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# MILWAUKEE November 9-11 2017

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# NSTA 2017 Area Conference on Science Education Making Waves: Moving Science Forward!

Milwaukee, Wisconsin • November 9–11, 2017

Milwaukee, WI Area Conference November 9 - 11, 2017

Committee Welcome 4
Milwaukee Conference Committee 4
President's Welcome 5
Sponsors and Contributors to the Milwaukee Conference ${\bf 5}$
NSTA Conferences Go Green! 6

#### **Registration, Travel, and Hotels**

Meeting Location and Times	7
Registration	7
Ground Transportation to/from Airport	7
Getting Around Town	7
Parking	7
Airlines	7
Discounted Rental Cars	7
Housing Questions	3
Milwaukee Map 8	3

#### **Conference Resources**

Exhibits
NSTA Science Store
Presenters and Presiders Check-In
NSTA Hub 10
Meet the Presidents and Board/Council 10
Wi-Fi in Wisconsin Center and Hyatt Regency 10
Welcome and Information Center
WSST Booth 10
WSST Welcome Reception 10
NSTA Conference App11
Audiovisual Needs
Graduate Credit Opportunity11
Online Session Evaluations/
Tracking Professional Development
First Aid Services/Mothers Room
Lost and Found

**National Science Teachers Association** 

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

#### **Conference Resources, cont.**

#### Indexes

Exhibitor List
Index of Exhibitor Workshops
Schedule at a Glance
Index of Participants121
Index of Advertisers128

#### **NSTA Affiliates**

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



Left to Right: Kevin Anderson, Michelle Griffin-Wenzel, and Ray Scolavino

Welcome to Wisconsin and the Milwaukee Area Conference on Science Education. Our conference theme is "Making Waves: Moving Science Education Forward!" We hope you'll join us in this work to champion science in our communities and connect with fellow science educators as we learn together.

Our conference strands are based on needs we've heard from teachers across Wisconsin and beyond:

- *Buoying Up Literacy with Science* focuses on connections between science and literacy, particularly at the elementary level.
- *Navigating STEM Through the* NGSS focuses on how 3-D science is a core part of a STEM or makerspace initiative, particularly with the connections to engineering inherent to the *NGSS*.
- *Preparing All Students for the Voyage* focuses on strategies to equitably engage all students in authentic science experiences.

In the words of famous former Green Bay Packers coach Vince Lombardi, "People who work together will win, whether it be against complex football defenses, or the problems of modern society." Let's work together November 9–11 in Milwaukee!

2017 Milwaukee Area Conference Committee Leaders Kevin Anderson, Ray Scolavino, and Michelle Griffin-Wenzel

# **Milwaukee Conference Committee**

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

#### **Conference Chairperson**

Kevin Anderson Science Education Consultant Wisconsin Dept. of Public Instruction 125 S. Webster St. PO Box 7841 Madison, WI 53707-7841 *kevin.anderson@dpi.wi.gov* 

#### **Program Coordinator**

Ray Scolavino Professor University of Wisconsin–Milwaukee 2400 E. Hartford Ave. Milwaukee, WI 53221 *rscali3@yahoo.com* 

#### Local Arrangements Coordinator

Michelle Griffin-Wenzel Science Teacher Germantown High School W18ON11501 River Lane Germantown, WI 53022 *mtwenzel@att.net* 

#### **Local Arrangements Committee**

*Volunteers Manager* Erica Mueller School District of Waukesha Waukesha, WI

Manager of Services for People with Special Needs Renee Scianni Wisconsin Conservatory of Lifelong Learning Milwaukee, WI

#### **Program Committee**

Strand Leader: Preparing All Students for the Voyage Michelle Griffin-Wenzel Germantown High School Germantown, WI

# Strand Leader: Navigating STEM Through the NGSS

Kevin Niemi University of Wisconsin–Madison Madison, WI

#### Strand Leader: Buoying Up Literacy with Science John Whitsett 2007–2008 NSTA President, and Retired Teacher/Curriculum Director Oshkosh, WI

**Program Representatives** Eric Brunsell University of Wisconsin Oshkosh Oshkosh, WI

John Surendonk Racine Unified School District Racine, WI

Erica Mueller School District of Waukesha Waukesha, WI

Natacia Campbell Joliet Public Schools District 86 Joliet, IL

**Conference Advisory Board Liaison** Ana Appel Ascend Charter Schools Brooklyn, NY

## **President's Welcome**



Welcome to the NSTA Area Conference in Milwaukee. This fifth-largest city in the Midwest is best known for its breweries (yes, that is why the baseball team is called the Milwaukee Brewers) and you must try those deep fried cheese curds! Along with the wonderful food, you'll find historic neighborhoods, museums, and river cruises. The conference team has worked hard to bring you great speakers and sessions for this conference! The conference

theme is *Making Waves: Moving Science Forward*. Along with this theme, the conference committee has planned the conference around three strands that explore topics of current significance.

The first strand is *Preparing All Students for the Voyage*. In a scienceand technology-driven society, equity means that all students should have access to the three dimensions of the *NGSS* to be prepared to participate as productive citizens. Successful achievement of disciplinary core ideas, science and engineering practices, and crosscutting concepts demands strategies that address a diverse set of learners, including but not limited to students with special needs, English language learners, gifted and talented students, urban and rural students, and those in other underserved groups. This strand will demonstrate how teachers can provide equitable science and engineering learning opportunities that engage ALL students in constructing meaning about the world around them.

The second strand is *Navigating STEM Through the NGSS*. STEM has become a buzzword attached to everything from a two-hour project

on Friday to a fully integrated learning program. A common definition of STEM education emphasizes its interdisciplinary approach coupled with real-world lessons. The focus of this strand is on creating authentic preK–12 cross-curricular connections and engaging students in real-world applications using *NGSS*. The *NGSS* integrates science with other STEM disciplines, as well as literacy. This strand will increase participants' understanding of the way the *NGSS* can be applied when implementing STEM lessons that are field tested and research based.

The final strand is *Buoying Up Literacy with Science*. Effective science instruction boosts literacy. Scientifically literate students obtain, evaluate, and communicate information. Integrating science and language arts instruction allows educators to support students from multiple angles. Reading, writing, listening, and speaking can be woven into science in meaningful mediums. In this strand, participants will develop an understanding of how science can support literacy and literacy instruction.

I encourage you to take full advantage of this conference to improve your knowledge of making science accessible for all students, not only through these selected strands, but through the other featured speakers, sessions, professional learning opportunities, as well as the exhibit hall. Take time to find new colleagues and share ideas with others. I am sure that you will agree with me that NSTA provides a unique and exciting opportunity to hone your teaching craft and create new ideas to use with your students. I look forward to seeing you here in Milwaukee!

> David T. Crowther 2017–2018 NSTA President

## Sponsors and Contributors to the Milwaukee Conference

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

#### Sponsors

HHMI BioInteractive Southwest Airlines Texas Instruments Vernier Software & Technology Wisconsin Society of Science Teachers

#### Contributors

American Association of Physics Teachers (AAPT) and Milwaukee Area AAPT Members American Chemical Society Education Division American Society for Engineering Education (ASEE) Discovery World Harley-Davidson Museum®



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



#### NSTA Milwaukee Area Conference on Science Education

## **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. Our conference preview is a smaller size and includes highlights for our three area conferences. As an added bonus, this new preview is more environmentally friendly, as it dramatically reduces 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 App

All conference pre-registrants are sent an electronic version (PDF) of the final conference program by e-mail approximately one week prior to the conference, further reducing print and shipping requirements. Also, attendees are encouraged to use the NSTA Conference app, which provides all the tools necessary for a successful conference experience.

#### **Recycled Paper and Sustainable Print Services**

Conference previews and final conference programs are printed on recycled paper whenever possible. In addition, Walsworth Inc., the printer for our conference materials, is in strict compliance with all environmental laws and exceeds these standards in many areas. Wherever possible, Walsworth works to reduce and recycle waste, use reduced- or low-VOC chemicals, increase the recycled content of raw materials, and use soy- or vegetable-based inks. Walsworth has also obtained certifications with the Sustainable Forest Initiative (SFI) and the Forest Stewardship Council® (FSC) to ensure paper products are being harvested from environmentally responsible sources.

#### **Environmentally Friendly Exhibition Practices**

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

#### **Wisconsin Center's Green Practices**

The Wisconsin Center is committed to minimizing waste, pollution, and its carbon footprint. Its energy and water conservation, recycling, and waste reduction initiatives include:

**Energy Conservation:** HVAC controls have been recalibrated and re-commissioned in Wisconsin Center, resulting in 10– 15% energy-use reductions. Hot water sensors in the systems automatically recalibrate according to outside air temperatures. High-efficiency, variable speed drives and water circulation pumps have been installed in Wisconsin Center HVAC systems, resulting in 10–12% energy-use reductions. Motion-sensor lighting controls in restrooms and elevators reducie electricity use approximately 35–60%. Ongoing relamping and fixture replacement to utilize high-pressure sodium, compact fluorescent, LED, and other high-efficiency light sources.

**Water Conservation:** "Low flow" restroom fixtures have been installed and are controlled by motion sensors and automatic shutoffs. Metal "fills" in Wisconsin Center HVAC cooling towers have been replaced with high-efficiency units, reducing the use of both water and chemicals.

**Recycling and Waste Reduction.** Levy Restaurants use 100% or high recycled-content and fully recyclable or compostable disposable food service items. Comprehensive, single-stream solid waste recycling has been implemented in cooperation with Waste Management, Inc. and Levy Restaurants. Wisconsin Center has received silver certification under Waste Management's Green Leader<sup>TM</sup> program.

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

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

# **Registration, Travel, and Hotels**

#### **Meeting Location and Times**

The conference hotels are Hyatt Regency Milwaukee, Fairfield Inn & Suites by Marriott Milwaukee Downtown, Hampton Inn & Suites Milwaukee Downtown, and Hilton Milwaukee City Center. Conference registration, exhibits, the NSTA Hub, the NSTA Science Store, exhibitor workshops, and many sessions will be located at Wisconsin Center. Other sessions and events will be held at the Hyatt Regency Milwaukee. The conference will begin on Thursday, November 9, at 8:00 AM, and end on Saturday, November 11, at 12 Noon.

#### Registration

Registration is required for participation in all conference activities and the exhibits. The lapel badge e-mailed to you with your confirmation, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities except those for which a separate fee is stated.

The Registration Area, located in Hall A of Wisconsin Center, will be open during the following hours:

Wed., Nov. 8	5:00-7:00 PM
Thu., Nov. 9	7:00 AM-5:00 PM
Fri., Nov. 10	7:00 AM-4:00 PM
Sat., Nov. 11	7:30 AM-12 Noon

If you misplace your badge, present your personal ID at the Badge Pick-Up/Replacement Counter in the Registration Area and you will be issued a replacement. Only one replacement badge will be issued.

# Ground Transportation to/from Airport

The General Mitchell International Airport (MKE) is approximately eight miles south of Wisconsin Center/downtown Milwaukee. Taxi fares average \$22–\$25 to downtown Milwaukee. GO Riteway provides airport shuttles at the Mitchell Airport. To book a shuttle or get fare quotes, visit *www.goriteway. com/fleet/airport-shuttles.* 



#### **Getting Around Town**

Getting around the Milwaukee area is very convenient. Many of the city's most popular attractions and a wide variety of restaurants are within easy walking distance. For an indoor option, the 1.75-mile skywalk network connects directly to Wisconsin Center and several hotels. Visit *bit.ly/2w7TwYg* to access a skywalk map. Bus route information is available at *ridemcts.com*.

#### Parking

The parking lot for Wisconsin Center is located at 500 W. Wells Street and offers a daily rate of \$15 with an overnight rate of \$20 (parking rates subject to change). There are also many parking ramps within easy walking distance. Visit *www.parkmilwaukee.com* for a complete listing or check with your hotel on their parking availability.

#### Airlines

NSTA has made arrangements with several major airlines to offer discounted fares to Milwaukee conference attendees. Visit *www.nsta.org/milwaukeetravel* for details.

#### **Discounted Rental Cars**

The toll-free number to contact an NSTAdesignated car rental company is:

Enterprise 800-593-0505 16AH230

\* go to www.enterprise.com and use "16AH230" in the "Optional: Coupon, Customer or Corporate Number" box, click on "search" and enter PIN "NST."



-Photo courtesy of Visit Milwaukee

# NSTA 2017 Milwaukee Area Conference November 9–11, 2017

Making Waves: Moving Science Forward!



- 1. Hyatt Regency Milwaukee (Headquarters Hotel) 333 W. Kilbourn Ave.
- 2. Fairfield Inn & Suites by Marriott Milwaukee Downtown 710 N. Old World 3rd St.
- Hampton Inn & Suites Milwaukee
   Downtown
   176 W. Wisconsin Ave.
- **4. Hilton Milwaukee City Center** 509 W. Wisconsin Ave.

Shuttle service will not be provided as all hotels are within walking distance to the Wisconsin Center.

If you have questions or concerns regarding your housing, please contact Orchid.Events (during business hours) Monday through Friday, 9:00 AM-8:00 PM ET at 877-352-6710 (toll-free) or 801-505-4611, or e-mail *help@orchid. events*. Available Monday–Friday, 9:00 AM-8:00 PM ET. After hours and on Saturday, call 801-505-4134.



#### —Photo courtesy of Jacob Slaton

exhibitor workshop and discover all the products and services companies and organizations have to offer.

Thu., Nov. 9	11:00 AM-12:30 PM
Fri., Nov. 10	3:00-4:00 PM

Lead Retrieval. NSTA exhibitors use lead retrieval, a paperless tracking system that allows them to receive fast, accurate information about conference attendees who have visited their booths. With the lead 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 103 for a complete listing of exhibitor workshops.

#### **NSTA Science Store**

Visit us at the NSTA Science Store to explore a wide selection of resources and gear you'll love! You'll find hundreds of books that uniquely blend accurate science content with

# **Conference Resources**

sound teaching strategies for science educators of all grade ranges and disciplines. Not only do we have books covering a wide range of topics to help you sharpen your content knowledge and hone your teaching methods, but we also carry a complete line of NSTA gear you can't find anywhere else—such as T-shirts, mugs, and classroom supplies. We offer convenient free shipping for book purchases to addresses within the United States when you place your order on-site at the conference. \*Note: Free shipping is not offered to international addresses or for NSTA gear purchases. We've lined up a number of unique opportunities for conference-goers:

- Exclusive author signings and meet-andgreet opportunities
- Our latest books—including Argument-Driven Inquiry in Physics, Volume 1: Mechanics Lab Investigations for Grades 9–12; Beyond the Egg Drop: Infusing Engineering Into High School Physics; Eureka! Grade 3–5 Science Activities and Stories; Toward High School Biology; and Picture-Perfect STEM Lessons, K-2 and 3–5: Using Children's Books to Inspire STEM Learning—and our newest children's books from NSTA Kids, such as When the Sun Goes Dark, Next Time You See a Cloud, and Notable Notebooks: Scientists and Their Writings
- "I Love Science" and NSTA gear product lines to show your love of science and pride in teaching
- Member discounts of 20% on NSTA Press® items and 10% on books from other publishers
- Daily book and gear specials, product giveaways, and more.

#### Presenters and Presiders Check-In

If you are presenting or presiding at a session, please check in at the Presenters/ Presiders check-in counter in the Registration Area.

#### NSTA Exhibits

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

The lapel badge e-mailed to you before the conference, or issued to you at registration on-site, is your "ticket of admission" to the Exhibit Hall and all conference activities. Maps of the Exhibit Hall and others meetings rooms will be accessible via our Conference app (see page 11). See page 93 for a complete list of exhibitors and contact information.

**Exhibit Hall Hours.** Located in Hall A, exhibits will be open for viewing during the following hours:

Thu., Nov. 9	11:00 AM-5:00 PM
Fri., Nov. 10	9:00 AM-4:00 PM
Sat., Nov. 11	9:00 AM-12 Noon

Did you know that NSTA offers Exclusive Exhibits Hall and Exhibitor Workshop hours? During these hours, there are no teacher sessions scheduled and it's a perfect time to visit the exhibits or engage in an

# **Conference Resources**

#### NSTA Hub

Come by the NSTA Hub located on the Mezzanine level of Wisconsin Center to meet NSTA staff and board members to learn more about NSTA membership and become part of the group that is crafting the future of science education. Win great prizes, including airfare on Southwest Airlines to the 2018 NSTA Atlanta National Conference on Science Education. We'll be handing out our new #ONLYatNSTA tweetshirts—come by and get one while supplies last!

#### Meet the Presidents and Board/Council

Be sure to stop by Friday from 2:45 to 3:30 PM at the entrance to Hall A for a special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference!

One lucky person who attends this event will be eligible to win a **\$100 gift certificate to the NSTA Science Store.** Must be present to win. Drawing will take place at 3:20 PM.

#### Wi-Fi in Wisconsin Center and Hyatt Regency

Limited complimentary Wi-Fi is available throughout Wisconsin Center for checking e-mail and casual internet access only. It's called "Wisconsin Center Free Public WIFI." No password is required, but you must accept the terms of use.

The Hyatt Regency provides complimentary Wi-Fi in its meeting rooms. A table tent card with instructions for accessing the network will appear on the head table in each session room.

#### Welcome and Information Center

A Welcome and Information Center is located at the Visit Milwaukee desk on the first floor of Wisconsin Center, near the main entrance. Here you'll find information on tourist attractions, transportation, restaurant recommendations, and more. The center will be staffed the following hours:

Thursday-Friday	8:00 AM-5:00 PM
Saturday	8:00 AM-12 Noon

#### WSST Booth

The Wisconsin Society of Science Teachers (WSST) booth is located in the Hall A Lobby of Wisconsin Center. The booth will have membership forms and information about science activities in Wisconsin. Stop by to say hello, learn how we can keep you up to date on the latest happenings in our area, and pick up some great commemorative items!

# Welcome Reception

## Hosted by the Wisconsin Society of Science Teachers

All conference participants welcome!

#### Thursday, November 9 • 6:30–8:30 PM UWM School of Freshwater Sciences

Enjoy hors d'oeuvres, beer, wine, and soda.

Tickets are \$20 and can be purchased at either the door or at the WSST booth in the Hall A Lobby of Wisconsin Center



#### Additional activities include:

- Team Trivia from 7:15 to 8:15 PM (free). Register your team of 3–5 at the WSST booth OR at the event.
- Wisconsin Beer Tasting from 7:00 to 8:00 PM (additional \$15 fee). Learn about the different types of beer, featuring beers from Wisconsin.

Shuttles will pick up participants at all four conference hotels starting at 6:15 PM. Last bus departs UWM at 8:45 PM.

#### The NSTA Conference App

Navigate the conference from the palm of your hand! The NSTA Conference app provides all the tools necessary for a successful conference experience.

Features include the ability to view session and workshop listings by time and presenter; maps of the Convention Center, Hyatt, and Exhibit Hall; social media plugins; and a notetaking tool. Visit *www.nsta.org/conferenceapp* to download the app. Please make sure to create a CrowdCompass account when logging in to be able to export any notes taken within the app. *Note:* The NSTA Conference app does not sync to our online Personal Scheduler.

#### **Audiovisual Needs**

NSTA will fulfill AV needs originally requested on the program proposals as long as the request is within the limits of equipment that NSTA provides. For any lastminute AV needs, presenters must arrange and pay for their own equipment. Audio Visual Production Solutions, the designated AV company on-site, will be located in the following rooms:

- First Aid Room (back of house by Grand Ballroom A), Wisconsin Center
- Byron Kilbourn, Hyatt

#### Graduate Credit Opportunity

Milwaukee conference attendees can earn one graduate-level credit hour in professional development through University of Wisconsin Oshkosh course Sec Ed 715: Current Trends in Curriculum & Instruction: Science Teaching Strategies. Cost is \$200.

Learn more about the assignment requirements at *bit.ly/2k64IQ j*.

Deadline is December 15, 2017.

#### **Online Session Evaluations and Tracking Professional Development**

All attendees can evaluate sessions online while simultaneously tracking their professional development certification.

Help NSTA's **GREEN** efforts by visiting the conference session browser to complete session evaluations online, November 9–22, 2017. During the conference, session evaluations can be completed on the computers at the Presenters/ Presiders check-in counter in the Registration Area. And this year, we're giving away an Apple iPad mini 4 Wi-Fi tablet to one lucky attendee who completes a session evaluation! Remember, the more sessions you attend and evaluate, the more chances you have to win!

To evaluate a session, attendees should follow these steps:

- Visit the conference session browser and search for part of the session title or presenter's name using the Find Keyword search option. *Note:* Our session evaluation system is designed to work from a computer and while it may work on smartphones/ tablets, it is not really designed for them.
- Once you find the session you wish to evaluate, simply click the **Evaluate Session** button.
- Enter badge number (if you don't remember your badge number, click "help me find my badge number").
- When finished evaluating the session, click the **Submit Evaluation** button.
- Repeat this process for each session attended.

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

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

Beginning December 4, 2017, an attendee can view his or her transcript at the NSTA Learning Center (*learningcenter.nsta.org*) by first logging on and then clicking "My Profile" under the Welcome. Here you'll find a "Certificates" tab, which you can use to access your transcript. Attendees can also document credit for activities that are not being evaluated (e.g., Exhibit Hall visits, etc.). In addition, the NSTA Learning Center offers professional development experiences (online and face-to-face) for your long-term growth and professionalism.

Each attendee is responsible for tracking his or her own attendance at such events. The transcript can be printed here and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

## **Conference Resources**



-Photo courtesy of Mike Weiss

#### First Aid Services/Mothers Rooms

The first aid office is located outside Grand Ballroom B (street level) of Wisconsin Center. For emergencies, contact the Public Safety Department at extension 6165 from an in-house phone or call 414-908-6165.

A mothers/lactation room will be available during conference hours. You may request a key to this room at the Conference Services booth in the Attendee Registration area in Hall A of Wisconsin Center.

#### Lost and Found

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

#### **Business Services**

Located on the Mezzanine Level, the Wisconsin Center Business Center is complimentary and self-service. Services include photocopies and laser prints (color and black/white), faxes, and computer stations with internet access. Shipping services are not offered. Hours are:

Monday–Friday, 8:00 AM–4:00 PM Saturday–Sunday, closed

Located on the lobby level of the hotel (1st floor), the Hyatt Regency Business Center is available 24 hours a day. Services include complimentary printing of boarding passes, Fedex shipping supplies, use of computers for browsing, and a multifunction printer for an additional fee.

# **Special Offer for NSTA Conference Attendees**

Discovery World is offering special discounted \$10 admission to all NSTA Milwaukee Area Conference attendees, November 9–11. Please remember to show your badge at the Ticket Counter.

Come explore Wisconsin's largest science and technology center featuring interactive exhibits such as Physics & You, pet stingrays in the Reiman Aquarium, and, on weekends, make fun and creative projects in the Kohl's Design It! Lab.

Join us on Saturday, November II, for our amazing Girls & STEM event aimed at inspiring young girls to envision themselves as engineers, designers, scientists, innovators, entrepreneurs, and the leaders of the future.

Discovery World is open Thursdays and Fridays, 9:00 AM-4:00 PM and Saturdays, 10:00 AM-5:00 PM. We are located on Milwaukee's lakefront at 500 North Harbor Drive, in between the Milwaukee Art Museum and the Summerfest Grounds.







# The Harley-Davidson Museum<sup>®</sup> Special Offer!

The Harley-Davidson Museum is offering reduced admission to NSTA Milwaukee Area Conference attendees for **\$14 per adult** (must show badge at front desk).

#### This offer is available November 8-12, 2017.

A walk through the museum is a walk through the history of America. With an unrivaled collection of Harley-Davidson® motorcycles and memorabilia, a 20-acre park-like campus, and a calendar full of events, the Harley-Davidson Museum is one of Milwaukee's top tourist destinations for visitors from around the globe.



MUSEUM HOURS Daily: 10:00 AM-6:00 PM (Thursday, 10:00 AM-8:00 PM)



400 W Canal St., Milwaukee, WI 53201 I-877-HD-MUSEUM or 414-287-2789 h-dmuseum.com EXHIBITS • SHOP • RESTAURANT • FREE PARKING



# Help us with your feedback...and get a chance for a free Apple iPad mini 4

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

When you log on to *www.nsta.org/milwaukeebrowser* and fill out an evaluation by clicking on the "evaluate session" button below the session you attended, you get entered

into a drawing for a chance to win an Apple iPad mini 4 Wi-Fi tablet *courtesy of the NSTA Conference Department*.

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

# • WE'RE GIVING AWAY an APPLE iPAD MINI 4 WI-FI TABLET



# CONFERENCE APP



• To access the app, visit www.nsta.org/conferenceapp



# Wisconsin



Center

WEST KILBOURN AVENUE



# **Wisconsin Center**

### WEST KILBOURN AVENUE



**Upper Level** 

# Hyatt Regency Milwaukee

#### **FIRST FLOOR**

SECOND FLOOR



#### **POLARIS-19TH FLOOR**



#### THIRD FLOOR



# **Conference Resources** • Headquarters Staff

#### **Executive Office**

David Evans, Executive Director Michelle Butler, Executive Administrator and Manager

#### **BOARD RELATIONS**

Michelle Butler, Executive Administrator and Manager Shawn Crowder, Administrative Coordinator

#### DATA ANALYTICS

Todd Wallace, Assistant Executive Director and CIO

#### HUMAN RESOURCES

Irene Doley, Assistant Executive Director Janine Smith, HR Benefits Manager and Generalist

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

#### NS74 Mission Statement

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

#### Officers and Board of Directors

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#### National Conferences on Science Education

Atlanta, Georgia March 15-18, 2018

St. Louis, Missouri April 11-14, 2019

Boston, Massachusetts April 2–5, 2020

Chicago, Illinois April 8-11, 2021

#### 7th Annual STEM Forum & Expo, hosted by NSTA

Philadelphia, Pennsylvania—July 11-13, 2018

#### Area Conferences on Science Education

#### 2017 Area Conferences

New Orleans, Louisiana—November 30-December 2

#### 2018 Area Conferences

Reno. Nevada—October 11-13 National Harbor, Maryland—November 15-17 Charlotte, North Carolina—November 29-December 1

## **Share Your Ideas!** NSTA's CONFERENCES Have an idea for an inspiring presentation or workshop on science education? Submit a session proposal today for... **ON SCIENCE EDUCATION** 7th Annual STFM Forum & Expo, hosted by NSTA **Proposal Deadline:** 12/4/2017 Philadelphia, PA.....July 11-13 (2018) 2018 Area Conferences **Proposal Deadline:** 1/16/2018 Reno, NV ..... October 11–13 National Harbor, MD.... November 15–17 Charlotte, NC......November 29–December 1 2019 National Conference **Proposal Deadline:** 4/16/2018 St. Louis, MO ..... April 11–14 To submit a proposal, visit www.nsta.org/conferenceproposals cience Teachers Association



# Science State of Mind

# NSTA NATIONAL CONFERENCE

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CONFERENCE STRANDS

## **REGISTER EARLY AND SAVE**

EARLY BIRD DEADLINE FEBRUARY 9, 2018

Focusing On Evidence of 3-D Learning



Reflecting on Access for All Students Comprehending the Role of Literacy in Science



Learn more and register www.nsta.org/atlanta

#NSTA18

# **Conference Program** • Highlights

#### **General Session**

The Serengeti Rules: The Quest to Discover How Life Works and Why It Matters Thursday, November 9, 9:15–10:30 AM



#### Sean B. Carroll

Vice President for Science Education, Howard Hughes Medical Institute, Chevy Chase, Md.

Be sure to join Sean after his talk at Booth #722 in the Exhibit Hall, where he will be

signing copies of his book, *The Serengeti Rules*. Books will be available for purchase at the booth while supplies last.

Speaker sponsored by HHMI BioInteractive.

(See page 37 for details.)

#### 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 34 for details.

#### Thursday, November 9 8:00-9:00 AM (Is This Your First NSTA Conference?) 9:15-10:30 AM 11:00 AM-5:00 PM Exhibits (Exclusive exhibit/exhibitor workshop hours: 1:30-3:30 PM 2:00-3:00 PM Wisconsin Society of Science Teachers (WSST) 6:30-8:30 PM Friday, November 10 8:00 AM-1:30 PM Middle School Chemistry Day ..... 28 8:00 AM-2:30 PM Chemistry Day (For Grades 9-12) ..... 28 8:00 AM-3:00 PM 8:00 AM-6:00 PM 9:00 AM-4:00 PM Exhibits (Exclusive exhibit/exhibitor workshop hours: 9:30-10:30 AM 11:00 AM-12 Noon 2:00-4:00 PM Wisconsin Society of Science Teachers 2:45-3:30 PM 5:00-7:00 PM Wisconsin Society of Science Teachers (WSST) Member Saturday, November 11 9:00 AM-12 Noon

# Win a round-trip **Southwest** ticket to the NSTA National Conference on Science Education in Atlanta.



#### Thanks to the generosity of

#### **Southwest Airlines**

we're giving away three round-trip tickets on Southwest Airlines for educators to attend the NSTA National Conference in Atlanta, March 15–18, 2018!



- The drawings will be held at:
- 4:00 PM, Thursday
- 2:00 PM, Friday
- 10:00 AM, Saturday

Stop by the NSTA Hub for all the details! You need not be present to win.



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# **Conference Program** • Conference Strands

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



#### **Preparing All Students for the Voyage**

In a science- and technology-driven society, equity means that all students should have access to the three dimensions of the *NGSS* to be prepared to participate as productive citizens. Successful achievement of disciplinary core ideas, science and engineering practices, and crosscutting concepts demands strategies that address a diverse set of learners, including but not limited to students with special needs, English language learners, gifted and talented students, urban and rural students, and those in other underserved groups. This strand will demonstrate how teachers can provide equitable science and engineering learning opportunities that engage ALL students in constructing meaning about the world around them.



#### Navigating STEM Through the NGSS

STEM has become a buzzword attached to everything from a two-hour project on Friday to a fully integrated learning program. A common definition of STEM education emphasizes its interdisciplinary approach coupled with real-world lessons. The focus of this strand is on creating authentic preK–12 cross-curricular connections and engaging students in real-world applications using *NGSS*. The *NGSS* integrates science with other STEM disciplines, as well as literacy. This strand will increase participants' understanding of the way the *NGSS* can be applied when implementing STEM lessons that are field tested and research based.



#### **Buoying Up Literacy with Science**

Effective science instruction boosts literacy. Scientifically literate students obtain, evaluate, and communicate information. Integrating science and language arts instruction allows educators to support students from multiple angles. Reading, writing, listening, and speaking can be woven into science in meaningful mediums. In this strand, participants will develop an understanding of how science can support literacy and literacy instruction.

# **Conference Program** • Conference Strands

#### **Buoying Up Literacy with Science**

#### Thursday, November 9

8:00–9:00 AM Elementary STEM Response

Elementary STEM Response To Intervention (RTI)

#### 12:30-3:30 PM

From Exploring Ecosystems to Writing Reports and Explanations—ELLs Focus on Language

#### 2:00-3:00 PM

Using Pop Culture and Polymers to Create Inquisitive Minds

3:30-4:30 PM

Teaching Literacy in Physics

#### 5:00-6:00 PM

Fusing Science and English Language Arts

#### Friday, November 10

8:00–9:00 AM Riding the Wave of Integration: Science and Children's Literature

#### 9:30-10:30 AM

Making Waves at the Discourse Level: Promoting High-Quality Dialogue with English Language Learners

#### 11:00 AM-12 Noon

Featured Presentation: Doing and Talking Science with English Learners (Speaker: Rita MacDonald)

#### **12:30–1:30 PM** Digital Storytelling—Not Just f

Digital Storytelling—Not Just for Language Arts Classes

2:00–3:00 PM Uncovering the Awesomeness of Our Science Students

#### Saturday, November 11

8:00–9:00 AM Building Background Knowledge

#### 9:30-10:30 AM

Standards Make Strange Instructional Bedfellows: Science and Social Studies— Inquiry and Problem Solving

#### 11:00 AM-12 Noon

Advancing Science Learning Through Interactive Science Notebooks

## Navigating STEM Through the NGSS

#### Thursday, November 9

#### 8:00-9:00 AM

Bringing the 4th of July into Your Classroom: Model-Based Inquiry at Its Finest!

#### 12:30-1:30 PM

CSI Mammoth: Using Social Studies to Teach Science Investigations

#### 2:00-3:00 PM

Engineering Your Approach to Creative Problem Finding and Design Solutions

#### 3:30-4:30 PM

PolyWhat? Application of STEM Using Polymers

#### 5:00-5:30 PM

Intermolecular Forces Unit Plan with NGSS Focus

#### 5:00-6:00 PM

Explaining Phenomena and Designing Solutions

#### Friday, November 10

#### 8:00-9:00 AM

Preservice and Inservice Teachers Tacking and Jibing Toward Integrated STEM and the Science and Engineering Practices

#### 9:30-10:30 AM

Featured Presentation: Growing Power and the Good Food Revolution (Speaker: Will Allen)

#### 11:00 AM-12 Noon

Project-Based Learning in an Early Elementary and Early Childhood Classroom

#### 12:30-1:30 PM

Using the Science of Flight to Teach *NGSS* and Free Student Flights

#### 2:00-3:00 PM

Using Models to Teach Shapes and Kinds of Land and Bodies of Water

#### Saturday, November 11

8:00–8:30 AM Using Local Citizen Science to Teach the Engineering Design Process

#### 8:30-9:00 AM

From Earth to Sky—Using Drones to Map 3-D Surfaces

#### 9:30-10:30 AM

Animal Multimedia Inspires Learning and Engagement

#### 11:00 AM-12 Noon

Investigating Clean Energy Systems: Connecting Classrooms to University Research

### Preparing All Students for the Voyage

#### Thursday, November 9

8:00–9:00 AM Physics Labs for Everyone

#### **12:30–1:30 PM** Creating a Technology-Based.

Creating a Technology-Based, Student-Centered Classroom

#### 2:00-3:00 PM

Featured Presentation: Fallacy of Fairness (Speaker: Jo Handelsman)

#### 3:30-4:30 PM

Children's Books as Hooks to Teach *NGSS* Science Practices

#### Friday, November 10

**8:00–9:00 AM** Igniting Creativity for STEM Innovation: Focus On Gifted/Advanced Learners

#### 9:30-10:30 AM

Using National Science Olympiad STEM Events to Address NGSS Crosscutting Concepts and Content

# 11:00 AM-12 Noon

*SciGirls* Strategies: Gender-Equitable Teaching Practices in Career and Technical Education Pathways for High School Girls

#### 12:30-1:30 PM

Data Is Not a Four-Letter Word: Use NOAA Resources to Build Student Proficiency in Data Analysis

#### 2:00-3:00 PM

Badging as a Vehicle for Engaging All Learners

#### Saturday, November 11

#### 11:00 AM-12 Noon

Not Just Flowers...STEM, Too: Reaching All Students Through Plants and Nature

Digital Observation Tech Skills: Student-Led Inquiry to Transects of Change

# **TEACHERS:** Your Mission -



#### **NSTA Press Sessions**

NSTA Press® books offer new classroom ideas and standards-based strategies, from Engineering to Solar Science and from preK to college. Join NSTA Press authors for these sessions linked to the topics of their books.

#### Thursday, November 9

8:00-9:00 AM	Creating a STEM Culture for Teaching and Learning
12:30-1:30 PM	Argument-Driven Inquiry in Physics: Mechanics Lab Investigations for Grades 9–12
2:00-3:00 PM	Uncovering Students' (and Teachers') Ideas in Science, Engineering, and Mathematics with Formative Assessment Probes and Techniques
3:30-4:30 PM	EUREKA! Grade 3—5 Science Activities and Stories
5:00-6:00 PM	Argument-Driven Inquiry in Physical Science: Lab Investigations for Grades 6—8



#### Friday, November 10 8:00–9:00 AM

8:00–9:00 AM	Uncovering Student Ideas in Science with 3-D Assessment Probes
9:30–10:30 AM	Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12
12:30-1:30 PM	Uncovering Student Ideas About Science with Formative Assessment Probes and Literacy Capacities
2:00-3:00 PM	Creating Classroom Narrative: Fitting Science Reasoning Problems and Open- Ended Investigation into a Curriculum

### **Meetings and Social Functions**

#### Thursday, November 9

Wisconsin Society of Science Teachers (WSST) Welcome Reception (By Ticket Through WSST; \$20) UWM School of Freshwater Sciences ....... 6:30–8:30 PM

#### Friday, November 10

Discover the NGSS Train-the-Trainer Workshop (By Preregistration Only) Regency B, Hyatt......8:00 AM-5:00 PM

Wisconsin Society of Science Teachers (WSST) Member Reception (For WSST members and Wisconsin teachers) Vue East (21st Floor), Hyatt ...... 5:00–7:00 PM

#### Saturday, November 11

Discover the NGSS Train-the-Trainer V	Workshop
(By Preregistration Only)	
Regency B, Hyatt	8:00 AM-5:00 PM

#### NSTA Milwaukee Area Conference on Science Education



### **Chemistry Day at NSTA**

Sponsored by the American Chemical Society Education Division

#### Connecting Structure and Properties: Building and Applying Knowledge For Grades 9–12

Friday, November 10, 8:00 AM–2:30 PM 102B, Wisconsin Center

Solutions to real-world problems involving chemistry are complex and explanations of relevant phenomena are multifaceted. A deep understanding of how the particle-level structures of substances affect their macroscopic properties is necessary if students are to develop explanations and design solutions to complex problems. Explore how to engage students in challenging problems and help them learn to collect and explore data in order to develop a scientific understanding of structure-property relationships. Demonstrate students' learning through relevantto-their-lives applications.

8:00–10:00 AM	Relating Structure and Properties: Eliciting and Visualizing Student Initial Ideas
10:30 AM–12 Noon	Relating Structure and Properties: Constructing Science Ideas Through Exploring Data
12:30-2:30 PM	Relating Structure and Properties: Demonstrating Understanding Through Integration and Application of Knowledge

## Middle School Chemistry Day

Sponsored by the American Chemical Society

#### Middle School Chemistry— Big Ideas About the Very Small

Friday, November 10, 8:00 AM–1:30 PM 102A, Wisconsin Center

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

8:00-9:00 AM	Solids, Liquids, Gases, and Changes of State
9:30–10:30 AM	The Water Molecule and Dissolving
11:00 AM-12 Noon	Chemical Reactions—Breaking and Making Bonds
12:30-1:30 PM	ACS Chemical Reactions—Ocean Acidification

## **Conference Program** • Special Programs



#### **Engineering Day at NSTA**

Sponsored by the American Society for Engineering Education Friday, November 10, 8:00 AM–3:00 PM 102E, Wisconsin Center

The American Society for Engineering Education (ASEE) has put together a public/private partnership to develop ways of engaging elementary, middle school, and high school students and teachers in engineering. Participants will learn about innovative, hands-on, project-based engineering activities, courses, curriculum options, events, outreach programs, professional development, and competitions designed to increase the engineering and technological literacy of all students; encourage more and more diverse students to pursue engineering careers; and enable teachers to learn about and experience engineering. Presenters will share lessons

8:00–9:00 AM	Arduinos/STEM Projects for Physical Science Students
9:30–10:30 AM	K–5 Engineering: Integrating Engineering and Design into the Curriculum
11:00 AM-12 Noon	Engineering Education: Simple Electronics and Microcontrollers for the Classroom

learned and examples of inquiry and design activities that have been developed in partnership with K–12 science teachers for use in the classroom and in informal educational settings. The materials result from a collaboration of engineering educators and STEM professionals working with *Teachengineering.org*, Engineering is Elementary, and Colleges of Engineering across the nation who actively engage in K–12 engineering in collaboration with partner teachers and schools. All sessions will help teachers understand the new ETS Engineering Design portion of the *Next Generation Science Standards (NGSS)*.

12:30-1:30 PM	NGSS, 3-D Learning, and the Design and Use of Classroom Assessment
2:00-3:00 PM	ASEE's K–12 Outreach: Engineering, Go For It (eGFI); Teach Engineering; Link Engineering; and the National Science Digital Library



#### **Physics Day at NSTA**

Sponsored by the American Association of Physics Teachers and Milwaukee Area AAPT Members

Friday, November 10, 8:00 AM–3:00 PM 102D, Wisconsin Center

The American Association of Physics Teachers offers a full day of physics content. Physics Day consists of interactive handson workshops and sessions covering important physics topics for today's world. Each of these workshops or sessions is organized by experienced physics educators and designed to deal with innovative teaching methods and/or hard-to-express concepts that can be immediately applied in your classroom.

