and Sustainable Choices (p. 120)

Integrated/General

Thursday

8:00–9:00 AM	G	127 A/B, Conv. Center	NSTA Avenue Session: Is This Your First NSTA Conference? (p. 47)
8:00–9:00 AM	G	127C, Conv. Center	Before and After Retirement: Practicalities and Possibilities (p. 47)
8:00–9:00 AM	G	221A, Conv. Center	Whiteboarding in Science (p. 48)
8:00–9:00 AM	E–H	228A, Conv. Center	Bringing Diversity into the Science Classroom (p. 47)
8:00–9:00 AM	E–H	228B, Conv. Center	National Board Certification for Teachers of Science: You Can Do It! Funding, Process, and Benefits (p. 48)
8:00–9:15 AM	6–8	121 A/B, Conv. Center	Inquiring with Interactive Science (p. 50)
8:00–9:15 AM	6–12	122A, Conv. Center	A Closer Look at Biology, Chemistry, and Earth Science Virtual Labs (p. 50)
8:00–9:15 AM	1–6	123, Conv. Center	Experimental Design (p. 50)
8:00–11:00 AM	5–8	122C, Conv. Center	Using Science Notebooks with FOSS Middle School (p. 51)
8:30–9:00 AM	E	221C, Conv. Center	On Solid Ground: Integrating Science and Reading Skills (p. 52)
9:00–11:00 AM	2–6	122B, Conv. Center	Seeds of Science/Roots of Reading: Integrating Science and Literacy at the Elementary Level (p. 52)
9:15–10:30 AM	G	Blrm. 120A, Conv. Ctr.	General Session: Talking Science in a Science-challenged World (Speaker: Ira Flatow) (p. 52)
9:30–10:30 AM	6–8	126 B/C, Conv. Center	Project-Based Inquiry Science (PBIS): A New Generation of Life, Earth, and Physical Science (p. 53)
10:00–11:15 AM	7–10	122A, Conv. Center	Introducing Inquiry Investigations™: Hands-On Inquiry Activities Focusing on Technology (p. 53)
10:00–11:15 AM	5–8	123, Conv. Center	Inquiry and Literacy: Grades 5–8 (p. 53)
11:30 AM–1:30 PM	2–6	122B, Conv. Center	Seeds of Science/Roots of Reading: Integrating Science and Literacy at the Elementary Level (p. 56)
12 Noon–1:15 PM	K–12	122A, Conv. Center	Educational Science Lab Design and Implementation for the 21st Century Made Easy (p. 56)
12:30–1:30 PM	G	Blrm. 120B, Conv. Ctr.	Moving from Science Anchors to Common State Standards (p. 59)
12:30–1:30 PM	E	221A, Conv. Center	Science Notebooking in the Elementary Classroom (p. 59)
12:30–1:30 PM	G	221C, Conv. Center	Building Productive Relationships with the Society of Women Engineers (p. 57)
12:30–1:30 PM	H	222C, Conv. Center	Helping High School Students Write Their Own Scientific Experiments (p. 59)