8:00–9:00 AM	IceCube Neutrino Observatory at the South Pole	11:00 AM-12 Noon	Teach Science with IceCube Neutrino Observatory
9:30-10:30 AM	Living and Working at the South	12:30-1:30 PM	Integrating Engineering into Physics
	Pole	2:00-3:00 PM	Video-Based Experiments

#### Association for Multicultural Science Education (AMSE)

President: Sharon Delesbore

# Friday, November 10

12:30-2:30 PM	George W. Carve	r Conversation Series on	Diversity and Equity	Executive C/D, Hyatt
	0		j 1 j	

#### **Association for Science Teacher Education (ASTE)**

President: Gillian Roehrig

Thursday, November 9		
12:30–1:30 PM	Simplifying the Planning of Lessons, Units, and Courses for <i>NGSS</i> Using "Phenomena First" Approaches for the Life Sciences	Lakeshore C, Hyatt

#### **Council for Elementary Science International (CESI)**

President: James McDonald

Friday, November 10		
9:30–10:30 AM	Integrating Science and Literacy: Proven Strategies Developed from Evidence-Based Practices	103D, Wisconsin Center
12:30-1:30 PM	Using Toys to Teach Physics	103D, Wisconsin Center

#### National Association for Research in Science Teaching (NARST)

President: Barbara A. Crawford

Thursday, November 9		
2:00-3:00 PM	Integrating Science and Technology in Engineering Design Challenges to Teach Nature of Science	Lakeshore C, Hyatt
Friday, November 10		
11:00 AM-12 Noon	Using Maker Activities and Formative Assessment Strategies to Enhance Computational Thinking Skills, Physics, and Engineering Learning	Lakeshore C, Hyatt

#### National Middle Level Science Teachers Association (NMLSTA)

Co-Presidents: Terri Hebert and Mary Lou Lipscomb

#### Thursday, November 9

2:00-3:00 PM	Surf's Up	102B, Wisconsin Center
Friday, November 10		
12:30–1:30 PM	Science Fairs: Relevant in 2017 or Is It Time for a Change?	103E, Wisconsin Center

#### National Science Education Leadership Association (NSELA)

President: Bob Sotak

#### Friday, November 10

9:30–10:30 AM	Tools for Science Leaders Session 1	Milwaukee, Hyatt
11:00 AM-12 Noon	Tools for Science Leaders Session 2	Milwaukee, Hyatt

# Three Dimensions of the Next Generation Science Standards (NGSS)

Science and Engineering Practices		Crosscutting Concepts		
SEP1	Asking Questions and Defining Problems	CCC1	Patterns	
SEP2	Developing and Using Models	CCC2	Cause and Effect: Mechanism and Explanation	
SEP3	Planning and Carrying Out Investigations	CCC3	Scale, Proportion, and Quantity	
SEP4	Analyzing and Interpreting Data	CCC4	Systems and System Models	
SEP5	Using Mathematics and Computational Thinking	CCC5	Energy and Matter: Flows, Cycles, and Conservation	
SEP6	Constructing Explanations and Designing Solutions	CCC6	Structure and Function	
SEP7	Engaging in Argument from Evidence	CCC7	Stability and Change	
SEP8	Obtaining, Evaluating, and Communicating			
	Information			

Disciplinary Core Ideas in Physical Science	Disciplinary Core Ideas in Life Science	Disciplinary Core Ideas in Earth and Space Science	Disciplinary Core Ideas in Engineering, Technology, and the Application of Science
<ul> <li>PS1: Matter and Its Interactions</li> <li>PS1.A: Structure and Properties of Matter</li> <li>PS1.B: Chemical Reactions</li> <li>PS1.C: Nuclear Processes</li> <li>PS2: Motion and Stability: Forces and Interactions</li> <li>PS2.A: Forces and Motion</li> <li>PS2.B: Types of Interactions</li> <li>PS2.C: Stability and Instability in Physical Systems</li> <li>PS3: Energy</li> <li>PS3.A: Definitions of Energy</li> <li>PS3.B: Conservation of Energy and Energy Transfer</li> <li>PS3.C: Relationship Between Energy and Forces</li> <li>PS3.D: Energy in Chemical Processes and Everyday Life</li> <li>PS4: Waves and Their Applications in Technologies for Information Transfer</li> <li>PS4.A: Wave Properties</li> <li>PS4.B: Electromagnetic Radiation</li> <li>PS4.C: Information Technologies and Instrumentation</li> </ul>	<ul> <li>LS1: From Molecules to Organisms: Structures and Processes</li> <li>LS1.A: Structure and Function</li> <li>LS1.B: Growth and Development of Organisms</li> <li>LS1.C: Organization for Matter and Energy Flow in Organisms</li> <li>LS1.D: Information Processing</li> <li>LS2: Ecosystems: Interactions, Energy, and Dynamics</li> <li>LS2.A: Interdependent Relationships in Ecosystems</li> <li>LS2.B: Cycles of Matter and Energy Transfer in Ecosystems</li> <li>LS2.C: Ecosystem Dynamics, Functioning, and Resilience</li> <li>LS2.D: Social Interactions and Group Behavior</li> <li>LS3: Heredity: Inheritance and Variation of Traits</li> <li>LS3.A: Inheritance of Traits</li> <li>LS3.B: Variation of Traits</li> <li>LS3.B: Variation of Traits</li> <li>LS4: Biological Evolution: Unity and Diversity</li> <li>LS4.A: Evidence of Common Ancestry and Diversity</li> <li>LS4.B: Natural Selection</li> <li>LS4.C: Adaptation</li> <li>LS4.D: Biodiversity and Humans</li> </ul>	<ul> <li>ESS1: Earth's Place in the Universe</li> <li>ESS1.A: The Universe and Its Stars</li> <li>ESS1.B: Earth and the Solar System</li> <li>ESS1.C: The History of Planet Earth</li> <li>ESS2: Earth's Systems</li> <li>ESS2.A: Earth Materials and Systems</li> <li>ESS2.B: Plate Tectonics and Large- Scale System Interactions</li> <li>ESS2.C: The Roles of Water in Earth's Surface Processes</li> <li>ESS2.D: Weather and Climate</li> <li>ESS2.E: Biogeology</li> <li>ESS3: Earth and Human Activity</li> <li>ESS3.A: Natural Resources</li> <li>ESS3.B: Natural Hazards</li> <li>ESS3.C: Human Impacts on Earth Systems</li> <li>ESS3.D: Global Climate Change</li> </ul>	<ul> <li>ETS1: Engineering Design</li> <li>ETS1.A: Defining and Delimiting an Engineering Problem</li> <li>ETS1.B: Developing Possible Solutions</li> <li>ETS1.C: Optimizing the Design Solution</li> <li>ETS2: Links Among Engineering, Technology, Science, and Society</li> <li>ETS2.A: Interdependence of Science, Engineering, and Technology</li> <li>ETS2.B: Influence of Engineering, Technology, and Science on Society and the Natural World</li> </ul>

# **Disciplinary Core Ideas**



Operational since 1872, the Milwaukee Pierhead Light is an active lighthouse that has been listed on the National Register of Historic Places since September 2012.

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

# NSTA 2017 Milwaukee Area Conference Professional Learning Documentation Form

All attendees can evaluate concurrent teacher and exhibitor sessions online while simultaneously tracking professional learning certification (based on clock hours). Use this form to keep track of all sessions/events attended during the Milwaukee conference. Sessions/events such as exhibit hall visits may not be available for online evaluation. However, these events still qualify for professional learning.

Beginning December 4, 2017, Milwaukee transcripts can be accessed at the NSTA Learning Center (learning center.nsta.org) by logging on with your Milwaukee Badge ID# and and first clicking on My Profile under the Welcome. Here you'll find a Certificates tab to access your transcript. Keep this form and use it to add the following activities to your Baltimore transcript. Completed transcripts can be printed from this website and presented to an administrator who requires documentation of participation in the conference. All information in these transcripts will be maintained (and can be accessed) indefinitely as part of an attendee's individual profile.

First Name:	Last Name:		Badge ID#	
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Evaluate sessions by accessing the conference session browser: www.nsta.org/milwaukeebrowser. You will need your badge number to evaluate sessions. See page 11 of the conference program for instructions. Note: Our session evaluation system is designed to work from a computer and while it may work on smartphones/tablets, it is not really designed for them. And don't forget, the more sessions you attend and evaluate, the more chances you have to win an Apple iPad mini 4 Wi-Fi!

#### Sample Questions:

- I. I selected this session:
  - a. for immediate classroom use.
  - b. based on the reputation of the speaker.
  - c. to improve my personal pedagogical knowledge/skill.
  - d. to improve my science content knowledge.
- 2. The session met my needs.

- 3. The information presented was clear and well organized.
- 4. Safe practices were employed.
- 5. The session avoided commercial solicitation (n/a for exhibitor workshops and NSTA Press® sessions).
- 6. The session should be repeated at another NSTA conference.

#### Sample Responses:

		2-Nieutral	1-D:	E-Companyly Discourse
I–Strongly Agree	z–Agree	3–ineutral	4–Disagree	5-Strongly Disagree

#### Thursday, November 9, 8:00 AM-6:00 PM

Start Time	End Time	Activity/Event Title

We're giving an Apple iPad mini 4 to one lucky attendee who evaluates sessions that he or she attends. The more sessions you attend and evaluate, the more chances you have to win!

### Friday, November 10, 8:00 AM-5:00 PM

Start Time	End Time	Activity/Event Title
Saturday, Nov	vember II, 8:00	AM-5:00 PM
•	•	
Start Time	End Time	Activity/Event Title
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Start Time	End Time	Activity/Event Title
## 8:00–8:30 AM Presentation

Throw That Textbook Out to Sea!

(Grades 4-12)

Lakeshore C, Hyatt

Science Focus: GEN, SEP

Sandra Leiterman (@saleiterman; saleiterman@gmail.com), University of Arkansas at Little Rock

Whether you want to test the waters or make waves...this session will give you a take-home template, as well as tips and planning techniques to turn your classroom from textbook based to Project Based!

## 8:00–9:00 AM Presentations

### Coding in K-5 Classrooms...Start Them Early!

(Grades P-5) Lakeshore A/B, Hyatt Science Focus: ETS, CCC1, SEP

**Joan Biese** (@gr1teacher; *jbiese*@seymour.k12.wi.us), Rock Ledge Primary Center, Seymour, Wis.

Computer science/coding websites and apps abound, with several focusing on young K-5 learners. Get them interested early; there are many benefits across the curriculum!

## The Lady Who Put Salt in Her Coffee: STEM and Literacy

(Grade 8)

Milwaukee, Hyatt

Science Focus: PS

**Vito Dipinto** (*vdipinto*@*nl.edu*), National Louis University at Wheeling, Ill.

Anthony Tournis, ASPIRA Haugan Middle School, Chicago, Ill.

Experience a novel grade 8 chemistry curriculum using storytelling to engage students in their science learning.

## **Elementary STEM Response To Intervention (RTI)**

(Grades 3-5) 101 C/D, Wisconsin Center Science Focus: ESS1.B, ESS2.A, ESS3.A, ETS1, ETS2.B, SEP1, SEP3, SEP4, SEP8

**Darrell McDaniel** (@dmcdaniel5253; *darrell.mcdaniel*@ cpsb.org), Calcasieu Parish School Board, Lake Charles, La. Receive details about the pilot year of Elementary STEM RTI implementation in Louisiana's Calcasieu Parish School District. Find out how you can replicate and modify the program.

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

## **Science Area**

A science area category is associated with each session. These categories are abbreviated on the Science Focus line for each session listing. On page 108, you will find the conference sessions grouped according to their assigned science area category.

The science areas and their abbreviations are:

- LS Life Science =
- PS = **Physical Science**
- ESS Earth and Space Science =
- Engineering, Technology, and the ETS = Application of Science
- GEN = **General Science Education**
- INF = **Informal Science Education**

## NGSS

See page 31 for a complete list of the NGSS codes used in this program.

## Strands

The Milwaukee Conference Committee has planned the conference around the following three strands, enabling you to focus on a specific area of interest or need. Strand events are identified by icons throughout the daily program. For strand descriptions, see page 24.



**Buoying Up Literacy with Science** 



Navigating STEM Through the NGSS



Preparing All Students for the Voyage

The following icons will be used throughout this program.

**NSTA Press® Sessions** 



NSTA NGSS@NSTA Forum Sessions

Sessions highlighting STEM learning INF experiences that occur in out-of-school environments.

### Bringing the 4th of July into Your Classroom: Model-Based Inquiry at Its Finest!

(Grades 6–8) 101B, Wisconsin Center Science Focus: GEN, SEP

Andrew Bean (apbean@cps.edu), Dever Elementary School, Chicago, Ill.

Join in uncovering the basis for writing a model-based inquiry unit through the lens of a fascinating puzzling phenomenon: Why are fireworks different colors?

## NSTA Press® Session: Creating a STEM Culture for Teaching and Learning

(General) Ballroom A, Wisconsin Center Science Focus: GEN, NGSS

**Jeffrey Weld** (*jeff.weld@uni.edu*), Iowa Governor's STEM Advisory Council, Cedar Falls

Hot off the NSTA Press, this book is for teachers, administrators, business partners, community members, parents, scholars, and policymakers who seek to be up-to-speed on the many elements of STEM, from curriculum to professional development to assessment to partnerships to licensing and more.

### Is This Your First NSTA Conference? First-Timer Conference Attendees' Orientation

(General) Ballroom D, Wisconsin Center Science Focus: GEN

#### 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 exploration through the program, the conference app, and NSTA's social media. By the end of the session, you will know just how to get the most from your conference experience in addition to building new networks with science colleagues.

## **Evaluate Your Sessions Online!**

This year, we're giving away a Apple iPad mini 4 Wi-Fi tablet to one lucky attendee who completes a session evaluation!

Remember, the more sessions you attend and evaluate, the more chances you have to win! (See page 11 for details.)

## 8:00–9:00 AM Hands-On Workshops

## JetStream: An Online School for Weather

(Grades 3–College) Executive A/B, Hyatt Science Focus: ESS2.D

**Dennis Cain** (dennis.cain@noaa.gov), NOAA National Weather Service, Fort Worth, Tex.

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

#### Shifting Practices to Make Sense of Science

(Grades P–6) Executive C/D, Hyatt Science Focus: PS3, SEP

Kathy Huncosky (khuncos@wested.org), Making Sense of SCIENCE at WestEd, Madison, Wis.

**John Kish** (*kishjj@milwaukee.k12.wi.us*), Rufus King International High School, Milwaukee, Wis.

**Renee Scianni** (*sciannrs@milwaukee.k12.wi.us*), Wisconsin Conservatory of Lifelong Learning, Milwaukee

Rhulene Artis (trartis@sbcglobal.net), Consultant, Milwaukee, Wis.

Kyle Witty (wittykf@milwaukee.k12.wi.us), Milwaukee (Wis.) Public Schools

**Lesley Zylstra** (*hofstelx@milwaukee.k12.wi.us*), Hawley Environmental School, Milwaukee, Wis.

Teachers in Milwaukee are changing the way their students approach science learning through active engagement and discourse. Discover how teacher collaboration is impacting instructional shifts.

### Traveling Through a Worm Hole: What Red Worm Burrowing Behavior Can Tell Us About the Effects of Environmental Contaminants

(Grades 7–12) Regency A, Hyatt Science Focus: LS1.A, LS1.B, LS2.D, LS3.B, CCC1, CCC2, CCC4, CCC6, SEP

**Renee Hesselbach** (*hesselba@uwm.edu*) and **Dan Weber** (*dweber@uwm.edu*), University of Wisconsin–Milwaukee Experience a hands-on module for your classroom that explores the toxic effects of environmental agents on red worm behavior as a model for human health.

#### Zombies Are Knocking on Your Classroom Door

(Grades 7–12) Regency B, Hyatt Science Focus: GEN, SEP2, SEP4, SEP5

**Jeffrey Lukens** (*jeffreylukens0613@gmail.com*), Sioux Falls (S.Dak.) School District

When zombies knock, let them into your classroom...and then battle them with STEM strategies! The zombies don't stand a chance.

#### Engineering the Maker Movement in Your Classroom

(Grades 9–College) Science Focus: ETS1, SEP6

**Rachelle Haroldson,** University of Wisconsin–River Falls **Jessica Hoida,** Kettle Moraine High School, Wales, Wis. Learn about the history, resources, and activities from the maker movement that address the *NGSS* engineering practices to embed into your classroom.

#### Large K Equilibrium

(Grades 9–College) Science Focus: GEN, SEP

**Gregory Dodd** (gbdodd@gmail.com), Retired Educator, Pennsboro, W.Va.

Emphasis will be placed on Large K Equilibrium and methods to overcome common student misconceptions. Take part in a "hands-on" equilibrium lab.

### **Physics Labs for Everyone**

101A, Wisconsin Center

Science Focus: PS, SEP **Patrick Carter** (*pcart40@yahoo.com*), Kaneland High School, Maple Park, Ill.

Perform 10 great labs that all physics students can do, and that use common lab equipment. Learn how to incorporate them into your unit plans.

## Polymers: Teaching "Hard" Concepts with Gooey Labs

(Grades 6–12) 102A, Wisconsin Center Science Focus: ETS, PS, CCC, SEP2, SEP3, SEP4, SEP6 Andrew Nydam (andrewnydam@hotmail.com), Polymer Ambassador, Olympia, Wash.

Enhance and deepen science and math concepts taught in traditionally "fun" polymer labs. Add more scientific processes to make them inquiry based. Take home a CD of information.

# **Need help navigating?**

Regency D, Hyatt

Feeling overwhelmed by all there is to see and do at an NSTA conference on science education? Join other first-time attendees for an interactive exploration through the conference program, the conference app, and NSTA's social media. By the end of the session, you will know just how to get the most from your conference experience in addition

to building new networks with science colleagues.

First-Timer Attendee Session Thursday, November 9, 8:00–9:00 AM Ballroom D, Wisconsin Center







## 8:00–9:00 AM Exhibitor Workshops

#### NGSS Waves: Protect Your Eyes!

(Grades 6-8) 201B, Wisconsin Center Science Focus: PS4.A, PS4.B, CCC1, CCC6, SEP2, SEP3, SEP4, SEP5

Sponsor: Lab-Aids, Inc.

Cynthia Sanchez, North-Grand High School, Chicago, Ill. Investigate wave properties before gathering evidence that energy varies with different colors of light. Start with tubes to investigate sound and then use a light station to explore light. Finally, experiment with colors and energy levels using a phosphorescent material.

#### How to Argue in a Middle School Science Class

(Grades 5-8) 202A, Wisconsin Center Science Focus: GEN, SEP7

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky.

Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Help students develop scientific argumentation skills by making claims based on observable evidence. Put these skills into practice with lessons from Delta Science Modules, as we prove (or disprove) fundamental science concepts. Leave with readers, equipment, and a lesson that you can try with your students next week.

#### Ten Minutes to Improving Science Achievement

(Grades K-8) 202B, Wisconsin Center Science Focus: GEN

Sponsor: Delta Education/School Specialty Science-FOSS Kathy Long, The Lawrence Hall of Science, University of California, Berkeley

"Assessment" can strike fear and trepidation into the hearts of teachers and students. Join FOSS developers to learn how assessment can be transformed into an integrated teaching tool that teachers and students in grades 3-8 can embrace to create a classroom culture that motivates effort and growth to improve achievement.

#### Exploring the Science and Engineering Practices

(Grades K-12)

(Grades 5-12)

103C, Wisconsin Center Science Focus: GEN, SEP

Ted Willard (@Ted\_NSTA; twillard@nsta.org), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

Come explore science and engineering practices (such as constructing explanations and developing models) that are central to the vision of education described in the Framework and the NGSS.

#### CPO Science Biology Energy QUEST: Teaching Cell **Energy Pathways**

202D, Wisconsin Center

Science Focus: LS Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

Get ENERGIZED about teaching energy pathways with our latest LINK supplementary learning module, amplified by cutting-edge Augmented Reality. Through collaborative gameboard play, a content-rich digital curriculum, and by manipulating smartphone-ready 3D imagery with a swipe of a finger, students will be clamoring to earn 32 ATP and synthesize C6H12O6 molecules.

### Incorporating STEM into the Classroom (High School Science)

202E, Wisconsin Center

Science Focus: ETS1, CCC, SEP

Sponsor: Activate Learning

(Grades 9-12)

Gary Curts, STEM Implementation Specialist/Retired Educator, Dublin, Ohio

Bringing STEM into the classroom by involving students in engineering design to solve a real-world problem gives students the opportunity to apply crosscutting concepts and disciplinary core ideas as well as demonstrate the NGSS science and engineering practices. Join us as we share how we have integrated STEM and the engineering design cycle into our core Earth science, chemistry, physics, and physical science courses.

#### Martian Genetics: An Electrophoresis Exploration

(Grades 6–College) 203 D/E, Wisconsin Center Science Focus: ETS, LS

Sponsor: Edvotek, Inc.

Brian Ell (*info@edvotek.com*), Tom Cynkar, and Maria Dayton, Edvotek Inc., Washington, D.C.

Explore genetics with our "out of this world" workshop! Imagine being the first scientist to explore Mars and discovering extraterrestrials. How would you use biotechnology to learn about the Martians? Discover how DNA technology can be used to explore the relationship between genotype and phenotype. Fluorescent dyes simulate DNA fragments, eliminating post-electrophoresis staining and saving classroom time!

### 8:30–9:00 AM Presentation

Guiding Middle School Students in Developing Their Explanations of the Seasons Through a Modeling-to-Learn Approach

(Grades 6–8) Lakeshore C, Hyatt Science Focus: ESS1.B, ESS2.D, CCC1, SEP2 Kyle Peters, Reek Elementary School, Lake Geneva, Wis.

Liesl Gapinski (hohenshl@uww.edu), University of Wisconsin– Whitewater

Join us to experience a modeling-to-learn approach used with middle school students to develop their causal explanations of the seasons for transfer to your classroom.



#### 9:15–10:30 AM General Session

The Serengeti Rules: The Quest to Discover How Life Works and Why It Matters

*(General)* Science Focus: LS Ballroom C, Wisconsin Center

Sponsored by HHMI BioInteractive



Sean B. Carroll (@SeanBiolCarroll; biointeractive@hhmi.org), Vice President for Science Education, Howard Hughes Medical Institute, Chevy Chase, Md.

Presider and Introduction: David Crowther, NSTA President, and University of Nevada, Reno

Platform Guests: Sean B. Carroll; David Crowther; Mary Gromko, NSTA Retiring President, Colorado Springs, Colo.; Christine Anne Royce, NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.; Nicole Vick, NSTA Director, District XII, and Galesburg High School North, Galesburg, Ill.; Kevin Anderson, Chairperson, NSTA Milwaukee Area Conference, and Wisconsin Dept. of Public Instruction, Madison; Ray Scolavino, President, Wisconsin Society of Science Teachers, Program Coordinator, NSTA Milwaukee Area Conference, and University of Wisconsin–Milwaukee; Michelle Griffin-Wenzel, Local Arrangements Coordinator, NSTA Milwaukee Area Conference, and Germantown High School, Germantown, Wis.; David Evans, NSTA Executive Director, Arlington, Va.

How does nature produce the right numbers of zebras and lions on the African savanna, or fish in the ocean? How do our bodies produce the right numbers of cells in our organs and bloodstream? How does life work? Biologist and author Sean B. Carroll tells stories from his book, *The Serengeti Rules*, of the pioneering scientists who sought the answers to such simple, yet profoundly important questions, and shows how their discoveries matter for our health and the health of the planet we depend upon.

Hailed for his pioneering work in evolutionary developmental biology, Sean B. Carroll is an award-winning scientist, writer, educator, and executive producer. Dr. Carroll leads the Department of Science Education at the Howard Hughes Medical Institute and is the Allan Wilson Professor of Molecular Biology and Genetics at the University of Wisconsin—Madison.

Be sure to join Sean after his talk at Booth #722 in the Exhibit Hall, where he will be signing copies of his book, The Serengeti Rules. Books will be available for purchase at the booth while supplies last.

## 9:30–10:30 AM Exhibitor Workshops

The Power of Modeling in K-8 Classrooms

*(Grades K–8)* Science Focus: GEN, NGSS Sponsor: Amplify 201A, Wisconsin Center

**Sophia Lambertsen** and **Rebecca Abbott**, The Lawrence Hall of Science, University of California, Berkeley How can students create and use models to enhance, explain, and expand their thinking? Experience a variety of ways students deepen and demonstrate their understanding of scientific phenomena through the use of models. Engage with K–8 exemplars from Amplify Science, the new *NGSS*-designed curriculum from The Lawrence Hall of Science.

## NGSS Ecology: Modeling the Introduction of a New Species

(Grades 6–8) 201B, Wisconsin Center Science Focus: LS2.B, LS2.C, CCC4, CCC5, SEP2 Sponsor: Lab-Aids, Inc.

**Cynthia Sanchez,** North-Grand High School, Chicago, Ill. How does a new species affect the flow of matter and energy in an ecosystem? This card sort—style activity models the introduction of a new species with special attention to the effect on existing predators and producers. This activity is from the new SEPUP middle level Ecology unit, revised and updated for the *NGSS* and published by Lab-Aids. Take home free samples of the activity.

### Coding with First Graders? The Smithsonian Says YES!

(Grades K–5)

201 C/D, Wisconsin Center

202A, Wisconsin Center

Science Focus: GEN, NGSS Sponsor: Carolina Biological Supply Co.

## Carolina Teaching Partner

Join us for this engaging hands-on workshop with investigations for teaching coding to young children. From the new Smithsonian Science for the Classroom<sup>TM</sup> series, the "How Can We Send a Message Using Sound?" module is designed to use the *NGSS* practices that make the standards come alive.

#### Makerspaces with Options for All Students

(Grades 4–8)

Science Focus: ETS

Sponsor: Delta Education and Frey Scientific

Kathy Armstrong, Northside Elementary School, Midway, Ky.

**Darrick Wood,** Distance Learning Coordinator, Louisville, Ky.

For students to develop the proper range of skills required of "makers"—a makerspace should provide tools and resources

to help them grow as scientists. Many makerspaces now include supplemental curriculum options that give students who are curious about science the resources designed for exploring classroom concepts in a maker setting.

### What Does Argumentation Look Like in an Elementary Classroom?

(Grades K–5) Science Focus: GEN, SEP7 202B, Wisconsin Center

202C, Wisconsin Center

Sponsor: Delta Education/School Specialty Science–FOSS **Brian Campbell,** The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Next Generation Program developers to learn about science practices within the context of active investigations. Experience analyzing and interpreting data, constructing explanations, and engaging in argumentation from evidence as tools to deepen student learning within a FOSS lesson. Find out about transitioning to FOSS Next Generation.

## Year-Round Solutions for Success in AP Chemistry from Flinn Scientific

(Grades 9–12)

Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Marvel (mmarvel@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill.

Join Flinn as we share AP Chemistry demonstrations, labs, inquiry activities, and more! Come learn about new ways to engage your advanced students. Our activities are aligned to the learning objectives and skills your students need to be successful. Prepare your students for the first day of class with FlinnPREP<sup>TM</sup>, a new online review of foundational chemistry concepts. Handouts and door prizes. AP is a trademark of the College Board.

## CPO's Wind Turbine: A STEM Approach to Engineering and Design

(Grades 5–12)

202D, Wisconsin Center

Science Focus: ETS, SEP

Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

CPO's Link Wind Turbine learning module lets students learn in a real-time digital platform and engineer a wind turbine. Students build, test, and revise their designs. LINK uses STEM activities and an *NGSS* approach giving students an understanding of how to apply the Engineering Cycle and demonstrate understanding.

201A, Wisconsin Center

## Literacy in the Context of Science in the Middle School Classroom

202E, Wisconsin Center

(Grades 5–8) Science Focus: GEN, NGSS Sponsor: Activate Learning

**Ellen Mintz** (*emintz621@gmail.com*), Charleston County School District, Charleston, S.C.

Experience a lesson that demonstrates the integration of literacy strategies in the context of science. This includes the incorporation of academic language in written responses in science notebooks and oral discourse in conjunction with investigations using an interactive word wall.

## Analyzing and Interpreting Data Using TCI's Bring Science Alive!

(Grades K–5) 203A, Wisconsin Center Science Focus: GEN, NGSS Sponsor: TCI **Brian Thomas,** TCI, Cincinnati, Ohio

Get your students to do more than just read a graph, chart, or statement. Participants will be immersed in a *Bring Science Alive!* classroom where students analyze and interpret data and construct an argument based on research.

## Keep Your Head Above Water with Magnetic Water Molecule Models

(Grades 4–College) 203B, Wisconsin Center Science Focus: ESS2, ESS3, ETS, LS1, LS4, PS1, PS2, CCC, SEP

Sponsor: 3D Molecular Designs

**Gina Vogt** (gina.vogt@3dmoleculardesigns.com), 3D Molecular Designs, Milwaukee, Wis.

ENGAGE students by modeling chemical and physical properties of water using hands-on/minds-on magnetic water molecules. EXPLORE common water phenomena such as density, erosion, and weathering. EXPLAIN the phases of water, density, and solubility. ELABORATE on the water cycle and its impact on the ecosystem. EVALUATE student learning with models.

## Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR

(Grades 9–College) 203 D/E, Wisconsin Center Science Focus: LS

Sponsor: Edvotek, Inc.

Maria Dayton (info@edvotek.com), Tom Cynkar, and Brian Ell, Edvotek Inc., Washington, D.C.

Explore the relationship between genotype and phenotype using Phenylthiocarbamide (PTC). Some think PTC tastes bitter, while others find it tasteless. The ability to taste PTC has been linked to variations in a taste receptor gene. Come learn how to use PCR to distinguish between PTC alleles. Free gift!

## **11:00 AM–12 Noon Exhibitor Workshops** Space Docking Failure: Phenomena and 3-D Instruction for Grades 6–8

(Grades 6–8) Science Focus: PS2, CCC, SEP Sponsor: Amplify

**Sophia Lambertsen** and **Rebecca Abbott**, The Lawrence Hall of Science, University of California, Berkeley Experience how students investigate a failed spacecraft docking while figuring out principles of force and motion and engaging in three-dimensional learning. Participants will get a hands-on dive into Amplify Science for grades 6–8, engaging with this new *NGSS*-designed curriculum from The Lawrence Hall of Science.

## NGSS Reproduction: Breeding Critters—More Traits

(Grades 6–8) 201B, Wisconsin Center Science Focus: LS1, LS3, CCC1, CCC2, SEP2, SEP6 Sponsor: Lab-Aids, Inc.

**Cynthia Sanchez,** North-Grand High School, Chicago, Ill. Students model and explain additional patterns of inheritance as they explore cause-and-effect relationships for additional traits of the critters. These patterns help them model and explain the wide variation that can result from sexual reproduction. This activity provides an opportunity to assess student work related to MS-LS3-2.

## Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs

201 C/D, Wisconsin Center

Science Focus: LS Sponsor: Carolina Biological Supply Co.

## Carolina Teaching Partner

(Grades 9-12)

Ready for a forensic dissection that is on the cutting edge? Engage students and revitalize your mammalian structure and function lessons with a real classroom autopsy. Participants dissect a Carolina's Perfect Solution pig by modeling the protocols of a professional forensic pathologist. Come experience our exclusive Perfect Solution preserved specimens. OK, Class, Please Open Your Science Notebooks...

(Grades K–8) 202A, Wisconsin Center Science Focus: GEN

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky.

**Darrick Wood,** Distance Learning Coordinator, Louisville, Ky.

Experience the feeling of starting with a blank notebook and filling it with new ideas to make sense of the world around you. Leave with ideas and strategies to improve student notebooking in your own classroom.

## What Does Conceptual Modeling Look Like in Grades K-5 Classrooms?

(Grades K–5) 202B, Wisconsin Center Science Focus: PS, CCC

Sponsor: Delta Education/School Specialty Science–FOSS **Brian Campbell,** The Lawrence Hall of Science, University of California, Berkeley

Join FOSS Next Generation Program developers to explore how students construct models about phenomena. Experience active investigations from two grade levels and create models about physical science concepts. Find out how student models can be used to guide future instruction within the FOSS program.

### Putting the "E" in STEM: Engineering in the Middle School Science Classroom

202C, Wisconsin Center

(Grades 6–9) Science Focus: ETS, SEP

Sponsor: AEOP

**Alexandra Wakely,** eCYBERMISSION Outreach Specialist, NSTA, Arlington, Va.

Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, Va.

Many science teachers are working on bringing engineering (the E in STEM) into their science classes. But with limited time, state requirements, and plenty of science content to cover, it can be a challenge. Discussion centers on the value of integrating engineering into your science classes and tips on how to make the integration seamless. There will also be an explanation of the online STEM competition eCYBERMISSION and how it relates to engineering in the science classroom.

#### CPO's LINK Genetics Learning Modules: Crazy Traits and Crazy Chromosomes

(Grades 5–12) 202D, Wisconsin Center Science Focus: LS

Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

CPO Science's LINK learning modules for genetics use *NGSS* strategies in a real-time digital learning environment. Students can study the relationship between DNA, genes and mitosis, meiosis, traits, alleles, phenotypes, and genotypes. Heredity comes alive as you use hands-on models to create crazy creatures in a unique collaborative program.

### Project-Based Inquiry Science<sup>™</sup> (PBIS): Creating "Coherence and Science Storylines" for Middle School Science

(Grades 6–8)	202E, Wisconsin Center
Science Focus: GEN, NGSS	
Sponsor: Activate Learning	

**Mary Starr** (*mary@starrscience.com*), Michigan Mathematics and Science Centers Network, Plymouth

STEM learning requires integration! Powerful questions and coherent storylines help solve the integration challenge. PBIS is built around interesting and meaningful Big Questions and Big Challenges, supporting the integration of science and engineering, engaging ALL students in high-quality STEM learning, and embracing the vision of the *Framework* and *NGSS*.

#### 5 E'sy Ways to Investigate Enzymes!

(Grades 8–College) 203B, Wisconsin Center Science Focus: LS1, LS3, LS4, PS1, PS2, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: 3D Molecular Designs

**Gina Vogt** (gina.vogt@3dmoleculardesigns.com), 3D Molecular Designs, Milwaukee, Wis.

ENGAGE students in investigating enzyme structure/ function using multiple modeling strategies. EXPLORE and EXPLAIN catabolism, anabolism, and competitive/ noncompetitive inhibition with hands-on/minds-on instructional materials. ELABORATE on insecticide inhibition at an enzyme active site resulting in unintended consequences. EVALUATE student learning with an enzyme molecular story. Handouts!

## Left at the Scene of the Crime: Introduction to Forensic Science

(Grades 6–College) Science Focus: LS Sponsor: Edvotek, Inc. 203 D/E, Wisconsin Center

Brian Ell (*info@edvotek.com*), Maria Dayton, and Tom Cynkar, Edvotek Inc., Washington, D.C.

Explore genetic diversity using forensic science! Your students become crime scene investigators as they analyze biological evidence using DNA fingerprinting, a technique that identifies people via genetic differences. Gel electrophoresis is used to create DNA fingerprints from crime scene and suspect samples. A match between samples suggests which suspect committed the crime. Free gift for attendees!

## 11:00 AM-5:00 PM Exhibits

Hall A, Convention Center

Did you know that NSTA offers exclusive exhibit hall and exhibitor workshop hours today from 11:00 AM to 12:30 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.



#### 12:30–1:30 PM Presentations

NGSS and the Small High School—An Out-of-This-World Solution?

(Grades 9–12)

Lakeshore A/B, Hyatt

Science Focus: GEN, NGSS

Allison Fuelling (@ajfuelling; afuelling@marshallschools. org), Joseph Wells (@MrWellsMHS; jwells@marshallschools. org), and Danielle Bendt (@MrsBendt66; dbendt@marshallschools.org), Marshall High School, Marshall, Wis.

Our small rural district is struggling to meet the *NGSS* while at the same time offering students the option for multiple advanced science courses. We would like to share our ideas with other districts and problem solve some challenges we are facing. How does your district address the breadth of the *NGSS*? Feedback welcomed.

#### ASTE-Sponsored Session: Simplifying the Planning of Lessons, Units, and Courses for NGSS Using "Phenomena First" Approaches for the Life Sciences

(Grades 6–12) Science Focus: LS Lakeshore C, Hyatt

Milwaukee, Hyatt

Rachelle Haroldson, Keaton Anderson (@SweetKeat24; @MrAScienceClass; *keaton.anderson24@gmail.com*), and Joel Donna (@joelddonna; *joel.donna@uwrf.edu*), University of Wisconsin–River Falls

Find out how to simplify your research-based planning for *NGSS* for life science. Engage in a model mitosis lesson and then explore tools and curricula.

#### NGSS and Visual Literacy: A STEAM Approach

(Grades 8–11)

Science Focus: PS

**Vito Dipinto** (*vdipinto@nl.edu*), National Louis University at Wheeling, Ill.

Andrew Bean (apbean@cps.edu), Dever Elementary School, Chicago, Ill.

Frank Prill (frankprilljr@gmail.com), Bolingbrook High School, Bolingbrook, Ill.

Anthony Tournis (ajtournis@gmail.com), ASPIRA Haugan Middle School, Chicago, Ill.

Come learn a variety of visual literacy skills you can use in your secondary physical science classroom.

#### Creating a Technology-Based, Student-Centered Classroom

(Grades 6–12) Science Focus: GEN 101A, Wisconsin Center

Matthew Senese (@MrSenese; msenese@d155.org) and William Janshego (@MrJanshego; wjanshego@d155.org), Prairie Ridge High School, Crystal Lake, Ill.

Improve science curriculum through the incorporation of ePortfolios, GAFE, and inquiry activities to replace the standard PowerPoint presentations and paper-based classroom.

#### Put on Your 3-D Assessment Glasses

(Grades K–12) 102C, Wisconsin Center Science Focus: ESS1.B, ETS

**Cary Sneider** (*carysneider@gmail.com*), Portland State University, Portland, Ore.

*NGSS* performance expectations mean that authentic assessment must allow you to observe what your students can do, not just see their answers on a test.

#### Using the NSTA Learning Center as an Online Textbook

(Grades 9–College)	103A, Wisconsin Center
Science Focus: GEN	

Wendy Binder (*wbinder@nsta.org*), SPIR Project Director, NSTA, Arlington, Va.

**Eric Brunsell** (@; *brunsele@uwosh.edu*), NSTA Director, Professional Development in Science Education, and University of Wisconsin Oshkosh

Professors are invited to come learn how to use the NSTA Learning Center as an online textbook when teaching science preservice teachers.

#### Killing Two Birds with One Notebook

103B, Wisconsin Center

Science Focus: GEN, NGSS

(Grades K-8)

**Seth Marie Westfall** (sethmariewestfall@gmail.com), Racine (Wis.) Unified School District

Explore methods and ideas for integrating reading, writing, listening, and speaking into science instruction through the use of interactive science notebooks. Examples of elementary and middle school notebooks will be presented. Review student examples and begin to create your own model interactive notebook. *CCSS* and *NGSS* correlations will be shared.

Regency A, Hyatt

## Solids: The Neglected "State" of Chemistry

(Grades 9–12) 103E, Wisconsin Center Science Focus: PS1

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

Use solids to make chemistry more relevant for students. Hands-on STEM activities using solid materials (metals/ polymers/ceramics) make concepts easier to teach/learn. *NGSS* correlations will be shared and you'll receive a CD of information.

## NSTA Press® Session: Argument-Driven Inquiry in Physics: Mechanics Lab Investigations for Grades 9–12

(Grades 9–12) Ballroom A, Wisconsin Center Science Focus: PS, CCC, SEP

**Victor Sampson** (@drvictorsampson; *victor.sampson@gmail.com*), The University of Texas at Austin

Learn about Argument-Driven Inquiry and how it can help students learn how to use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.

## Climate Literacy $\rightarrow$ Climate Solutions

(Grades K–12) Ballroom B, Wisconsin Center Science Focus: ESS, CCC

June Teisan (june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Want to teach climate literacy but don't know where to start? The National Oceanic and Atmospheric Administration (NOAA) offers a spectrum of online lesson plans, videos, data sets, webinars, and more that can inform and inspire students to engineer solutions to climate concerns.

## NESTA and AMS Share: DataStreme's 3-D Learning Tools to Support Essential Earth Science Concepts

(General) Ballroom D, Wisconsin Center Science Focus: ESS, CCC, SEP

Wendy Abshire (@AMSeducation; wabshire@ametsoc.org), American Meteorological Society, Washington, D.C.

Free professional development opportunity! Check out the very successful American Meteorological Society (AMS) DataStreme Project, three courses full of real-world data to explore weather, water, and climate science.

## 12:30–1:30 PM Hands-On Workshops

Integration of Science and Literacy Equals Improved Achievement

(Grades 3–8)

Science Focus: GEN

Linda Linnen, Retired Teacher, Aurora, Colo.

Experience how to integrate reading, writing, speaking, and listening, plus *CCSS* strategies and science notebooking into daily science lessons.

## Designing and Evaluating Project-Based Activities to Foster 3-D Learning

(Grades K–12) Regency B, Hyatt

Science Focus: GEN, NGSS

**John Loehr** (*jfloehr@soinc.org*), Science Olympiad, Oakbrook Terrace, Ill.

Learn how to create and evaluate Project-Based Learning activities that address the three dimensions of the *NGSS* using a framework from Science Olympiad.

## How to Read Like Scientists!

Regency C, Hyatt

Science Focus: GEN

(Grades 4-10)

**Ann Berg** (*aberg@c-ischools.org*), Cambridge Middle School, Cambridge, Minn.

Explore strategies through interactive activities and discussion that support success in reading science nonfiction and, most importantly, scientific inquiry.

## S CSI Mammoth: Using Social Studies to Teach Science Investigations

(Grades 2–6) 101B, Wisconsin Center Science Focus: ESS, LS3, LS4.A, CCC1, CCC2, SEP3, SEP7 Jennifer Edginton (jedginton@kenosha.org) and Doug Dammann (ddammann@kenosha.org), Kenosha Public Museum, Kenosha, Wis.

Join Kenosha Public Museum educators to learn the science behind a mysterious mammoth site from the Ice Age. Featuring hands-on activities and free lessons.

## Evidence and Explanations: Energy Changes and Transformations in a Bouncing, Flashing Ball

(Grades 3–8) 102A, Wisconsin Center Science Focus: PS3.A, PS3.B, CCC5, SEP3

Karen Ostlund (@karen\_ostlund; *klostlund@utexas.edu*), 2012–2013 NSTA President, and The University of Texas at Austin

Come play with a bouncing, flashing ball to make observations as evidence to explain types of energy changes and transfers.

#### Decoding Starlight: From Photons to Pixels to Images—Using Science and Art

(Grades 7–12) 102D, Wisconsin Center Science Focus: ESS1.A, ETS2.A, PS2.B, PS2.C, PS4.B, PS4.C

## **Donna Young** (*dlyoung.nso*(*@gmail.com*), NASA NSO STEM Coordinator, Bullhead City, Ariz.

Produce a photon intensity image of a supernova remnant using NASA X-ray data, and then convert the image into a public release image with this STEAM activity.

### Connecting Content, Critical Thinking, and Creativity Through Trade Books

(Grades 3-6) 102E, Wisconsin Center Science Focus: GEN, CCC1, CCC3, CCC6

Christine Anne Royce (@caroyce; caroyce@aol.com), NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.

Investigate a series of activities to help integrate science and literacy skills. These activities use trade books focused on critical thinking, creativity, and developmentally appropriate content.



—Photo courtesy of Jennifer Williams and Mary Ellen Hamner

## 12:30–1:30 PM Exhibitor Workshops

### Puppet Theater Engineering: Phenomena and 3-D Instruction for Grades K and 1

(Grades K-1) Science Focus: PS, CCC, SEP 201A, Wisconsin Center

Sponsor: Amplify

Sophia Lambertsen and Rebecca Abbott, The Lawrence Hall of Science, University of California, Berkeley Experience how students design shadow scenery and sound effects while figuring out the principles of light and sound and engaging in three-dimensional learning. Get a hands-on dive into Amplify Science for grades K-1, engaging with this new K-8 NGSS-designed curriculum from The Lawrence Hall of Science.

### NGSS Biomedical Engineering: Get a Grip!

(Grades 6-8) 201B, Wisconsin Center Science Focus: ETS, LS1.A, CCC6, SEP1, SEP2, SEP5, SEP6 Sponsor: Lab-Aids, Inc.

Cynthia Sanchez, North-Grand High School, Chicago, Ill. Use the approach of biomimicry to design, test, evaluate, and redesign a mechanical gripping device to meet criteria. An iterative process is used to optimize the device by investigating the relationship between structure and function and applicable technology.

## Hands-On Science with Classroom Critters

(Grades K-12) 201 C/D, Wisconsin Center Science Focus: LS Sponsor: Carolina Biological Supply Co.

## **Carolina Teaching Partner**

Add action and excitement to your science class with live organisms! Discover fun hands-on activities with pill/sow bugs, termites, bessbugs, and butterflies you can use in your labs. Learn about care and handling, as well as easy ways to introduce inquiry. Additional resources available online.

#### What in the World Are Crosscutting Concepts?

(Grades K-8) 202A. Wisconsin Center Science Focus: GEN, CCC

Sponsor: Delta Education/School Specialty Science Kathy Armstrong, Northside Elementary School, Midway, Ky. Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Crosscutting concepts may be the most misunderstood dimension of the NGSS. Come be a student and experience Delta Science Module lessons that unleash the power of the crosscutting concepts and give them the attention they deserve. Leave with materials and strategies that you can use in your classroom next week.

#### Wave Properties and Information Transfer

(Grades 6–9) 202B, Wisconsin Center Science Focus: PS4, CCC, SEP

Sponsor: Delta Education/School Specialty Science–FOSS Jessica Penchos, The Lawrence Hall of Science, University of California, Berkeley

Engage in activities using lasers and optical fibers in the new FOSS Next Generation Waves Course for middle school. Explore properties of refraction and reflection that allow information transfer by fiber-optic technology, and identify connections to the three dimensions of *NGSS*.

#### Out-of-School STEM Enrichment: AEOP Program Design Collaboration

(Grades K–12) Science Focus: GEN, NGSS

Sponsor: AEOP

**Jarod Phillips,** GEMS Project Manager, NSTA, Arlington, Va.

Come learn what AEOP can do for your students' STEM enrichment outside of school time! This workshop is hosted by the Army Educational Outreach Program (AEOP), sponsors of out-of-school programs across the nation for K–12 students. Join in to get a chance to work with colleagues in developing your ideal (fictional) program and seeing how it stacks up to the programs offered by AEOP!

## Modular Robotics for Elementary and Middle School: CUBELETS!

(Grades 3–8)

202D, Wisconsin Center

202C, Wisconsin Center

Science Focus: ETS

Sponsor: Frey Scientific/School Specialty Science Kat Mills, School Specialty Science, Rosharon, Tex.

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

Encourage students to be inquisitive and unlock their inner inventor! Learn about types of robotic operations: THINK, SENSE, and ACT in a hands-on hour using Cubelets, blocks that can instantly connect and perform robot functions. What sensory input is needed? What output is generated? How many classroom applications are there?

#### Structuring Discussion to Be Equitable and Rigorous

(Grades K–12) 202E, Wisconsin Center Science Focus: PS2, SEP2, SEP6, SEP7, SEP8 Sponsor: Activate Learning

Heather Milo (hmilo@activatelearning.com), Activate Learning, Greenwich, Conn.

The *Framework* promotes learning as a fundamentally social endeavor supported by collaborative and communicative norms. Yet, sustaining these norms requires teachers to examine and support K–12 students' ways of talking so they all are able to articulate, make sense of, and evaluate each other's ideas. Walk away with ready-to-use tools that foster and assess productive talk. This session uses the IQWST<sup>TM</sup> unit, How Will It Move?

#### Getting Students Through the Cellular Membrane

(Grades 6–College) 203B, Wisconsin Center Science Focus: LS1, PS1, PS2, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: 3D Molecular Designs

**Gina Vogt** (gina.vogt@3dmoleculardesigns.com), 3D Molecular Designs, Milwaukee, Wis.

Support three-dimensional learning with materials that engage your students in an exploration of rare chemical and physical properties of water and the membranes that separate cells from their surrounding environment. Construct a model to explain diffusion, osmosis, and active and passive transport of molecules across the cell membrane.

## Cancer Investigators: Medical Diagnostics in Your Classroom

203 D/E, Wisconsin Center

Sponsor: Edvotek, Inc.

(Grades 9-College)

Science Focus: LS

Brian Ell (*info@edvotek.com*), Tom Cynkar, and Maria Dayton, Edvotek Inc., Washington, D.C.

Cancer contributes to almost one in every four deaths in the United States. Fortunately, innovations in biomedical research have improved our understanding of the differences between normal and cancer cells. In this hands-on workshop, participants use microscopy and electrophoresis to explore the hallmarks of cancer. Free gift for attendees!

#### 12:30–3:30 PM Hands-On Workshop

From Exploring Ecosystems to Writing Reports and Explanations—ELLs Focus on Language

(Grades 3–6) Executive C/D, Hyatt Science Focus: LS1.C, CCC5, SEP2, SEP6

Holly Rosa (hrosa@bostonpublicschools.org), Boston (Mass.) Public Schools

**Tracy Hodgson-Drysdale** (*tdrysdal@lesley.edu*), Lesley University, Cambridge, Mass.

Find out how you can guide English language learners from everyday language to academic language, and from rich science talk to engaging science writing.

#### 1:30–3:30 PM Presentation

#### **INF** Showcase of Wisconsin Science Olympiad

(General) Hall B Lobby, Wisconsin Center Science Focus: GEN, INF, NGSS

**Forrest Schultz** (@WIsciolympiad; *schultzf@uwstout.edu*), University of Wisconsin–Stout, Menomonie

Scott Gundrum (scoots@mrgundrum.com), Slinger High School, Slinger, Wis.

Nicole Williams (williams@muhs.edu), Marquette University High School, Milwaukee, Wis.

Experience the excitement of Science Olympiad as students and coaches in Wisconsin share their competitive STEM events at walk-up stations. Enjoy firsthand teaching and learning of STEM at its finest!



-Photo courtesy of Mike Weiss

### 2:00–3:00 PM Featured Presentation Fallacy of Fairness

*(General)* Science Focus: GEN 102C, Wisconsin Center



Jo Handelsman (@jo44atWID; jo.handelsman@wisc.edu), Director, Wisconsin Institutes for Discovery, Madison

Presider: Michelle Griffin-Wenzel, Strand Leader, and Germantown High School, Germantown, Wis.

Most educators intend to teach all

students. In fact, many of us see students' failures as a referendum on our own performance. But in reality, in science education we do not reach all students equally due to external factors that are out of our control as well as what happens in the classroom, which we are empowered to change. Girls and ethnic minority students are often disadvantaged by the teaching methods we use and by the impact of our unintended biases on our expectations of certain students and, consequently, their performance. We can work toward leveling the playing field and improving learning for all students by adopting active learning methods and being vigilant about expression of our own unconscious biases. We will discuss the evidence for unconscious bias and the power of individual will to change its impact.

Jo Handelsman was appointed by former President Barack Obama as the associate director for Science at the White House Office of Science and Technology Policy (OSTP) where she served for three years until January 2017. Jo received her PhD at the University of Wisconsin–Madison in Molecular Biology and has since authored over 100 papers, 30 editorials, and 3 books. She is responsible for groundbreaking studies in microbial communication and work in the field of metagenomics. Notably, in 2011, Jo received the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring from President Obama and in 2012, Nature named her one of "ten people who mattered this year" for her research on gender bias in science. Jo is the director of the Wisconsin Institute for Discovery at the University of Wisconsin–Madison.

## 2:00–3:00 PM Presentations

## **INF** Fostering a Great Lakes Community of Practice with the Center for Great Lakes Literacy

(Grades 4–12) Executive A/B, Hyatt Science Focus: ETS1, INF, SEP2, SEP3, SEP6

Kathleen Kline (@ks\_kline; kkline@aqua.wisc.edu), University of Wisconsin Sea Grant Institute, Madison

Lynn Kurth (lynn.kurth@maps.k12.wi.us), Prairie River Middle School, Merrill, Wis.

Delve into how the Center for Great Lakes Literacy fosters a community of practice among educators who are passionate about the Great Lakes.

## Creating a Coding Culture in the Classroom

(Grades P–6) Lakeshore A/B, Hyatt Science Focus: GEN, NGSS

**Byron Gilliland** (@byron\_gilliland; byron.gilliland@ winona.k12.mn.us), Jefferson Elementary STEM School, Winona, Minn.

Discover ways to create a culture inclusive to coding in the classroom. Explore methods to create excitement and engage preK-6 students in coding/programming activities.

### NARST-Sponsored Session: Integrating Science and Technology in Engineering Design Challenges to Teach Nature of Science

(Grades 6–9)

Lakeshore C, Hyatt

Science Focus: ETS1

Allison Antink-Meyer (@AntinkMeyer; aameyer@ilstu. edu), Illinois State University, Normal

Discussion centers on three engineering design challenges that integrate science, engineering, and technology and how to use STEM to teach nature of science.

## Using Engineering Design to Collaboratively Create Engineering Design

(Grades 2–College) Regency C, Hyatt Science Focus: ETS1

**Ken Turner, Jr.** (*kturner@dbq.edu*), University of Dubuque, Iowa

**Melissa Kirby** (@KirbyScience; *kirbym@kmsd.edu*), Kettle Moraine High School, Wales, Wis.

The problem-solving orientation of engineering design is the perfect means for teachers to use when collaboratively creating a lesson or unit using engineering design.

## Using Pop Culture and Polymers to Create Inquisitive Minds

(Grades 6–12) 101 C/D, Wisconsin Center Science Focus: PS, SEP1, SEP2, SEP6, SEP7, SEP8

**Sherri Rukes** (*sherri.rukes@d128.org*), Libertyville High School, Libertyville, Ill.

Ever wonder how to get more students interested in what you teach? Add some pop culture and a pop culture project to make the connection with your students. Take home a CD.

#### High School Teachers: Birds of a Feather

(Grades 9–12) 101A, Wisconsin Center Science Focus: GEN, NGSS

**Steve Wood** *(swood@d125.org),* Adlai E. Stevenson High School, Lincolnshire, Ill.

Facilitated by NSTA's High School Committee, come discover NSTA resources, participate in discussions, and share high school needs/concerns in your state. How can we help?

## Engineering Your Approach to Creative Problem Finding and Design Solutions

(Grades 6–12) 101B, Wisconsin Center Science Focus: ETS, CCC4, CCC5, SEP1

**Dorothy Ginnett** (*dorothyginnett@gmail.com*), Auburndale High School, Auburndale, Wis.

Creatively brainstorm integration of authentic place-based issues to pursue engineering problem finding and design solutions that positively impact your local school or community.

#### STEM and Trade Books: Strange Bedfellows

(Grades P–8/College) 103A, Wisconsin Center Science Focus: GEN

**Juliana Texley** (*texlelj@cmich.edu*), 2014–2015 NSTA President, and Science Writer/Instructor, New Baltimore, Mich. Wondering how to add literacy to your STEM lessons? Come learn about NSTA's initiative, "Best STEM Books" and how to identify them.

California Science Project Session: Academic Language Development in Science Through Literacy

(*Grades 4–12*) 103C, *Wisconsin Center* Science Focus: ESS2.B, ESS2.D, LS2.A, LS2.C, LS2.D, LS4.B, PS1.A, CCC1, CCC2, CCC4, CCC7, SEP2, SEP4, SEP6, SEP7, SEP8

Arthur Beauchamp (@Dr\_Dialogue; acbeauchamp@ ucdavis.edu), University of California, Davis

**Melanie Villanueva** (@MrsVChemistry; *melaniem5@ hotmail.com*), Sweetwater Union High School District, Chula Vista, Calif.

Set your students up for success in navigating scientific discourse. Learn several techniques for getting students to generate academic language both verbally and in writing.

#### Assistance from the Retiree Committee

(General) 103E, Wisconsin Center Science Focus: GEN Lloyd Barrow (barrowl@missouri.edu), Professor Emeritus, University of Missouri, Columbia Come pick up suggestions from the NSTA Retiree Committee as you plan your retirement.

## 2:00–3:00 PM Hands-On Workshops

Evolution: DNA and the Unity of Life

(Grades 9–12) Regency A, Hyatt Science Focus: LS4, CCC1, CCC2, SEP2, SEP4, SEP7 Molly Malone (molly.malone@utah.edu), The University of Utah, Salt Lake City

Explore a curriculum unit integrating three-dimensional learning with published scientific data to address core ideas in biochemistry, common ancestry, heredity, natural selection, and speciation. Visit *learn.genetics.utah.edu* for more information.

### iPad: Data Collection, Analysis, and Student Lab Reporting

(Grades 7–College)	Regency B, Hyatt
Science Focus: ETS, SEP	

**Gregory Dodd** (gbdodd@gmail.com), Retired Educator, Pennsboro, W.Va.

Join this hands-on workshop demonstrating the enormous potential of iPads for data collection, analysis, and student lab reporting in the science laboratory. Handouts!

#### Instructional Stakeholder Relationships

(Grades K-8)

Science Focus: ESS3

Christopher Thompson (christopher.thompson@rusd.org), Racine (Wis.) Unified School District

Regency D, Hyatt

**Nancy Carlson,** Hawthorn Hollow Nature Sanctuary and Arboretum, Kenosha, Wis.

Kathy Huncosky (*khuncos@wested.org*), Making Sense of SCIENCE at WestEd, Madison, Wis.

Learn how to create mutually beneficial partnerships between a school district, a community, and national-based learning organizations to create place-based learning.

### Launching an Elementary Science Program

(Grades P–5) 102A, Wisconsin Center Science Focus: ETS

**Kim Stilwell** (@kimstilwellNSTA; *kstilwell@nsta.org)*, Manager, New Business Development, NSTA, Arlington, Va. Need ideas for where to start with building an elementary STEM program or enhancing your current program? The initial steps in building an elementary STEM program can be an overwhelming thought. We will share our success stories and how using *Picture-Perfect Science* resources became part of the foundation to a successful implementation. Leave with links to helpful resources and ideas on how to start an elementary STEM program.

#### NMLSTA-Sponsored Session: Surf's Up

(Grades 4–8) 102B, Wisconsin Center Science Focus: ESS2.C, SEP

Liz Martinez, Illinois Mathematics and Science Academy, Aurora

Dive into graphing and modeling as we explore the topography of the ocean floor from a surfing perspective.

#### Come On Board as We Show You Around Picture-Perfect Science Lessons!

(Grades P–8) 10 Science Focus: GEN, NGSS

102E, Wisconsin Center

Georgia Littleton (georgia.littleton@boonevilleschools.com), Garnetta Bonner, and Barbette Smithson (barbette. smithson@boonevilleschools.com), Booneville Elementary School, Booneville, Ark.

Allow us to demonstrate our gratification to *Picture-Perfect Science Lessons*. These lessons incorporate science, math, and literacy while captivating the attention of elementary students.

## NSTA Press® Session: Uncovering Students' (and Teachers') Ideas in Science, Engineering, and Mathematics with Formative Assessment Probes and Techniques

(General) Ballroom A, Wisconsin Center Science Focus: GEN, NGSS

**Page Keeley** (@CTSKeeley; *pagekeeley*@gmail.com), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Experience examples of how the *Uncovering Student Ideas* assessment probes and Formative Assessment Classroom Techniques (FACTs) can be used to elicit students' STEM-related ideas and inform instruction.

#### NESTA and ESIP: Got a Drone? Try This!

(Grades 7–12)	Ballroom D, Wisconsin Center
Science Focus: ESS	

**Margaret Mooney** (*margaret.mooney@ssec.wisc.edu*), University of Wisconsin–Madison

Engage students in STEM using recreational Unmanned Aerial Vehicles (UAVs, or drones)! Learn about a free e-book from the Federation of Earth Science Information Partners (ESIP) Education and try teacher-developed drone activities.

#### 2:00–3:00 PM Exhibitor Workshops

Using Maggots, Flies, and Flesh to Solve a Mystery!(Grades 6–12)201A, Wisconsin Center

Science Focus: GEN

Sponsor: Texas Instruments

**Stacy Thibodeaux,** David Thibodaux STEM Magnet Academy, Youngsville, La.

**Jeffrey Lukens,** Sioux Falls (S.Dak.) School District A decomposing corpse is found in a field. Four possible missing persons fit the description. But who is it? Using clues near the scene will help determine identity. Forensic anthropologist Diane France helped to develop this free middle school and high school forensic science lesson.

#### **Chemical Batteries**

(Grades 6-8)

Science Focus: PS1.B, PS3.B, PS3.C, PS3.D, CCC2, CCC5, SEP1, SEP2, SEP3, SEP4

201B, Wisconsin Center

Sponsor: Lab-Aids, Inc.

**Cynthia Sanchez,** North-Grand High School, Chicago, Ill. Although we live a battery-powered lifestyle, most of us (students included) have no idea how batteries actually work. In this hands-on workshop, we will engage in an activity from *Issues and Physical Science* from Lab-Aids. Make a wet cell battery, explore the effect of using different metal electrodes on battery output, and consider ways to reduce the number of discarded batteries in the waste stream.

## Collecting Evidence: How Does an Owl Get All That Energy?

(Grades K–5) 201 C/D, Wisconsin Center Science Focus: LS, CCC, SEP Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

Join us to experience a lesson from Carolina's Building Blocks of Science® elementary curriculum. The lesson uses modeling to solve the problem, "Which animals provide energy for owls?" Leave with a set of ideas for using modeling with your students.

## Boosting the Makerspace Experience for Young Scientists!

202A, Wisconsin Center

(Grades K–3) Science Focus: ETS

Sponsor: Delta Education and Frey Scientific

Kathy Armstrong, Northside Elementary School, Midway, Ky.

**Darrick Wood,** Distance Learning Coordinator, Louisville, Ky.

Makerspaces are popping up everywhere, providing a creative space to explore questions and solve problems. But for younger students, tackling STEM-related challenges requires a foundation in science investigation. Help young scientists build the skills needed for independent exploration in their makerspaces with programs like SCIENCE IN A NUTSHELL.

#### Identifying Energy Transfers in Motors and Generators

202B, Wisconsin Center (Grades 6-8) Science Focus: PS3, CCC, SEP

Sponsor: Delta Education/School Specialty Science-FOSS Jessica Penchos, The Lawrence Hall of Science, University of California, Berkeley

Dissect a motor to identify its components and make claims about energy transfers in the new FOSS Next Generation Electromagnetic Force Course for middle school. Compare the motor components to those of a generator and consider sustainability of energy sources. Identify connections to the three dimensions of NGSS.

#### Flinn Scientific's Exploring Chemistry<sup>TM</sup>: Connecting Content Through Experiments

(Grades 9-12) 202C, Wisconsin Center Science Focus: PS

Sponsor: Flinn Scientific, Inc.

Mike Marvel (mmarvel@flinnsci.com) and Jillian Saddler (jsaddler@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill. Join us as we showcase the features and benefits of our Exploring Chemistry kits! We will highlight integrated lab and learning activities for some of the major topics in your chemistry curriculum. The experiments, demos, and Process-Oriented Guided Inquiry Learning (POGIL<sup>TM</sup>) activities ensure that students really understand the concepts and get a glimpse of the underlying simplicity and beauty of chemistry. Handouts and door prizes.

#### Solving the Mystery of STEM Using Forensic Science

202D, Wisconsin Center

(Grades 5-12)

Science Focus: GEN

Sponsor: Frey Scientific/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex. Erik Benton, CPO Science/School Specialty Science, Nashua, N.H.

Conduct STEM-focused beginner forensic activities that connect scientific investigations to analysis and investigative skills. Solve "cases" involving fingerprinting, blood spatter, and document or fabric analysis. Using a digital learning environment with simple supplies, we will apply basic mathematic principles, plus integrate reading and writing strategies with Frey Scientific's Forensics Kit.

#### Literacy in the Context of Science in the Elementary Classroom

(Grades K-5) Science Focus: GEN, NGSS 202E, Wisconsin Center

Sponsor: Activate Learning

**Ellen Mintz** (*emintz621@gmail.com*), Charleston County School District, Charleston, S.C.

Experience a lesson that demonstrates the integration of literacy strategies in the context of science. This includes the incorporation of academic language in written responses in science notebooks and oral discourse in conjunction with investigations using an interactive word wall.

#### Engineering Design in the NGSS

(Grades 6-8) 203A, Wisconsin Center Science Focus: ETS1 Sponsor: TCI

Matt Moorman, TCI, Kalamazoo, Mich.

Join us and become immersed in a Bring Science Alive! investigation designed to reach all learners and make engineering design fun and engaging. Experience this lesson from the student perspective as you take on the role of an engineer defining problems, developing solutions, and testing to best solve the problem.

#### **Communicating Science Through Lab Notebooking**

(Grades 9-College) 203C, Wisconsin Center Science Focus: GEN Sponsor: Bio-Rad Laboratories Damon Tighe (damon\_tighe@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Maintaining a proper lab notebook is key to communicating processes and findings to build on your results. It can also be the difference between winning a patent or not. Learn about critical elements for good documention and rubrics for assessment of student notebooks.

### Detecting the Silent Killer: Clinical Detection of Diabetes

(Grades 9–College)	203 D/E, Wisconsin Center
Science Focus: LS	

Sponsor: Edvotek, Inc.

Maria Dayton (info@edvotek.com), Brian Ell, and Tom Cynkar, Edvotek Inc., Washington, D.C.

Over 380 million people worldwide are afflicted by diabetes, a disease that causes high blood sugar. Due to genetic predisposition and high-calorie, low-activity lifestyles, that number continues to grow. Without early treatment, diabetes causes severe medical complications. In this exploration, you will diagnose diabetes using simulated urinalysis and ELISA tests. Free gift for attendees!

#### 3:30–4:30 PM Presentations

The Power of Science Literacy: A Success Story(Grades 9–12)Lakeshore A/B, HyattScience Focus: GEN, SEP1, SEP4, SEP7, SEP8

**Caroline Milne** (@MrsMilneBiology; cmilne@barrington220.org), **Vanessa Fennig** (@MrsFennig; vfennig@ barrington220.org), **Colleen Zenner** (@czenner\_edu; czenner@barrington220.org), and **Michelle Anderson** (manderson@barrington220.org), Barrington High School, Barrington, Ill.

Increase student engagement with successful literacy strategies. Walk away with resources and assessments that are easy to implement and adaptable for high school science.

#### **Teaching Literacy in Physics**

(Grades 10–College) 101 C/D, Wisconsin Center Science Focus: PS, SEP7, SEP8

Rachael Lancor (*rlancor* @edgewood.edu), Edgewood College, Madison, Wis.

Writing helps students to articulate their ideas and build scientific arguments. Various assignments that we have used in our courses will be shared.

#### PolyWhat? Application of STEM Using Polymers

(Grades 5–12) 101B, Wisconsin Center

Science Focus: ETS1, PS, CCC, SEP Sherri Rukes (sherri.rukes@d128.org), Libertyville High

School, Libertyville, Ill. Deepen your students' STEM experience by adding vari-

ous polymer inquiry/engineering design challenges. Take "traditionally fun" polymer activities and turn them into *NGSS* investigations to create more critical thinkers in the classroom.

#### Equity in Science Education Roundtable

(General)

Science Focus: GEN

102B, Wisconsin Center

Natacia Campbell (@NataciaCampbell; *natacia.campbell*@ gmail.com), NSTA Director, Multicultural/Equity in Science Education, and Joliet (Ill.) Public Schools District 86 Join us in sharing equity concerns and resources for enhancing equity and access in science education programs. Find out what NSTA is doing to support equity nationwide.



Do You Need a New Science Lab? (Grades 6–12) 103A, Wisconsin Center

Science Focus: GEN

Ruth Ruud (ruudruth61@gmail.com), Cleveland State University, Cleveland, Ohio

Win a Shell Science Lab Makeover (\$20,000 value) for your school! Are you a middle school or high school science teacher in need of a science lab makeover? Attend this session and learn how you can apply to win the Shell Science Lab Makeover. You will have an opportunity to actually begin to complete the application and have your questions answered.

#### NGSS-Based Performance Assessments and Rubrics (Grades 3–12) 103B, Wisconsin Center

Science Focus: GEN, SEP2, SEP3, SEP4

**Kevin Anderson** (@wisdpiscience; mrkja@yahoo.com), Chairperson, NSTA Milwaukee Area Conference, and Wisconsin Dept. of Public Instruction, Madison

Come learn how to create *NGSS*-focused performance tasks and rubrics as I share examples.

## Authors Wanted! How to Get Published in an NSTA Journal

(General)	103E,	Wisconsin Center
Science Focus: GEN		

Linda Froschauer (fro2@me.com), Field Editor, Science & Children, and 2006–2007 NSTA President, Pasadena, Calif. Patty McGinnis (pattymcginnis1@gmail.com), Field Editor, Science Scope, and Arcola Intermediate School, Eagleville, Pa. Meet with NSTA's journal editors to learn how to successfully prepare and submit an article for publication.

#### 3:30–4:30 PM Hands-On Workshops

#### Ingredients of Productive Science Talk in the Classroom

(Grades P–12) Executive A/B, Hyatt Science Focus: GEN

Kathy Huncosky (khuncos@wested.org), Making Sense of SCIENCE at WestEd, Madison, Wis.

**Kirsten Daehler** (*kdaehle@wested.org*), Making Sense of SCIENCE at WestEd, Los Alamitos, Calif.

Discover how to support productive scientific discourse in the classroom. Help students make sense of complex science ideas through evidence-based discussions.

## Teach Evolution with the World's Most Extravagant Birds

(Grades 6–12) Regency A, Hyatt Science Focus: LS4, CCC1, CCC2, CCC4, CCC6, CCC7 Kelly Schaeffer (@BirdSleuth; kms448@cornell.edu), The Cornell Lab of Ornithology, Ithaca, N.Y.

Watch out Darwin's finches, a brighter bird is the new biology teacher in town! Learn to teach evolution and natural selection through the birds-of-paradise.

#### Twitter for Student Engagement: Tweets of Science Communication from My Classroom

(Grades 9–College) Science Focus: GEN, SEP8

**Michelle Frack** (@NutmegSomething; *mfrack@hawk.iit. edu*), Illinois Institute of Technology, Chicago

Regency B, Hyatt

Purposefully use Twitter in your science course to improve content connections, engagement, information dissemination, and learning community while counteracting social media negatives with best practices.

#### **Teaching Around "Daily" Learning Targets**

(Grades 10–12) Regency D, Hyatt Science Focus: GEN

**Christy Bradley,** Tremper High School, Kenosha, Wis. Daily learning targets or "I can statements" give students empowerment of their own learning. Find out how to guide students through this process to maximize student learning.

### Children's Books as Hooks to Teach NGSS Science Practices

(Grades K–8) Science Focus: GEN, SEP 101A, Wisconsin Center

Selina Bartels (selina.bartels@cuchicago.edu), Concordia University Chicago, River Forest, Ill.

Judith Lederman (ledermanj@iit.edu), Norman Lederman (ledermann@iit.edu), and Dionysius Gnanakkan (dgnanakk@hawk.iit.edu), Illinois Institute of Technology, Chicago

Learn to engage young children in science investigations inspired by children's books. Take away ideas to empower children to ask and answer their own questions.

#### Rock Cycle Uno

(Grades 6–8) 102D, Wisconsin Center

Science Focus: ESS2.A, CCC7, SEP2

Ray Avedian (ravedian@smmusd.org) and Pamela Sever (psever@smmusd.org), John Adams Middle School, Santa Monica, Calif.

Students learn the rock cycle by playing a fun game of cards.

#### Electricity Made Simple

(Grades 6–12) 102E, Wisconsin Center Science Focus: PS, CCC, SEP

Lawrence Scheckel (*lscheckel@charter.net*), Retired Educator, Tomah, Wis.

This hands-on session is for those who know very little about basic electrity and need ideas on how to teach simple electrical circuits. Handouts.

## Explore, Read, Write, and More with Rocks, Soil, and Sand

(Grades P–1) 103D, Wisconsin Center

Science Focus: ESS

**Terrie Schmoldt** (*schmoldtt@evansville.k12.wi.us*), Levi Leonard Elementary School, Evansville, Wis.

Have you ever had a rock collection? Read about, examine, explore, and discuss rocks through a variety of hands-on activities and then journal about it!

## NSTA Press® Session: EUREKA! Grade 3–5 Science Activities and Stories

(Grades 3–5)

Science Focus: GEN, SEP

Ballroom A, Wisconsin Center

**Donna Farland-Smith** (*farlandsmith@aol.com*), The Ohio State University at Mansfield

Participate in some of the 27 lessons linking nonfiction historical trade books and science content for grades 3-5.

#### Astronomy Activities for Your Classroom

(Grades 4–12) Ballroom B, Wisconsin Center Science Focus: ESS1, PS2, CCC1, CCC3, CCC4, CCC7, SEP2, SEP5

**Donald Powers** (*DT-Powers*@wiu.edu), Western Illinois University, Macomb

Leave with a variety of low-budget hands-on astronomy activities that you can immediately use in your classroom.

#### NESTA and CIMSS Share GOES-16 STEM Resources!

(Grades 6–12) Ballroom D, Wisconsin Center Science Focus: ESS2.D, ESS3

**Margaret Mooney** (@UWCIMSS; margaret.mooney@ssec. wisc.edu), University of Wisconsin–Madison

**Craig Phillips** (@capte8baraboo; *cphillips@barabooschools. net*) and **Brian Witthun** (@sciandmathguy; *bwitthun@barabooschools.net*) Jack Young Middle School, Baraboo, Wis. GOES-16 is a NOAA weather satellite with incredible technological advancements, perfect for STEM education. Bring your laptop or tablet to explore new GOES-16 resources.

## **3:30–4:30 PM** Exhibitor Workshops Zombie Apocalypse!

(*Grades 6–12*) Science Focus: GEN

Sponsor: Texas Instruments

#### Jeffrey Lukens, Sioux Falls (S.Dak.) School District

Be part of a zombie apocalypse! Learn about disease-spread modeling using simulations and fun storylines about a zombie outbreak. Applicable for middle school and high school, this workshop is sure to scare you and your little zombies with its exciting Hollywood themes used to engage students in learning science!

201A, Wisconsin Center

#### Investigating a Cliff Model

(Grades 6–8) 201B, Wisconsin Center Science Focus: ESS2.C, CCC4, CCC7, SEP2, SEP3, SEP4, SEP6

Sponsor: Lab-Aids, Inc.

**Cynthia Sanchez,** North-Grand High School, Chicago, Ill. Engineer a coastal breakwater (from the *Issues and Earth Science* "Erosion and Deposition" unit from Lab-Aids) and analyze the trade-offs of the design. Explore how the natural world is influenced by our engineered world, creating more societal issues that must be solved through science and engineering. See how SEPUP embeds the practices and uses real issues to powerfully deliver content learning.

#### Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry Teacher

(Grades 9–12) 201 C/D, Wisconsin Center Science Focus: PS Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

Looking for lab activities that work every time, not just periodically? Explore easy, engaging, and safe chemistry activities that can produce a reaction from your students. Whether you're new to chemistry or feeling out of your element, learn ways to create excitement with hands-on labs, digital content, and demonstrations.

#### How to Argue in the Elementary Science Class

(Grades K–4) 202A, Wisconsin Center Science Focus: GEN, SEP7

Sponsor: Delta Education/School Specialty Science

Kathy Armstrong, Northside Elementary School, Midway, Ky. Darrick Wood, Distance Learning Coordinator, Louisville, Ky.

Help students develop scientific argumentation skills by making claims based on observable evidence. Put these skills into practice with lessons from Delta Science Modules, as we prove (or disprove) fundamental science concepts. Leave with readers, equipment, and a lesson that you can try with your students next week.

#### **Evolutionary Evidence in the Fossil Record**

202B, Wisconsin Center

Science Focus: LS4, CCC, SEP

(Grades 6-8)

Sponsor: Delta Education/School Specialty Science–FOSS **Ann Moriarty,** The Lawrence Hall of Science, University of California, Berkeley

What does the fossil record tell us about how life has changed over time? Explore evolutionary history through hands-on activities from the new FOSS Next Generation Heredity and Adaptation Course for middle school, and identify connections to the three dimensions of *NGSS*.



## CPO Science LINK Learning Module: Chemistry and the Periodic Table

(Grades 5–12) 202D, Wisconsin Center Science Focus: PS

Sponsor: CPO Science/School Specialty Science

Kat Mills, School Specialty Science, Rosharon, Tex.

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

CPO Science's new LINK Chemistry learning module is an *NGSS* approach that lets students experience innovative activities to learn about atomic structure and the periodic table. Use a digital learning environment with hands-on equipment to study bonding, isotopes, subatomic particles, ions, balancing equations, energy levels, and periodicity. Door prizes.

#### Science Storylines and the Driving Question Board: Keeping NGSS Curricula Student Driven

(Grades K–12) 202E, Wisconsin Center Science Focus: GEN, CCC6, SEP2

Sponsor: Activate Learning

Heather Milo (hmilo@activatelearning.com), Activate Learning, Greenwich, Conn.

What if K–12 lessons could both meet the standards and leverage student curiosity about the natural world? Join us for an engaging workshop on storyline coherence as a means to not only have pedagogy meet the *NGSS*, but also build on students wonderment questions using the Driving Question Board. This session uses the IQWST<sup>TM</sup> unit, How Can I Smell Things from a Distance?

#### **Enzymes: Technology Inspired by Nature**

(Grades 9–College) 203C, Wisconsin Center Science Focus: LS Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif

With rising greenhouse gases, scientists look to nature for a biofuel solution. Cellobiase enzyme, an engine for cellulosic biofuel production, takes center stage. Use an inquiry-based approach to extract enzyme, test activity, and design experiments to study how pH, temperature, and concentrations affect reaction rates.

## Environmental Toxicology Using Edvotek's New EZ-elegans

203 D/E, Wisconsin Center

Science Focus: LS Sponsor: Edvotek, Inc.

(Grades 9-College)

Maria Dayton (*info@edvotek.com*), Brian Ell, and Tom Cynkar, Edvotek Inc., Washington, D.C.

Model organisms allow scientists to investigate biological questions that cannot be studied in humans. Learn how Edvotek's EZ-elegans simplifies culturing *C. elegans* in your classroom. Then, explore effects of environmental factors on *C. elegans* using a simple locomotion assay. Integrate STEM concepts with data collection and statistics. Free gift for attendees!

## 5:00–5:30 PM Presentations

#### Spiraling Content and Using Exit-Level Performance Rubrics to Document Academic Growth

(Grades 6–9) Science Focus: GEN

**D.J. Huddleston** (*swimdad\_x2@frontier.com*), D.C. Everest Senior High School, Schofield, Wis.

102A, Wisconsin Center

Spiraling content curriculum around core umbrella standards and using exit-level performance rubrics allow students, educators, and parents to monitor academic growth toward targeted outcomes.

#### Using Seminars as a Form of Alternative Assessment

(Grades 9–12) 102E, Wisconsin Center Science Focus: GEN

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

Socratic seminars continue the tradition of Socrates, the classical Greek philosopher who taught his followers by asking questions. Today, Socratic dialogue can transform students' learning experience in classrooms through high school and beyond. When facilitated by a teacher, the Socratic method can lead to improved student achievement, increased motivation, and a more respectful classroom culture.

#### Intermolecular Forces Unit Plan with NGSS Focus

(Grades 9–12) 103A, Wisconsin Center Science Focus: PS1

Michelle Vlahovic (michelle\_vlahovic@glenbard.org), Glenbard (Ill.) District 87

Participate in the entire unit with handouts and example work on HS-PS1-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. Students experience science, identify patterns, collaborate with peers, and present their work.

### Tick! Tack! A Clock Is Ticking: Integrating Engineering Practices into Your Classroom

(Grades 3–8) 103D, Wisconsin Center Science Focus: ETS, SEP

**Eun Kyung Ko** (eun.ko@nl.edu), National Louis University, Skokie, Ill.

From *CCSS* to *NGSS* and even engineering practice, elementary science teachers just need an idea of where to start. Imagine selecting a book from *CCSS* appendix B informational text and designing an engineering project!

## Using Lab Practicals to Assess NGSS Science and Engineering Practices in the Physics Classroom

(Grades 9–12) 103E, Wisconsin Center

Science Focus: PS, SEP

Shannon Feineis (sfeineis@barrington220.org), Stephanie Marry (smarry@barrington220.org), and Daniel Carnduff (@carnduffphysics; crndg6@aol.com), Barrington High School, Barrington, Ill.

Barrington High School physics teachers use lab practicals to assess *NGSS* science and engineering practices as part of their unit summative assessments. Equipment, prompts, rubrics, and sample lab summatives will be demonstrated and discussed.



#### 5:00–6:00 PM Presentations

A Simple Classroom Test to Assess the Effects of Chemicals on Learning and Memory in Fishes

(Grades 7–12) Milwaukee, Hyatt Science Focus: LS1.A, LS1.B, LS2.D, LS3.B, LS4.C, CCC1, CCC2, CCC4, CCC6, CCC7, SEP

**Renee Hesselbach** (*hesselba@uwm.edu*) and **Dan Weber** (*dweber@uwm.edu*), University of Wisconsin–Milwaukee Experience a hands-on module for your classroom exploring the toxic effects of environmental agents on zebrafish learning as a model for human health.

#### **Pursuing Meaningful and Deeper Learning**

(Grades 9-12)

Regency D, Hyatt

Science Focus: GEN, SEP1, SEP7

**Joe Kulesza** (joseph\_kulesza@glenbard.org) and **Eric Day** (eric\_day@glenbard.org), Glenbard North High School, Carol Stream, Ill.

Inspire your students toward meaningful and deeper learning by embedding traditional learning targets within broader goals that traverse all types of student and personal interests.

#### **Polymers: Basics for the Science Classroom**

(Grades 7–12)

103B, Wisconsin Center

Science Focus: PS1

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

Simple demonstrations, labs, and activities bring STEMrelevant polymers into your curriculum. Concepts include formation, classification, structure, and properties. I'll share *NGSS* correlations and a CD of activities/information.

#### NSTA Press® Session: Argument-Driven Inquiry in Physical Science: Lab Investigations for Grades 6–8

(Grades 6–8) Ballroom A, Wisconsin Center Science Focus: PS, CCC, SEP

**Victor Sampson** (*@*drvictorsampson; *victor.sampson@ gmail.com*), The University of Texas at Austin

Learn about Argument-Driven Inquiry and how it can help students learn to use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.

#### 5:00–6:00 PM Hands-On Workshops

Fusing Science and English Language Arts

Lakeshore A/B, Hyatt

Science Focus: LS1.B, LS4.A

(Grades P-1)

Amanda Herlache (amherlache@gbaps.org), Green Bay (Wis.) Area Public School District

**Angela La Combe,** Curriculum Coordinator, Green Bay, Wis.

Have you used a read aloud to spark student interest in science? Explore using read alouds as the foundation for an integrated unit of study.

#### • Explaining Phenomena and Designing Solutions

(Grades K–5) 101B, Wisconsin Center Science Focus: PS2, CCC1, CCC2, SEP1, SEP6

Nancy Karre (nancy@bcamsc.org), Battle Creek Area Math and Science Center, Battle Creek, Mich.

Use phenomena and designing solutions to drive student engagement and learning. Experience an activity from an *NGSS*-focused lesson that makes science knowledge relevant and purposeful.

#### Teaching the Human Dimensions of Climate Change

(Grades 6–12) 102B, Wisconsin Center Science Focus: ESS3.A, ESS3.C, ESS3.D, LS4.D, CCC1, CCC2, CCC3, CCC4, CCC7, SEP

Howard Aprill (howard.aprill@milwaukeecountywi.gov), Wehr Nature Center, Franklin, Wis.

Discover online resources as well as hands-on activities to connect climate change with human activities (past and present) and assess risks to different global communities.

#### All Kids Welcome: Success in Science Regardless of Background and Resources

(Grades 1–6) 102D, Wisconsin Center Science Focus: GEN

Kristi Zenchak (zenchak@oakton.edu), Oakton Community College, Des Plaines, Ill.