12:30–1:30 PM	M	225A, Conv. Center	Reading and Writing Happen in Science, Too! (p. 58)
12:30–1:30 PM	H	226 A–C, Conv. Center	NSTA High School Committee Share Session (p. 58)
12:30–1:30 PM	H/S	227C, Conv. Center	NSTA Press Session: Science Teaching as a Profession—Why It Isn't; How It Could Be (p. 58)
12:30–1:30 PM	G	228B, Conv. Center	CESI Session: Get the Scoop on CESI (p. 58)
12:30–1:30 PM	G	229A, Conv. Center	NSTA ESP Symposium I (p. 56)
12:30–1:30 PM	G	231A, Conv. Center	Assessment for Dummies (p. 58)
12:30–1:45 PM	9–12	121 A/B, Conv. Center	Wow! Realistic Laboratory Simulations for the Entire High School Science Curriculum You Have to See to Believe! (p. 60)
12:30–1:45 PM	K–8	121C, Conv. Center	Misconception Mania: Exciting and Engaging Ways to Address Common Misunderstandings in Science (p. 60)
12:30–1:45 PM	7–12	125A, Conv. Center	Sustainable Energy: The Green Path to STEM Integration (p. 60)
12:30–1:45 PM	K–12	129 A/B, Conv. Center	Using Dinah Zike's Foldables to Teach Science More Effectively (p. 61)
1:00–2:30 PM	K–12	123, Conv. Center	What's Going On in There? Inquiry Science for Administrators, Trainers, and Teachers (p. 61)
2:00–3:00 PM	G	Blrm. 120B, Conv. Ctr.	Featured Presentation: Transforming to the 21st-Century Global Classroom (Speaker: Jo Anne Vasquez) (p. 62)
2:00–3:00 PM	E–H	127C, Conv. Center	NSTA Avenue Session: SciLinks: Using the Online Assignment Tool (p. 62)
2:00–3:00 PM	M–H	221A, Conv. Center	Forensic Science: The Context for Integration (p. 64)
2:00–3:00 PM	G	221C, Conv. Center	Science Night for Dummies (p. 62)
2:00–3:00 PM	P/E	224B, Conv. Center	Integrating Nonfiction Reading and Writing While Teaching About Energy (p. 64)
2:00–3:00 PM	G	227B, Conv. Center	ELD Strategies in Science (p. 63)
2:00–3:00 PM	G	228A, Conv. Center	Measuring the Integration of Science and Mathematics (p. 63)
2:00–3:00 PM	M/S	228B, Conv. Center	Developing a Network of Teacher Leaders in Science (p. 64)
2:00–3:00 PM	G	231B, Conv. Center	NSTA Press Session: So You Want New Science Facilities: Science Facilities 101 (p. 64)
2:00–3:15 PM	7–10	122A, Conv. Center	Doing DNA Electrophoresis Simply—with E-Gels®! (p. 65)
2:00–4:00 PM	3–6	122C, Conv. Center	FOSS Assessment: Valuing Academic Progress in Grades 3–6 (p. 65)
2:15–3:30 PM	6–12	121 A/B, Conv. Center	Meet the Untamed Science Crew and Learn How to Make Your Own Science Videos! (p. 65)
2:15–3:30 PM	4–C	125A, Conv. Center	It's Easy to Go Digital! (p. 66)
2:15–3:30 PM	K–2	129 A/B, Conv. Center	A to Z Activities for the Primary Classroom (p. 66)
2:30–4:00 PM	K–8	122B, Conv. Center	FOSS and DSM Kit Refurbishment/Material Management (p. 67)
3:00–4:30 PM	K–6	123, Conv. Center	Science Gnus: The Stories of Science in the Stories of Scientists and Process Skills (p. 67)
3:30–4:30 PM	6–8	126 B/C, Conv. Center	Project-Based Inquiry Science (PBIS): A New Generation of Life, Earth, and Physical Science (p. 70)
3:30–4:30 PM	G	127C, Conv. Center	NSTA Avenue Session: Toshiba/NSTA ExploraVision Awards Program (p. 68)
3:30–4:30 PM	G	221A, Conv. Center	Observing and Analyzing Patterns in Nature to Strengthen Literacy and Mathematical Skills (p. 69)
3:30–4:30 PM	E	222B, Conv. Center	Fight Bac! Integrating Food Safety into Your Elementary Classroom (p. 69)
3:30–4:30 PM	M	222C, Conv. Center	It's a Bird, It's a Plane…Observations of the Wright Brothers (p. 69)
3:30–4:30 PM	M–H	227C, Conv. Center	Inquiring Minds Need to Know: Making Scientific Connections Through People, Invention, and Literature (p. 68)
3:30–4:30 PM	G	228A, Conv. Center	Asking the Right Questions (p. 68)
3:30–4:30 PM	P–M/I	228B, Conv. Center	Magical Illusions Workshop for K–8 Teachers (p. 70)
3:30–4:30 PM	G	231A, Conv. Center	The Good, the Bad, and the Ugly: Using Digital Video Editing for Reflection on Teaching Practice (p. 68)
4:00–5:15 PM	6–8	121 A/B, Conv. Center	Planet Diary: Web-based Science News and Activities Engage Students in Science (p. 71)
4:00–5:15 PM	7–10	122A, Conv. Center	Inquiry Investigations™ Forensics Science Curriculum Module (p. 71)
4:00–5:15 PM	K–8	126A, Conv. Center	Cross-curriculum Integration Using Space as a Theme (p. 71)
4:00–5:15 PM	1–8	129 A/B, Conv. Center	I See What You Mean—Developing Visual Literacy (p. 72)
5:00–6:00 PM	E–M	221A, Conv. Center	Academic Vocabulary Development Strategies for the Science Classroom (p. 74)