**John Zenchak** (*jjzenchak@noctrl.edu*), North Central College, Naperville, Ill.

Experience activities that cut across limitations of student background and school resources, yet use inquiry to teach scientific process skills and grade-appropriate content.

### 5:30–6:00 PM Presentations

Moving Your District Forward in STEM and NGSS(Grades K-12)103D, Wisconsin CenterScience Focus: GEN, NGSS

Andrew West (awest@waunakee.k12.wi.us) and Tammy Rademacher, Waunakee Community High School, Waunakee, Wis.

**Aimee Spahos,** Waunakee Intermediate School, Waunakee, Wis.

**Jessica North** (*jessicanorth@waunakee.k12.wi.us*), Waunakee Middle School, Waunakee, Wis.

**Denise Farnsworth** (*dfarnsworth*@waunakee.k12.wi.us), Prairie Elementary School, Waunakee, Wis.

**Jodi Ryan** (*jodiryan@waunakee.k12.wi.us*), Arboretum Elementary School, Waunakee, Wis.

**Ken Penfield** (*kpenfield@waunakee.k12.wi.us*), Heritage Elementary School, Waunakee, Wis.

Use a science leadership team model to encourage *NGSS* and STEM opportunities in K–12 classrooms.

### What Are They Thinking? Using ONPAR to Assess 3-D Thinking in Students

103E. Wisconsin Center

(Grades 6–8) Science Focus: GEN, NGSS

**Linda Malkin,** University of Wisconsin–Madison Are you struggling to assess three-dimensional learning in your diverse classroom? Learn how ONPAR digital tools can inform teaching and learning for middle school students.

### 6:30–8:30 PM Networking Opportunity

## Wisconsin Society of Science Teachers (WSST) Welcome Reception

(By Ticket Through WSST, \$20) UWM School of Freshwater Sciences All conference participants are invited to this welcome reception is for all WSST members and Wisconsin teachers to meet with their professional organization and socialize. Enjoy hors d'oeuvres, beer, wine, and soda.

Special activities include:

- A 3–5 member Team Trivia Competition for prizes (free)
- Wisconsin Beer Tasting Seminar (additional \$15 fee)

Tickets, if still available, may be purchased for \$20 at the WSST Booth.

Shuttles will pick up participants at all four conference hotels starting at 6:15 PM. Last bus departs UWM at 8:45 PM.



—Photo courtesy of Mike Weiss



—Photo courtesy of Visit Milwaukee

Atop the Wisconsin Gas Building is a 21-foot-tall weather beacon shaped as a natural gas flame that indicates the weather forecast by its color and flicker.

#### 8:00–9:00 AM Presentations

Using Standards-Based Grading Principles with a Percentage-Based Grading System

(Grades 6-12)

Executive C/D, Hyatt

Science Focus: GEN

Matthew Senese (@MrSenese; msenese@d155.org) and William Janshego (@MrJanshego; wjanshego@d155.org), Prairie Ridge High School, Crystal Lake, Ill.

Get tools to implement standards-based grading principles in order to effectively assess student learning and instruction in a traditional percentage-based grading system.

#### **Engaging the Adult Learner: Powerful Professional** Learning Strategies for Implementing NGSS in Your **Schools**

(General)

Lakeshore A/B, Hyatt

Science Focus: GEN, NGSS

Elissa Hoffman (@ehoffman; eahoffman@gbaps.org), Michael Friis (@friisicle; mtfriis@gbaps.org), and Amanda Herlache (amherlache@gbaps.org), Green Bay (Wis.) Area Public School District

Leverage the power of the NGSS to design effective and engaging PD sessions for adult learners. Leave with practical strategies to implement immediately!

### Reaching ALL of Your Students in Your iPad 1:1 Classroom

(Grades 5-12) Regency C, Hyatt Science Focus: GEN, NGSS

Diane Kasparie, Quincy Notre Dame High School, Quincy, Ill.

Deliver your high-quality standards-based science curriculum, assess students' understanding, and keep students engaged in your iPad 1:1 classroom to ensure genuine student learning, painlessly! BYOD!



#### Igniting Creativity for STEM Innovation: Focus On **Gifted/Advanced Learners**

(Grades K-12) 101A, Wisconsin Center Science Focus: ESS3.D, ETS1.A, ETS2.B, LS4.D, CCC4, CCC5, SEP1, SEP4, SEP5, SEP8

**Dorothy Ginnett** (*dorothyginnett*@gmail.com), Auburndale High School, Auburndale, Wis.

Explore strategies to close the science excellence gap, including identification of advanced/gifted potential from diverse populations, stimulating student creativity and advanced learning challenges.

## Preservice and Inservice Teachers Tacking and Jibarnothing ing Toward Integrated STEM and the Science and **Engineering Practices**

(Grades K-6)

(Grades 6-College)

Science Focus: ESS, PS

101B, Wisconsin Center Science Focus: GEN, SEP1, SEP2, SEP3

Matthew Vick (mevick@wi.rr.com), University of Wisconsin-Whitewater

Encounter methods to connect inservice teachers with preservice teachers to integrate the science and engineering practices into their teaching through innovative "third space" methods course structures.

#### AAPT Session: IceCube Neutrino Observatory at the South Pole

102D, Wisconsin Center

Francis Halzen, Wisconsin IceCube Particle Astrophysics Center, Madison

Hear about the design and science of the biggest and strangest telescope ever built, the IceCube Neutrino Observatory at the South Pole.

## Enabling K–6 Students to Understand the Impact of STEM and the Integration of All Its Disciplines

(Grades K-6) 103B, Wisconsin Center Science Focus: GEN, NGSS

Donna Knoell (dknoell@sbcglobal.net), Educational Consultant, Overland Park, Kans.

Join me as I model integration of STEM disciplines in classroom explorations by analyzing and constructing physical structures and everyday household objects to advance learning and ignite engagement and creativity. Handouts.

### Science, Technology, and Literacy: Ideas for the Elementary Classroom

(Grades 1-6) Science Focus: GEN

103E, Wisconsin Center

Jane Savatski (@teachtwo), Janet Berry Elementary School, Appleton, Wis.

Use Chromebooks or iPads to simultaneously teach and learn about science and literacy concepts. Most elementary classroom teachers face the challenge of teaching multiple disciplines in a limited amount of time. Walk away with ideas for using technology to internalize science and literacy concepts.

#### NSTA Press® Session: Uncovering Student Ideas in Science with 3-D Assessment Probes

(Grades K–12) Ballroom A, Wisconsin Center Science Focus: GEN, NGSS

**Page Keeley** (@CTSKeeley; *pagekeeley*@gmail.com), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Experience how formative assessment probes from the *Uncovering Student Ideas* series elicit evidence of students' disciplinary core ideas while providing the opportunity to use science practices and crosscutting concepts.

## 8:00–9:00 AM Hands-On Workshops

Forest Ecosystems: Trees of Life

(Grades K–8) Regency A, Hyatt Science Focus: LS1.A, LS1.B, LS1.C, LS2.A, LS2.C, LS2.D, LS3, LS4.B, LS4.C, LS4.D

Georgia Littleton (georgia.littleton@boonevilleschools.com), Garnetta Bonner, and Barbette Smithson (barbette. smithson@boonevilleschools.com), Booneville Elementary School, Booneville, Ark.

Join us in a STEM exploration of the ecosystems surrounding the forests and trees of the world. Lesson plans and literacy connections supplied.

## Introducing Students to Linguistics: The Science of Language

(Grades 6–12)	Regency D, Hyatt
Science Focus: GEN, NGSS	

Suzanne Loosen (loosensa@milwaukee.k12.wi.us), Milwaukee (Wis.) Public Schools

Kelsie Pattillo (kelsie@uwm.edu), University of Wisconsin-Milwaukee

Learn about language science and how to incorporate it as a STEM unit. Topics include anatomy and speech production, voice waves, and mathematical/computational skills.

#### Riding the Wave of Integration: Science and Children's Literature

(Grades 3–6) 101 C/D, Wisconsin Center Science Focus: ESS, ETS, PS

**Christine Anne Royce** (@caroyce; *caroyce*@aol.com), NSTA President-Elect, and Shippensburg University, Shippensburg, Pa.

Maximize instructional time while meeting both the *NGSS* and *CCSS* by riding the wave of integration by pairing selected children's literature and three-dimensional investigations.



## ACS Middle Level Session One: Solids, Liquids, Gases, and Changes of State

(Grades 6–8) 102A, Wisconsin Center Science Focus: PS

**James Kessler,** American Chemical Society, Washington, D.C.

Explore solids, liquids, gases, and changes of state through hands-on activities and molecular model animations from the free 5E (Engage, Explore, Explain, Elaborate, and Evaluate) lesson plans at *middleschoolchemistry.com*.

## ASEE Session: Arduinos/STEM Projects for Physical Science Students

(Grades 9–12) 102E, Wisconsin Center Science Focus: ETS1, ETS2.B, PS, SEP1, SEP3 Mark McAtee (mark\_mcatee@natronaschools.org), Roosevelt

High School, Casper, Wyo.

Incorporate Arduino projects and programing into your existing curriculum, meeting *NGSS* with technology. Have your students learn programming and circuit prototyping using readily available Arduino microprocessors with a variety of projects.

## **INF** It's Cooler by the Lake!

(Grades 6–8) 103C, Wisconsin Center Science Focus: ESS2, ESS3, INF, CCC2, CCC4, CCC5, CCC7, SEP1, SEP2, SEP4, SEP7

Taylor Fusinatto (@fusinatto1210; fusinattot@district65. net), Dr. Bessie Rhodes School of Global Studies, Skokie, Ill. Emily Stankovic (@Stankovic\_NMS; stankovice@district65.net), Nichols Middle School, Evanston, Ill.

Use art, technology, and citizen science to engage all students in understanding the important freshwater system in their community.



–Photo courtesy of Jacob Slaton

201A. Wisconsin Center

## 8:00–9:00 AM Exhibitor Workshops Integrate Instruction and Assessment in Three Dimensions Using Learning Progressions

(Grades K–8) Science Focus: GEN, NGSS Sponsor: Amplify

**Rebecca Abbott** and **Sophia Lambertsen**, The Lawrence Hall of Science, University of California, Berkeley

Explore how learning progressions may be used to organize a coherent sequence of instruction for a unit, define the focus and timing of assessments, and enable actionable inferences about students' progress. Engage with K–8 exemplars from Amplify Science, the new *NGSS*-designed curriculum from The Lawrence Hall of Science.

#### Photosynthesis and Respiration Shuffle

(Grades 9–12) 201B, Wisconsin Center Science Focus: LS1.C, LS2.B, PS3.D, CCC2, CCC4, SEP2, SEP6

Sponsor: Lab-Aids, Inc.

**Dawn Posekany,** Solon High School, Solon, Iowa Students have major misconceptions about photosynthesis and cellular respiration, but this content is essential for understanding matter and energy, both at the micro (cellular) and macro (ecosystem) levels. Using a computer simulation, a hands-on activity, and notebooking/discussion strategies, expose student thinking—all from SEPUP's new *Science & Global Issues: Biology* program from Lab-Aids.

#### Hands-On Activities to Model Habitat Preference and Population Sampling

(Grades K–12) 201 C/D, Wisconsin Center Science Focus: LS

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Watch and learn! First you'll learn about sampling methods and get hands-on experience using transects. Then you'll

#### Imagine That! Creative Problem Solving Through Engineering and Puppetry

(Grades P–K) 103D, Wisconsin Center Science Focus: GEN, CCC

**Penny Russell** (@Wolf\_Trap), Wolf Trap Institute for Early Learning Through the Arts, Vienna, Va.

Discover how the connections between the engineering method and puppetry can enhance your teaching and empower children's creative problem-solving skills and habits of mind!

use inquiry to develop experiments to observe the habitat preference of bess beetles, millipedes, and other insects. This engaging workshop gives you new inquiry-based tools to nurture student curiosity.

## Untangling Electric Circuits: STEM Activities from Essential Physics

(Grades 7–12) 202A, Wisconsin Center Science Focus: PS3.A, PS3.B, PS3.D, CCC2, CCC6, SEP3, SEP4, SEP7

Sponsor: PASCO scientific

**Ronn Fieldhouse,** PASCO scientific, Roseville, Calif. Students are often confused when learning the basics of circuits because they cannot directly observe the phenomenon, or they become lost in tangled wires. There is a simpler way for students to learn the basics of circuits and have the freedom to easily explore their circuit designs to gain a deeper understanding of electrical concepts. Get hands on with new technology to discover a better way to teach circuits!

#### Science Teacher/STEM Teacher—What's the Difference?

202B. Wisconsin Center

(Grades K–11) Science Focus: GEN, SEP Sponsor: STEMscopes

Judy Zimny (*jzimny@NISE.institute*), Accelerate Learning, Inc., Houston, Tex.

Distinguishing between science and STEM is important as teachers integrate STEM into their practice. Join us to discuss the unique nature of STEM, the research-based instructional strategies necessary to support its outcomes, and a STEM certification pathway that encourages self-reflection and growth in STEM teaching.

#### Enhance Your Science Course with POGIL<sup>TM</sup> Activities

(Grades 7–College) 202C, Wisconsin Center Science Focus: LS, PS

Sponsor: Flinn Scientific, Inc.

Jillian Saddler (jsaddler@flinnsci.com) and Mike Marvel (mmarvel@flinnsci.com), Flinn Scientific, Inc., Batavia, Ill. Create a more student-centered science classroom! Discover strategies for incorporating Process Oriented Guided-Inquiry Learning (POGIL) activities into your biology and chemistry courses, including free sample activities. POGIL activities guide students to construct new understandings while encouraging critical thinking, problem solving, and collaboration. Learn how to integrate POGIL with lab and demos for a complete hands-on science experience!

#### Ideas for Teaching About Earthquakes and Earth Structure

(Grades K–12) 202D, Wisconsin Center Science Focus: ESS2.B

Sponsor: Pearson Learning Services

Michael Wysession, Washington University in St. Louis, Mo.

Join geophysics professor Michael Wysession as he discusses exciting new discoveries about earthquakes and the structure of Earth and provides examples of activities that can be directly incorporated into *NGSS*-focused curricula. Also, receive an overview of many of the K–12 educational tools developed at Incorporated Research Institutions for Seismology (IRIS).

#### Integrating Chromebook with Vernier Data-Collection Technology

(Grades 3–College) 202E, Wisconsin Center Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. In this hands-on workshop, learn how Vernier supports teachers who use Chromebook devices in their classrooms. Experiments such as "Boyle's Law," "Grip Strength Comparison," and "Ball Toss" will be conducted.

#### Elephant Biology and Conservation with HHMI BioInteractive

(Grades 8–College) 203 D/E, Wisconsin Center Science Focus: LS2.A, LS2.C, LS3, LS4.B, LS4.D, CCC1, CCC2, CCC3, CCC4, CCC7, SEP1, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

Sponsor: HHMI BioInteractive

**Amy Fassler** (*fasslera@marshfieldschools.org*), Marshfield High School, Marshfield, Wis.

The story of elephants is a powerful case study for teaching biological concepts. Explore different techniques used to count elephants as we model the Great Elephant Census and discover free HHMI BioInteractive resources to show students how scientific research can guide conservation efforts.

#### Science and Engineering Practices in the NGSS

203A, Wisconsin Center

*(Grades K–8)* Science Focus: GEN, SEP Sponsor: TCI

#### Brian Thomas, TCI, Cincinnati, Ohio

Join TCI and participate in an engaging *Bring Science Alive!* investigation that has your elementary students developing solutions and making sense of the natural and designed world. Participants will experience this lesson from the student perspective as they carry out investigations, build models, and learn skills to analyze and interpret data, develop solutions, and communicate their methods just like professional scientists and engineers!

#### PTC Taster Lab—From Genotype to Phenotype

(Grades 6–College) 203B, Wisconsin Center Science Focus: LS1, LS3, LS4, CCC6, CCC7, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Sponsor: miniPCR

**Robert Dennison** and **Sebastian Kraves** (*seb@minipcr. com*), miniPCR, Cambridge, Mass.

A single nucleotide change in your DNA can make you a supertaster. Come explore the molecular genetics of taste using PCR and gel electrophoresis. Learn how to amplify and analyze your own genes, linking your PTC taste receptor DNA sequence to your own taster phenotype.

## How to Use Pop Culture in Your Life Science Class

(Grades 9–College) 203C, Wisconsin Center Science Focus: LS

Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Use popular science to engage high school and college students in your classroom. See how popular TV and movies connect to real-world science discoveries and issues. Learn to use examples like DNA fingerprinting to make gel electrophoresis the foundation of a fun hands-on lab that increases student involvement and understanding.

## 8:00–10:00 AM Hands-On Workshop

ACS High School Session One: Relating Structure and Properties: Eliciting and Visualizing Students' Initial Ideas

(Grades 9–12) 102B, Wisconsin Center Science Focus: PS, CCC, SEP

**Chad Bridle** (@sciencebridle; *cbridle1@gpsbulldogs.org*), Grandville High School, Grandville, Mich.

Jennifer Keil (jenniferkeill1@gmail.com) and Marta Gmurczyk (m\_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

**Rebecca Stober** (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts, Denver, Colo.

**Saul Trevino** (*srt0589@gmail.com*), Houston Baptist University, Houston, Tex.

Discover how to elicit and explore students' initial ideas and models of chemical compounds by using engaging phenomena in relevant contexts. Learn also how to engage students in data analysis to allow them to build an understanding of the structure and properties of ionic and covalent compounds.

## 8:00 AM-5:00 PM Meeting

## Discover the NGSS Train-the-Trainer Workshop

(By Preregistration Only) Regency B, Hyatt This workshop gives teacher leaders a solid understanding of the NGSS, tools for conducting teacher training, and the confidence they need to be leaders.

## 8:30–9:00 AM Presentation

## Making the Leap to a Digital Course

(Grades 9–12) Executive A/B, Hyatt Science Focus: GEN

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

Join me for a demonstration on how to gather resources into a single, easily updated electronic space that can make students, teachers, and parents willing to toss the textbook!

## 9:00 AM-4:00 PM Exhibits

Hall A, Convention Center

Did you know that NSTA offers exclusive exhibit hall and exhibitor workshop hours today from 3:00 to 4:00 PM? During these hours there are no teacher sessions scheduled and it's a perfect time to visit the exhibits and discover all the products and services companies and organizations have to offer. Some exhibitors will offer materials for sale throughout the conference.

## 9:30–10:00 AM Presentation

 From Proteins to Climate Change—Biotech in Action

 (Grades 9–12)
 Lakeshore A/B, Hyatt

Science Focus: ESS, LS

**Elizabeth Jesse** (@sciencewiscedu; *ejesse2@wisc.edu*) and **Benjamin Minkoff** (*bminkoff@wisc.edu*), University of Wisconsin Biotechnology Center, Madison

Use the most plentiful protein on the planet—RuBisCO—to teach the DNA $\rightarrow$ RNA $\rightarrow$ protein pathway of molecular biology through hands-on activities that use current research methods.



### 9:30–10:30 AM Featured Presentation Growing Power and the Good Food Revolution (General)

Science Focus: INF

102C, Wisconsin Center



Will Allen (@GrowingPower; will@growingpower.org), Founder and CEO, Growing Power, Milwaukee, Wis.

Presider: Kevin Niemi, Strand Leader, NSTA Milwaukee Area Conference, and University of Wisconsin-Madison

The son of a sharecropper, Will Allen had no intention of ever becoming a farmer himself. But after years in professional basketball and as an executive for KFC and Procter & Gamble, Will cashed in his retirement fund for a two-acre plot a half mile away from Milwaukee's largest public housing project. The area was a food desert, with only convenience stores and fast-food restaurants to serve the needs of local residents. In the face of financial challenges and daunting odds, Will built the country's preeminent urban farma food and educational center that now produces enough vegetables and fish year-round to feed thousands of people. Growing Power has sought to prove how local food systems can help troubled youths, dismantle racism, create jobs, bring urban and rural communities closer together, and improve public health. Today, Growing Power helps develop community food systems across the country.

Will Allen is an urban farmer who is transforming the planning, cultivation, production, and delivery of good, healthy food to urban and rural populations. After a career in professional basketball and a number of years in corporate sales and marketing at Procter & Gamble, in 1993 Will returned to his roots as a farmer to purchase the last remaining registered farm in the City of Milwaukee, where he established and functions as Farmer, Founder, and CEO of the worldpreeminent urban farm and nonprofit organization, Growing Power.

In 2008, Will was a John D. and Katherine T. MacArthur Foundation Fellow and "genius grant" winner. In 2010, Time Magazine named him to its list of 100 World's Most Influential People. A member of the Clinton Global Initiative, Will was invited to the White House to join First Lady Michelle Obama in launching "Let's Move!"—her signature leadership program to reverse the epidemic of childhood obesity in America.

Will continues to bring good food to people all over the world to help end poverty through Growing Power's National Headquarters in Milwaukee.

## 9:30–10:30 AM Presentations **Boost Books, Cultivate Curiosity!**

(Grades K-2)

Science Focus: GEN

Executive A/B, Hyatt

Joan Biese (@gr1teacher; jbiese@seymour.k12.wi.us), Rock Ledge Primary Center, Seymour, Wis.

Nonfiction, fiction, and even poetry books can connect young readers to foundational science ideas. Maximize your busy schedule by combining science with literacy!

## Developing Creativity in an Assessment-Driven Environment

(Grades 6-College) Science Focus: GEN, NGSS Executive C/D, Hyatt

**Ken Turner**, Jr. (*kturner*@*dbq.edu*), University of Dubuque, Iowa

Developing creativity through the perspectives of science, writing, and graphic design is the goal of this collaborative presentation. Come share!

NSELA-Sponsored Session: Tools for Leaders Session 1 (Grades K-12) Milwaukee, Hyatt

Science Focus: GEN

Larry Plank (@nselascience; larry.plank@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

Bob Sotak (@nselascience; bobsotak@gmail.com), NSELA President, and Science/STEM Education Consultant, Edmonds, Wash.

The National Science Education Leadership Association welcomes you to join science leaders from around the nation who will share successful tools and best practices for leaders in science education. These tools can be curricular, instructional, or managerial in nature.

### Making Waves at the Discourse Level: Promoting High-Quality Dialogue with English Language Learners

(Grades 1-9)

101 C/D, Wisconsin Center

Science Focus: PS4.A, SEP7

Matthew Vick (mevick@wi.rr.com) and Melanie Schneider

(schneidm@uww.edu), University of Wisconsin–Whitewater Learn strategies for teaching vocabulary at multiple levels, supporting oral discourse for English language learners, and engaging students in argument based on evidence.



## Using National Science Olympiad STEM Events to Address NGSS Crosscutting Concepts and Content

(Grades 3–12) 101A, Wisconsin Center Science Focus: ESS1.A, ESS1.B, ESS2.A, ESS2.B, ESS2.C, ESS2.D, ESS3.A, ESS3.B, ESS3.D, ETS1, LS1.A, LS1.B, LS3, LS4.C, PS1.A, PS1.B, PS2, PS3.B, PS3.C, PS4.A, PS4.B, CCC, SEP

**Donna Young** (*dlyoung.nso@gmail.com*), NASA NSO STEM Coordinator, Bullhead City, Ariz.

National Science Olympiad elementary through high school competitions include STEM events and supporting resources that are easily incorporated into existing curricula to actively engage students.

### AAPT Session: Living and Working at the South Pole

(General) 102D, Wisconsin Center Science Focus: ETS2, PS, CCC7

Kate Miller (kate.miller@apsva.us), Washington-Lee High School, Arlington, Va.

Katherine Shirey (@kateyshirey; katey.shirey@ knowlesteachers.org), Knowles Science Teaching Foundation, Moorestown, N.J.

Ever wonder what it would be like to live and work at the South Pole? Find out from two teachers who did!

## Eureka! Science Trade Books—Good as Gold!

(General)

Science Focus: GEN

103A, Wisconsin Center

Juliana Texley (@JulianaTexley; *texlelj@cmich.edu*), 2014–2015 NSTA President, and Science Writer/Instructor, New Baltimore, Mich.

Need great books for student learning? Explore and use NSTA Recommends and the Children's Book Council Outstanding Science Trade Books. Door prizes...books, of course!

## Making Redox Practical, Relevant, Engaging, and Fun Corrosion Chemistry!

(Grades 7–12) 103B, Wisconsin Center Science Focus: PS

Andrew Nydam (andrewnydam@hotmail.com), Polymer Ambassador, Olympia, Wash.

Join me for real-world examples using labs, demonstrations, and examples that make reactivity, oxidation/reduction, and corrosion exciting, practical, and easy to teach and learn. I'll share STEM connections and a CD of information.

## Taking NGSS Outside: The Benefits, Strategies, and Evidence of Outdoor Learning

(Grades 6–8/College) 103C, Wisconsin Center Science Focus: LS2

**Mary Beth Factor** (@Trees4Tomorrow; *marybeth*@ *treesfortomorrow.com*), Trees for Tomorrow, Eagle River, Wis. *NGSS* and outdoor learning go hand in hand and serve to meet the needs of diverse learners. Strategies of implementation and stories of application will be shared!

## NSTA Press® Session: Argument-Driven Inquiry in Biology: Lab Investigations for Grades 9–12

(Grades 9–12) Ballroom A, Wisconsin Center Science Focus: LS, CCC, SEP

**Victor Sampson** (@drvictorsampson; *victor.sampson*@ *gmail.com*), The University of Texas at Austin

Learn about Argument-Driven Inquiry and how it can help students learn to use disciplinary core ideas, crosscutting concepts, and science and engineering practices to explain natural phenomena.



## 9:30–10:30 AM Hands-On Workshops

**Easy Middle School Engineering Projects** 

(Grades 6–12) Regency C, Hyatt Science Focus: ETS, SEP1, SEP2, SEP3, SEP4, SEP6, SEP7, SEP8

Brian Knox (brian.knox@bvsd.org), Peak to Peak Charter School, Lafayette, Colo.

Learn some easy-to-implement middle school—level engineering projects that meet the *NGSS*. Walk away with four low-cost inquiry-based engineering projects and build one on your own!

### Teachers Helping Teachers: Teaching Socially Controversial Topics

(Grades 7–College) Regency D, Hyatt Science Focus: ESS, LS4

**Brian Pinney** (@NCSEteach; *pinney@ncse.com*), National Center for Science Education, Oakland, Calif.

The National Center for Science Education (NCSE) has spent decades defending the teaching of scientifically settled but socially controversial topics. Discussion centers on teaching these topics.

## A Picture-Perfect Approach to Connecting Literacy and Science

(Grades P–5) 101B, Wisconsin Center Science Focus: GEN, NGSS

Kim Stilwell (@kimstilwellNSTA; kstilwell@nsta.org), Manager, NSTA Business Development, NSTA, Arlington, Va.

Need ideas to connect literacy and science? Never before has it been so easy to interest students in reading and science. *Picture-Perfect Science Lessons* combine the appeal of children's picture books with standards-based science content. Leave with ideas on how to begin the integration in your classroom.

## 9:30–10:30 AM Exhibitor Workshops

Implementing Argumentation: Evidence, Claims, Reasoning, and Science Seminars in Grades 6–8

(Grades 6–8) 201A, Wisconsin Center Science Focus: GEN, NGSS

Sponsor: Amplify

**Sophia Lambertsen** and **Rebecca Abbott**, The Lawrence Hall of Science, University of California, Berkeley Participate in The Lawrence Hall of Science's argumentationrich curricular approach that supports students as they gain expertise using evidence and reasoning to support claims. Engage in a science seminar, getting a glimpse of what the authentic and robust use of argumentation can look like in your classroom.

## ACS Middle Level Session Two: The Water Molecule and Dissolving

(Grades 6–8) 102A, Wisconsin Center Science Focus: PS

**James Kessler,** American Chemical Society, Washington, D.C.

Explore the polarity of the water molecule and identify substances based on their solubility using hands-on activities and molecular animations from the free website *middleschool-chemistry.com*.

### ASEE Session: K–5 Engineering: Integrating Engineering and Design into the Curriculum

(Grades 3–5) 102E, Wisconsin Center Science Focus: ETS

**Jay Garvey Shah** (*jgshah@sunprairieschools.org*), Creekside Elementary School, Sun Prairie, Wis.

Attention will be paid to the importance and authentic implementation of engineering in the upper elementary school setting. Engage in hands-on engineering design processes and gain experience designing and testing possible solutions.

## CESI-Sponsored Session: Integrating Science and Literacy: Proven Strategies Developed from Evidence-Based Practices

(Grades K–5) 103D, Wisconsin Center Science Focus: GEN

**Jim McDonald** (@jimscienceguy; *jim.mcdonald@cmich. edu)*, CESI President, and Central Michigan University, Mount Pleasant

Find out how to integrate science with literacy and walk away with 33 proven instructional strategies to use in your classroom right away.

#### What Is a Species?

(Grades 9–12) 201B, Wisconsin Center Science Focus: LS4.A, CCC1, CCC2, SEP6, SEP7, SEP8 Sponsor: Lab-Aids, Inc.

**Dawn Posekany,** Solon High School, Solon, Iowa In this activity from the SEPUP high school biology program, learn about conditions that lead to speciation, including isolation due to temporal, geographical, and behavioral factors, and more. Then determine whether selected animal or plant pairs are in the early, mid, or late stages of speciation.

202D, Wisconsin Center

202E, Wisconsin Center

#### Shifting to the Five Innovations: How Do We Transform Instruction?

(Grades 6–8) 201 C/D, Wisconsin Center Science Focus: PS1, CCC, SEP

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Experience the five innovations with the Smithsonian's new STC-Middle School "Matter and Its Interactions" module. This thought-provoking hands-on workshop will demonstrate three-dimensional learning using phenomena. Leave with a better understanding of how the five innovations enhance science instruction.

#### Understanding Photosynthesis: A Lab-Based Approach

(Grades 6–12) 202A, Wisconsin Center Science Focus: LS1.A, LS1.C, LS2.B

Sponsor: PASCO scientific

**Ronn Fieldhouse,** PASCO scientific, Roseville, Calif. How can you clear up student misconceptions about respiration only occurring in the dark, or that only green light is used for photosynthesis? With data! Collect data on plant pigments, light reactions, and carbon cycling to create a better conceptual model that students can synthesize for a complete understanding of photosynthesis.

#### **INF** STEMrangers: Making Science Night Meaningful

(Grades 3–8) Science Focus: LS2.C, INF Sponsor: STEMscopes

**Michele Cozza** (*mcozza*@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.

STEMscopes has partnered with EarthEcho International to develop Science Nights for schools that turn learning into action. Come see how you can both learn new science content and help save Earth's most valuable resource. Leave with the tools to make your campus science night an unforgettable event for students and families.

#### 3-2-1 Blast Off!

Science Focus: PS2, PS3

(Grades 2–8)

202C, Wisconsin Center

202B, Wisconsin Center

Sponsor: Educational Innovations, Inc.

**Jeremy Johnson,** Educational Innovations, Inc., Terre Haute, Ind.

What student doesn't like a burst of energy?! Elementary and middle school teachers join us for this fast-paced hands-on workshop that covers energy, forces, motion, and Newton's laws. Make your own stomp rockets as you explore elastic, potential, and kinetic energy, and more! Lesson ideas, giveaways, and door prizes!

## Incorporating the NGSS Crosscutting Concepts into Your Teaching

(Grades K–12) Science Focus: GEN, CCC

Sponsor: Pearson Learning Services

Michael Wysession, Washington University in St. Louis, Mo.

Join professor and *NGSS* writing team leader Michael Wysession as he discusses ways that teaching can meet best practices concerning the *NGSS* crosscutting concepts. Often seen as the most challenging of the three dimensions of the *NGSS*, the crosscutting concepts, if implemented well, can provide students with a deep and intuitive understanding of science.

#### Chemistry with Vernier

*(Grades 9–12)* Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, learn how Vernier supports chemistry teachers who want their students to use probeware. A variety of experiments from our popular chemistry lab books will be conducted. Learn how our innovative datacollection technology works across multiple platforms such as LabQuest 2, computer, Chromebook, and iPad.

#### **Explore Data Points with HHMI BioInteractive**

(Grades 9–College) 203 D/E, Wisconsin Center Science Focus: LS1.A, LS1.B, LS3, LS4.A, LS4.B, LS4.C, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP1, SEP2, SEP4, SEP5, SEP7, SEP8

Sponsor: HHMI BioInteractive

Kathy Van Hoeck (kathyvanhoeck@gmail.com), York Community High School, Emhurst, Ill.

Are you looking for scientific research and data that are accessible to your students? Come learn about HHMI BioInteractive's Data Points. These free classroom-ready resources can help your students unpack complex data and include associated materials—such as short films, interactives, and classroom activities—that encourage data literacy.

#### Hands-On Anatomy: Body Building with Clay

(Grades 5–College) 203A, Wisconsin Center Science Focus: LS

Sponsor: ANATOMY IN CLAY® Learning System

**Debbi Warren,** Medford (Ore.) School District 549C Join us for this hands-on approach to teaching anatomy and body systems. This is a proven method used from middle schools to medical schools that allows for learning, not memorizing, how the human body systems work together. Participants will be involved in building and discussing how the system works in the classroom.

## DNA Structure and Function with a Twist of Dynamic DNA

(Grades 8–College) 203B, Wisconsin Center Science Focus: ETS, LS, CCC1, CCC2, CCC6, CCC7, SEP3, SEP6

Sponsor: 3D Molecular Designs

**Tim Herman** (*herman@msoe.edu*), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

Support three-dimensional learning with engaging instructional materials that introduce DNA as a double-stranded helical molecule and as information that encodes proteins. Physical models allow students to explore DNA structure and function. A paper bioinformatics exercise focuses on the beta subunit of hemoglobin and the sickle cell disease mutation.

#### Get That Grant Money!

(Grades 9–College)

Science Focus: GEN Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

203C, Wisconsin Center

Successful grant writing isn't rocket science, but it can take your teaching to new heights. We will show you how to get organized and find resources. Experienced grant writers will share their powerful tips to get you to the next level.

#### 10:00–10:30 AM Presentations

## Station Rotations to Chunk Material in Freshman Biology

Lakeshore A/B, Hyatt

(Grade 9)

Science Focus: LS, SEP1, SEP7, SEP8 Bridget Meyers, Glenbard (Ill.) District 87

Eric Day (eric\_day@glenbard.org), Glenbard North High School, Carol Stream, Ill.

Take an activity and chunk it, allowing for a "timed" amount for students to read, react, and respond. Students refine as closure to the activity.

#### NGSS and Climate Change for Middle School

(Grades 5–10) Regency A, Hyatt Science Focus: ESS3.C, ESS3.D, CCC2, SEP1, SEP2, SEP7 Jenna Totz (@climategenorg; jenna@climategen.org), Climate Generation: A Will Steger Legacy, Minneapolis, Minn. Is your district adopting NGSS? Are you looking for free

curricular resources? Let Climate Generation help you incorporate climate change performance standards with interdisciplinary real-world lessons.

#### 10:30 AM–12 Noon Hands-On Workshop

ACS High School Session Two: Relating Structure and Properties: Constructing Science Ideas Through Exploring Data

102B, Wisconsin Center

Science Focus: PS, CCC, SEP

(Grades 9-12)

Chad Bridle (cbridle1@gpsbulldogs.org), Grandville High School, Grandville, Mich.

Jennifer Keil (jenniferkeil11@gmail.com) and Marta Gmurczyk (m\_gmurczyk@acs.org), American Chemical Society, Washington, D.C.

**Rebecca Stober** (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts, Denver, Colo.

**Saul Trevino** (*srt0589@gmail.com*), Houston Baptist University, Houston, Tex.

Experience strategies for engaging students in analyzing and interpreting data to discover the structural factors that affect the solubility of ionic compounds. Explore how to help students use their findings to revise their original models and create solutions to relevant problems in the surrounding world.
#### **11:00 AM–12 Noon Featured Presentation Doing and Talking Science with English Learners** (General) 102C, Wisconsin Center

(General) 102C, Science Focus: GEN, NGSS



**Rita MacDonald** (*rkmacdonald*@ *wisc.edu*), Applied Linguist and Researcher, WIDA Consortium, Wisconsin Center for Education Research, Madison

Presider: John Whitsett, Strand Leader, NSTA Milwaukee Area Conference; 2007–2008 NSTA President; and Retired Teacher/Curriculum

Director, Oshkosh, Wis.

English learners—the most rapidly growing segment of our student population—are often excluded from the vibrant classroom discourse that is part of the science and engineering practices of the *NGSS*, due to the mistaken belief that they need proficiency in complex academic English to participate effectively. But ELs can and do engage meaningfully with their peers in critical science discussions when properly supported. By learning about resources developed during a three-year NSF grant, viewing a classroom video, and listening to teachers talk about their implementation of this new approach, attendees will learn ways to simultaneously strengthen all students' science-based reasoning and their effectiveness with language.

Rita MacDonald is an applied linguist and researcher at the 39-state WIDA Consortium at the Wisconsin Center for Education Research, University of Wisconsin—Madison. Since completing a master's degree in Teaching English to Speakers of Other Languages (TESOL) at Saint Michael's College in Vermont in 2002, she has worked in educational linguistics, first as an ESL teacher, then as a teacher educator for both ESL and content teachers, and now as a member of WIDA's research team.

Her work and research has focused on supporting content teachers in building students' academic discourse, particularly as lead developer on an NSF grant to support ELL engagement in the disciplinary practices of math and science. She also serves as the applied linguist on a team supporting the development of a Yugtun language assessment system with the indigenous Yup'ik people of Alaska, and as part of the support team for language revitalization efforts for a Wisconsin tribe. Additional areas of focus include formative language assessment, mentoring of co-teaching teams, and the development of resources to support equitable, cross-state identification and reclassification of English learners.

#### 11:00 AM-12 Noon Presentations

# Connecting Science and Inquiry with Literacy(Grades 3–9)Executive A/B, HyattScience Focus: GEN, SEPDebra Kneser (@debkneser; dmkneser65@marianuniversity.edu), Marian University–Wisconsin, Fond du Lac

Kevin Niemi (kjniemi@wisc.edu), University of Wisconsin– Madison

Explore how science inquiry and disciplinary literacy skills are incorporated in the *NGSS*.

#### National Board Certification

(Grades P-12)

Executive C/D, Hyatt

Lakeshore A/B, Hyatt

Science Focus: GEN

Jayne Ryczkowski (jayneryczkowski@gmail.com), Kaukauna High School, Kaukauna, Wis.

**Michelle Griffin-Wenzel** (@MGriffinwenzel; *mtwenzel*@ *att.net*), Local Arrangements Coordinator, NSTA Milwaukee Area Conference, and Germantown (Wis.) School District Find out how earning your National Board Certification will benefit you as a science educator! We will discuss the process and benefits of certification.

Project-Based Learning in an Early Elementary and Early Childhood Classroom

(Grades P-4) Science Eccus: GEN\_NGSS

Science Focus: GEN, NGSS

**Byron Gilliland** (@byron\_gilliland; byron.gilliland@ winona.k12.mn.us), Jefferson Elementary STEM School, Winona, Minn.

Discover strategies to successfully meet standards and integrate STEM educational experiences with Project-Based Learning in an early elementary and early childhood classroom.

#### NARST-Sponsored Session: Using Maker Activities and Formative Assessment Strategies to Enhance Computational Thinking Skills, Physics, and Engineering Learning

(Grades 9–12) Lakeshore C, Hyatt Science Focus: ETS, PS, INF, CCC, SEP

**C. Meghan Hausman** (@cmeghausman; *c-hausman@neiu. edu*), Northeastern Illinois University, Chicago

Discover major computational thinking components, as well as maker activities and formative assessments designed to enhance computational thinking, physics, and engineering learning. (Grades K-12)

#### NSELA-Sponsored Session: Tools for Leaders Session 2

Milwaukee, Hyatt Science Focus: GEN

Larry Plank (@nselascience; larry.plank@sdhc.k12.fl.us), Hillsborough County Public Schools, Tampa, Fla.

**Bob Sotak** (@nselascience; bobsotak@gmail.com), NSELA President, and Science/STEM Education Consultant, Edmonds, Wash.

The National Science Education Leadership Association welcomes you to join science leaders from around the nation who will share successful tools and best practices for leaders in science education. These tools can be curricular, instructional, or managerial in nature.

#### AAPT Session: Teach Science with IceCube Neutrino Observatory

(Grades 7–College) 102D, Wisconsin Center Science Focus: ESS, ETS2, PS3.A, PS3.B, PS3.C

Jeff Paradis (jparadis@whitnall.com) and Amanda Nothem (anothem@whitnall.com), Whitnall High School, Milwaukee, Wis.

It can be done! Discover great ways to introduce science concepts using examples connected to the South Pole Ice-Cube Neutrino Observatory.

#### How to Implement STEM and NGSS into Your Classroom Through the Use of NSTA Competitions

(Grades K-12) 103A, Wisconsin Center Science Focus: GEN, NGSS

**Sue Whitsett** (*swhitsett*(*ansta.org*), AEOP Project Director, NSTA, Arlington, Va.

Erin Lester (elester@nsta.org), eCYBERMISSION Project Manager, NSTA, Arlington, Va.

Hear about various NSTA competitions and how they can bring STEM and the NGSS into the classroom, as well as give students and teachers a chance to earn recognition and prizes. Free food and a gift bag will be distributed to each participant.

#### **Collaborative Groundwater Research You Can Do!**

(Grades 9-College) 103B, Wisconsin Center Science Focus: ESS3.A

Dennis Rohr (drohr@seymour.k12.wi.us), Seymour Community High School, Seymour, Wis.

John Luczaj (luczajj@uwgb.edu), University of Wisconsin-Green Bay

Combine student real-world research, a community-service project, and collaboration with university scientists as students discover and research local groundwater issues that may impact their personal lives.

#### Meet the Standards and Enhance Your Chemistry **Classroom with Other People's Money**

(Grades 9-12) 103E, Wisconsin Center Science Focus: PS, CCC, SEP

Kenetia Thompson and Karen Kaleuati (k\_kaleuati@ acs.org), American Chemical Society, Washington, D.C.

Learn about grant opportunities available to high school chemistry teachers (including those from the American Chemical Society) and the process for writing a fundable proposal.

#### NGSS@NGSS@NSTA Forum Session: Designing and Using NSTA Classroom Assessments to Support Meaningful NGSS Investigations

(Grades K-12)

Ballroom B, Wisconsin Center Science Focus: GEN, NGSS

Philip Bell (@philiplbell; pbell@uw.edu) and Deb Mor**rison** ((*a*)educatordeb; *educator.deb*(*a*)*gmail.com*), University of Washington, Seattle

Embedding formative assessment sequences into instruction helps gauge progress in student understanding and reveals learning assets that students bring to the classroom. Through an examination of assessment examples and sample student responses, we'll explore how to design and interpret cognitive assessments of three-dimensional learning, as well as cultural formative assessments of student and community interests and funds of knowledge. STEM teaching tools will also be shared.

# **11:00 AM–12 Noon** Hands-On Workshops DNA Sequence Evolution Simulation

(Grades 8–College) Regency A, Hyatt Science Focus: LS3, LS4, SEP4, SEP5

Nicole Perna (ntperna@wisc.edu), University of Wisconsin– Madison

Members of the UW–Madison Crow Institute will demonstrate a fun and informative pen-and-paper DNA sequence evolution and phylogenetic analysis lesson.

#### **INF** Connected Educators Connect Learning

Regency C, Hyatt

Science Focus: GEN, INF

(General)

**Sandra Leiterman** (@saleiterman; saleiterman@gmail.com), University of Arkansas at Little Rock

Trouble with the digital world? Learn how to become a connected educator by building a digital Professional Learning Network.

#### Inventing Is Just Plain Fun (for All)!

(Grades 4–College) Regency D, Hyatt Science Focus: ETS, SEP6

**Anthony Perry** (@tonyperry; *aperry*@mit.edu), The Lemelson-MIT Program, Cambridge, Mass.

**Steve Meyer** (stevenblakemeyer@gmail.com), STEMy Stuff, Brillion, Wis

Gain experience leading design challenges and incorporating invention into your curriculum to provide authentic threedimensional units that integrate STEM disciplines.

#### Innovative and Integrated: STEM Activities from Chinese Classrooms

(Grades 6–12) 101 C/D, Wisconsin Center Science Focus: GEN, SEP

Judith Lederman (ledermanj@iit.edu) and Norman Lederman (ledermann@iit.edu), Illinois Institute of Technology, Chicago

Presider: David Crowther (*crowther@unr.edu*), NSTA President, and University of Nevada, Reno

Teachers from Beijing middle schools and secondary STEM high schools will demonstrate unique integrated projects and activities. Participants will be actively engaged in model lessons that authentically include all STEM components. *SciGirls* Strategies: Gender-Equitable Teaching Practices in Career and Technical Education Pathways for High School Girls

101A, Wisconsin Center

Science Focus: ETS2.A

(Grades 6-12)

(Grades K-12)

Science Focus: GEN, NGSS

Alex Dexheimer (@SciGirls; adexheimer@tpt.org) and Leah Defenbaugh (@leahdeeda; ldefenbaugh@tpt.org), Twin Cities Public Television, Saint Paul, Minn.

Learn how to employ *SciGirls*' researched-based gender equitable teaching strategies through classroom discussion, activities, and multimedia resources.

#### ACS Middle Level Session Three: Chemical Reactions— Breaking and Making Bonds

(Grades 6–8) 102A, Wisconsin Center Science Focus: PS

**James Kessler,** American Chemical Society, Washington, D.C.

Explore the production of a gas, a precipitate, and changes in temperature through hands-on activities and molecular model animations from the free online resource *middleschoolchemistry.com*. Attendees will receive a handout of the lessons.

ASEE Session: Engineering Education: Simple Electronics and Microcontrollers for the Classroom

(Grades K–12) 102E, Wisconsin Center Science Focus: ETS, PS3, PS4, SEP

Andrea Burrows (@SciEdBurrows; *aburrow1@uwyo.edu*) and Mike Borowczak (@mborowczak; *mike.borowczak@ uwyo.edu*), University of Wyoming, Laramie

We introduce basic electronics for the classroom and then build a circuit with LEDs, light sensor, and a microcontroller (e.g. Arduino and Raspberry Pi).

#### Selecting Phenomena to Motivate Student Sensemaking

103C, Wisconsin Center

**Ted Willard** (@Ted\_NSTA; *twillard*@*nsta.org*), Program Director, NGSS@NSTA, NSTA, Arlington, Va

The right phenomena are a key ingredient in successful threedimensional teaching and learning. Emphasis will be placed on what makes some phenomena better than others and how to use them successfully in the classroom.



#### 11:00 AM–12 Noon Exhibitor Workshops Disappearing Jaguars and Sloths: Phenomena and

3-D Instruction for Grades 2-5

(Grades 2-5) Science Focus: LS 201A, Wisconsin Center

Sponsor: Amplify

Rebecca Abbott and Sophia Lambertsen, The Lawrence Hall of Science, University of California, Berkeley

Experience how students investigate declining jaguar and sloth populations while figuring out principles of ecosystems and engaging in three-dimensional learning. Get a hands-on dive into Amplify Science for grades 2-5, engaging with this new NGSS-designed program from The Lawrence Hall of Science.

#### **Cell Differentiation and Gene Expression**

(Grades 9-12) 201B, Wisconsin Center Science Focus: LS1.A, LS1.B, LS2, LS3, LS4, CCC1, CCC4, CCC6, SEP2, SEP6

Sponsor: Lab-Aids, Inc.

Dawn Posekany, Solon High School, Solon, Iowa

Students often have trouble conceptualizing how selective gene expression works. We will use manipulatives to teach this concept and explain how it is connected to genetic engineering. Innovative activities are selected from the new Science and Global Issues: Biology program from SEPUP and Lab-Aids. Activities focus on ways to integrate selective gene expression as a relevant and engaging sustainability issue.

#### Harnessing a Powerful Synergy: Engaging All Students with Science-Based Literacy Experiences

(Grades K-8) 103D, Wisconsin Center Science Focus: GEN, SEP8

**Carolyn DeCristofano** (@STEMCarolyn; carolyn@ bhstemed.us), Blue Heron STEM Education, Inc., Plympton, Mass.

**Patricia Newman** (@PatriciaNewman; newmanbooks@live. com), Author, Sacramento, Calif.

**Jennifer Swanson** (@JenSwanBooks; jennifer@jenniferswansonbooks.com), Author, Jacksonville, Fla

With a trio of lively activities, acclaimed science nonfiction authors demonstrate the synergistic power of literacy and science to engage a diverse classroom. Follow-up resources provided.

#### **Comparative Mammalian Organ Dissection with** Carolina's Perfect Solution® Specimens

(Grades 9-12) 201 C/D, Wisconsin Center Science Focus: LS

Sponsor: Carolina Biological Supply Co.

#### **Carolina Teaching Partner**

Come show us your surgical skills while you experience the superior quality of Carolina's Perfect Solution specimens. Dissect a cow eye and then your choice of a sheep brain, pig heart, or pig kidney. Use this excellent comparative dissection to gain a better understanding of these mammalian organs.

#### **Evaporative Cooling: Visualizing Matter so It Makes** Sense!

202A, Wisconsin Center

(Grades 6-12)

Science Focus: PS1 Sponsor: PASCO scientific

Ronn Fieldhouse, PASCO scientific, Roseville, Calif.

Why does perspiration make you feel cooler? How is cooling related to molecular properties? Help your students understand the process of evaporation by measuring the temperature difference when a substance changes from liquid to gas. Look at the process from a molecular perspective to understand how bonding and shape affect cooling.

#### Using Argumentation for Discussing Phenomena and Increasing Student Voice About STEM

(Grades K–12) 202B, Wisconsin Center Science Focus: GEN, SEP7 Sponsor: STEMscopes

**Michele Cozza** (*mcozza*@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.

Reduce teacher talk and increase purposeful student talk as we model consensus building through argumentation around intriguing science phenomena that matter. ELA skills and the 21st-century skills of communication and collaboration are a must in the STEM classroom!

#### STEM in Agriculture: Middle School/High School

(Grades 6–12) 202C, Wisconsin Center Science Focus: ESS3.C, ETS2.B, LS1.A, LS1.B, LS1.D, LS2.A, LS2.C, PS3.D, CCC, SEP

Sponsor: GrowNextGen

Brian Badenhop, Ohio Hi-Point Career Center, Bellefontaine

**Jeff Jostpille,** Fort Jennings High School, Fort Jennings, Ohio

Jane Hunt (jane@educationprojects.org) and Heather Bryan (heather@educationprojects.org), Education Projects, LLC, Columbus, Ohio

Engage in hands-on activities related to engineering, biotechnology, and food science that teach STEM skills, inspired by agriculture.

#### The Best Test Prep Book Ever for AP Chemistry

(Grades 9–12)

Science Focus: PS

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Sponsor: Pearson Learning Services

**Ed Waterman,** Retired Educator, Fort Collins, Colo. Learn how to give students control of the required content with ample practice to master the material. This book includes thorough content summaries and hundreds of updated multiple choice and free-response questions focusing on graphical and tabular data analysis and atomic-molecular particle representations.

#### **Biology with Vernier**

(Grades 9–12)

202E, Wisconsin Center

202D, Wisconsin Center

Science Focus: ETS, LS, SEP

Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, learn how Vernier supports biology teachers who want their students to use probeware. A variety of experiments from our popular biology lab books will be conducted. Learn how our innovative data-collection technology works across multiple platforms such as LabQuest 2, computer, Chromebook, and iPad.

# Death Finds the Mesozoic: Analyzing Real Data with HHMI BioInteractive

(Grades 6–College) 203 D/E, Wisconsin Center Science Focus: ESS1.C, ESS2.E, LS2.C, LS4.A, CCC1, CCC2, CCC4, CCC7, SEP1, SEP4, SEP5, SEP6, SEP7 Sponsor: HHMI BioInteractive

Nicoline Chambers (chambers.nikki@tusd.org), West High School, Torrance, Calif.

Bring Earth and physical science into your biology classes or biology into your other sciences classes—with these rich, robust, free BioInteractive resources. Take part in a 5E lesson experience centered around the K-T mass extinction. Engage your students in science practices, including analyzing data and constructing explanations.

#### Bringing the World into Your Classroom with National Geographic Explorers

(Grades K–5)

203A, Wisconsin Center

Science Focus: GEN

Sponsor: National Geographic Learning | Cengage

**Pam Caffery** (*pam.caffery@cengage.com*), National Geographic Learning | Cengage, Boston, Mass.

Your students will be inspired when they connect with National Geographic Explorers and National Geographic Learning! Discover great ideas for using National Geographic Learning's program and the Explorers to bring real-world exploration to the classroom.

#### Of All the Nerve: Exploring Neuronal Communication Through Three-Dimensional Learning

(Grades 9–College) 203B, Wisconsin Center Science Focus: ETS, LS1, CCC1, CCC2, CCC4, CCC6, CCC7, SEP1, SEP2, SEP6

Sponsor: MSOE Center for BioMolecular Modeling Gina Vogt (gina.vogt@3dmoleculardesigns.com), 3D Molecular Designs, Milwaukee, Wis.

Engage students by exploring response to neuronal stimuli by incorporating three-dimensional learning and hands-on/ minds-on models. Construct a neuronal synapse model with sodium-potassium pump, calcium, sodium, and potassium channels. Model resting and action potentials and neurotransmitter release. Develop explanations of ways drugs and toxins disturb neuronal communication. Handouts!

#### **Become a GMO Investigator**

203C, Wisconsin Center

(Grades 9-College) Science Focus: LS

Sponsor: Bio-Rad Laboratories Damon Tighe (damon\_tighe@bio-rad.com), Bio-Rad Laboratories, Hercules, Calif.

Regardless of where you stand in the GM debate, wouldn't it be interesting to know which foods you eat are GM foods? This hands-on workshop teaches the basics of DNA extraction, PCR, and electrophoresis and how they are used to test grocery store food products for the presence of GM foods.

#### 12:30–1:30 PM Presentations

**INF** Beyond the Field Trip: Creating Community Partnerships to Enhance Science Learning Outside the Classroom

(General)

Executive A/B, Hyatt

Science Focus: GEN, INF Lisa Martin and Rochelle Sandrin (sandrirr@milwaukee. k12.wi.us), Milwaukee (Wis.) Public Schools

While field trips come and go, partnerships can last forever. Learn how to create community partnerships that promote equitable access to science for all students.

#### Digital Storytelling—Not Just for Language Arts Classes

(Grades K-12) 101 C/D, Wisconsin Center Science Focus: GEN, SEP1, SEP6, SEP7, SEP8 Sandra Leiterman (@saleiterman; saleiterman@gmail.com), University of Arkansas at Little Rock

Learn the seven elements of digital storytelling. See examples of digital stories in the science classroom, and get links to free web 2.0 tools you can use next week!

#### Data Is Not a Four-Letter Word: Use NOAA Resources to Build Student Proficiency in Data Analysis

(Grades 5-12) 101A, Wisconsin Center Science Focus: GEN

June Teisan (june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

Scientists at the National Oceanic and Atmospheric Administration collect a stunning array of data in their work. Learn how to access this treasure trove of archived and real-time data, and explore NOAA's data-rich resources, lesson plans, and visualization tools to help you build student proficiency in scientific data analysis.



#### **AAPT Session: Integrating Engineering into Physics**

(Grades 9-College) 102D, Wisconsin Center Science Focus: ETS, PS, SEP

Katherine Shirey (@kateyshirey; katey.shirey@ knowlesteachers.org), Knowles Science Teaching Foundation, Moorestown, N.J.

Thinking about how to bring engineering to your physics classes? Learn about possible tensions and productive solutions to overcome them from real experiences.

#### **NSTA District Support**

103A, Wisconsin Center

(Grades K-12) Science Focus: GEN

**Kim Stilwell** (@kimstilwellNSTA; kstilwell@nsta.org), Manager, New Business Development, NSTA, Arlington, Va. Find out how NSTA can support your district with science PD opportunities that combine access to national thought leaders with high-quality NSTA products.

#### Modeling the World Around Us: Applying the NGSS Practice in the K-6 Classroom

(Grades P-6) 103B, Wisconsin Center Science Focus: GEN, SEP2, SEP3, SEP6, SEP8

Sarah Kendrick (skendrick@madisoncountryday.org) and **Shelley Petzold** (*spetzold*@madisoncountryday.org), Madison Country Day School, Waunakee, Wis.

Help students build a better understanding of the world around them through the use of models. Example models from K-6 classrooms will be shared.

Lakeshore A/B, Hyatt



—Photo courtesy of Jacob Slaton

# NMLSTA-Sponsored Session: Science Fairs: Relevant in 2017 or Is It Time for a Change?

(Grades 4–9) 103E, Wisconsin Center Science Focus: GEN, NGSS

Kathy Biernat (@ScientistMaker; kbiernat@stmaryeg.org), St. Mary's Visitation School, Franklin, Wis.

Heather Gayton-Grabarski (@HeatherGayton; grabarski\_h@afasd.net), Adams-Friendship Elementary School, Adams, Wis.

Does the traditional science fair with its trifold display board meet the *NGSS* goals of authentic learning and assessment?

#### NSTA Press® Session: Uncovering Student Ideas About Science with Formative Assessment Probes and Literacy Capacities

(Grades K–5) Ballroom A, Wisconsin Center Science Focus: GEN, NGSS

**Page Keeley** (@CTSKeeley; *pagekeeley*@gmail.com), 2008–2009 NSTA President, and The Keeley Group, Fort Myers, Fla.

Experience examples of how K–5 formative assessment probes in the *Uncovering Student Ideas* series elicit evidence of student understanding through the use of the literacy capacities of writing, speaking, and listening.

#### 12:30–1:30 PM Hands-On Workshops

Using the Science of Flight to Teach *NGSS* and Free Student Flights

(Grades 3-6)

Science Focus: ETS, PS, INF Lee Siudzinski (lee@blueskyfoundation.org), Blue Sky Edu-

cational Foundation, Three Lakes, Wis. Erron Sagen (erron.sagen@gmail.com), Oakwood Elementary School, Oshkosh, Wis.

Let us introduce you to an aviation curriculum that we've used 15 years. It was evaluated by an independent researcher and demonstrated significant achievement in science and mathematics.

#### **INF** Connecting Families Through STEM Events

(Grades P-8) Regency C, Hyatt Science Focus: ETS, INF, CCC2, CCC4, CCC6, SEP1, SEP2, SEP4, SEP6

**Rebecca McDowell** (@BeTheChnge; @STEM220; beckymmcdowell@gmail.com) and **Elizabeth Nelson** (@ STEM220; enelson@barrington220.org), Barrington (Ill.) 220 School District

Partner with families by hosting fun yet educational family STEM events. Navigate through the logistics and then team up to complete one or more STEM challenges.

#### Bringing the "Bookends" of STEM Together

(Grades 7–12) Regency D, Hyatt

Science Focus: GEN, SEP3, SEP4, SEP5 Jeffrey Lukens (*jeffreylukens0613@gmail.com*), Sioux Falls (S.Dak.) School District

The "bookends" of STEM are science and math, and integrating them should be seamless, natural, and painless. Come join the fun as we collect and analyze data!

# ACS Middle Level Session Four: ACS Chemical Reactions—Ocean Acidification

(Grades 6–8) 102A, Wisconsin Center Science Focus: PS

James Kessler, American Chemical Society, Washington, D.C.

Explore how excess carbon dioxide in the atmosphere makes water more acidic through hands-on activities from the free website *middleschoolchemistry.com*. Simple and inexpensive experiments show how excess carbon dioxide can contribute to ocean acidification. Attendees will receive a handout of the lesson.

# ASEE Session: NGSS, 3-D Learning, and the Design and Use of Classroom Assessment

(Grades 6–12) 102E, Wisconsin Center Science Focus: ETS, LS, PS, CCC, SEP2, SEP3, SEP4, SEP5, SEP6, SEP7, SEP8

**Brian Gane** (*bgane@uic.edu*) and **Sania Zaidi** (@saniazaidi; *sania@uic.edu*), The University of Illinois at Chicago Join us as we go into detail about how to conceptualize and design classroom assessments that meet the *NGSS*.

#### **Climate Science in the Classroom**

(Grades 3–12) 103C, Wisconsin Center Science Focus: ESS3.C, ESS3.D, CCC2, CCC6, CCC7, SEP1, SEP2, SEP7, SEP8

**Jenna Totz** (@climategenorg; *jenna*@climategen.org), Climate Generation: A Will Steger Legacy, Minneapolis, Minn.

Join Climate Generation for free climate science activities, lessons, and resources. We will spend this workshop engaging in these activities so you are ready to implement on Monday.

#### **CESI-Sponsored Session: Using Toys to Teach Physics**

(Grades K–8) 103D, Wisconsin Center Science Focus: PS3.A, PS3.B, CCC5, SEP3

**Jim McDonald** (@jimscienceguy; *jim.mcdonald@cmich. edu)*, CESI President, and Central Michigan University, Mount Pleasant

Karen Ostlund (@karen\_ostlund; klostlund@utexas.edu), 2012–2013 NSTA President, and The University of Texas at Austin

**Betty Crocker** (*betty.crocker@unt.edu*), Retired Educator, Denton, Tex.

Tinker with how toys can be used to teach physics to increase student motivation, excitement, and interest. Handouts.

#### NGSS@ NGSS@NSTA Forum Session: Better Science for All

NSTA (Grades K–12) Science Focus: GEN, NGSS

Michael Lach (mikelach@me.com), Achieve, Inc., Washington, D.C.

Implementation of the *NGSS* should focus on advancing science education for all students and doing this successfully means catalyzing strategic change within your school and district. Explore how to leverage existing Achieve tools to address concrete needs (selecting instructional materials, evaluating assessments, etc.) while simultaneously building long-term capacity to advance science instruction. This session is designed for leaders who are (or want to be) thinking strategically about *NGSS* implementation and are looking for ideas of how to move forward.

# **12:30–1:30 PM** Exhibitor Workshops Are You Moody?

(Grades 6–12) 201A, Wisconsin Center Science Focus: ETS, PS, CCC2, SEP5, SEP6 Sponsor: Texas Instruments

**Stacy Thibodeaux,** David Thibodaux STEM Magnet Academy, Youngsville, La.

Fred Fotsch, Texas Instruments, Dallas

We will bring science and coding together as participants learn to do some basic coding (no experience necessary) while developing their own mood ring! The science of color mixing is explored while determining the right body temperature thresholds. Is fuchsia flirty? Should green be groovy? It's up to you!

#### pH Scale

(Grades 9–12) 201B, Wisconsin Center Science Focus: PS, SEP4, SEP5

Sponsor: Lab-Aids, Inc.

Brandon Watters, Vernon Hills High School, Vernon Hills, Ill.

What does pH actually measure? In this investigation, you will measure pH indirectly using indicators and absorption using the Lab-Master. Using their data, participants generate a graph of absorbance versus pH. This graph can be used to determine the pH of solutions, within the measured pH range. Join us for this activity from *A Natural Approach to Chemistry* program.

#### Introduction to Wisconsin Fast Plants®

(Grades K–12) 201 C/D, Wisconsin Center Science Focus: LS

Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

Experience the versatility of Wisconsin Fast Plants. These small, quick-growing plants engage students, suit all learning levels, and let you integrate plant development, life cycle, environmental effects, genetics, and evolution into your instruction. Learn the basics for successful planting, flower dissection, and pollination.

#### Exploring Misconceptions: What Is pH?

(Grades 6–12) 202A, Wisconsin Center Science Focus: PS1.A, CCC1, CCC3, SEP2, SEP5 Sponsor: PASCO scientific

**Ronn Fieldhouse,** PASCO scientific, Roseville, Calif. What is pH and why is the scale 0–14? Help students understand the logarithmic pH scale by creating serial dilutions in this hands-on workshop. Using the Wireless pH sensor and universal indicator, your students will be able to analyze and visualize what pH actually means and measures!

#### Demystifying STEM: Earthquake-Proof Towers and Engineering Design

(Grades 3–8) 202B, Wisconsin Center Science Focus: ESS2, ETS1, PS4 Sponsor: STEMscopes

Michele Cozza (mcozza@acceleratelearning.com), Accelerate Learning, Inc., Houston, Tex.

While investigating the phenomenon of waves through the three dimensions of the *NGSS*, we will design and build earthquake-proof towers that can withstand the devastating horizontal S waves. Using models, simulations, and tower engineering, we will demystify the standards for waves, the practices of engineering design, and how best to teach them through STEM.

#### STEM in Agriculture: Elementary

(Grades K–5) 202C, Wisconsin Center Science Focus: ESS3.A, ETS1, ETS2.B, PS1.A, PS1.B, LS1.B Sponsor: GrowNextGen

**Jeff Jostpille,** Fort Jennings High School, Fort Jennings, Ohio

Brian Badenhop, Ohio Hi-Point Career Center, Bellefontaine

**Heather Bryan** (*heather@educationprojects.org*) and **Jane Hunt** (*jane@educationprojects.org*), Education Projects, LLC, Columbus, Ohio

Engage in hands-on activities appropriate for elementary students that develop STEM skills while helping students understand what agriculture products they use in their daily lives.

# STEM and NGSS Inquiry in Chemistry—Effective, Efficient, Economical

(Grades 9–12) 202D, Wisconsin Center Science Focus: PS

Sponsor: Pearson Learning Services

Ed Waterman, Retired Educator, Fort Collins, Colo.

Learn how to transition to a STEM and *NGSS* studentcentered chemistry classroom by implementing safe, simple, easy-to-use, material-conserving, time-efficient, and effective inquiry activities in chemistry.

#### Integrating Chromebook with Vernier Data-Collection Technology

(Grades 3–College) 202E, Wisconsin Center Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. In this hands-on workshop, learn how Vernier supports teachers who use Chromebook devices in their classrooms. Experiments such as "Boyle's Law," "Grip Strength Comparison," and "Ball Toss" will be conducted.

#### Some Animals Are More Equal than Others: Exploring Trophic Cascades

(Grades 8–College) 203 D/E, Wisconsin Center Science Focus: LS2.A, LS2.C, CCC1, CCC2, CCC4, CCC5, CCC6, CCC7, SEP1, SEP2, SEP4, SEP7, SEP8 Sponsor: HHMI BioInteractive

**Amy Fassler** (*fasslera@marshfieldschools.org*), Marshfield High School, Marshfield, Wis.

What controls species' populations in a food web? From Robert Paine's pioneering studies to current research on river ecology, your students will gain a deeper understanding of the importance of top-down regulation of ecological communities by predators using HHMI BioInteractive's free resources. Get ready for a trophic cascade throwdown!

# Take a Walk Through the Molecular World with Watercolor Landscapes

(Grades 9–College) 203B, Wisconsin Center Science Focus: LS1, LS3, PS1, CCC3, CCC4, CCC6, SEP1, SEP2

Sponsor: MSOE Center for BioMolecular Modeling **Tim Herman** (*herman@msoe.edu*), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

Use vibrant watercolor landscapes to explore the molecular world in the cellular context within which proteins function. David Goodsell's Tour of the Human Cell Panorama traces the production and secretion of antibodies. His new Flu Fight: Immunity & Infection Panorama illustrates how antibodies work to block the influenza infection cycle.

#### 12:30–2:30 PM Hands-On Workshops

AMSE-Sponsored Session: George W. Carver Conversation Series on Diversity and Equity

(General)

Executive C/D, Hyatt

Science Focus: GEN

**Deb Morrison** (@educatordeb; educator.deb@gmail.com), University of Washington, Seattle

**Preston Robinson III** (preston.robinson.iii@gmail.com), Tuskegee University, Tuskegee Institute, Ala.

The life of George Washington Carver exemplifies excellence in spite of circumstances. Dialogue and plan for equitable actions to create opportunities for ALL students.

#### ACS High School Session Three: Relating Structure and Properties: Demonstrating Understanding Through Integration and Application of Knowledge

(Grades 9–12) 102B, Wisconsin Center Science Focus: PS, CCC, SEP

Chad Bridle (cbridle1@gpsbulldogs.org), Grandville High School, Grandville, Mich.

Jennifer Keil (jenniferkeill1@gmail.com) and Marta Gmurczyk, American Chemical Society, Washington, D.C.

**Rebecca Stober** (*beckystober@gmail.com*), Mapleton Expeditionary School of the Arts, Denver, Colo.

**Saul Trevino** (*srt0589@gmail.com*), Houston Baptist University, Houston, Tex.

Learn how to help students integrate results and ideas from multiple explorations to build explanations and construct arguments based on structure-property relationships of covalent compounds. Learn how students can demonstrate a rich understanding of core chemical concepts and ideas by proposing solutions to complex problems.

#### 1:00–1:30 PM Presentation

Authentic Assessment: Hierarchy and Structure/ Function of Gene Expression

Regency A, Hyatt

Science Focus: LS3

(Grades 9-12)

Jeffrey McMahon, Barrington High School, Barrington, Ill.

Find out how our assessment creates differentiates to reach students of low and gifted abilities. The assessment hits several *NGSS* performance expectations, and gives students a very hands-on assessment, assessing hierarchy and structure/ function in gene expression.

#### 2:00–2:30 PM Presentation

**INF** The Learning Ecosystem: Consider the Wisconsin Science Festival to Make Connections to Your Classroom

*(General)* Science Focus: INF, GEN

(Grades 6-12)

Science Focus: ETS1, SEP

2

Executive A/B, Hyatt

**Travis Tangen** (@WiSciFest; *ttangen@warf.org*), Wisconsin Alumni Research Foundation, Madison

Find ways for your classroom to connect to the Wisconsin Science Festival. Students, teachers, and researchers can be involved as presenters or visitors at your own site or make connections to event hosts across the state of Wisconsin.

#### 2:00–3:00 PM Presentations

#### **EXENTHUNCO: What Is That?**

(Grades 6–8)

Science Focus: LS4.B

Lakeshore C, Hyatt

Frederick Maier (fredmaier@sbcglobal.net), Village of Itasca Nature Center, Itasca, Ill.

Roy "Jack" Tison (globes@comcast.net), Lincoln Marsh Natural Area, Wheaton, Ill.

Discover a new method to clearly explain the ideas of extinction and endangered, threatened, uncommon, and common species.

# Teach Engineering Practices on the Cheap with Concrete

Regency C, Hyatt

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

Solidify new learning by teaching engineering using concrete and other composite materials. Discover inexpensive STEM projects that engage students using the #1 building material in the world. *NGSS* correlations will be shared.



(Grades K-9)

#### Badging as a Vehicle for Engaging All Learners

101A, Wisconsin Center Science Focus: GEN, INF

Matthew Vick (mevick@wi.rr.com), University of Wisconsin-Whitewater

**Ken King** (*kking*@*roosevelt.edu*), Roosevelt University, Schaumburg, Ill.

Learn strategies to implement your own digital or traditional badging program in or out of school to engage all learners.

#### AAPT Session: Video-Based Experiments

(Grades 7–College) 102D, Wisconsin Center Science Focus: PS, SEP2, SEP3, SEP4, SEP5, SEP7

**Matthew Vonk** (matthew.vonk@uwrf.edu), University of Wisconsin–River Falls

Learn how to teach science as a process and hone students' science skills by efficiently designing and performing experiments using direct measurement videos.

#### **NSTA's Online Resources and Communities**

103A, Wisconsin Center (General) Science Focus: GEN, NGSS

**Ted Willard** ((*a*)Ted\_NSTA; *twillard*(*a*)*nsta.org*), Program Director, NGSS@NSTA, NSTA, Arlington, Va.

Wendy Binder (wbinder@nsta.org), SPIR Project Director, NSTA, Arlington, Va.

The NSTA Learning Center and the NGSS@NSTA Hub provide educators with thousands of free resources and opportunities-as well as a professional peer community-that support professional learning and classroom instruction. Get free resources and ICE CREAM!

#### Advancing Science Literacy While Meeting CCSS

(Grades K-6) Science Focus: GEN, NGSS

Donna Knoell (dknoell@sbcglobal.net), Educational Consultant, Overland Park, Kans.

103B, Wisconsin Center

I'll share strategies to enable elementary students to read and comprehend informational science text, communicate science concepts orally and in writing, develop their science vocabularies, and meet the CCSS. Handouts.

#### Literacy in the Chemistry Classroom

(Grades 9-12)

103C, Wisconsin Center

Science Focus: PS, SEP Michelle Anderson (manderson@barrington220.org), Sara Calhoun (scalhoun@barrington220.org), and Jessica Royal (jroyal@barrington220.org), Barrington High School, Barrington, Ill.

Learn how a creative, more student-centered, real-world approach can increase engagement and add more literacy to your chemistry classroom experience.

#### How to Construct 3-D Learning Lessons for Early **Childhood Learners**

(Grades P-2) 103D, Wisconsin Center Science Focus: ETS2.A, LS1.A, LS2.D, PS2.B, PS3.A, PS4.A, CCC1, CCC6, SEP1, SEP6, SEP7

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

Join me for an example of how the NGSS is implemented with three-dimensional learning for the K-2 learner.

#### Blending Science and Language Arts

(Grades P-5) 103E, Wisconsin Center Science Focus: LS

Kelly Schaeffer (@BirdSleuth; kms448@cornell.edu), The Cornell Lab of Ornithology, Ithaca, N.Y.

Children's books can be powerful tools for science learning. Explore book-related activities that connect STEM, art, and ELA while inspiring outdoor observation.

#### NSTA Press® Session: Creating Classroom Narrative: Fitting Science Reasoning Problems and Open-**Ended Investigation into a Curriculum**

(Grades 8-12) Ballroom A, Wisconsin Center Science Focus: ESS2

Russell Colson (colson@mnstate.edu), Minnesota State University Moorhead

**Mary Colson** ((*a*)MnMColson; mcolson(*a*)moorheadschools. org), Horizon Middle School, Moorhead, Minn.

We will discuss weaving sample experimental investigations and modeling of surface and groundwater movement into a curriculum, with examples from the NSTA Press book Learning to Read the Earth and Sky.

#### 2:00–3:00 PM Hands-On Workshops

Uncovering the Awesomeness of Our Science Students (Grades 5–9) Lakeshore A/B, Hyatt Science Focus: GEN, SEP1, SEP3, SEP4, SEP6

Sarah Renish-Ratelis (sarenish@yahoo.com) and Callie Mikolajczyk (mikolajczykc@gmail.com), Mary Lou Mahone Middle School, Kenosha, Wis.

Most students do inquiry-based investigations but have difficulty in constructing scientific explanations. Join us as we explore ways to strengthen communication skills through the use of scaffolding and workshop models, as well as building learner confidence.

#### Organelle Elections: Using the Political Candidate Analogy to Engage Biology Students

(Grades 9–College) Regency A, Hyatt Science Focus: LS, SEP2, SEP8

Michelle Frack (@NutmegSomething; mfrack@hawk.iit. edu), Illinois Institute of Technology, Chicago

Integrate political analogy into lectures as students write and present "stump speeches" to construct models to represent, explain, and communicate cell and organelle function to peers.

#### STEM-Related Activities for K-8 Science

(Grades K–8) Regency D, Hyatt Science Focus: ETS, PS2, PS3, CCC2, SEP2, SEP4 **Donald Powers** (DT-Powers@wiu.edu), Western Illinois University, Macomb

Emphasis will be placed on activities that integrate engineering and technology activities appropriate for elementary and middle school classrooms. *NGSS* connections included.

#### Using Models to Teach Shapes and Kinds of Land and Bodies of Water

(Grades 2–4) 101B, Wisconsin Center Science Focus: ESS2.B, CCC1, SEP2, SEP4

Stephen Mattox (mattoxs@gvsu.edu), Adea Davis (davisade@mail.gvsu.edu), and Meghan Cleveland (clevelme@mail.gvsu.edu), Grand Valley State University, Allendale, Mich.

We will explore 3-D models and images and national, regional, state, and county maps to describe the shapes and kinds of water and land features.

#### Sing, Dance, and Celebrate Science

102A, Wisconsin Center

Science Focus: GEN, NGSS

(General)

Juliana Texley (@JulianaTexley; *texlelj@cmich.edu*), 2014–2015 NSTA President, and Science Writer/Instructor, New Baltimore, Mich.

Sing with Pete Seeger, dance, enjoy poetry, and celebrate with the Innovation Collaborative. Join in for some effective practices research and free lessons for all ages.

#### ASEE Session: ASEE's K–12 Outreach: Engineering, Go For It (eGFI); Teach Engineering; Link Engineering; and the National Science Digital Library

(Grades P–12) 102E, Wisconsin Center Science Focus: ETS, SEP1, SEP6

**Jay Garvey Shah** (*jgshah@sunprairieschools.org*), Creekside Elementary School, Sun Prairie, Wis.

Join the American Society for Engineering Education (ASEE) and its K–12 division for innovative ways to introduce engineering into the K–12 classroom.

#### NGSS@ NGSS@NSTA Forum Session: Developing Coherent Storylines of NGSS Lessons

(Grades K–12) Ballroom B, Wisconsin Center Science Focus: GEN, NGSS

Brian Reiser (@reiserbrianj; reiser@northwestern.edu) and Michael Novak (@mnovakccl; mnovakccl@gmail.com), Northwestern University, Evanston, Ill.

We will explore how to develop a coherent storyline for a unit where instead of students learning about science ideas, they are motivated by questions arising from phenomena to figure out these ideas and, in the process, incrementally build explanatory models.

# Science Square Dancing: Lessons That Move to the Music!

(General) Ballroom D, Wisconsin Center Science Focus: GEN, CCC1, CCC6

**Lewis Maday-Travis** (@fishyteaching; *ltravis@seattleacad-emy.org*), Seattle Academy, Upper School, Seattle, Wash.

Engage all students with lessons combining social dance with concept-rich content. Participants will dance the Periodic Table, cell structures, and more! No dancing experience needed.

202C, Wisconsin Center

#### 2:00–3:00 PM Exhibitor Workshops

When Zombies Attack!

(Grades 6–12) 201A, Wisconsin Center Science Focus: ETS, LS, PS, SEP5, SEP6 Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District Fred Fotsch, Texas Instruments, Dallas

After the apocalypse, you must use any resources available to survive. In this session, survivors will use a little coding (no experience necessary), a simple speaker, and a flashlight to construct a zombie repulsion device. Using the science of sound and hearing, you may just find a way to stop the ZOMBIE ATTACK!

#### Chemical Formula and Amino Acids

(Grades 9–12)

Science Focus: ETS1, PS2

Sponsor: Lab-Aids, Inc.

Brandon Watters, Vernon Hills High School, Vernon Hills, Ill.

201B, Wisconsin Center

What is the difference between subscripts and coefficients? What does "balancing" a chemical equation mean? Many students have trouble with these fundamental concepts in chemistry. If a student does not fully understand the chemical formula, then moles, reactions, and stoichiometry are hopelessly confusing. Join us for some elegant, intuitive, and well-differentiated lessons that allow students of all levels to master the chemical formula and thereby move confidently into a deeper understanding of chemistry.

#### Engineer Physical Science Excitement in Your Classroom with a Carolina STEM Challenge®

(Grades 6–12) 201 C/D, Wisconsin Center Science Focus: PS, SEP

Sponsor: Carolina Biological Supply Co.

#### Carolina Teaching Partner

Bounce and race into hands-on activities that engage middle school and high school students. Apply creative problemsolving skills and engineering practices to chemistry and physical science challenges. Experience how Carolina makes it easy to bring STEM to your classroom.

# STEM Challenge: Keeping Students Engaged with Problem Solving

(Grades 6–9) Science Focus: GEN, SEP1 Sponsor: AEOP

Matthew Hartman, eCYBERMISSION Content Manager, NSTA, Arlington, Va.

The practices included in the *NGSS* are all based on solving problems. Come work on and solve some problems that you can take back to the classroom, as well as develop your own problem-solving activities. We will also share how the online STEM competition, eCYBERMISSION, gives students a chance to solve problems using science and engineering and how you and your students can participate at no cost.

#### Make Any Classroom a Makerspace

(Grades K–12) 202D, Wisconsin Center Science Focus: ETS Sponsor: Pearson Learning Services

Obie Martin, Pearson Education, Logansport, Ind.

Makerspaces are everywhere, from television to your public library. You can make your classroom into a makerspace without a lot of equipment or cost. All you need is the right attitude and the willingness to promote innovative thinking in your students. Come try it out for yourself in this fun hands-on workshop.

#### Integrating iPad with Vernier Data-Collection Technology

(Grades 3–College) 202E, Wisconsin Center Science Focus: ETS, PS, SEP

Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

Collecting and analyzing data help students learn critical science concepts that increase test scores and promote science inquiry. In this hands-on workshop, you will learn how Vernier supports teachers who use iPads in their classrooms. Experiments such as "Boyle's Law," "Grip Strength Comparison," and "Ball Toss" will be conducted.

# Exploring Inheritance and Gene Regulation in Sticklebacks

#### (*Grades* 9–*College*) 203 *D/E*, *Wisconsin Center* Science Focus: LS1.A, LS1.B, LS1.D, LS3, LS4.A, LS4.B, LS4.C, CC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP1, SEP2, SEP4, SEP5, SEP7

Sponsor: HHMI BioInteractive

Kathy Van Hoeck (kathyvanhoeck@gmail.com), York Community High School, Emhurst, Ill.

Help your students understand gene regulation and inheritance with free HHMI BioInteractive materials. Explore a short film, lab activity, and data analysis that center around stickleback fish evolution, and emphasize collecting and analyzing data to determine a pattern of inheritance.

# The Science and Ethics of Genome Editing with CRISPR/Cas9

(Grades 9–College) 203B, Wisconsin Center Science Focus: ETS, LS1, LS3, LS4, CCC4, CCC6, CCC7, SEP1, SEP2, SEP3

Sponsor: MSOE Center for BioMolecular Modeling

**Tim Herman** (*herman@msoe.edu*), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

The development of CRISPR/Cas9 gene editing technology promises to revolutionize the biological sciences the same way that restriction endonucleases led to genetic engineering in the 1970s. Explore physical models of the Cas9 endonuclease and contrast the structure/function of this protein with restriction enzymes, zinc finger nucleases, and TALEN proteins.

#### Conserving Panda Population...One Hormone Test Design at a Time!

(Grades 9–College) 203C, Wisconsin Center Science Focus: LS Sponsor: Bio-Rad Laboratories

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Come put your immunology and reproductive endocrinology systems knowledge basics to the test as you engineer a hormone detection system that can be used for giant panda population conservation efforts.

#### 2:00–4:00 PM Hands-On Workshop

Wisconsin Society of Science Teachers Preservice Exploratorium

(General) Hall B Lobby, Wisconsin Center Science Focus: GEN, NGSS

**Ray Scolavino** (*rscali3@yahoo.com*), Program Coordinator, NSTA Milwaukee Area Conferenence, and University of Wisconsin–Milwaukee

Abbey Beine (desmond2@uwm.edu), Kelsey Clark (clark227@uwm.edu), Trevor Derksen (trev2892@gmail. com), Mark Jarchow (mjarchow@uwm.edu), Kaitlin Kapitan (kapitan@uwm.edu), Anthony Garcia (garciaap@uwm.edu), Jennifer Hawes (jlhawes@uwm.edu), Kylie Vanchena (vanchena@uwm.edu), Juliana Montero (jmontero@uwm.edu), Matt Sanders (sande259@uwm. edu), Amanda Schreiber (schrei78@uwm.edu), and Matt Sostock (@msostock; msostock@uwm.edu), University of Wisconsin-Milwaukee

Preservice teachers present discrepant events. Move from table to table and gather lesson plans to take with you so you can spice up your lessons with discrepant events.