5:00–6:00 PM	S	221B, Conv. Center	Building Partnerships to Improve Teacher Quality and Student Outcomes: The Cleveland Math and Science Partnership (p. 72)
5:00–6:00 PM	G	221C, Conv. Center	Become a Teacher at Sea with NOAA Scientists (p. 72)
5:00–6:00 PM	M–H	224A, Conv. Center	Interactive Student-based Science (p. 74)
5:00–6:00 PM	E–H	224B, Conv. Center	Inquiry-based Hands-On Activities and Demonstrations (p. 74)
5:00–6:00 PM	P/E	227A, Conv. Center	Linking Home and School with P.A.S.S.© (Portable Affordable Simple Science) (p. 74)
5:00–6:00 PM	G	227B, Conv. Center	Let's Look at How Science REALLY Works! (p. 73)
5:00–6:00 PM	E–H	229A, Conv. Center	GreenSchools! (p. 74)

Friday

8:00–9:00 AM	G	127C, Conv. Center	Starting an NSTA Student Chapter: Student and Faculty Perspectives (p. 77)
8:00–9:00 AM	H–C/I	221A, Conv. Center	Imaging the Invisible (p. 79)
8:00–9:00 AM	M–H	221B, Conv. Center	An Integrated Program Based on *The Story of Science* (p. 77)
8:00–9:00 AM	E	224B, Conv. Center	Infusing Literacy and Mathematics Skills in the Science Content of the Elementary School (p. 79)
8:00–9:00 AM	H	225A, Conv. Center	NSTA High School Committee Presents Leading Beyond the Classroom (p. 78)
8:00–9:00 AM	G	227B, Conv. Center	Learning Science in Informal Environments (p. 78)
8:00–9:00 AM	G	228A, Conv. Center	Web 2.0 in the Classroom: Collaborative Learning Tools for Science (p. 78)
8:00–9:00 AM	G	229B, Conv. Center	CESI Session: Make and Take (p. 80)
8:00–9:15 AM	1–5	123, Conv. Center	Put Some Spark into Science Investigations (p. 81)
8:00–9:15 AM	5–12	126A, Conv. Center	Detecting Radiation in Our Radioactive World (p. 82)
8:00–9:30 AM	K–8	125B, Conv. Center	K–8 Science with Vernier (p. 82)
8:00–10:00 AM	K–6	122C, Conv. Center	Introducing Science Notebooks with FOSS K–6 (p. 84)
8:30–9:00 AM	H–C/S	222A, Conv. Center	SCST Session: GOBs of Information: Evaluation of a One-Semester General, Organic, and Biochemistry Course for the Allied Health Field (p. 77)
9:30–10:30 AM	E–H	127C, Conv. Center	NSTA Avenue Session: Toyota TAPESTRY Grants for Science Teachers = $$$ for Your School! (p. 85)
9:30–10:30 AM	G	221A, Conv. Center	Using Scaffolded Inquiry to Promote Rigor in Learning Science (p. 87)
9:30–10:30 AM	G	221C, Conv. Center	Professional Development Providers: What You Should Know and Be Able to Do (p. 85)
9:30–10:30 AM	G	222A, Conv. Center	NARST Session: Science Teachers and Scientific Argumentation: Trends in Practice and Beliefs (p. 86)
9:30–10:30 AM	S	224A, Conv. Center	Collaborative Inquiry in Professional Learning Communities: Linking Inquiry Questions, Learning Expectations, and Classroom-based Data Collection (p. 88)
9:30–10:30 AM	G	228B, Conv. Center	A Tree Grows in Phoenix: What's New from PLT? (p. 86)
9:30–10:30 AM	G	231A, Conv. Center	Bring the Year of Science into Your Classroom with NOAA Resources (p. 86)
9:30–11:30 AM	G	128 A/B, Conv. Center	NSTA ESP Symposium II (p. 90)
10:00–11:15 AM	5–8	121 A/B, Conv. Center	Inquiry, Evidence, and Thinking: The Heart of Science Teaching (p. 90)
10:00–11:15 AM	1–6	123, Conv. Center	Integrating Science and Literacy: Grades 1–6 (p. 90)
10:00–11:15 AM	3–12	129 A/B, Conv. Center	Teaching Inquiry Science with Toys and Treats (p. 91)
10:00–11:30 AM	7–C	125B, Conv. Center	Developing 21st-Century Minds with Vernier (p. 91)
11:00 AM–12 Noon	G	Blrm. 120B, Conv. Ctr.	Featured Presentation: Using Text to Support Firsthand Science Inquiry (Speaker: Jacqueline Barber and Gina Cervetti) (p. 92)
11:00 AM–12 Noon	E	222C, Conv. Center	Bring Literacy and Science Together: B.L.A.S.T.© for Success at School and Home (p. 94)
11:00 AM–12 Noon	G	223, Conv. Center	Learning with the Brain in Mind! (p. 94)
11:00 AM–12 Noon	M	225A, Conv. Center	City of Materials: Connecting Science to the "Stuff" in Kids' Lives (p. 93)
11:00 AM–12 Noon	G	228A, Conv. Center	Engaging K–8 Science Students with Hands-On Investigations and Inquiry (p. 93)
11:00 AM–12 Noon	C	228B, Conv. Center	Revising the NSTA Preservice Teacher Program Standards (p. 94)
11:00 AM–12 Noon	E–M	231B, Conv. Center	NSTA Press Session: Activities Linking Science with Math, K–8 (p. 95)
11:30 AM–12 Noon	G	222A, Conv. Center	NARST Session: Swirling Discourses: Using a Discourses and Communities Framework to Situate Elementary Preservice Teachers' Use of an Instructional Model to Plan and Teach Science (p. 92)