#### 2:45–3:30 PM Special Session

#### Meet the Presidents and Board/Council

(General) NSTA Exhibit Hall Entrance, Wisconsin Center Science Focus: GEN

Be sure to stop by for this special session. Come "meet and greet" with your elected NSTA officers on your way to the exhibits. The President, President-Elect, and Retiring President along with your Board and Council members are looking forward to talking with you at the conference! One lucky person who attends this event will be eligible to win a \$100 gift certificate to the NSTA Science Store. Must be present to win. Drawing will take place at 3:20 PM.



—Photo courtesy of Jacob Slaton

#### 3:30–4:30 PM Exhibitor Workshops

#### Drought in Africa Inspires Students to Invent a Smart Irrigation System

(Grades 6–12) 201A, Wisconsin Center Science Focus: ESS, ETS, CCC1, CCC2, CCC5, CCC7, SEP1, SEP2, SEP3, SEP4, SEP5, SEP6

Sponsor: Texas Instruments

Jeffrey Lukens, Sioux Falls (S.Dak.) School District Fred Fotsch, Texas Instruments, Dallas

Come learn how to create a project-based camp or classroom lesson that enables students to apply concepts, such as photosynthesis and the water cycle, to design a smart irrigation system. Inspired by real-world events, students are motivated to apply problem-solving skills and learn some basic program-

ming to come up with innovative solutions to the drought situation in southern Africa.

#### Distilling Aromatic Hydrocarbons

(Grades 9–12)

201B, Wisconsin Center

Science Focus: PS2 Sponsor: Lab-Aids, Inc.

Brandon Watters, Vernon Hills High School, Vernon Hills, Ill.

We distill water to purify it, or so we think. So why does the clear distillate from apple cider smell like apples? Join us and find out! Using a clever test-tube distillation apparatus, distill the essence of vanilla and the scent of mint...and even show you how to make brandy from wine! Distillation is a crucial process in chemical engineering and technology, yet few students ever get to explore the process.

#### Take Your Students on a Quest! A Real-World Problem-Based Learning Project That Incorporates All Three Dimensions of *NGSS*

(Grades K–8)

202D, Wisconsin Center

Science Focus: GEN, NGSS Sponsor: Pearson Learning Services

Chuck McMillan, Pearson Education, Boston, Mass.

Take your students on a Quest! These real-world Problem-Based Learning projects incorporate all three dimensions of *NGSS*. A Quest! brings classroom concepts to life as students are immersed in a world of discovery to help solve real-world problems through a combination of hands-on digital simulations.

#### Physics and Physical Science with Vernier

202E, Wisconsin Center

Science Focus: ETS, PS, SEP

(Grades 9-12)

Sponsor: Vernier Software & Technology

**David Carter** (*info@vernier.com*), Vernier Software & Technology, Beaverton, Ore.

In this hands-on workshop, learn how Vernier supports physics and physical science teachers who want their students to use probeware. A variety of experiments from our popular lab books will be conducted. Learn how our innovative data-collection technology works across multiple platforms such as LabQuest 2, computer, Chromebook, and iPad.

# Investigate Photosynthesis and Cellular Respiration with Algae Beads

Grades 9–College)	203C, Wisconsin Center
Science Focus: LS	
Sponsor: Bio-Rad Laboratories	

**Damon Tighe** (*damon\_tighe@bio-rad.com*), Bio-Rad Laboratories, Hercules, Calif.

Use algae beads in a colorimetric assay to study both photosynthesis and cellular respiration through authentic inquiry investigations in formats to support both AP and *NGSS* biology. Learn how to extend this lab to study the effects of light intensity, light color, temperature, and other organisms on these processes.

#### 5:00–7:00 PM Networking Opportunity Wisconsin Society of Science Teachers (WSST) Member Reception

#### Vue East (21st Floor), Hyatt

This reception is for all WSST members and Wisconsin teachers to meet with their professional organization and socialize.



—Photo courtesy of Visit Milwaukee

#### 8:00–8:30 AM Presentations

Using Local Citizen Science to Teach the Engineering Design Process

(Grades 6–12) Lakeshore A/B, Hyatt Science Focus: ESS2.D, ESS3.A, ESS3.C, ESS3.D, ETS1, LS2.A, LS2.B, LS2.C, INF, CCC2, CCC4, CCC5, SEP, Karen Olson (@karenurbenolson; klolson@barabooschools. net), Spencer Rohlinger (srohlinger@barabooschools.net), and Claire Gillick, Baraboo High School, Baraboo, Wis. Hear how we worked with community partners to mitigate the effects of climate change, all while developing science and engineering practices, scientific argumentation, literacy skills, and making science relevant to our students.

#### Step by Step: Rube Goldberg in the Physics Classroom

(Grades 6–12) 103B, Wisconsin Center Science Focus: PS, SEP

Howard Citron (hcitron@dist113.org) and William Stafford (wstafford@dist113.org), Deerfield High School, Deerfield, Ill.

Engineering and physics collide in this exploration of mechanics and energy transfer through the use of Rube Goldberg machines.

#### 8:00–9:00 AM Presentations

NOAA in Your Backyard: Free Professional Development and Local Educator Resources Are Closer Than You Think

(Grades K–12) 103A, Wisconsin Center Science Focus: GEN, SEP

June Teisan (june.teisan@noaa.gov), NOAA Office of Education, Washington, D.C.

The National Oceanic and Atmospheric Administration (NOAA) has hundreds of facilities and professional communicators across the nation. Get connected to guest speakers, field trips, and local and national professional development opportunities.

# Food Chains: Using Field Surveys That Give Real Results

(Grades 6–8)

103E, Wisconsin Center

Science Focus: LS2.B

Frederick Maier (fredmaier@sbcglobal.net), Village of Itasca Nature Center, Itasca, Ill.

Roy "Jack" Tison (globes@comcast.net), Lincoln Marsh Natural Area, Wheaton, Ill.

Join us for three hands-on survey techniques that allow students to calculate actual numbers of plants, herbivores, and carnivores in creating a food chain.

#### 8:00–9:00 AM Hands-On Workshops

#### Building Background Knowledge

(Grades 5–9) 101 C/D, Wisconsin Center Science Focus: GEN, SEP8

**Sarah Renish-Ratelis** (sarenish@yahoo.com), Mary Lou Mahone Middle School, Kenosha, Wis.

The Building Background Workshop helps students synthesize multiple sources of nonfiction text to provide common background knowledge for all learners.

#### INF Connecting Chemistry to Your World Through ChemClub

(Grades 9–12) Science Focus: PS, INF

(Grades P-6)

Science Focus: GEN

102A, Wisconsin Center

Karen Kaleuati (@ACSChemClubs; k\_kaleuati@acs.org), American Chemical Society, Washington, D.C.

The ACS ChemClub program provides fun and educational resources—all for FREE! Learn about the program, try out some of the activities, and take home a copy of the resources.

#### Making Sense of Science: A System for Systems Thinking

(Grades 3–10) 102B, Wisconsin Center Science Focus: LS1.C, LS2.B, CCC4, CCC5

Kathy Huncosky (khuncos@wested.org), Making Sense of SCIENCE at WestEd, Madison, Wis.

Christopher Thompson (christopher.thompson@rusd.org), Racine (Wis.) Unified School District

**Jonathan Ticha** (jonathan.ticha@rusd.org), West Ridge Elementary School, Racine, Wis.

Make systems accessible—explore a variety of system boundaries, components, interactions, and inputs/outputs. Then make sense of the world through systems thinking.

# Seamless Integration: Maximize Student Learning in Science and Literacy

102D, Wisconsin Center

**Sara Nelson** (@SaraDNelson1; *sara.d.nelson@gmail.com*), Iowa State University, Ames

Join me as I share integrated lesson plans and practices that engage and enhance learning for elementary-age children in both science and literacy. Lessons and practices can be used for both formal and informal educational settings.

#### Principles of Electrophoresis: Which Way Did the DNA Go?

(Grades 6-College) 102E, Wisconsin Center Science Focus: LS, PS2.B, INF

Barbara Bielec (barbara.bielec@btci.org), BioPharmaceutical Technology Center Institute, Madison, Wis.

Designed for teachers in grades 6–12, this presentation will emphasize fundamental biotechnology concepts about electrophoresis in a hands-on way! Also, biotechnology teacher courses and stipends will be shared.

#### 8:00–9:00 AM Exhibitor Workshop Calling All Carbons

(Grades 9-12) 201B, Wisconsin Center Science Focus: ESS2.A, ESS3.A, ESS3.C

Sponsor: Lab-Aids, Inc.

Jenny Boldt, Solon High School, Solon, Iowa

The element of carbon is critical to life on Earth. All living organisms contain different and essential carbon-based molecules. Several Earth processes work together to cycle carbon from one carbon reservoir to another and to keep the amount in each reservoir stable. Join in to learn about and model different carbon transfer processes.

#### 8:00 AM-5:00 PM Meeting

#### Discover the NGSS Train-the-Trainer Workshop

(By Preregistration Only) Regency B, Hyatt This workshop gives teacher leaders a solid understanding of the NGSS, tools for conducting teacher training, and the confidence they need to be leaders.



#### 8:30–9:00 AM Presentations

#### Augmented Reality Makes Science Come to Life!

Lakeshore A/B, Hyatt Science Focus: GEN, INF

Joan Biese (@gr1teacher; jbiese@seymour.k12.wi.us), Rock Ledge Primary Center, Seymour, Wis.

iOS and Android apps—such as Aurasma, Elements 4D, and more—can enhance science exploration in the K-12 classroom and integrate with other content areas.

(Grades P-12)

#### From Earth to Sky—Using Drones to Map 3-D Surfaces (Grades 7–College) 101B, Wisconsin Center

Science Focus: ESS2.C, ESS2.D, ESS2.E, ESS3.C, ETS2.A, CCC1, CCC3, CCC4

Carl Wozniak (cwozniak@nmu.edu) and Catherine Boileau (cboileau@nmu.edu), Northern Michigan University, Marquette

Drones and 3D printers—it doesn't get more exciting for students! Join an exploration of modeling geologic features in digital and physical three dimensions.

#### **Freshman Physics for All**

(Grades 9-12) Science Focus: PS 103B. Wisconsin Center

Judi Luepke, Deerfield High School, Deerfield, Ill.

Discover how one high school developed a freshman physics program using NGSS to provide nearly 100% of graduates with a physics experience for STEM careers.

#### 9:00 AM-12 Noon Exhibits

Hall A, Convention Center The NSTA Exhibit Hall is a must-see! NSTA brings you the leading science education companies and organizations to showcase products, services, curricula, and much more. You'll discover something new and exciting in the world of science teaching. Some exhibitors will offer materials for sale.

#### 9:30–10:00 AM Presentation

#### Spark Students' Curiosity with Chemistry!

(Grades K-12) 103B, Wisconsin Center Science Focus: PS1, PS3

**Karen Kaleuati** (*k\_kaleuati@acs.org*), American Chemical Society, Washington, D.C.

Learn about the various free resources—games, lesson plans, grants, and more—available from the American Chemical Society (ACS) without being a member. Attendees will walk away with copies of the resources.

#### 9:30–10:30 AM Presentations

Differentiated Voyage: Technology Integration and Differentiating Science Assessments

Lakeshore A/B, Hyatt

(Grades 6–8) Science Focus: LS3, PS2

**Josh Ariel Almoite** (@sirbiolojosh; *ariel.almoite@asfm. edu.mx)*, American School Foundation of Monterrey, Santa Catarina, N.L., Mexico

Learn how to integrate technology through formative response tools. The differentiated authentic assessment by Robert Marzano will also be integrated in the Branch-Loop Differentiated Model (my original model). Attendees should bring a laptop or mobile device to maximize participation.

#### Standards Make Strange Instructional Bedfellows: Science and Social Studies—Inquiry and Problem Solving

(Grades K–5) 101 C/D, Wisconsin Center Science Focus: GEN, NGSS

**David Allen** (@dallenbio; *david.r.allen@rps205.com*) and **Cory Nilsen** (@rps205\_ss; *cory.nilsen@rps205.com*), Rockford (Ill.) Public Schools

We will share how to use *NGSS* as the backbone to a curriculum and instruction model that integrates science, social studies, and literacy in elementary classrooms.

#### Diffusion, the Cell Membrane, and Ourselves: Biology Comes Alive Through the Aesthetic Realism Method

(Grades 7–11) 103E, Wisconsin Center Science Focus: LS1.A, LS1.C

**Rosemary Plumstead** (aldersgate@msn.com), Retired Educator, Waretown, N.J.

**Sarah Ross** (*sross3@gmail.com*), Retired Biology Teacher, New York, N.Y.

Demos on diffusion vividly show its logical, beautiful structure of opposites, enabling students to eagerly learn and feel that science is exciting and related to themselves!

#### 9:30–10:30 AM Hands-On Workshops

2 Animal Multimedia Inspires Learning and Engagement

♦ (Grades 6-12) 101B, Wisconsin Center Science Focus: LS

Kelly Schaeffer (@BirdSleuth; kms448@cornell.edu), The Cornell Lab of Ornithology, Ithaca, N.Y.

Come see how easy it is to support STEM learning through animal multimedia using the free sound analysis program Raven.

The Law of Conservation of Mass...and Literacy

(Grades 9–12) 102A, Wisconsin Center Science Focus: PS

**Dawnne LePretre** (*dlepretr@hawk.iit.edu*), **Judith Lederman** (*ledermanj@iit.edu*), and **Norman Lederman** (*ledermann@iit.edu*), Illinois Institute of Technology, Chicago

Selina Bartels (selina.bartels@cuchicago.edu), Concordia University Chicago, River Forest, Ill.

We will share a tested chemistry lesson linking conservation of mass to nature of science, a key component of scientific literacy via claims, reasoning, argumentation, and reflective writing.

#### Teaching Science and Engineering with Historical Primary Sources: Opportunities for Cross-Disciplinary Learning

(Grades 3–12) 102B, Wisconsin Center Science Focus: ESS, ETS, CCC, SEP

**John Smith** (@jftrey; *jf.trey.smith@gmail.com*), Northwestern University, Evanston, Ill.

Engage students in cross-disciplinary literacy learning using maps, notebooks, photos, and newspapers that make visible science practices and links among science, technology, engineering, and society.

#### **Testing Look-Alike Liquids**

(Grades 3–6) 102D, Wisconsin Center Science Focus: PS1.A, CCC1, CCC6, SEP2, SEP4, SEP6 **Patricia Galvan** (*p\_galvan@acs.org*), American Chemical Society, Washington, D.C.

Conduct simple tests on four identical-looking clear colorless household liquids. Testing reveals interesting differences elementary students will discover! Complete instructions will be provided and are available at *www.inquiryinaction.org*.

#### Taking the Right Step

(Grades 4–7) 102E, Wisconsin Center Science Focus: LS, PS, SEP1, SEP2, SEP5, SEP7 Vernon Gentele (vern@treesfortomorrow.com), Trees for Tomorrow, Eagle River, Wis.

In this hands-on session, participants will look at the *NGSS* to see how students learn by making models. Elements of STEM will assist in learning.

#### **INF** Outside Your Door: Exploring the Arts in Nature

(Grades P–K) 103D, Wisconsin Center Science Focus: GEN, INF, CCC

**Penny Russell,** Wolf Trap Institute for Early Learning Through the Arts, Vienna, Va.

Discover how the arts can enhance your children's understanding of weather and seasonal changes, life needs, and the natural world outside your door.

#### 9:30–10:30 AM Exhibitor Workshops

**Prospecting for Mineral Ore** 

201B, Wisconsin Center

(Grades 9–12) Science Focus: ESS3, ETS1

Sponsor: Lab-Aids, Inc.

Jenny Boldt, Solon High School, Solon, Iowa

How do geologists look for mineral ore? In this activity from EDC Earth Science, participants search for a layer of rock containing a valuable mineral called molybdenum by testing sediments collected in strategic spots along river systems gathering data to decide where the deposit is located. This is no cookie mining activity!

#### **Cells as Protein Engineers**

(Grades 8–College) 203B, Wisconsin Center Science Focus: ETS1, LS1, LS3, CCC1, CCC2, CCC3, CCC4, CCC6, CCC7, SEP1, SEP2, SEP4, SEP5, SEP6 Sponsor: MSOE Center for BioMolecular Modeling **Tim Herman** (herman@msoe.edu), MSOE Center for Bio-Molecular Modeling, Milwaukee, Wis.

Explore the cellular processes of DNA replication, transcription, and translation using hands-on instructional materials that support the three dimensions of *NGSS*, most notably the science and engineering practice of developing and using models. Handouts and information on borrowing instructional materials from a university model lending library program will be provided.

#### 10:00–10:30 AM Presentation

Learning Chemistry Like Physics

(Grades 9–12) 103B, Wisconsin Center Science Focus: PS1.B, PS3.C, CCC2, CCC4, CCC5, SEP2, SEP3, SEP4

Dan Voss (@dcvoss1; daniel.voss@kstf.org), Boone High School, Boone, Iowa

Joshua Rappuhn (jrappuhn@district100.com), Belvidere High School, Belvidere, Ill.

**Aliza Zivic** (@alizamstein; *alizazivic*@u.northwestern.edu), Northwestern University, Evanston, Ill.

See how a chemistry unit on energetics uses magnets and other hands-on tools to help students build an understanding of bonds and bond energy.

#### 11:00 AM–12 Noon Presentations

Advancing Science Learning Through Interactive Science Notebooks

(Grades K–12) 101 C/D, Wisconsin Center Science Focus: GEN, NGSS

Kevin Mason (masonk@uwstout.edu), University of Wisconsin– Stout, Menomonie

Discover how teachers are using interactive science notebooks to engage students in science and engineering, activate prior knowledge, check for understanding, and reflect on learning.

#### Super STEM Apps and Trade Books for PreK-6 Classrooms

(Grades P-6)

103A, Wisconsin Center

Science Focus: GEN, NGSS

Janet Jordan (janetjordan37@gmail.com), Retired Educator, Fort Wayne, Ind.

Discover many excellent, engaging, and challenging STEM iPad apps and trade books. Practical tips for integrating them into the curriculum will be presented.

# Cars: A Fundamental Look at How Cars Work and the Science Involved

(Grades 7–12) 103B, Wisconsin Center Science Focus: ETS, PS1, PS2, PS3, CCC2, CCC4, SEP2, SEP4

#### Andrew Nydam (andrewnydam@hotmail.com), Polymer Ambassador, Olympia, WA

Students love cars and tolerate school. Complex science concepts can be introduced and explored using the automobile as the focus (energy transformations, chemical reactions, gas laws, solutions).

#### Using Inquiry-Based Modules to Study Biological Processes in Relation to Environmental Health Science

(Grades 7–12) 103E, Wisconsin Center Science Focus: LS1.A, LS1.B, LS2.D, LS3.B, CCC1, CCC2, CCC4, CCC6, CCC7, SEP

Renee Hesselbach (hesselba@uwm.edu), Craig Berg (caberg@ uwm.edu), Dave Petering (petering@uwm.edu), Henry Tomasiewicz (henryt@uwm.edu), and Michael Carvan (carvanmj@uwm.edu), University of Wisconsin–Milwaukee Learn about four unique modules that teach students about the toxic effects of environmental agents on the developmental and behavioral health of fish and earthworms.



#### **11:00 AM–12 Noon Hands-On Workshops** Not Just Flowers...STEM, Too: Reaching All Students Through Plants and Nature

(Grades 6–12) 101A, Wisconsin Center Science Focus: ETS, LS, CCC, SEP

**Rebecca Ammann** (*rlammann@gmail.com*), Chicago Botanic Garden, Glencoe, Ill.

Plants offer a natural entryway to STEM for students from diverse backgrounds and abilities. We will unearth a fun hands-on workshop covering science, engineering, and technology.

#### Investigating Clean Energy Systems: Connecting Classrooms to University Research

(Grades 7–College) 101B, Wisconsin Center Science Focus: ESS3.C, ESS3.D, ETS1, ETS2.B, LS1.C, LS2.A, LS3, LS4.B, LS4.C, LS4.D, PS3.D, CCC1, CCC4, CCC5, SEP1, SEP3, SEP4, SEP7

**John Greenler** (@johngreenler; *john.greenler*@*wisc.edu*), Great Lakes Bioenergy Research Center, Madison, Wis. Through research stories, data dives, and hands-on investigations, students learn how to apply science and engineering practices in the current quest for alternative fuels.

#### Let's Get Wet: Water and Weather

(Grades P–3) 102A, Wisconsin Center Science Focus: ESS

Ruth Ruud (ruudruth61@gmail.com), Cleveland State University, Cleveland, Ohio

**Juliana Texley** (texlelj@cmich.edu), 2014–2015 NSTA President, and Science Writer/Instructor, New Baltimore, Mich. Don't look now, but the CCSS asks that you teach Earth sciences as early as kindergarten, and the NGSS have specific goals for early primary. No more procrastinating! The good news is that you have your equipment. Come get easy activities, lit basics, and basic teacher background so that you can start right away!

# Digital Observation Tech Skills: Student-Led Inquiry to Transects of Change

102B, Wisconsin Center

Science Focus: ETS2, LS2

(Grades 4-12)

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

Justin Hougham (@uphamwoods1941; justin.hougham@ ces.uwex.edu), University of Wisconsin–Extension, Wisconsin Dells

**Daniel Graves** (gravesdt@milwaukee.12.wi.us), Maryland Avenue Montessori School, Milwaukee, Wis.

Use technology to engage our "technology-native" students in careful observation and student-led inquiries. Teachers highlight projects and participants engage in a mini-inquiry of their own.

#### Bring the Science of Energy to Your Elementary School Classroom!

(Grades 2–6) 102D, Wisconsin Center Science Focus: PS3

**Amy Truemper** (@NEED\_Project; @ms\_truemper; *atruemper@sd308.org*), Bednarcik Junior High School, Aurora, Ill.

Confidently teach energy forms and transformations in your elementary classroom using six center-based, hands-on stations. Motion, sound, and thermal, radiant, electrical, and chemical energy are fun to teach!

#### Rates in Earth Science: Can You Outrun a Glacier? A Lava Flow? A Landslide?

(Grades 7–12) 102E, Wisconsin Center Science Focus: ESS2.A, CCC3

**Stephen Mattox** (*mattoxs@gvsu.edu*) and **Emily Siriano** (@EmilySiriano; *sirianoe@mail.gvsu.edu*), Grand Valley State University, Grand Rapids, Mich.

Earth science processes move as fast as comets and as slow as plates. We'll demonstrate rates of numerous phenomena to be used across your curriculum.

#### Memory, Attention, and Distraction

(Grades 9–12) 103D, Wisconsin Center Science Focus: LS1.D, CCC4, SEP2

Molly Malone (molly.malone@utah.edu), The University of Utah, Salt Lake City

What can games, a murder mystery, and a driving test demonstrate about neurophysiology? Explore brain anatomy, memory, and attention for free at *learn.genetics.utah.edu*.

#### **11:00 AM–12 Noon Exhibitor Workshop** Using Climate Proxies to Learn About Earth's Climate History

201B, Wisconsin Center

(Grades 9–12) Science Focus: ESS2, ESS3, ETS1

Sponsor: Lab-Aids, Inc.

Jenny Boldt, Solon High School, Solon, Iowa

How can scientists tell what Earth's climate was like thousands of years before human measurements? This activity simulates the use of fossil ocean foraminifera, tiny organisms whose growth patterns are different in warm or cold water. Analyze and graph samples of replicas of these organisms to determine relative warm and cold periods in the past 200,000 years. This activity is from EDC Earth Science, a new NSF-supported high school program from Lab-Aids.

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**7TH ANNUAL** 

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# Forum & Expo

# HOSTED BY NSTA Philadelphia, Pennsylvania July 11–13, 2018

This dynamic event brings together educators and organizations who are actively implementing STEM programs in their schools or districts.

Come prepared to learn tactics that work, build your professional learning network, connect with effective outreach programs and partnerships, discover new resources, and build a strong curriculum.

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**#STEMforum** 

93

Some exhibitors have classified their products by grade level and subject area. Subject areas are abbreviated here as follows:

В

С

EA

ΕN

G

PH

PD

Т

Biology/Life Science
Chemistry/Physical Science
Earth/Space Science
Environmental Science
Integrated/General Science
Physics/Physical Science
Professional Development
Technology Education

3D Molecular Designs	#508
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Milwaukee, WI 53202	EN, G, PD
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#415

Activate Learning is a leader in research-based K–12 STEM curricula, including IQWST® and Project-Based Inquiry Science:  $PBIS^{TM}$  for middle school science and several leading high school math, science, and engineering curricula. Our project-based, investigation-centered, and literacy-rich programs immerse students in rigorous learning environments, in which their original questions and everyday experiences are central to standards-based 3-D learning.

AEOP eCYBERMISSION and #418 GEMS B, C, EA, EN, G, PH, T 1840 Wilson Blvd. PreK–12, College Arlington, VA 22201 Phone: 703-312-9360 E-mails: swhitsett@nsta.org Website: www.usaeop.com

The National Science Teachers Association administers and provides support to U.S. Army Educational Outreach Programs that engage students in real-world STEM experiences. Learn about eCYBERMISSION, an online competition free to grades 6–9 students, as well as GEMS and Camp Invention, summer STEM enrichment programs for grades K–12 teachers and students.

American Chemical Society	#615
1155 16th St. NW	C, PD
Washington, DC 20036	PreK-12
Phone: 800-333-9511	
E-mail: education@acs.org	
Website: www.acs.org/education	

The ACS Education Division serves learners and educators by building communities and providing effective chemistry education resources, grants, communities, professional development opportunities, standards, and guidelines. Stop by our booth to find information that can support your efforts to provide innovative, relevant, and effective chemistry education from kindergarten through professional education.

American Meteorological Society#7021200 New York Ave. NWEA, PDWashington, DC 20005K-12, CollegePhone: 202-737-1043E-mail: amsedu@ametsoc.orgWebsite: www.ametsoc.org

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Amplify	#509
55 Washington St.	B, EA, EN, G
8th Floor	K-8
Brooklyn, NY 11201	
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Website: www.amplify.com	

Amplify Science, written and developed by The Lawrence Hall of Science, is a brand new K–8 science curriculum designed to address the *NGSS*. Students learn to investigate, talk, read, write, think, and argue like real scientists and engineers through investigations of real-world problems and scientific phenomena.

#### **Exhibitors**

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Bedford, Freeman, & Worth is the most trusted source for digital and print high school science resources. We publish the bestselling Environmental Science for AP\*, as well as Principles of Life for AP\* Biology and Living by Chemistry for pre-AP\* Chemistry. Stop by booth 202 for more information.

Bethel University	#316
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Saint Paul, MN 55112	K-12
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E-mail: graduate-admissions@bethel	.edu
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Cereal City Science	#518
201 W. Michigan Ave.	G
Battle Creek, MI 49017	K-8
Phone: 269-213-3824	
E-mail: cindy@bcamsc.org	
Website: www.bcamsc.org	

The Cereal City Science program (by BCAMSC) supports kindergarten through middle school educators and students with curricula and professional development that meets the NGSS and CCSS. This research-based program provides STEM instruction where students are engaged in phenomena and problem solving in an integrated curriculum of physical science, life science, Earth science, engineering, and technology.



Climate Generation: A Will Steger #217LegacyEA, EN, G, PD2801 21st Ave. S, Suite 1104–12Minneapolis, MN 554079hone: 612-278-7147E-mail: jenna@climategen.orgWebsite: www.climategen.org

Climate Generation: A Will Steger Legacy empowers individuals and their communities to engage in solutions to climate change. We support educators and students with sciencebased interdisciplinary educational resources on climate change, its implications, and solutions to achieve climate literacy. We accomplish this through curricula, professional development, and public outreach.

CPO Science/School	#305
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80 Northwest Blvd.	6-12
Nashua, NH 03063	
Phone: 800-282-9560	
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Phone: 434-975-2629	
E-mail: maryannchapman@grandclassroom.com	
Website: www.grandclassroom.com	

Grand Classroom is a student travel organization, emphasizing outdoor educational experiences in national parks, major U.S. cities, and international destinations.

Green Edventures Tours	#719
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Las Vegas, NV 89108	6–12, College
Phone: 715-252-1238	
E-mail: <i>tara@greenedventures.com</i>	1
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We offer eco-travel and adventures for teachers and students. Our tours feature place-based education with inquiry and STEM programming in Alaska, Costa Rica, Florida, Iceland, Baja Mexico (Sea of Cortez), Trinidad and Tobago, and the Galápagos.

3	GrowNextGen	#201
	A website sponsored by th	e Ohio Soybean Council
2	1926 Chatfield Rd.	B, C, EA, EN, G, PH, T
	Columbus, OH 43221	K-12
	Phone: 614-406-5548	
	E-mail: jane@educationp	rojects.org
	Website: www.grownextge	en.org

GrowNextGen is a website sponsored by the Ohio Soybean Council dedicated to bringing the science of agriculture into science classrooms in an effort to include agriculture as a STEM topic. The website provides FREE resources, including labs, activities, and career education for elementary through high school students that meet the NGSS.

HHMI BioInteractive	#300
4000 Jones Bridge Rd.	B, EN
Chevy Chase, MD 20815	7–12, College
Website: www.biointeractive.org	

HHMI BioInteractive develops free resources based on real data, highlighting research practices. Our short films, virtual labs, apps, and print materials combine important science with engaging presentation. These multimedia resources are developed, vetted, and fieldtested by educators and scientists-and are all tied to national curriculum standards.

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Website: https://k12.kendallhunt.com	

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Ronkonkoma, NY 1177	6-12	
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E-mail: christine.leonard@littlebits.cc Website: http://littlebits.cc/education

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#715

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Millikin University	#704
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Decatur, IL 62522	9-12
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E-mail: lcasey@millikin.edu	
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Minerals Education Coalition	#208
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Englewood, CO 80112	K-12
Phone: 303-948-4221	
E-mail: kriss@smenet.org	
Website: www.mineralseducationcoalition	n.org

The Minerals Education Coalition is dedicated to education that promotes the importance of minerals in our daily lives. To reach K–12 educators, free rock and minerals kits are given to attendees, as well as classroom posters. MEC's website is a tool for all teachers with its searchable database of free lesson plans, demonstrations, and resources for mineral education.

MiniOne Systems
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#419

B, C, EN, PD, T 8–12, College

miniPCR	#700
1770 Massachusetts Ave.	B, EA
Cambridge, MA 02140	6–12, College
Phone: 781-990-8727	-
E-mail: team@minipcr.com	
Website: www.minipcr.com	

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MSOE Center for BioMolecular	#510
Modeling	
1025 N. Broadway St.	
Milwaukee, WI 53202	
Phone: 414-277-7529	
E-mail: herman@msoe.edu	
Website: http://cbm.msoe.edu	

As an instructional materials development laboratory, we create student-centered, hands-on kits and models for the molecular biosciences. Through our professional development experiences, teachers learn active teaching skills and are involved in developing and field-testing new kits. Ask about our outreach programs—SMART Teams and Science Olympiad Protein Modeling Event.

Nasco	#205
901 Janesville Ave.	All
Fort Atkinson, WI 53538	PreK-12
Phone: 800-558-9595	
Website: www.enasco.com	

Our comprehensive collection of classroom supplies and equipment encourages hands-on exploration in middle school, secondary, and post-high school science programs. Our products include visual aids, interactive whiteboard materials, kits, and teacher resources for generations.

National Fluid Power	#203
Association	G, T
6737 W. Washington St.	6-12
Suite 2350	
Milwaukee, WI 53214	
Phone: 414-778-3344	
E-mail: sscaccianoce@nfpa.com	
Website: www.nfpahub.com/fpc	

The National Fluid Power Association proudly offers the Fluid Power Challenge to students nationwide. The Challenge consists of STEM design and build competitions that introduce students to hydraulics, pneumatics, and engineering. Students experience hands-on learning, teamwork, problem-solving, and perseverance. NFPA awards grants and scholarships, as well as links educators to industry.

National Geographic	#200
Learning   Cengage	All
20 Channel Center St.	PreK-12
Boston, MA 02210	
Phone: 888-915-3276	
E-mail: schoolcustomerservice@cenge	age.com
Website: www.ngl.cengage.com	

National Geographic Learning, a part of Cengage, provides quality preK–12, academic, and adult education instructional solutions for reading, science, social studies, mathematics, world languages, ESL/ELD, advanced/ honors/electives, career and technical education, and professional development. See our new catalog at *NGL.Cengage.com/catalogs*.

National Institute for **STEM Education** 5177 Richmond Ave. Suite 1025 Houston, TX 77056 Phone: 800-831-0864 E-mail: judy@nise.institute

PD PreK-12, College

#410

Website: www.getstemcertified.com The National Institute for STEM Education (NISE) certifies teachers, campuses, and districts in STEM teaching using a competencybased, academic coach-led online learning plat-

form in which educators produce a portfolio of work that demonstrates proficiency across 15 STEM teacher actions.

#### National Inventors Hall of Fame/ #311 **Camp Invention** All 6 - 12

3701 Highland Park NW North Canton, OH 44720 Phone: 800-968-4332 E-mail: campinvention@invent.org Website: www.campinvention.org

WHERE BIG IDEAS BECOME THE NEXT BIG THING<sup>TM</sup>. Camp Invention is the only nationally recognized nonprofit summer enrichment program for kindergartners through sixthgraders that is inspired by the greatest innovators around-the Inductees of the National Inventors Hall of Fame®. At Camp Invention, children are empowered to question, brainstorm, collaborate, and invent!

NICERC	#214
6300 E. Texas St.	G, PH, PD, T
Bossier City, LA 71111	6-12
Phone: 318-759-1600	
E-mail: info@nicerc.org	

The National Integrated Cyber Education Research Center (NICERC) develops cyberbased curricula for use by K-12 teachers. The curricula is free to any K-12 educator within the United States and is composed of the Cyber Interstate-a library of cyber-based curricula that allows students to explore cyber issues, engage in cyber education, and enter cyber career fields.



-photo courtesy of Mike Weiss

NOAA Education	#708
1305 East-West Hwy.	EA, EN
Room 1W514	1-12
Silver Spring, MD 20910	
Phone: 301-713-1208	
E-mail: education@noaa.gov	
Website: www.education.noaa.gov	

NOAA is a federal science agency providing free information about weather, climate, oceans, coasts, fisheries, satellite data, and solar weather. NOAA's science touches the lives of every American-protecting life and property and conserving and protecting natural resources. Our mission is to educate and inspire the nation and prepare a future workforce.

OHAUS Corp.	#406
7 Campus Dr., Suite 310	All
Parsippany, NJ 07054-4413	PreK-12
Phone: 800-672-7722	College
E-mail: debbie.foreman@ohaus.com	C
Website: www.ohaus.com	

OHAUS-a leading manufacturer of balances, scales, and water quality test meters-offers a complete array of measurement solutions for grades K-12 and beyond. With OHAUS, you'll connect your students to the real world of measurement through dependable equipment.

PASCO scientific	#601
10101 Foothills Blvd.	All
Roseville, CA 95747	K–12, College
Phone: 800-772-8700	C
Website: www.pasco.com	

PASCO scientific, a leader in STEM education, transforms science education and student learning with award-winning probeware, software, and curriculum that promote science inquiry and 21st century readiness skills. Today teachers and students worldwide use PASCO solutions for physics, biology, chemistry, Earth, and environmental sciences, as well as programming and robotics.

Pearson Learning Services	#600
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Boston, MA 02116 H	PreK–12
Phone: 888-827-0772	
Website: www.pearsonschool.com	

Pearson is the world's learning company. We're inspired by the way education transforms lives, and we help K-12 educators create better learning across all disciplines with our products and services. We're dedicated to improving student outcomes and helping learners prepare for college and careers. Because where learning flourishes, so do people.

#### **NSTA Programs**

**AEOP eCYBERMISSION and GEMS** 

Booth #418 • E-mail: swhitsett@nsta.org Website: www.usaeop.com

Shell Science Lab Challenge Booth #416 • E-mail: aupton@nsta.org Website: www.nsta.org/shellsciencelab

#### **NSTA Hub**

Located on the Mezzanine level of the Wisconsin Center

NGSS@NSTA E-mail: ngss@nsta.org Website: www.nsta.org/ngss

**NSTA Membership** E-mail: membership@nsta.org Website: www.nsta.org/membership

**NSTA Professional Learning Opportunities** E-mails: jputnam@nsta.org; fmendez@nsta.org Website: www.nsta.org/conferences#more

School Specialty Sc	ience	#307
80 Northwest Blvd.	B, C, EA, E	N, G, PH
Nashua NH 03063		PreK-12
Website: www.schoolspecialtyscience.com		

School Specialty Science brings together the very best curriculum with FOSS® and CPO Science, classroom resources, equipment, and furniture with Delta Education and Frey Scientific. Together, these effective teaching and learning solutions serve all the needs of preK-12 science teachers, curriculum specialists, and administrators.

Science Ninjas	#519
2518 N. Kedzie Blvd.	С
Chicago, IL 60647	4-12
Phone: 508-718-7652	
E-mail: nathan.schreiber@gmail.com	
Website: www.scienceninjas.com	

Science Ninjas makes games for STEM learners of all ages, combining Pokemon-style appeal with chemistry fundamentals. Often, scienceis-fun products look like oatmeal, and kids don't eat it-but not Science Ninjas! Headed by two PhDs and a New York Times #1 bestselling cartoonist, our games, comics, and ninjas make learning science fun!

Shell Science Lab Challenge
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Arlington, VA 22201
Phone: 703-312-9217
E-mail: <i>aupton@nsta.org</i>
Website: www.nsta.org/shellsciencelab

Learn how to win \$20,000 for your school science lab, up to \$10,000 for your outstanding efforts as a science educator, and \$1,800 as an urban science educator.

Society of Womer	1 Engineers (SWE)	#608
130 E. Randolph S	t.	PD, T
Chicago, IL 60601		K-12
Phone: 312-596-52	230	
E-mail: outreach@	swe.org	
Website: www.socie	tyofwomenengineers.sw	e.org

The Society of Women Engineers offers many ways for K-12 students and educators to join the engineering community and get involved in the diversity and inclusion conversation. We publish a monthly e-newsletter for educators about events, resources, and more. Our free program SWENext is a great way for girls under 18 to be part of SWE and build a STEM identity!

#416	Sourcebooks	#716
PD	1935 Brookdale Rd.	EA, G, PH, T
K-12	Suite 139	PreK-8
	Naperville, IL 60563	
	Phone: 630-961-3900	
	E-mail: stephanie.graham@s	sourcebooks.com
	Website: www.sourcebooks.cc	om

Sourcebooks is an independent publishing company dedicated to connecting readers to resources that will change their lives. Our Baby University series of board books introduces children to STEM by offering simple explanations of complex scientific ideas.

South Dakota State University	#216
351 Avera Health Sciences bldg.	С
Brookings, SD 57007	6-12
Phone: 605-688-6274	
E-mail: matt.miller@sdstate.edu	
Website: www.sdstate.edu/chemistry-bioc	hemistry

South Dakota State University offers a variety of programs, both undergraduate and graduate. Of particular interest for this conference is our online MS program for teachers. Our goal is to offer a professional masters degree focusing on topics relevant to a science teacher.

#### **Squishy Circuits Store** 19721 Nowthen Blvd. Anoka, MN 55303 Phone: 763-486-5832 E-mail: contactus@squishycircuitsstore.com Website: www.squishycircuits.com

Squishy Circuits uses conductive and insulating play dough to teach the basics of electrical circuits in a fun, hands-on way. Let your creations come to life as you light them up with LEDs, make noises with buzzers, and spin with the motor.

#313	STEMCON
G, PH	2250 E. Devon Ave.
K-5	Suite 225
	Des Plaines, IL 60018
	Phone: 847-824-3380, x241
	E-mail: info@stemcon.net
. 1.	Website: www.stemcon.net

STEMCON's mission is to provide a practical professional development conference for K-12 STEM educators. STEMCON is a platform for STEM educators and administrators from all around the nation to connect, collaborate, and share their best practices. Join us for the 5th Annual STEMCON at the Hyatt Regency O'Hare on April 20, 2018.

#209	STEMscopes	#409
PD	5177 Richmond Ave., Suite 1025	All
K-12	Houston, TX 77057	PreK-12
	Phone: 800-831-0864	
	E-mail: david@acceleratelearning.com	
	Website: www.stemscopes.com	

STEMscopes<sup>TM</sup>, created by Accelerate Learning Inc., is an award-winning, research-based national leader in preK-12 STEM curriculum. Used by over 3.5 million students across 45 states, STEMscopes provides comprehensive digital resources, supplemental print materials, and hands-on exploration kits that drive engagement and academic growth.



---photo courtesy of Jacob Slaton

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2440 W. El Camino Real, Suite 400	All
Mountain View, CA 94040	preK-8
Phone: 650-390-6600	
E-mail: <i>ttran@teachtci.com</i>	
Website: www.teachtci.com	

TCI is a K–12 publishing company that creates science and social studies curricula that enables educators to engage all students in a diverse classroom.

TeacherGeek, Inc.	#215
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Holley, NY 14470	PreK–12, College
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E-mail: sales@teachergeek.co	om
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E-mail: ti-cares@ti.com		
Website: https://education.ti.com	1	

Texas Instruments (TI) provides free classroom activities that enhance math, science, and STEM curricula; technology that encourages students to develop a deeper understanding of concepts; and professional development that maximizes your investment in TI technology.

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Website: www.vernier.com		

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# World Wildlife Fund#6191250 24th St. NWB, EA, EN, G, TWashington, DC 200372–6Phone: 202-495-4405E-mail: wildclassroom@wwfus.orgWebsite: www.worldwildlife.org/wildclassroom

World Wildlife Fund connects educators and parents with the materials they need to help kids understand the natural world around them with a new educational resource, Wild Classroom. Available for free download, Wild Classroom is a growing library of species-focused toolkits that can be used to enhance children's learning experience.



#### 3D Molecular Designs (Booth #508)

Thursday, Nov 9	9:30-10:30 AM	203B, Wisc. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 39)
Thursday, Nov 9	11:00 AM-12 Noon	203B, Wisc. Center	5 E'sy Ways to Investigate Enzymes! (p. 40)
Thursday, Nov 9	12:30-1:30 PM	203B, Wisc. Center	Getting Students Through the Cellular Membrane (p. 45)
Friday, Nov 10	9:30-10:30 AM	203B, Wisc. Center	DNA Structure and Function with a Twist of Dynamic DNA (p. 68)

#### Activate Learning (Booth #415)

Thursday, Nov 9	8:00-9:00 AM	202E, Wisc. Center	Incorporating STEM into the Classroom (High School Science) (p. 36)
Thursday, Nov 9	9:30-10:30 AM	202E, Wisc. Center	Literacy in the Context of Science in the Middle School Classroom (p. 39)
Thursday, Nov 9	11:00 AM-12 Noon	202E, Wisc. Center	Project-Based Inquiry Science <sup>TM</sup> (PBIS): Creating "Coherence and Science
-			Storylines" for Middle School Science (p. 40)
Thursday, Nov 9	12:30-1:30 PM	202E, Wisc. Center	Structuring Discussion to Be Equitable and Rigorous (p. 45)
Thursday, Nov 9	2:00-3:00 PM	202E, Wisc. Center	Literacy in the Context of Science in the Elementary Classroom (p. 50)
Thursday, Nov 9	3:30-4:30 PM	202E, Wisc. Center	Science Storylines and the Driving Question Board: Keeping NGSS Curricula
-			Student Driven (p. 54)

#### AEOP (Booth #418)

Thursday, Nov 9	11:00 AM-12 Noon	202C, Wisc. Center	Putting the "E" in STEM: Engineering in the Middle School Science Classroom (p. 40)
Thursday, Nov 9	12:30-1:30 PM	202C, Wisc. Center	Out-of-School STEM Enrichment: AEOP Program Design Collaboration (p. 45)
Friday, Nov 10	2:00-3:00 PM	202C, Wisc. Center	STEM Challenge: Keeping Students Engaged with Problem Solving (p. 81)

#### Amplify (Booth #509)

Thursday, Nov 9	9:30-10:30 AM	201A, Wisc. Center	The Power of Modeling in K–8 Classrooms (p. 38)
Thursday, Nov 9	11:00 AM-12 Noo	n 201A, Wisc. Center	Space Docking Failure: Phenomena and 3-D Instruction for Grades 6-8 (p. 39)
Thursday, Nov 9	12:30-1:30 PM	201A, Wisc. Center	Puppet Theater Engineering: Phenomena and 3-D Instruction for Grades K and 1 (p. 44)
Friday, Nov 10	8:00–9:00 AM	201A, Wisc. Center	Integrate Instruction and Assessment in Three Dimensions Using Learning Progressions (p. 61)
Friday, Nov 10	9:30–10:30 AM	201A, Wisc. Center	Implementing Argumentation: Evidence, Claims, Reasoning, and Science Seminars in Grades 6–8 (p. 66)
Friday, Nov 10	11:00 AM-12 Noo	n 201A, Wisc. Center	Disappearing Jaguars and Sloths: Phenomena and 3-D Instruction for Grades 2–5 (p. 72)

#### ANATOMY IN CLAY® Learning System (Booth #516)

Friday, Nov 10 9:50–10:50 AM 205A, wise. Center Flands-Off Anatomy: Body Bunding with Clay (p. 68)	Friday, Nov 10	9:30-10:30 AM	203A, Wisc. Center	Hands-On Anatomy: Body Building with Clay (p. 68)	
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#### **Bio-Rad Laboratories (Booth #605)**

Thursday, Nov 9	2:00-3:00 PM	203C, Wisc. Center	Communicating Science Through Lab Notebooking (p. 50)
Thursday, Nov 9	3:30-4:30 PM	203C, Wisc. Center	Enzymes: Technology Inspired by Nature (p. 54)
Friday, Nov 10	8:00-9:00 AM	203C, Wisc. Center	How to Use Pop Culture in Your Life Science Class (p. 63)
Friday, Nov 10	9:30-10:30 AM	203C, Wisc. Center	Get That Grant Money! (p. 68)
Friday, Nov 10	11:00 AM-12 Noon	203C, Wisc. Center	Become a GMO Investigator (p. 74)
Friday, Nov 10	2:00-3:00 PM	203C, Wisc. Center	Conserving Panda PopulationOne Hormone Test Design at a Time! (p. 82)
Friday, Nov 10	3:30-4:30 PM	203C, Wisc. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 83)

#### **Index of Exhibitor Workshops**

#### Carolina Biological Supply Co. (Booth #500)

Thursday, Nov 9	9:30-10:30 AM	201 C/D, Wisc. Center	Coding with First Graders? The Smithsonian Says YES! (p. 38)
Thursday, Nov 9	11:00 AM-12 Noor	n 201 C/D, Wisc. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 39)
Thursday, Nov 9	12:30-1:30 PM	201 C/D, Wisc. Center	Hands-On Science with Classroom Critters (p. 44)
Thursday, Nov 9	2:00-3:00 PM	201 C/D, Wisc. Center	Collecting Evidence: How Does an Owl Get All That Energy? (p. 49)
Thursday, Nov 9	3:30-4:30 PM	201 C/D, Wisc. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry
			Teacher (p. 53)
Friday, Nov 10	8:00-9:00 AM	201 C/D, Wisc. Center	Hands-On Activities to Model Habitat Preference and Population
			Sampling (p. 61)
Friday, Nov 10	9:30-10:30 AM	201 C/D, Wisc. Center	Shifting to the Five Innovations: How Do We Transform Instruction? (p. 67)
Friday, Nov 10	11:00 AM-12 Noor	n 201 C/D, Wisc. Center	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution®
			Specimens (p. 72)
Friday, Nov 10	12:30-1:30 PM	201 C/D, Wisc. Center	Introduction to Wisconsin Fast Plants® (p. 76)
Friday, Nov 10	2:00-3:00 PM	201 C/D, Wisc. Center	Engineer Physical Science Excitement in Your Classroom with a Carolina STEM
			Challenge® (p. 81)

#### CPO Science/School Specialty Science (Booth #305)

Thursday, Nov 9	8:00-9:00 AM	202D, Wisc. Center	CPO Science Biology Energy QUEST: Teaching Cell Energy Pathways (p. 36)
Thursday, Nov 9	9:30-10:30 AM	202D, Wisc. Center	CPO's Wind Turbine: A STEM Approach to Engineering and Design (p. 38)
Thursday, Nov 9	11:00 AM-12 Noon	202D, Wisc. Center	CPO's LINK Genetics Learning Modules: Crazy Traits and Crazy
			Chromosomes (p. 40)
Thursday, Nov 9	3:30-4:30 PM	202D, Wisc. Center	CPO Science LINK Learning Module: Chemistry and the Periodic Table (p. 54)

#### Delta Education (Booth #301) and Frey Scientific (Booth #303)

Thursday, Nov 9	9:30-10:30 AM	202A, Wisc. Center	Makerspaces with Options for All Students (p. 38)
Thursday, Nov 9	2:00-3:00 PM	202A, Wisc. Center	Boosting the Makerspace Experience for Young Scientists! (p. 49)

#### Delta Education/School Specialty Science (Booth #301)

Thursday, Nov 9	8:00-9:00 AM	202A, Wisc. Center	How to Argue in a Middle School Science Class (p. 36)
Thursday, Nov 9	11:00 AM-12 Noon	202A, Wisc. Center	OK, Class, Please Open Your Science Notebooks (p. 40)
Thursday, Nov 9	12:30-1:30 PM	202A, Wisc. Center	What in the World Are Crosscutting Concepts? (p. 44)
Thursday, Nov 9	3:30-4:30 PM	202A, Wisc. Center	How to Argue in the Elementary Science Class (p. 53)

#### Delta Education/School Specialty Science-FOSS (Booth #301)

Thursday, Nov 9	8:00-9:00 AM	202B, Wisc. Center	Ten Minutes to Improving Science Achievement (p. 36)
Thursday, Nov 9	9:30-10:30 AM	202B, Wisc. Center	What Does Argumentation Look Like in an Elementary Classroom? (p. 38)
Thursday, Nov 9	11:00 AM-12 Noon	202B, Wisc. Center	What Does Conceptual Modeling Look Like in Grades K-5 Classrooms? (p. 40)
Thursday, Nov 9	12:30-1:30 PM	202B, Wisc. Center	Wave Properties and Information Transfer (p. 45)
Thursday, Nov 9	2:00-3:00 PM	202B, Wisc. Center	Identifying Energy Transfers in Motors and Generators (p. 50)
Thursday, Nov 9	3:30-4:30 PM	202B, Wisc. Center	Evolutionary Evidence in the Fossil Record (p. 53)

#### Educational Innovations, Inc. (Booth #609)

Friday, Nov 10

9:30–10:30 AM 202C, Wisc. Center

3-2-1 Blast Off! (p. 67)
#### Edvotek, Inc. (Booth #308)

Thursday, Nov 9	8:00-9:00 AM	203 D/E, Wisc. Center	Martian Genetics: An Electrophoresis Exploration (p. 37)
Thursday, Nov 9	9:30-10:30 AM	203 D/E, Wisc. Center	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using
			PCR (p. 39)
Thursday, Nov 9	11:00 AM-12 Noo	n 203 D/E, Wisc. Center	Left at the Scene of the Crime: Introduction to Forensic Science (p. 41)
Thursday, Nov 9	12:30-1:30 PM	203 D/E, Wisc. Center	Cancer Investigators: Medical Diagnostics in Your Classroom (p. 45)
Thursday, Nov 9	2:00-3:00 PM	203 D/E, Wisc. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 50)
Thursday, Nov 9	3:30-4:30 PM	203 D/E, Wisc. Center	Environmental Toxicology Using Edvotek's New EZ-elegans (p. 54)

#### Flinn Scientific, Inc. (Booth #701)

Thursday, Nov 9	9:30-10:30 AM	202C, Wisc. Center	Year-Round Solutions for Success in AP Chemistry from Flinn Scientific (p. 38)
Thursday, Nov 9	2:00-3:00 PM	202C, Wisc. Center	Flinn Scientific's Exploring Chemistry <sup>TM</sup> : Connecting Content through
			Experiments (p. 50)
Friday, Nov 10	8:00-9:00 AM	202C, Wisc. Center	Enhance Your Science Course with POGIL <sup>TM</sup> Activities (p. 62)

#### Frey Scientific/School Specialty Science (Booth #303)

Thursday, Nov 9	12:30-1:30 PM	202D, Wisc. Center	Modular Robotics for Elementary and Middle School: CUBELETS! (p. 45)
Thursday, Nov 9	2:00-3:00 PM	202D, Wisc. Center	Solving the Mystery of STEM Using Forensic Science (p. 50)

#### GrowNextGen (Booth #201)

Friday, Nov 10	11:00 AM-12 Noon	202C, Wisc. Center	STEM in Agriculture: Middle School/High School (p. 73)
Friday, Nov 10	12:30-1:30 PM	202C, Wisc. Center	STEM in Agriculture: Elementary (p. 77)

#### HHMI BioInteractive (Booth #300)

Friday, Nov 10	8:00-9:00 AM	203 D/E, Wisc. Center	Elephant Biology and Conservation with HHMI BioInteractive (p. 62)
Friday, Nov 10	9:30-10:30 AM	203 D/E, Wisc. Center	Explore Data Points with HHMI BioInteractive (p. 67)
Friday, Nov 10	11:00 AM-12 Noon	203 D/E, Wisc. Center	Death Finds the Mesozoic: Analyzing Real Data with HHMI BioInteractive (p. 73)
Friday, Nov 10	12:30-1:30 PM	203 D/E, Wisc. Center	Some Animals Are More Equal than Others: Exploring Trophic Cascades (p. 77)
Friday, Nov 10	2:00-3:00 PM	203 D/E, Wisc. Center	Exploring Inheritance and Gene Regulation in Sticklebacks (p. 82)

#### Lab-Aids, Inc. (Booth #602)

Thursday, Nov 9	8:00-9:00 AM	201B, Wisc. Center	NGSS Waves: Protect Your Eyes! (p. 36)
Thursday, Nov 9	9:30-10:30 AM	201B, Wisc. Center	NGSS Ecology: Modeling the Introduction of a New Species (p. 38)
Thursday, Nov 9	11:00 AM-12 Noon	201B, Wisc. Center	NGSS Reproduction: Breeding Critters—More Traits (p. 39)
Thursday, Nov 9	12:30-1:30 PM	201B, Wisc. Center	NGSS Biomedical Engineering: Get a Grip! (p. 44)
Thursday, Nov 9	2:00-3:00 PM	201B, Wisc. Center	Chemical Batteries (p. 49)
Thursday, Nov 9	3:30-4:30 PM	201B, Wisc. Center	Investigating a Cliff Model (p. 53)
Friday, Nov 10	8:00-9:00 AM	201B, Wisc. Center	Photosynthesis and Respiration Shuffle (p. 61)
Friday, Nov 10	9:30-10:30 AM	201B, Wisc. Center	What Is a Species? (p. 66)
Friday, Nov 10	11:00 AM-12 Noon	201B, Wisc. Center	Cell Differentiation and Gene Expression (p. 72)
Friday, Nov 10	12:30-1:30 PM	201B, Wisc. Center	pH Scale (p. 76)
Friday, Nov 10	2:00-3:00 PM	201B, Wisc. Center	Chemical Formula and Amino Acids (p. 81)
Friday, Nov 10	3:30-4:30 PM	201B, Wisc. Center	Distilling Aromatic Hydrocarbons (p. 83)
Saturday, Nov 11	8:00-9:00 AM	201B, Wisc. Center	Calling All Carbons (p. 86)
Saturday, Nov 11	9:30-10:30 AM	201B, Wisc. Center	Prospecting for Mineral Ore (p. 88)
Saturday, Nov 11	11:00 AM-12 Noon	201B, Wisc. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 90)

# **Index of Exhibitor Workshops**

#### miniPCR (Booth #700)

Friday, Nov 10 8:00–9:00 AM 203B, Wisc. Center

PTC Taster Lab—From Genotype to Phenotype (p. 62)

#### MSOE Center for BioMolecular Modeling (Booth #510)

Friday, Nov 10	11:00 AM-12 Noon 203B, Wisc. Center		Of All the Nerve: Exploring Neuronal Communication Through Three-Dimensional
			Learning (p. 73)
Friday, Nov 10	12:30-1:30 PM	203B, Wisc. Center	Take a Walk Through the Molecular World with Watercolor Landscapes (p. 77)
Friday, Nov 10	2:00-3:00 PM	203B, Wisc. Center	The Science and Ethics of Genome Editing with CRISPR/Cas9 (p. 82)
Saturday, Nov 11	9:30-10:30 AM	203B, Wisc. Center	Cells as Protein Engineers (p. 88)

#### National Geographic Learning | Cengage (Booth #200)

Friday, Nov 10	11:00 AM-12 Noon 203A, Wisc. Center	Bringing the World into Your Classroom with National Geographic Explorers (p. 73)

#### PASCO scientific (Booth #601)

Friday, Nov 10	8:00-9:00 AM	202A, Wisc. Center	Untangling Electric Circuits: STEM Activities from Essential Physics (p. 61)
Friday, Nov 10	9:30-10:30 AM	202A, Wisc. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 67)
Friday, Nov 10	11:00 AM-12 Noon	202A, Wisc. Center	Evaporative Cooling: Visualizing Matter so It Makes Sense! (p. 72)
Friday, Nov 10	12:30-1:30 PM	202A, Wisc. Center	Exploring Misconceptions: What Is pH? (p. 76)

#### Pearson Learning Services (Booth #600)

Friday, Nov 10	8:00-9:00 AM	202D, Wisc. Center	Ideas for Teaching About Earthquakes and Earth Structure (p. 62)
Friday, Nov 10	9:30-10:30 AM	202D, Wisc. Center	Incorporating the NGSS Crosscutting Concepts into Your Teaching (p. 67)
Friday, Nov 10	11:00 AM-12 Noo	n 202D, Wisc. Center	The Best Test Prep Book Ever for AP Chemistry (p. 73)
Friday, Nov 10	12:30-1:30 PM	202D, Wisc. Center	STEM and NGSS Inquiry in Chemistry—Effective, Efficient, Economical (p. 77)
Friday, Nov 10	2:00-3:00 PM	202D, Wisc. Center	Make Any Classroom a Makerspace (p. 81)
Friday, Nov 10	3:30-4:30 PM	202D, Wisc. Center	Take Your Students on a Quest! A Real-World Problem-Based Learning Project
			That Incorporates All Three Dimensions of NGSS (p. 83)

#### STEMscopes (Booth #409)

Friday, Nov 10	8:00-9:00 AM	202B, Wisc. Center	Science Teacher/STEM Teacher: What's the Difference? (p. 61)
Friday, Nov 10	9:30-10:30 AM	202B, Wisc. Center	STEMrangers: Making Science Night Meaningful (p. 67)
Friday, Nov 10	11:00 AM-12 Noon	202B, Wisc. Center	Using Argumentation for Discussing Phenomena and Increasing Student Voice
			About STEM (p. 73)
Friday, Nov 10	12:30-1:30 PM	202B, Wisc. Center	Demystifying STEM: Earthquake-Proof Towers and Engineering Design (p. 77)

#### TCI (Booth #515)

Thursday, Nov 9	9:30-10:30 AM	203A, Wisc. Center	Analyzing and Interpreting Data Using TCI's Bring Science Alive! (p. 39)
Thursday, Nov 9	2:00-3:00 PM	203A, Wisc. Center	Engineering Design in the NGSS (p. 50)
Friday, Nov 10	8:00-9:00 AM	203A, Wisc. Center	Science and Engineering Practices in the NGSS (p. 62)

### Texas Instruments (Booth #302)

Thursday, Nov 9	2:00-3:00 PM	201A, Wisc. Center	Using Maggots, Flies, and Flesh to Solve a Mystery! (p. 49)
Thursday, Nov 9	3:30-4:30 PM	201A, Wisc. Center	Zombie Apocalypse! (p. 53)
Friday, Nov 10	12:30-1:30 PM	201A, Wisc. Center	Are You Moody? (p. 76)
Friday, Nov 10	2:00-3:00 PM	201A, Wisc. Center	When Zombies Attack! (p. 81)
Friday, Nov 10	3:30-4:30 PM	201A, Wisc. Center	Drought in Africa Inspires Students to Invent a Smart Irrigation System (p. 83)

#### Vernier Software & Technology (Booth #400)

Friday, Nov 10	8:00-9:00 AM	202E, Wisc. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 62)
Friday, Nov 10	9:30-10:30 AM	202E, Wisc. Center	Chemistry with Vernier (p. 67)
Friday, Nov 10	11:00 AM-12 Noon	202E, Wisc. Center	Biology with Vernier (p. 73)
Friday, Nov 10	12:30-1:30 PM	202E, Wisc. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 77)
Friday, Nov 10	2:00-3:00 PM	202E, Wisc. Center	Integrating iPad with Vernier Data-Collection Technology (p. 81)
Friday, Nov 10	3:30-4:30 PM	202E, Wisc. Center	Physics and Physical Science with Vernier (p. 83)

## Earth and Space Science

## Thursday

8·00-9·00 AM	3-5	101 C/D Wisc. Center	Elementary STEM Response To Intervention (RTI) (p. 33)
8:00–9:00 AM	3–C	Executive A/B, Hvatt	JetStream: An Online School for Weather (p. 34)
8:30-9:00 AM	6-8	Lakeshore C, Hyatt	Guiding Middle School Students in Developing Their Explanations of the Seasons
			Through a Modeling-to-Learn Approach (p. 37)
9:30-10:30 AM	4–C	203B, Wisc. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 39)
12:30-1:30 PM	K-12	102C, Wisc. Center	Put on Your 3-D Assessment Glasses (p. 42)
12:30-1:30 PM	2-6	101B, Wisc. Center	CSI Mammoth: Using Social Studies to Teach Science Investigations (p. 43)
12:30-1:30 PM	K–C	Blrm. D, Wisc. Center	NESTA and AMS Share: DataStreme's 3-D Learning Tools to Support Essential Earth
			Science Concepts (p. 43)
12:30-1:30 PM	K-12	Blrm. B, Wisc. Center	Climate Literacy $\rightarrow$ Climate Solutions (p. 43)
12:30-1:30 PM	7-12	102D, Wisc. Center	Decoding Starlight: From Photons to Pixels to Images—Using Science and Art (p. 44)
2:00-3:00 PM	K-8	Regency D, Hyatt	Instructional Stakeholder Relationships (p. 48)
2:00-3:00 PM	4-8	102B, Wisc. Center	NMLSTA-Sponsored Session: Surf's Up (p. 48)
2:00-3:00 PM	7-12	Blrm. D, Wisc. Center	NESTA and ESIP: Got a Drone? Try This! (p. 49)
2:00-3:00 PM	4-12	103C, Wisc. Center	California Science Project Session: Academic Language Development in Science
			Through Literacy (p. 48)
3:30-4:30 PM	6-12	Blrm. D, Wisc. Center	NESTA and CIMSS Share GOES-16 STEM Resources! (p. 53)
3:30-4:30 PM	6-8	102D, Wisc. Center	Rock Cycle Uno (p. 52)
3:30-4:30 PM	P-1	103D, Wisc. Center	Explore, Read, Write, and More with Rocks, Soil, and Sand (p. 52)
3:30-4:30 PM	4-12	Blrm. B, Wisc. Center	Astronomy Activities for Your Classroom (p. 53)
5:00-6:00 PM	6-12	102B, Wisc. Center	Teaching the Human Dimensions of Climate Change (p. 56)

8:00-9:00 AM	6-8	103C, Wisc. Center	It's Cooler by the Lake! (p. 60)
8:00-9:00 AM	K-12	202D, Wisc. Center	Ideas for Teaching About Earthquakes and Earth Structure (p. 62)
8:00-9:00 AM	K-12	101A, Wisc. Center	Igniting Creativity for STEM Innovation: Focus On Gifted/Advanced Learners (p. 59)
8:00-9:00 AM	6–C	102D, Wisc. Center	AAPT Session: IceCube Neutrino Observatory at the South Pole (p. 59)
8:00-9:00 AM	3-6	101 C/D, Wisc. Center	Riding the Wave of Integration: Science and Children's Literature (p. 60)
9:30-10:00 AM	9-12	Lakeshore A/B, Hyatt	From Proteins to Climate Change—Biotech in Action (p. 63)
9:30-10:30 AM	3-12	101A, Wisc. Center	Using National Science Olympiad STEM Events to Address NGSS Crosscutting
			Concepts and Content (p. 65)
9:30-10:30 AM	7-С	Regency D, Hyatt	Teachers Helping Teachers: Teaching Socially Controversial Topics (p. 66)
10:00-10:30 AM	5-10	Regency A, Hyatt	NGSS and Climate Change for Middle School (p. 68)
11:00AM-12 Noon	6–C	203 D/E, Wisc. Center	Death Finds the Mesozoic: Analyzing Real Data with HHMI BioInteractive (p. 73)
11:00AM-12 Noon	6-12	202C, Wisc. Center	STEM in Agriculture: Middle School/High School (p. 73)
11:00AM-12 Noon	9-С	103B, Wisc. Center	Collaborative Groundwater Research You Can Do! (p. 70)
11:00AM-12 Noon	7-С	102D, Wisc. Center	AAPT Session: Teach Science with IceCube Neutrino Observatory (p. 70)
12:30-1:30 PM	K-5	202C, Wisc. Center	STEM in Agriculture: Elementary (p. 77)
12:30-1:30 PM	3-12	103C, Wisc. Center	Climate Science in the Classroom (p. 76)
2:00-3:00 PM	8-12	Blrm. A, Wisc. Center	NSTA Press® Session: Creating Classroom Narrative: Fitting Science Reasoning
			Problems and Open-Ended Investigation into a Curriculum (p. 79)
12:30-1:30 PM	3-8	202B, Wisc. Center	Demystifying STEM: Earthquake Proof Towers and Engineering Design (p. 77)
2:00-3:00 PM	2–4	101B, Wisc. Center	Using Models to Teach Shapes and Kinds of Land and Bodies of Water (p. 80)
2:00-3:00 PM	2–4	101B, Wisc. Center	Using Models to Teach Shapes and Kinds of Land and Bodies of Water (p. )
2:00-4:00 PM	P–C	Hall B Lobby, Wisc. Center	Wisconsin Society of Science Teachers Preservice Exploratorium (p. 82)
3:30-4:30 PM	6-12	201A, Wisc. Center	Drought in Africa Inspires Students to Invent a Smart Irrigation System (p. 83)

## Saturday

8:00	0-8:30 AM	6-12	Lakeshore A/B, Hyatt	Using Local Citizen Science to Teach the Engineering Design Process (p. 85)
8:00	)—9:00 AM	9-12	201B, Wisc. Center	Calling All Carbons (p. 86)
8:30	)–9:00 AM	7—С	101B, Wisc. Center	From Earth to Sky—Using Drones to Map 3-D Surfaces (p. 86)
9:30	0–10:30 AM	9-12	201B, Wisc. Center	Prospecting for Mineral Ore (p. 88)
9:30	0–10:30 AM	3-12	102B, Wisc. Center	Teaching Science and Engineering with Historical Primary Sources: Opportunities for
				Cross-Disciplinary Learning (p. 87)
11:0	0AM-12 Noon	7-12	102E, Wisc. Center	Rates in Earth Science: Can You Outrun a Glacier? A Lava Flow? A Landslide? (p. 90)
11:0	0AM-12 Noon	7—С	101B, Wisc. Center	Investigating Clean Energy Systems: Connecting Classrooms to University Research (p. 89)
11:0	0AM-12 Noon	P-3	102A, Wisc. Center	Let's Get Wet: Water and Weather (p. 89)
11:0	0AM-12 Noon	9-12	201B, Wisc. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 90)

## Engineering, Technology, and the Application of Science

## Thursday

8:00-9:00 AM	3-5	101 C/D, Wisc. Center	Elementary STEM Response To Intervention (RTI) (p. 33)
8:00-9:00 AM	9-12	202E, Wisc. Center	Incorporating STEM into the Classroom (High School Science) (p. 36)
8:00-9:00 AM	6–C	203 D/E, Wisc. Center	Martian Genetics: An Electrophoresis Exploration (p. 37)
8:00-9:00 AM	6-12	102A, Wisc. Center	Polymers: Teaching "Hard" Concepts with Gooey Labs (p. 35)
8:00-9:00 AM	P-5	Lakeshore A/B, Hyatt	Coding in K–5 ClassroomsStart Them Early! (p. 33)
8:00-9:00 AM	9-С	Regency C, Hyatt	Engineering the Maker Movement in Your Classroom (p. 35)
9:30-10:30 AM	4-8	202A, Wisc. Center	Makerspaces with Options for All Students (p. 38)
9:30-10:30 AM	5-12	202D, Wisc. Center	CPO's Wind Turbine: A STEM Approach to Engineering and Design (p. 38)
11:00AM-12 Noon	6–9	202C, Wisc. Center	Putting the "E" in STEM: Engineering in the Middle School Science Classroom (p. 40)
12:30-1:30 PM	7-12	102D, Wisc. Center	Decoding Starlight: From Photons to Pixels to Images—Using Science and Art (p. 44)
12:30-1:30 PM	6-8	201B, Wisc. Center	NGSS Biomedical Engineering: Get a Grip! (p. 44)
12:30-1:30 PM	3-8	202D, Wisc. Center	Modular Robotics for Elementary and Middle School: CUBELETS! (p. 45)
12:30-1:30 PM	K-12	102C, Wisc. Center	Put on Your 3-D Assessment Glasses (p. 42)
2:00-3:00 PM	6-8	203A, Wisc. Center	Engineering Design in the NGSS $(p. 50)$
2:00-3:00 PM	7-С	Regency B, Hyatt	iPad: Data Collection, Analysis, and Student Lab Reporting (p. 48)
2:00-3:00 PM	6–9	Lakeshore C, Hyatt	NARST-Sponsored Session: Integrating Science and Technology in Engineering Design
			Challenges to Teach Nature of Science (p. 47)
2:00-3:00 PM	6-12	101B, Wisc. Center	Engineering Your Approach to Creative Problem Finding and Design Solutions (p. 47)
2:00-3:00 PM	4-12	Executive A/B, Hyatt	Fostering a Great Lakes Community of Practice with the Center for Great Lakes
			Literacy (p. 47)
2:00-3:00 PM	2-С	Regency C, Hyatt	Using Engineering Design to Collaboratively Create Engineering Design (p. 47)
2:00-3:00 PM	P-5	102A, Wisc. Center	Launching an Elementary Science Program (p. 48)
2:00-3:00 PM	K-3	202A, Wisc. Center	Boosting the Makerspace Experience for Young Scientists! (p. 49)
3:30-4:30 PM	5-12	101B, Wisc. Center	PolyWhat? Application of STEM Using Polymers (p. 51)
			- · · · -

8:00–9:00 AM	3-С	202E, Wisc. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 62)
8:00–9:00 AM	9-12	102E, Wisc. Center	ASEE Session: Arduinos/STEM Projects for Physical Science Students (p. 60)
8:00-9:00 AM	K-12	101A, Wisc. Center	Igniting Creativity for STEM Innovation: Focus On Gifted/Advanced Learners (p. 59)
8:00-9:00 AM	3–6	101 C/D, Wisc. Center	Riding the Wave of Integration: Science and Children's Literature (p. 60)
9:30-10:30 AM	3-12	101A, Wisc. Center	Using National Science Olympiad STEM Events to Address NGSS Crosscutting
			Concepts and Content (p. 65)
9:30-10:30 AM	9-12	202E, Wisc. Center	Chemistry with Vernier (p. 67)
9:30-10:30 AM	3-5	102E, Wisc. Center	ASEE Session: K–5 Engineering: Integrating Engineering and Design into the
			Curriculum (p. 66)

# Schedule at a Glance Engineering, Technology, and the Application of Science

9:30-10:30 AM	6-12	Regency C, Hyatt	Easy Middle School Engineering Projects (p. 66)
9:30-10:30 AM	8–C	203B, Wisc. Center	DNA Structure and Function with a Twist of Dynamic DNA (p. 68)
11:00 AM-12 Noon	6-12	202C, Wisc. Center	STEM in Agriculture: Middle School/High School (p. 73)
11:00AM-12 Noon	9-С	203B, Wisc. Center	Of All the Nerve: Exploring Neuronal Communication Through Three-Dimensional Learning (p. 73)
11:00AM-12 Noon	9-12	202E, Wisc. Center	Biology with Vernier (p. 73)
11:00AM-12 Noon	K-12	102E, Wisc. Center	ASEE Session: Engineering Education: Simple Electronics and Microcontrollers for the Classroom (p. 71)
11:00AM–12 Noon	9–12	Lakeshore C, Hyatt	NARST-Sponsored Session: Using Maker Activities and Formative Assessment Strategies to Enhance Computational Thinking Skills, Physics, and Engineering Learning (p. 69)
11:00 AM-12 Noon	6-12	101A, Wisc. Center	<i>SciGirls</i> Strategies: Gender-Equitable Teaching Practices in Career and Technical Education Pathways for High School Girls (p. 71)
11:00AM-12 Noon	7-С	102D, Wisc. Center	AAPT Session: Teach Science with IceCube Neutrino Observatory (p. 70)
11:00AM-12 Noon	4–C	Regency D, Hyatt	Inventing Is Just Plain Fun (for All)! (p. 71)
12:30-1:30 PM	3-8	202B, Wisc. Center	Demystifying STEM: Earthquake Proof Towers and Engineering Design (p. 77)
12:30-1:30 PM	P8	Regency C, Hyatt	Connecting Families Through STEM Events (p. 75)
12:30-1:30 PM	K-5	202C, Wisc. Center	STEM in Agriculture: Elementary (p. 77)
12:30-1:30 PM	9-С	102D, Wisc. Center	AAPT Session: Integrating Engineering into Physics (p. 74)
12:30-1:30 PM	6-12	102E, Wisc. Center	ASEE Session: NGSS, 3-D Learning, and the Design and Use of Classroom Assessment (p. 76)
12:30-1:30 PM	3–6	Lakeshore A/B, Hyatt	Using the Science of Flight to Teach NGSS and Free Student Flights (p. 75)
12:30-1:30 PM	3-С	202E, Wisc. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 77)
12:30-1:30 PM	6-12	201A, Wisc. Center	Are You Moody? (p. 76)
2:00-3:00 PM	6-12	Regency C, Hyatt	Teach Engineering Practices on the Cheap with Concrete (p. 78)
2:00-3:00 PM	P-2	103D, Wisc. Center	How to Construct 3-D Learning Lessons for Early Childhood Learners (p. 79)
2:00-3:00 PM	9-С	203B, Wisc. Center	The Science and Ethics of Genome Editing with CRISPR/Cas9 (p. 82)
2:00-3:00 PM	6-12	201A, Wisc. Center	When Zombies Attack! (p. 81)
2:00-3:00 PM	K-12	202D, Wisc. Center	Make Any Classroom a Makerspace (p. 81)
2:00-3:00 PM	3-С	202E, Wisc. Center	Integrating iPad with Vernier Data-Collection Technology (p. 81)
2:00-3:00 PM	9-12	201B, Wisc. Center	Chemical Formula and Amino Acids (p. 81)
2:00-3:00 PM	P-12	102E, Wisc. Center	ASEE Session: ASEE's K–12 Outreach: Engineering, Go For It (eGFI), Teach Engineering, Link Engineering, and the National Science Digital Library (p. 80)
2:00-3:00 PM	K-8	Regency D, Hyatt	STEM-Related Activities for K–8 Science (p. 80)
3:30-4:30 PM	9-12	202E, Wisc. Center	Physics and Physical Science with Vernier (p. 83)
3:30-4:30 PM	6-12	201A, Wisc. Center	Drought in Africa Inspires Students to Invent a Smart Irrigation System (p. 83)

## Saturday

8:00-8:30 AM	6-12	Lakeshore A/B, Hyatt	Using Local Citizen Science to Teach the Engineering Design Process (p. 85)
8:30-9:00 AM	7-С	101B, Wisc. Center	From Earth to Sky—Using Drones to Map 3-D Surfaces (p. 86)
9:30-10:30 AM	3-12	102B, Wisc. Center	Teaching Science and Engineering with Historical Primary Sources: Opportunities for
			Cross-Disciplinary Learning (p. 87)
9:30-10:30 AM	8–C	203B, Wisc. Center	Cells as Protein Engineers (p. 88)
9:30-10:30 AM	9-12	201B, Wisc. Center	Prospecting for Mineral Ore (p. 88)
11:00AM-12 Noon	9-12	201B, Wisc. Center	Using Climate Proxies to Learn About Earth's Climate History (p. 90)
11:00AM-12 Noon	7-С	101B, Wisc. Center	Investigating Clean Energy Systems: Connecting Classrooms to University Research (p. 89)
11:00AM-12 Noon	6-12	101A, Wisc. Center	Not Just FlowersSTEM, Too: Reaching All Students Through Plants and Nature (p. 89)
11:00AM-12 Noon	4-12	102B, Wisc. Center	Digital Observation Tech Skills: Student-Led Inquiry to Transects of Change (p. 89)
11:00AM-12 Noon	7-12	103B, Wisc. Center	Cars: A Fundamental Look at How Cars Work and the Science Involved (p. 88)

## Life Science

## Thursday

8:00-9:00 AM	6–C	203 D/E, Wisc. Center	Martian Genetics: An Electrophoresis Exploration (p. 37)
8:00-9:00 AM	5-12	202D, Wisc. Center	CPO Science Biology Energy QUEST: Teaching Cell Energy Pathways (p. 36)
8:00-9:00 AM	7-12	Regency A, Hyatt	Traveling Through a Worm Hole: What Red Worm Burrowing Behavior Can Tell Us
		0	About the Effects of Environmental Contaminants (p. 34)
9:15-10:30 AM	P–C	Blrm. C, Wisc. Center	General Session: The Serengeti Rules: The Quest to Discover How Life Works and Why It
			Matters (p. 37)
9:30-10:30 AM	6-8	201B, Wisc. Center	NGSS Ecology: Modeling the Introduction of a New Species (p. 38)
9:30-10:30 AM	9-С	203 D/E, Wisc. Center	Exploring the Genetics of Taste: SNP Analysis of the PTC Gene Using PCR (p. 39)
9:30-10:30 AM	4–C	203B, Wisc. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 39)
11:00 AM-12 Noon	6-8	201B, Wisc. Center	NGSS Reproduction: Breeding Critters—More Traits (p. 39)
11:00AM-12 Noon	8–C	203B, Wisc. Center	5 E'sy Ways to Investigate Enzymes! (p. 40)
11:00AM-12 Noon	5-12	202D, Wisc. Center	CPO's LINK Genetics Learning Modules: Crazy Traits and Crazy Chromosomes (p. 40)
11:00AM-12 Noon	6–C	203 D/E, Wisc. Center	Left at the Scene of the Crime: Introduction to Forensic Science (p. 41)
11:00AM-12 Noon	9-12	201 C/D, Wisc. Center	Autopsy: Forensic Dissection Featuring Carolina's Perfect Solution® Pigs (p. 39)
12:30-1:30 PM	2-6	101B, Wisc. Center	CSI Mammoth: Using Social Studies to Teach Science Investigations (p. 43)
12:30-1:30 PM	6–C	203B, Wisc. Center	Getting Students Through the Cellular Membrane (p. 45)
12:30-1:30 PM	6-8	201B, Wisc. Center	NGSS Biomedical Engineering: Get a Grip! (p. 44)
12:30-1:30 PM	9-12	103E, Wisc. Center	Solids: The Neglected "State" of Chemistry (p. 43)
12:30-1:30 PM	9-С	203 D/E, Wisc. Center	Cancer Investigators: Medical Diagnostics in Your Classroom (p. 45)
12:30-1:30 PM	K-12	201 C/D, Wisc. Center	Hands-On Science with Classroom Critters (p. 44)
12:30-1:30 PM	6-12	Lakeshore C, Hyatt	ASTE-Sponsored Session: Simplifying the Planning of Lessons, Units, and Courses for
			NGSS Using "Phenomena First" Approaches for the Life Sciences (p. 42)
12:30-3:30 PM	3-6	Executive C/D, Hyatt	From Exploring Ecosystems to Writing Reports and Explanations—ELLs Focus on
			Language (p. 46)
2:00-3:00 PM	9-12	Regency A, Hyatt	Evolution: DNA and the Unity of Life (p. 48)
2:00-3:00 PM	9-С	203 D/E, Wisc. Center	Detecting the Silent Killer: Clinical Detection of Diabetes (p. 50)
2:00-3:00 PM	K-5	201 C/D, Wisc. Center	Collecting Evidence: How Does an Owl Get All That Energy? (p. 49)
2:00-3:00 PM	4-12	103C, Wisc. Center	California Science Project Session: Academic Language Development in Science
			Through Literacy (p. 48)
3:30-4:30 PM	6-8	202B, Wisc. Center	Evolutionary Evidence in the Fossil Record (p. 53)
3:30-4:30 PM	9-С	203 D/E, Wisc. Center	Environmental Toxicology Using Edvotek's New EZ-elegans (p. 54)
3:30-4:30 PM	9-С	203C, Wisc. Center	Enzymes: Technology Inspired by Nature (p. 54)
3:30-4:30 PM	6-12	Regency A, Hyatt	Teach Evolution with the World's Most Extravagant Birds (p. 52)
5:00-6:00 PM	6-12	102B, Wisc. Center	Teaching the Human Dimensions of Climate Change (p. 56)
5:00-6:00 PM	P-1	Lakeshore A/B, Hyatt	Fusing Science and English Language Arts (p. 56)
5:00-6:00 PM	7-12	Milwaukee, Hyatt	A Simple Classroom Test to Assess the Effects of Chemicals on Learning and Memory in
			Fishes (p. 56)

8:00-9:00 AM	K-8	Regency A, Hyatt	Forest Ecosystems: Trees of Life (p. 60)
8:00-9:00 AM	8–C	203 D/E, Wisc. Center	Elephant Biology and Conservation with HHMI BioInteractive (p. 62)
8:00-9:00 AM	9-12	201B, Wisc. Center	Photosynthesis and Respiration Shuffle (p. 61)
8:00-9:00 AM	K-12	101A, Wisc. Center	Igniting Creativity for STEM Innovation: Focus On Gifted/Advanced Learners (p. 59)
8:00-9:00 AM	9-С	203C, Wisc. Center	How to Use Pop Culture in Your Life Science Class (p. 63)
8:00-9:00 AM	K-12	201 C/D, Wisc. Center	Hands-On Activities to Model Habitat Preference and Population Sampling (p. 61)
8:00-9:00 AM	6–C	203B, Wisc. Center	PTC Taster Lab: From Genotype to Phenotype (p. 62)
8:00-9:00 AM	7-С	202C, Wisc. Center	Enhance Your Science Course with POGIL <sup>TM</sup> Activities (p. 62)
9:30-10:00 AM	9-12	Lakeshore A/B, Hyatt	From Proteins to Climate Change—Biotech in Action (p. 63)
9:30-10:30 AM	9-С	203 D/E, Wisc. Center	Explore Data Points with HHMI BioInteractive (p. 67)