12 Noon–1:15 PM	3–12	129 A/B, Conv. Center	Teaching Inquiry Science with Toys and Treats (p. 97)
12 Noon–1:30 PM	7–C	125B, Conv. Center	Developing 21st-Century Minds with Vernier (p. 97)
12 Noon–2:00 PM	G	Laveen A, Sheraton	PreK–8 CESI Luncheon: Science and Magic from Hogwart's Academy (Speaker: Alan J. McCormack) (p. 97)
12:30–1:30 PM	S	127C, Conv. Center	NSTA Avenue Session: The NSTA Learning Center: Free Classroom Resources and Professional Development for Educators (p. 98)
12:30–1:30 PM	M–H/S	221B, Conv. Center	Say What You Mean! Strategies to Help Students Better Communicate Science (p. 98)
12:30–1:30 PM	E	221C, Conv. Center	Using Science Notebooks in the Elementary Classroom (p. 98)
12:30–1:30 PM	G	222A, Conv. Center	Action Research and Beyond: Professional Learning Communities (p. 98)
12:30–1:30 PM	M–C	224A, Conv. Center	Easy and Effective Ways to Use PhET's Web-based Interactive Simulations in the Science Classroom (p. 100)
12:30–1:30 PM	E–H	228A, Conv. Center	Become an Einstein Fellow! (p. 98)
12:30–1:30 PM	G	228B, Conv. Center	Integrating Literacy in the Science Classroom: A Model for Deaf, Hard of Hearing, and Hearing Students (p. 98)
12:30–1:30 PM	E–H	229B, Conv. Center	Exploring Solar Energy (p. 100)
1:00–2:15 PM	K–8	123, Conv. Center	Working as One with Hands and Minds (p. 101)
2:00–3:00 PM	G	Blrm. 120B, Conv. Ctr.	Featured Presentation: Putting the "Science" into Professional Learning Communities: Buiding Group Capacity to Transform Science Teaching and Learning (Speaker: Page Keeley) (p. 101)
2:00–3:00 PM	P/E	222A, Conv. Center	Stand and Deliver! Be a Presenter at NSTA Conferences (p. 102)
2:00–3:00 PM	E–M	222B, Conv. Center	Using Biofuels as a Context for Teaching About Energy (p. 103)
2:00–3:00 PM	I	227B, Conv. Center	Collaborative, Authentic Science and Engineering at the Edge of the Atmosphere (p. 102)
2:00–3:00 PM	M–H	227C, Conv. Center	Effective Team Teaching in Science (p. 102)
2:00–3:00 PM	E–H	228A, Conv. Center	Teaching About the Rain Forests of the Oceans Using NOAA Resources (p. 102)
2:00–3:00 PM	M–C	229B, Conv. Center	Learning the "Game" of Formulating and Testing Hypotheses and Models (p. 104)
2:00–3:00 PM	G	231A, Conv. Center	Exploring Systems: Interactive Resources on the Web (p. 102)
2:00–3:00 PM	G	231B, Conv. Center	NSTA Press Session: I See What You Mean: Developing Visual Literacy for Science Learning (p. 104)
2:00–3:15 PM	3–12	129 A/B, Conv. Center	Teaching Science with Foldables (p. 105)
2:00–3:30 PM	7–C	125B, Conv. Center	Developing 21st-Century Minds with Vernier (p. 105)
2:00–4:30 PM	3–6	122C, Conv. Center	Making Sense of Science Notebooks with FOSS 3–6 (For Experienced Users) (p. 106)
2:30–4:00 PM	6–12	126 B/C, Conv. Center	Using SPARK Science Learning System to Enhance Hands-On Science (p. 106)
3:30–4:30 PM	G	221A, Conv. Center	Using Science as the Focus for Literacy Learning (p. 108)
3:30–4:30 PM	M	221B, Conv. Center	Keeping Middle School Science Alive: A Professional Development Model (p. 106)
3:30–4:30 PM	G	221C, Conv. Center	NSTA Teacher and Principal Awards and Recognitions (p. 106)
3:30–4:30 PM	E	222A, Conv. Center	You Want Me to Do What in 40 Minutes? (p. 106)
3:30–4:30 PM	G	225A, Conv. Center	The Problems with Models and How to Fix Them (p. 106)
3:30–4:30 PM	M–H	227A, Conv. Center	Scale the Universe (p. 109)
3:30–4:30 PM	M–C	228A, Conv. Center	Building Scientific Discourse Communities for Professionals and the Classroom (p. 107)
3:30–4:30 PM	M–C	228B, Conv. Center	Clickers: A Powerful Tool for Student Engagement and Assessment (p. 108)
3:30–4:30 PM	G	229B, Conv. Center	Maximizing Quality Instructional Time: What to Do When You Have Five Minutes Left (p. 109)
4:00–5:15 PM	6–8	121 A/B, Conv. Center	From Science to Engineering (p. 109)
4:00–5:15 PM	K–8	121C, Conv. Center	Motivating Students Through Project Based Learning (PBL) (p. 109)
4:00–5:15 PM	3–12	129 A/B, Conv. Center	Teaching Science with Foldables (p. 110)

Saturday

8:00–9:00 AM	P–M	221B, Conv. Center	Reality Check: STEM Misconceptions (p. 113)
8:00–9:00 AM	G	221C, Conv. Center	The "Take Action!" Project (p. 113)
8:00–9:00 AM	G	222A, Conv. Center	Using NOAA's Climate Change Resources in Your Classroom (p. 113)

8:00–9:00 AM	M–H	224B, Conv. Center	Scale the Universe with Fermi (p. 114)
8:00–9:00 AM	M–C	227C, Conv. Center	Size Matters: Dinosaurs to Nanotechnology—Galileo's Revolution (p. 114)
8:00–9:00 AM	G	231B, Conv. Center	NSTA Press Session: The Architects Have Started Without Me! What Do I Do Now? Science Facilities 102 (p. 115)
8:00–9:15 AM	6–8	121 A/B, Conv. Center	The Digital Path and Essential 21st-Century Skills (p. 115)
8:00–9:15 AM	K–8	126A, Conv. Center	Cross-curriculum Integration Using Space as a Theme (p. 116)
9:00–11:00 AM	E	Exhibit Hall, Conv. Ctr.	Special Event: *Science Matters* in Phoenix (p. 116)
9:30–10:30 AM	M–C	221A, Conv. Center	Web Inquiry Projects: Making the Most of Online Data (p. 117)
9:30–10:30 AM	G	227A, Conv. Center	AMSE Session: Strategies and Resources: Enhancing the Science Learning of Students from Underrepresented Groups in the Sciences (p. 118)
11:00–11:30 AM	M	227B, Conv. Center	The Write Now Approach for High-Level Thinking and Learning Science and Math (p. 119)
11:00 AM–12 Noon	G	221A, Conv. Center	Theory into Practice: Modeling Effective Practices Based on Learning Theory (p. 120)
11:00 AM–12 Noon	G	221B, Conv. Center	The Impact of Collective Efficacy on High School Science Achievement (p. 119)
11:00 AM–12 Noon	G	222C, Conv. Center	NSTA ESP Symposium III (p. 119)
11:00 AM–12 Noon	E–H	223, Conv. Center	The Science of Bread Making (p. 120)
11:00 AM–12 Noon	H	224B, Conv. Center	Brown Bag Projects (p. 120)

Physics/Physical Science

Thursday

8:00–9:00 AM	M–H	223, Conv. Center	Managing Whiteboard-mediated Classroom Discourse (p. 48)
8:00–9:00 AM	E	224A, Conv. Center	Collaboration: A Beautiful Engineering Principle (p. 48)
8:00–9:15 AM	4–6	124B, Conv. Center	Force! Momentum! Energy Kids Discover More with the STC Program™: Motion and Design (p. 50)
12 Noon–1:30 PM	5–12	124A, Conv. Center	Collision Physics: A Smashing Good Time! (p. 56)
12:30–1:30 PM	9–12	126 B/C, Conv. Center	*Active Physics*® Third Edition: Newly Revised with More Content, More Math, More Physics (p. 60)
12:30–1:30 PM	E–M	231B, Conv. Center	NSTA Press Session: Stop Faking It! Finally Understand ELECTRICITY and MAGNETISM So You Can Teach It (p. 60)
12:30–1:45 PM	9–12	125B, Conv. Center	The Physics Behind the Roller Coaster (p. 60)
2:00–3:00 PM	7–9	126 B/C, Conv. Center	InterActions in Physical Science: When Your Students Interact with Science They Discover (p. 65)
2:00–3:00 PM	M–H	222C, Conv. Center	Modeling the Spectrum (p. 64)
2:00–3:30 PM	5–12	124A, Conv. Center	Fun with Electricity and Circuits (p. 65)
3:30–4:30 PM	E–M	222A, Conv. Center	Physical Science on a Shoestring (p. 68)
4:00–4:30 PM	E–M	227B, Conv. Center	Reflective Assessment Technique: Fifteen Minutes to Improved Instruction (p. 70)
4:00–5:30 PM	5–12	124A, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 72)
5:00–6:00 PM	H–C	225A, Conv. Center	Teaching the Simple Science of Flight (p. 73)

Friday

8:00–9:00 AM	6–12	126 B/C, Conv. Center	Tough Topics in Physics and Physical Science: Motion (p. 80)
8:00–9:00 AM	E–M	225B, Conv. Center	PSD Session: Laser Light: What Makes It So Special? (p. 80)
8:00–9:00 AM	G	226C, Conv. Center	AAPT Session: Music in Motion: Teaching Science and Math Through Musical Instrument Design and Construction (p. 78)
8:00–9:15 AM	3–9	129 A/B, Conv. Center	Get Charged Up with Educational Innovations! (p. 82)
9:30–10:30 AM	E–M	225B, Conv. Center	PSD Session: Index of Refraction: Follow a New Path with the Refraction of Light (p. 88)
9:30–10:30 AM	I	226C, Conv. Center	AAPT Session: Symmetry and Patterns in Rangolee Art from India (p. 86)
10:00–11:15 AM	6–8	125A, Conv. Center	STC/MS™: Energy, Machines, and Motion (p. 91)
10:00–11:30 AM	5–12	124A, Conv. Center	Light and Optics: A Series of EnLIGHTening Experiments! (p. 91)

11:00–11:30 AM	M–C	222A, Conv. Center	NARST Session: Data Logging in Senior High Science: Are We Disadvantaging Girls? (p. 92)
11:00 AM–12 Noon	E–M	225B, Conv. Center	PSD Session: Diffraction: Using Light to Measure (p. 95)
11:00 AM–12 Noon	H–C/I	226C, Conv. Center	AAPT Session: Make and Take Fun and Deep Physics Activities That Illuminate Newton's Laws (p. 95)
12 Noon–1:30 PM	5–12	124A, Conv. Center	Music, Sound, and Waves (p. 97)
12:30–1:30 PM	E–M	222C, Conv. Center	Activities, Materials, and Resources That Teach Science (p. 99)
12:30–1:30 PM	H	226C, Conv. Center	AAPT Session: Data Collection and Analysis Using Technology in the Physics Classroom (p. 100)
2:00–3:00 PM	H–C	226C, Conv. Center	AAPT Session: Discourse Management (p. 103)
3:30–4:30 PM	G	226C, Conv. Center	AAPT Session: Informal Science: The Tucson Physics Factory (p. 107)
4:00–5:30 PM	5–12	124A, Conv. Center	Collision Physics: A Smashing Good Time! (p. 110)

Saturday

8:00–9:00 AM	H–C	227A, Conv. Center	Physics Homework Using Andes (p. 114)
8:00–9:00 AM	I	227B, Conv. Center	Live Wind Data in Your Classroom (p. 114)
11:00 AM–12 Noon	H–C	227A, Conv. Center	Cosmic Rays in the Classroom (p. 120)
11:00 AM–12 Noon	E–M	231C, Conv. Center	Elastic Power: Wind Up Your Engines and Explore! (p. 121)

Notes

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