# Schedule at a Glance Life Science

9:30-10:30 AM	3-8	202B, Wisc. Center	STEMrangers: Making Science Night Meaningful (p. 67)
9:30-10:30 AM	7-С	Regency D, Hyatt	Teachers Helping Teachers: Teaching Socially Controversial Topics (p. 66)
9:30-10:30 AM	6–8,C	103C, Wisc. Center	Taking NGSS Outside: The Benefits, Strategies, and Evidence of Outdoor Learning (p. 65)
9:30-10:30 AM	8–C	203B, Wisc. Center	DNA Structure and Function with a Twist of Dynamic DNA (p. 68)
9:30-10:30 AM	5-С	203A, Wisc. Center	Hands-On Anatomy: Body Building with Clay (p. 68)
9:30-10:30 AM	6-12	202A, Wisc. Center	Understanding Photosynthesis: A Lab-Based Approach (p. 67)
9:30-10:30 AM	9-12	Blrm. A, Wisc. Center	NSTA Press® Session: Argument-Driven Inquiry in Biology: Lab Investigations for Grades
			<i>9–12</i> (p. 65)
9:30-10:30 AM	3-12	101A, Wisc. Center	Using National Science Olympiad STEM Events to Address NGSS Crosscutting
			Concepts and Content (p. 65)
9:30-10:30 AM	9-12	201B, Wisc. Center	What Is a Species? (p. 66)
10:00-10:30 AM	9	Lakeshore A/B, Hyatt	Station Rotations to Chunk Material in Freshman Biology (p. 68)
11:00AM-12 Noon	6–C	203 D/E, Wisc. Center	Death Finds the Mesozoic: Analyzing Real Data with HHMI BioInteractive (p. 73)
11:00AM-12 Noon	8–C	Regency A, Hyatt	DNA Sequence Evolution Simulation (p. 71)
11:00 AM-12 Noon	6-12	202C, Wisc. Center	STEM in Agriculture: Middle School/High School (p. 73)
11:00AM-12 Noon	9-12	201 C/D, Wisc. Center	Comparative Mammalian Organ Dissection with Carolina's Perfect Solution®
			Specimens (p. 72)
11:00AM-12 Noon	9-С	203C, Wisc. Center	Become a GMO Investigator (p. 74)
11:00AM-12 Noon	9-12	202E, Wisc. Center	Biology with Vernier (p. 73)
11:00AM-12 Noon	9-12	201B, Wisc. Center	Cell Differentiation and Gene Expression (p. 72)
11:00 AM-12 Noon	9-С	203B, Wisc. Center	Of All the Nerve: Exploring Neuronal Communication Through Three-Dimensional
			Learning (p. 73)
11:00AM-12 Noon	2-5	201A, Wisc. Center	Disappearing Jaguars and Sloths: Phenomena and 3-D Instruction for Grades 2–5 (p. 72)
12:30–1:30 PM	9-С	203B, Wisc. Center	Take a Walk Through the Molecular World with Watercolor Landscapes (p. 77)
12:30–1:30 PM	8–C	203 D/E, Wisc. Center	Some Animals Are More Equal than Others: Exploring Trophic Cascades (p. 77)
12:30-1:30 PM	K-12	201 C/D, Wisc. Center	Introduction to Wisconsin Fast Plants® (p. 76)
12:30–1:30 PM	6-12	102E, Wisc. Center	ASEE Session: NGSS, 3-D Learning, and the Design and Use of Classroom
			Assessment (p. 76)
12:30–1:30 PM	K-5	202C, Wisc. Center	STEM in Agriculture: Elementary (p. 77)
1:00–1:30 PM	9–12	Regency A, Hyatt	Authentic Assessment: Hierarchy and Structure/Function of Gene Expression (p. 78)
2:00–3:00 PM	9–C	203 D/E, Wisc. Center	Exploring Inheritance and Gene Regulation in Sticklebacks (p. 82)
2:00–3:00 PM	P-2	103D, Wisc. Center	How to Construct 3-D Learning Lessons for Early Childhood Learners (p. 79)
2:00–3:00 PM	6-8	Lakeshore C, Hyatt	EXENTHUNCO: What Is That? (p. 78)
2:00–3:00 PM	P-5	103E, Wisc. Center	Blending Science and Language Arts (p. 79)
2:00-3:00 PM	9–C	Regency A, Hyatt	Organelle Elections: Using the Political Candidate Analogy to Engage Biology Students (p. 80)
2:00-3:00 PM	9-С	203C, Wisc. Center	Conserving Panda Population: One Hormone Test Design at a Time! (p. 82)
2:00-3:00 PM	9-С	203B, Wisc. Center	The Science and Ethics of Genome Editing with CRISPR/Cas9 (p. 82)
2:00-3:00 PM	6-12	201A, Wisc. Center	When Zombies Attack! (p. 81)
3:30-4:30 PM	9-С	203C, Wisc. Center	Investigate Photosynthesis and Cellular Respiration with Algae Beads (p. 83)

## Saturday

8:00-8:30 AM	6-12	Lakeshore A/B, Hyatt	Using Local Citizen Science to Teach the Engineering Design Process (p. 85)
8:00-9:00 AM	3-10	102B, Wisc. Center	Making Sense of Science: A System for Systems Thinking (p. 85)
8:00-9:00 AM	6-8	103E, Wisc. Center	Food Chains: Using Field Surveys That Give Real Results (p. 85)
8:00-9:00 AM	6–C	102E, Wisc. Center	Principles of Electrophoresis: Which Way Did the DNA Go? (p. 86)
9:30-10:30 AM	7-11	103E, Wisc. Center	Diffusion, the Cell Membrane, and Ourselves: Biology Comes Alive Through the
			Aesthetic Realism Method (p. 87)
9:30-10:30 AM	8–C	203B, Wisc. Center	Cells as Protein Engineers (p. 88)
9:30-10:30 AM	6-12	101B, Wisc. Center	Animal Multimedia Inspires Learning and Engagement (p. 87)
9:30-10:30 AM	4–7	102E, Wisc. Center	Taking the Right Step (p. 88)
9:30-10:30 AM	6-8	Lakeshore A/B, Hyatt	Differentiated Voyage: Technology Integration and Differentiating Science
			Assessments (p. 87)

# Schedule at a Glance Life Science

11:00AM-12 Noon	9–12	103D, Wisc. Center	Memory, Attention, and Distraction (p. 90)
11:00AM-12 Noon	7-12	103E, Wisc. Center	Using Inquiry-Based Modules to Study Biological Processes in Relation to
			Environmental Health Science (p. 89)
11:00AM-12 Noon	7-С	101B, Wisc. Center	Investigating Clean Energy Systems: Connecting Classrooms to University Research (p. 89)
11:00AM-12 Noon	6-12	101A, Wisc. Center	Not Just FlowersSTEM, Too: Reaching All Students Through Plants and Nature (p. 89)
11:00AM-12 Noon	4-12	102B, Wisc. Center	Digital Observation Tech Skills: Student-Led Inquiry to Transects of Change (p. 89)

## **Physical Science**

## Thursday

8:00-8:30 AM	8	Milwaukee, Hyatt	The Lady in Her Coffee: STEM and Literacy (p. 33)
8:00-9:00 AM	P6	Executive C/D, Hyatt	Shifting Practices to Make Sense of Science (p. 34)
8:00-9:00 AM	9-12	101A, Wisc. Center	Physics Labs for Everyone (p. 35)
8:00-9:00 AM	6-12	102A, Wisc. Center	Polymers: Teaching "Hard" Concepts with Gooey Labs (p. 35)
9:30-10:30 AM	9-12	202C, Wisc. Center	Year-Round Solutions for Success in AP Chemistry from Flinn Scientific (p. 38)
9:30-10:30 AM	4–C	203B, Wisc. Center	Keep Your Head Above Water with Magnetic Water Molecule Models (p. 39)
11:00 AM-12 Noon	K-5	202B, Wisc. Center	What Does Conceptual Modeling Look Like in Grades K–5 Classrooms? (p. 40)
11:00 AM-12 Noon	n 6–8	201A, Wisc. Center	Space Docking Failure: Phenomena and 3-D Instruction for Grades 6–8 (p. 39)
11:00AM-12 Noon	8-C	203B, Wisc. Center	5 E'sy Ways to Investigate Enzymes! (p. 40)
12:30-1:30 PM	7-12	102D, Wisc. Center	Decoding Starlight: From Photons to Pixels to Images—Using Science and Art (p. 44)
12:30-1:30 PM	K-1	201A, Wisc. Center	Puppet Theater Engineering: Phenomena and 3-D Instruction for Grades K and 1 (p. 44)
12:30-1:30 PM	6–9	202B, Wisc. Center	Wave Properties and Information Transfer (p. 45)
12:30-1:30 PM	K-12	202E, Wisc. Center	Structuring Discussion to Be Equitable and Rigorous (p. 45)
12:30-1:30 PM	6–C	203B, Wisc. Center	Getting Students Through the Cellular Membrane (p. 45)
12:30-1:30 PM	9-12	Blrm. A, Wisc. Center	NSTA Press® Session: Argument-Driven Inquiry in Physics: Mechanics Lab Investigations for
			Grades 9–12 (p. 43)
12:30-1:30 PM	8-11	Milwaukee, Hyatt	NGSS and Visual Literacy: A STEAM Approach (p. 42)
12:30-1:30 PM	3-8	102A, Wisc. Center	Evidence and Explanations: Energy Changes and Transformations in a Bouncing,
			Flashing Ball (p. 43)
2:00-3:00 PM	6-8	202B, Wisc. Center	Identifying Energy Transfers in Motors and Generators (p. 50)
2:00-3:00 PM	6-8	201B, Wisc. Center	Chemical Batteries (p. 49)
2:00-3:00 PM	6-12	101 C/D, Wisc. Center	Using Pop Culture and Polymers to Create Inquisitive Minds (p. 47)
2:00-3:00 PM	4-12	103C, Wisc. Center	California Science Project Session: Academic Language Development in Science
			Through Literacy (p. 48)
2:00-3:00 PM	9-12	202C, Wisc. Center	Flinn Scientific's Exploring Chemistry <sup>™</sup> : Connecting Content through
			Experiments (p. 50)
3:30-4:30 PM	5-12	101B, Wisc. Center	PolyWhat? Application of STEM Using Polymers (p. 51)
3:30-4:30 PM	5-12	202D, Wisc. Center	CPO Science LINK Learning Module: Chemistry and the Periodic Table (p. 54)
3:30-4:30 PM	9-12	201 C/D, Wisc. Center	Keep Calm and Chemistry On: Successful Lab Activities for the New Chemistry
			Teacher (p. 53)
3:30-4:30 PM	10–C	101 C/D, Wisc. Center	Teaching Literacy in Physics (p. 51)
3:30-4:30 PM	4-12	Blrm. B, Wisc. Center	Astronomy Activities for Your Classroom (p. 53)
3:30-4:30 PM	6-12	102E, Wisc. Center	Electricity Made Simple (p. 52)
5:00-5:30 PM	9-12	103A, Wisc. Center	Intermolecular Forces Unit Plan with NGSS Focus (p. 55)
5:00-5:30 PM	9-12	103E, Wisc. Center	Using Lab Practicals to Assess NGSS Science and Engineering Practices in the Physics
			Classroom (p. 55)
5:00-6:00 PM	7-12	103B, Wisc. Center	Polymers: Basics for the Science Classroom (p. 56)
5:00-6:00 PM	6-8	Blrm. A, Wisc. Center	$\operatorname{NSTA}\operatorname{Press}{}^{\mathbb{R}}$ Session: Argument-Driven Inquiry in Physical Science: Lab Investigations for
			Grades 6–8 (p. 56)
5:00-6:00 PM	K-5	101B, Wisc. Center	Explaining Phenomena and Designing Solutions (p. 56)

8:00-9:00 AM	6–C	102D, Wisc. Center	AAPT Session: IceCube Neutrino Observatory at the South Pole (p. 59)
8:00-9:00 AM	9-12	201B, Wisc. Center	Photosynthesis and Respiration Shuffle (p. 61)
8:00-9:00 AM	7-12	202A, Wisc. Center	Untangling Electric Circuits: STEM Activities from Essential Physics (p. 61)
8:00-9:00 AM	3-С	202E, Wisc. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 62)
8:00-9:00 AM	7-С	202C, Wisc. Center	Enhance Your Science Course with POGIL <sup>TM</sup> Activities (p. 62)
8:00-9:00 AM	3-6	101 C/D, Wisc. Center	Riding the Wave of Integration: Science and Children's Literature (p. 60)
8:00-9:00 AM	9-12	102E, Wisc. Center	ASEE Session: Arduinos/STEM Projects for Physical Science Students (p. 60)
8:00-9:00 AM	6-8	102A, Wisc. Center	ACS Middle Level Session One: Solids, Liquids, Gases, and Changes of State (p. 60)
8:00-10:00 AM	9-12	102B, Wisc. Center	ACS High School Session One: Relating Structure and Properties: Eliciting and
			Visualizing Student Initial Ideas (p. 63)
9:30-10:30 AM	9-12	202E, Wisc. Center	Chemistry with Vernier (p. 67)
9:30-10:30 AM	6-8	102A, Wisc. Center	ACS Middle Level Session Two: The Water Molecule and Dissolving (p. 66)
9:30-10:30 AM	2-8	202C, Wisc. Center	3-2-1 Blast Off! (p. 67)
9:30-10:30 AM	6-8	201 C/D, Wisc. Center	Shifting to the Five Innovations: How Do We Transform Instruction? (p. 67)
9:30-10:30 AM	P–C	102D, Wisc. Center	AAPT Session: Living and Working at the South Pole (p. 65)
9:30-10:30 AM	3-12	101A, Wisc. Center	Using National Science Olympiad STEM Events to Address NGSS Crosscutting
			Concepts and Content (p. 65)
9:30-10:30 AM	7-12	103B, Wisc. Center	Making Redox Practical, Relevant, Engaging, and Fun Corrosion Chemistry! (p. 65)
9:30-10:30 AM	1–9	101 C/D, Wisc. Center	Making Waves at the Discourse Level: Promoting High-Quality Dialogue with English
			Language Learners (p. 64)
10:30AM-12 Noon	9-12	102B, Wisc. Center	ACS High School Session Two: Relating Structure and Properties: Constructing Science
			Ideas Through Exploring Data (p. 68)
11:00 AM-12 Noon	6-12	202C, Wisc. Center	STEM in Agriculture: Middle School/High School (p. 73)
11:00AM-12 Noon	6-8	102A, Wisc. Center	ACS Middle Level Session Three: Chemical Reactions—Breaking and Making
			Bonds (p. 71)
11:00AM-12 Noon	9-12	Lakeshore C, Hyatt	NARST-Sponsored Session: Using Maker Activities and Formative Assessment
			Strategies to Enhance Computational Thinking Skills, Physics, and Engineering
			Learning (p. 69)
11:00 AM-12 Noon	6-12	202A, Wisc. Center	Evaporative Cooling: Visualizing Matter so It Makes Sense! (p. 72)
11:00AM-12 Noon	K-12	102E, Wisc. Center	ASEE Session: Engineering Education: Simple Electronics and Microcontrollers for the
			Classroom (p. 71)
11:00AM-12 Noon	7-С	102D, Wisc. Center	AAPT Session: Teach Science with IceCube Neutrino Observatory (p. 70)
11:00AM-12 Noon	9-12	103E, Wisc. Center	Meet the Standards and Enhance Your Chemistry Classroom with Other People's
			Money (p. 70)
11:00AM-12 Noon	9-12	202D, Wisc. Center	The Best Test Prep Book Ever for AP Chemistry (p. 73)
12:30-1:30 PM	3-8	202B, Wisc. Center	Demystifying STEM: Earthquake Proof Towers and Engineering Design (p. 77)
12:30-1:30 PM	K-5	202C, Wisc. Center	STEM in Agriculture: Elementary (p. 77)
12:30-1:30 PM	6-12	202A, Wisc. Center	Exploring Misconceptions: What Is pH? (p. 76)
12:30-1:30 PM	9-12	202D, Wisc. Center	STEM and NGSS Inquiry in Chemistry: Effective, Efficient, Economical (p. 77)
12:30-1:30 PM	6-12	201A, Wisc. Center	Are You Moody? (p. 76)
12:30-1:30 PM	9-С	203B, Wisc. Center	Take a Walk Through the Molecular World with Watercolor Landscapes (p. 77)
12:30-1:30 PM	3-С	202E, Wisc. Center	Integrating Chromebook with Vernier Data-Collection Technology (p. 77)
12:30-1:30 PM	9-12	201B, Wisc. Center	pH Scale (p. 76)
12:30-1:30 PM	9-С	102D, Wisc. Center	AAPT Session: Integrating Engineering into Physics (p. 74)
12:30-1:30 PM	K-8	103D, Wisc. Center	CESI-Sponsored Session: Using Toys to Teach Physics (p. 76)
12:30-1:30 PM	6-8	102A, Wisc. Center	ACS Middle Level Session Four: ACS Chemical Reactions—Ocean
			Acidification (p. 75)
12:30-1:30 PM	6-12	102E, Wisc. Center	ASEE Session: NGSS, 3-D Learning, and the Design and Use of Classroom
			Assessment (p. 76)
12:30-1:30 PM	3-6	Lakeshore A/B, Hyatt	Using the Science of Flight to Teach NGSS and Free Student Flights (p. 75)
12:30-2:30 PM	9-12	102B, Wisc. Center	ACS High School Session Three: Relating Structure and Properties: Demonstrating
			Understanding Through Integration and Application of Knowledge (p. 78)
2:00-3:00 PM	7-С	102D, Wisc. Center	AAPT Session: Video-Based Experiments (p. 79)
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# Schedule at a Glance Physical Science

2:00-3:00 PM	K-8	Regency D, Hyatt	STEM-Related Activities for K-8 Science (p. 80)
2:00-3:00 PM	9-12	103C, Wisc. Center	Literacy in the Chemistry Classroom (p. 79)
2:00-3:00 PM	P-2	103D, Wisc. Center	How to Construct 3-D Learning Lessons for Early Childhood Learners (p. 79)
2:00-3:00 PM	6-12	201 C/D, Wisc. Center	Engineer Physical Science Excitement in Your Classroom with a Carolina STEM
			Challenge® (p. 81)
2:00-3:00 PM	9-12	201B, Wisc. Center	Chemical Formula and Amino Acids (p. 81)
2:00-3:00 PM	3-С	202E, Wisc. Center	Integrating iPad with Vernier Data-Collection Technology (p. 81)
2:00-3:00 PM	6-12	201A, Wisc. Center	When Zombies Attack! (p. 81)
3:30-4:30 PM	9-12	202E, Wisc. Center	Physics and Physical Science with Vernier (p. 83)
3:30-4:30 PM	9-12	201B, Wisc. Center	Distilling Aromatic Hydrocarbons (p. 83)

## Saturday

8:00-8:30 AM	6-12	103B, Wisc. Center	Step by Step: Rube Goldberg in the Physics Classroom (p. 85)
8:00-9:00 AM	6–C	102E, Wisc. Center	Principles of Electrophoresis: Which Way Did the DNA Go? (p. 86)
8:00-9:00 AM	9-12	102A, Wisc. Center	Connecting Chemistry to Your World Through ChemClub (p. 85)
8:30-9:00 AM	9-12	103B, Wisc. Center	Freshman Physics for All (p. 86)
9:30-10:00 AM	K-12	103B, Wisc. Center	Spark Students' Curiosity with Chemistry! (p. 86)
9:30-10:30 AM	6-8	Lakeshore A/B, Hyatt	Differentiated Voyage: Technology Integration and Differentiating Science
			Assessments (p. 87)
9:30-10:30 AM	3-6	102D, Wisc. Center	Testing Look-Alike Liquids (p. 87)
9:30-10:30 AM	4—7	102E, Wisc. Center	Taking the Right Step (p. 88)
9:30-10:30 AM	9-12	102A, Wisc. Center	The Law of Conservation of Massand Literacy (p. 87)
10:00-10:30 AM	9-12	103B, Wisc. Center	Learning Chemistry Like Physics (p. 88)
11:00AM-12 Noon	7-12	103B, Wisc. Center	Cars: A Fundamental Look at How Cars Work and the Science Involved (p. 88)
11:00AM-12 Noon	7-С	101B, Wisc. Center	Investigating Clean Energy Systems: Connecting Classrooms to University Research (p. 89)
11:00AM-12 Noon	2-6	102D, Wisc. Center	Bring the Science of Energy to Your Elementary School Classroom! (p. 90)

## **General Science Education**

## Thursday

8:00-8:30 AM	4-12	Lakeshore C, Hyatt	Throw That Textbook Out to Sea! (p. 33)
8:00-9:00 AM	7-12	Regency B, Hyatt	Zombies Are Knocking on Your Classroom Door (p. 34)
8:00-9:00 AM	9-С	Regency D, Hyatt	Large K Equilibrium (p. 35)
8:00-9:00 AM	6-8	101B, Wisc. Center	Bringing the 4th of July into Your Classroom: Model-Based Inquiry at Its Finest! (p. 34)
8:00-9:00 AM	K-8	202B, Wisc. Center	Ten Minutes to Improving Science Achievement (p. 36)
8:00-9:00 AM	5-8	202A, Wisc. Center	How to Argue in a Middle School Science Class (p. 36)
8:00-9:00 AM	6-8	201B, Wisc. Center	NGSS Waves: Protect Your Eyes! (p. 36)
8:00-9:00 AM	P–C	Blrm. A, Wisc. Center	NSTA Press® Session: Creating a STEM Culture for Teaching and Learning (p. 34)
8:00-9:00 AM	K-12	103C, Wisc. Center	Exploring the Science and Engineering Practices (p. 36)
8:00-9:00 AM	P–C	Blrm. D, Wisc. Center	Is This Your First NSTA Conference? First-Timer Conference Attendees'
			Orientation (p. 34)
9:30-10:30 AM	5-8	202E, Wisc. Center	Literacy in the Context of Science in the Middle School Classroom (p. 39)
9:30-10:30 AM	K-5	201 C/D, Wisc. Center	Coding with First Graders? The Smithsonian Says YES! (p. 38)
9:30-10:30 AM	K-5	202B, Wisc. Center	What Does Argumentation Look Like in an Elementary Classroom? (p. 38)
9:30-10:30 AM	K-8	201A, Wisc. Center	The Power of Modeling in K-8 Classrooms (p. 38)
9:30-10:30 AM	K-5	203A, Wisc. Center	Analyzing and Interpreting Data Using TCI's Bring Science Alive! (p. 39)
11:00 AM-12 Noon	6–8	202E, Wisc. Center	Project-Based Inquiry Science <sup>TM</sup> (PBIS): Creating "Coherence and Science Storylines"
			for Middle School Science (p. 40)
11:00 AM-12 Noon	K-8	202A, Wisc. Center	OK, Class, Please Open Your Science Notebooks (p. 40)
12:30-1:30 PM	9-С	103A, Wisc. Center	Using the NSTA Learning Center as an Online Textbook (p. 42)

# Schedule at a Glance General Science Education

12:30-1:30 PM	K-8	202A, Wisc. Center	What in the World Are Crosscutting Concepts? (p. 44)
12:30-1:30 PM	K-12	202C, Wisc. Center	Out-of-School STEM Enrichment: AEOP Program Design Collaboration (p. 45)
12:30-1:30 PM	K-12	Regency B, Hyatt	Designing and Evaluating Project-Based Activities to Foster 3-D Learning (p.43)
12:30-1:30 PM	K-8	103B, Wisc. Center	Killing Two Birds with One Notebook (p. 42)
12:30-1:30 PM	9-12	Lakeshore A/B, Hyatt	NGSS and the Small High School—An Out-of-This-World Solution? (p. 42)
12:30-1:30 PM	3-8	Regency A, Hyatt	Integration of Science and Literacy Equals Improved Achievement (p. 43)
12:30-1:30 PM	4-10	Regency C, Hyatt	How to Read Like Scientists! (p. 43)
12:30-1:30 PM	3-6	102E, Wisc. Center	Connecting Content, Critical Thinking, and Creativity Through Trade Books (p. 44)
12:30-1:30 PM	6-12	101A, Wisc. Center	Creating a Technology-Based, Student-Centered Classroom (p. 42)
1:30-3:30 PM	K–C	Hall B Lobby, Wisc. Center	Showcase of Wisconsin Science Olympiad (p. 46)
2:00-3:00 PM	6-12	201A, Wisc. Center	Using Maggots, Flies, and Flesh to Solve a Mystery! (p. 49)
2:00-3:00 PM	5-12	202D, Wisc. Center	Solving the Mystery of STEM Using Forensic Science (p. 50)
2:00-3:00 PM	9-12	101A, Wisc. Center	High School Teachers: Birds of a Feather (p. 47)
2:00-3:00 PM	K–C	Blrm. A, Wisc. Center	NSTA Press® Session: Uncovering Students' (and Teachers') Ideas in Science,
			Engineering, and Mathematics with Formative Assessment Probes and Techniques (p. 49)
2:00-3:00 PM	P–C	102C, Wisc. Center	Featured Presentation: Fallacy of Fairness (p. 46)
2:00-3:00 PM	K-5	202E, Wisc. Center	Literacy in the Context of Science in the Elementary Classroom (p. 50)
2:00-3:00 PM	9-С	203C, Wisc. Center	Communicating Science Through Lab Notebooking (p. 50)
2:00-3:00 PM	P-8,C	103A, Wisc. Center	STEM and Trade Books: Strange Bedfellows (p. 47)
2:00-3:00 PM	12	103E, Wisc. Center	Assistance from Retiree Committee (p. 48)
2:00-3:00 PM	P8	102E, Wisc. Center	Come On Board as I Show You Around Picture-Perfect Science Lessons! (p. 48)
2:00-3:00 PM	P-4	Lakeshore A/B, Hyatt	Creating a Coding Culture in the Classroom (p. 47)
3:30-4:30 PM	3-12	103B, Wisc. Center	NGSS-Based Performance Assessments and Rubrics (p. 51)
3:30-4:30 PM	P-12	Executive A/B, Hyatt	Ingredients of Productive Science Talk in the Classroom (p. 52)
3:30-4:30 PM	9-С	Regency B, Hyatt	Twitter for Student Engagement: Tweets of Science Communication from My
			Classroom (p. 52)
3:30-4:30 PM	10-12	Regency D, Hyatt	Teaching Around "Daily" Learning Targets (p. 52)
3:30-4:30 PM	9-12	Lakeshore A/B, Hyatt	The Power of Science Literacy: A Success Story (p. 51)
3:30-4:30 PM	6-12	103A, Wisc. Center	Do You Need a New Science Lab? (p. 51)
3:30-4:30 PM	K-8	101A, Wisc. Center	Children's Books as Hooks to Teach NGSS Science Practices (p. 52)
3:30-4:30 PM	K-12	202E, Wisc. Center	Science Storylines and the Driving Question Board: Keeping NGSS Curricula Student
			Driven (p. 54)
3:30-4:30 PM	6-8	201B, Wisc. Center	Investigating a Cliff Model (p. 53)
3:30-4:30 PM	3-5	Blrm. A, Wisc. Center	NSTA Press® Session: EUREKA! Grade 3–5 Science Activities and Stories (p. 52)
3:30-4:30 PM	K–C	102B, Wisc. Center	Equity in Science Education Roundtable (p. 51)
3:30-4:30 PM	K-4	202A, Wisc. Center	How to Argue in the Elementary Science Class (p. 53)
3:30-4:30 PM	6-12	201A, Wisc. Center	Zombie Apocalypse! (p. 53)
3:30-4:30 PM	P–C	103E, Wisc. Center	Authors Wanted! How to Get Published in an NSTA Journal (p. 51)
5:00-5:30 PM	9-12	102E, Wisc. Center	Using Seminars as a Form of Alternative Assessment (p. 55)
5:00-5:30 PM	3-8	103D, Wisc. Center	Tick! Tack! A Clock Is Ticking: Integrating Engineering Practices into Your
			Classroom (p. 55)
5:00-5:30 PM	6–9	102A, Wisc. Center	Spiraling Content and Using Exit-Level Performance Rubrics to Document Academic
			Growth (p. 55)
5:00-6:00 PM	9-12	Regency D, Hyatt	Pursuing Meaningful and Deeper Learning (p. 56)
5:00-6:00 PM	1-6	102D, Wisc. Center	All Kids Welcome: Success in Science Regardless of Background and Resources (p. 56)
5:30-6:00 PM	K-12	103D, Wisc. Center	Moving Your District Forward in STEM and NGSS (p. 57)
5:30-6:00 PM	6-8	103E, Wisc. Center	What Are They Thinking? Using ONPAR to Assess 3-D Thinking in Students (p. 57)

8:00-9:00 AM	5-12	Regency C, Hyatt	Reaching ALL of Your Students in Your iPad 1:1 Classroom (p. 59)
8:00–9:00 AM	P–C	Lakeshore A/B, Hyatt	Engaging the Adult Learner: Powerful Professional Learning Strategies for
8.00 9.00 AM	6 12	Executive C/D Hustt	Implementing NGSS in Your Schools (p. 59) Using Standards Pased Carding Principles with a Parcentage Pased Cardo System (p. 59)
8:00-9:00 AM	6-12	Executive C/D, Hyatt	Using Standards-Based Grading Principles with a Percentage-Based Grade System (p. 59)

# Schedule at a Glance General Science Education

8:00-9:00 AM	P–K	103D, Wisc. Center	Imagine That! Creative Problem Solving Through Engineering and Puppetry (p. 61)
8:00-9:00 AM	K6	103B, Wisc. Center	Enabling K—6 Students to Understand the Impact of STEM and Integration of All Its Disciplines (p. 59)
8:00-9:00 AM	1-6	103E, Wisc. Center	Science, Technology, and Literacy: Ideas for the Elementary Classroom (p. 59)
8:00-9:00 AM	6-12	Regency D, Hyatt	Introducing Students to Linguistics: The Science of Language (p. 60)
8:00–9:00 AM	K6	101B, Wisc. Center	Preservice and Inservice Teachers Tacking and Jibing Toward Integrated STEM and the Science and Engineering Practices (n. 59)
8:00–9:00 AM	K-12	Blrm. A, Wisc. Center	NSTA Press® Session: Uncovering Student Ideas in Science with 3-D Assessment Probes (p. 60)
8.00-9.00 AM	K-11	202B Wise Center	Science Teacher / STEM Teacher: What's the Difference? (n. 61)
8:00-9:00 AM	K_8	202B, Wise. Center	Integrate Instruction and Assessment in Three Dimensions Using Learning
0.00 9.001101	R 0	20111, Wise. Center	Progressions (p. 61)
8:00-9:00 AM	K-8	203A, Wisc. Center	Science and Engineering Practices in the NGSS (p. 62)
8:30-9:00 AM	9-12	Executive A/B, Hvatt	Making the Leap to a Digital Course (p. 63)
9:30-10:30 AM	K-12	202D, Wisc. Center	Incorporating the NGSS Crosscutting Concepts into Your Teaching (p. 67)
9:30–10:30 AM	6–8	201A, Wisc. Center	Implementing Argumentation: Evidence, Claims, Reasoning, and Science Seminars in Grades 6–8 (p. 66)
9:30-10:30 AM	9–C	203C, Wisc. Center	Get that Grant Money! (p. 68)
9:30-10:30 AM	K-12	Milwaukee, Hyatt	NSELA-Sponsored Session: Tools for Leaders Session 1 (p. 64)
9:30-10:30 AM	P–C	103A, Wisc. Center	Eureka! Science Trade Books—Good as Gold! (p. 65)
9:30-10:30 AM	P-5	101B, Wisc. Center	A Picture-Perfect Approach to Connecting Literacy and Science (p. 66)
9:30-10:30 AM	K-2	Executive A/B, Hyatt	Boost Books, Cultivate Curiosity! (p. 64)
9:30-10:30 AM	6–C	Executive C/D, Hyatt	Developing Creativity in an Assessment-Driven Environment (p. 64)
9:30–10:30 AM	K-5	103D, Wisc. Center	CESI-Sponsored Session: Integrating Science and Literacy: Proven Strategies Developed from Evidence-Based Practices (p. 66)
11:00 AM-12 Noon	n 6–12	101 C/D, Wisc. Center	Innovative and Integrated: STEM Activities from Chinese Classrooms (p. 71)
11:00 AM-12 Noon	n P-4	Lakeshore A/B, Hyatt	Project-Based Learning in an Early Elementary and Early Childhood Classroom (p. 69)
11:00 AM-12 Noon	n P—C	Regency C, Hyatt	Connected Educators Connect Learning (p. 71)
11:00 AM-12 Noon	n K-8	103D, Wisc. Center	Harnessing a Powerful Synergy: Engaging All Students with Science-Based Literacy Experiences (p. 72)
11:00 AM-12 Noon	n P-12	Executive C/D, Hyatt	National Board Certification (p. 69)
11:00 AM-12 Noon	n 3-9	Executive A/B, Hyatt	Connecting Science and Inquiry with Literacy (p. 69)
11:00 AM-12 Noon	n K—12	103A, Wisc. Center	How to Implement STEM and <i>NGSS</i> into Your Classroom Through the Use of NSTA Competitions (p. 70)
11:00 AM-12 Noon	n K—12	103C, Wisc. Center	Selecting Phenomena to Motivate Student Sensemaking (p. 71)
11:00 AM-12 Noon	n K-12	Blrm. B, Wisc. Center	NGSS@NSTA Forum Session: Designing and Using Classroom Assessments to Support Meaningful NGSS Investigations (p. 70)
11:00 AM-12 Noon	n K—12	202B, Wisc. Center	Using Argumentation for Discussing Phenomena and Increasing Student Voice about STEM (p. 73)
11:00 AM-12 Noon	n P–C	102C, Wisc, Center	Featured Presentation: Doing and Talking Science with English Learners (p. 69)
11:00 AM-12 Noon	h K-12	Milwaukee, Hvatt	NSELA-Sponsored Session: Tools for Leaders Session 2 (p. 70)
11:00 AM-12 Noon	n K—5	203A, Wisc. Center	Bringing the World into Your Classroom with National Geographic Explorers (p. 73)
12:30-1:30 PM	K-12	Blrm. B, Wisc. Center	NGSS@NSTA Forum Session: Better Science for All (p. 76)
12:30-1:30 PM	K-5	Blrm. A, Wisc. Center	NSTA Press® Session: Uncovering Student Ideas About Science with Formative Assessment Probes and Literacy Capacities (p. 75)
12:30-1:30 PM	K-12	103A, Wisc, Center	NSTA District Support (n. 74)
12:30-1:30 PM	Р–С	Executive A/B, Hyatt	Beyond the Field Trip: Creating Community Partnerships to Enhance Science Learning Outside the Classroom (p. 74)
12:30-1:30 PM	P6	103B, Wisc. Center	Modeling the World Around Us: Applying the <i>NGSS</i> Practice in the K–6 Classroom (p. 74)
12:30-1:30 PM	7-12	Regency D. Hvatt	Bringing the "Bookends" of STEM Together (p. 75)
12:30–1:30 PM	K-12	101 C/D. Wisc. Center	Digital Storytelling—Not Just for Language Arts Classes (p. 74)
12:30–1:30 PM	5-12	101A, Wisc. Center	Data Is Not a Four-Letter Word: Use NOAA Resources to Build Student Proficiency in Data Analysis (p. 74)

# Schedule at a Glance General Science Education

12:30-1:30 PM	4-9	103E, Wisc. Center	NMLSTA-Sponsored Session: Science Fairs: Relevant in 2017 or Is It Time for a
			Change? (p. 75)
12:30 - 2:30 PM	P–C	Executive C/D, Hyatt	AMSE-Sponsored Session: George W. Carver Conversation Series on Diversity and
			Equity (p. 78)
2:00-2:30 PM	K–C	Executive A/B, Hyatt	The Learning Ecosystem: Consider the Wisconsin Science Festival to Make
			Connections to Your Classroom (p. 78)
2:00-3:00 PM	K6	103B, Wisc. Center	Advancing Science Literacy While Meeting CCSS (p. 79)
2:00-3:00 PM	P–C	102A, Wisc. Center	Sing, Dance, and Celebrate Science (p. 80)
2:00-3:00 PM	5–9	Lakeshore A/B, Hyatt	Uncovering the Awesomeness of Our Science Students (p. 80)
2:00-3:00 PM	K–9	101A, Wisc. Center	Badging as a Vehicle for Engaging All Learners (p. 79)
2:00-3:00 PM	P–C	103A, Wisc. Center	NSTA's Online Resources and Communities (p. 79)
2:00-3:00 PM	K-12	Blrm. B, Wisc. Center	NGSS@NSTA Forum Session: Developing Coherent Storylines of NGSS Lessons (p. 80)
2:00-3:00 PM	6–9	202C, Wisc. Center	STEM Challenge: Keeping Students Engaged with Problem Solving (p. 81)
2:00-3:00 PM	P–C	Blrm. D, Wisc. Center	Science Square Dancing: Lessons that Move to the Music! (p. 80)
2:00-4:00 PM	P–C	Hall B Lobby, Wisc. Center	Wisconsin Society of Science Teachers Preservice Exploratorium (p. )
2:45-3:30 PM	P–C	Exhibit Hall Entrance	Meet the Presidents and Board/Council (p. 82)
3:30-4:30 PM	K-8	202D, Wisc. Center	Take Your Students on a Quest! A Real-World Problem-Based Learning Project that
			Incorporates All Three Dimensions of NGSS (p. 83)

## Saturday

8:00–9:00 AM 8:00–9:00 AM	5–9 K–12	101 C/D, Wisc. Center 103A, Wisc. Center	Building Background Knowledge (p. 85) NOAA inYour Backyard: Free Professional Development and Local Educator Resources Are Closer ThanYou Think (p. 85)
8:00-9:00 AM	P6	102D, Wisc. Center	Seamless Integration: Maximize Student Learning in Science and Literacy (p. 85)
8:30-9:00 AM	P-12	Lakeshore A/B, Hyatt	Augmented Reality Makes Science Come to Life! (p. 86)
9:30-10:30 AM	P–K	103D, Wisc. Center	Outside Your Door: Exploring the Arts in Nature (p. 88)
9:30-10:30 AM	K-5	101 C/D, Wisc. Center	Standards Make Strange Instructional Bedfellows: Science and Social Studies-Inquiry
			and Problem Solving (p. 87)
11:00 AM-12 Noon	P6	103A, Wisc. Center	Super STEM Apps and Trade Books for PreK-6 Classrooms (p. 88)
11:00 AM-12 Noon	K-12	101 C/D, Wisc. Center	Advancing Science Learning Through Interactive Science Notebooks (p. 88)

## **Informal Science Education**

#### Thursday

1:30-3:30 PM	K–C	Hall B Lobby, Wisc. Center	Showcase of Wisconsin Science Olympiad (p. 46)
2:00-3:00 PM	4-12	Executive A/B, Hyatt	Fostering a Great Lakes Community of Practice with the Center for Great Lakes
			Literacy (p. 47)

8:00–9:00 AM	6-8	103C, Wisc. Center	It's Cooler by the Lake! (p. 60)
9:30–10:30 AM 9:30–10:30 AM	5—8 Р—С	102C, Wisc. Center	Featured Presentation: Growing Power and the Good Food Revolution (p. 64)
11:00 AM-12 Noon 11:00 AM-12 Noon	P–C 9–12	Regency C, Hyatt Lakeshore C, Hyatt	Connected Educators Connect Learning (p. 71) NARST-Sponsored Session: Using Maker Activities and Formative Assessment
			Strategies to Enhance Computational Thinking Skills, Physics, and Engineering Learning (p. 69)
12:30-1:30 PM	3–6	Lakeshore A/B, Hyatt	Using the Science of Flight to Teach NGSS and Free Student Flights (p. 75)
12:30-1:30 PM	P8	Regency C, Hyatt	Connecting Families Through STEM Events (p. 75)

# Schedule at a Glance Informal Science Education

P–C	Executive A/B, Hyatt	Beyond the Field Trip: Creating Community Partnerships to Enhance Science Learning
		Outside the Classroom (p. 74)
K–C	Executive A/B, Hyatt	The Learning Ecosystem: Consider the Wisconsin Science Festival to Make
		Connections to Your Classroom (p. 78)
K-9	101A, Wisc. Center	Badging as a Vehicle for Engaging All Learners (p. 79)
	Р–С К–С К–9	<ul> <li>P–C Executive A/B, Hyatt</li> <li>K–C Executive A/B, Hyatt</li> <li>K–9 101A, Wisc. Center</li> </ul>

## Saturday

8:00-8:30 AM	6-12	Lakeshore A/B, Hyatt	Using Local Citizen Science to Teach the Engineering Design Process (p. 85)
8:00-9:00 AM	6–C	102E, Wisc. Center	Principles of Electrophoresis: Which Way Did the DNA Go? (p. 86)
8:00-9:00 AM	9-12	102A, Wisc. Center	Connecting Chemistry to Your World Through ChemClub (p. 85)
8:30-9:00 AM	P-12	Lakeshore A/B, Hyatt	Augmented Reality Makes Science Come to Life! (p. 86)
9:30-10:30 AM	P–K	103D, Wisc. Center	Outside Your Door: Exploring the Arts in Nature (p. 88)



# **Index of Participants**

## A

Abbott, Rebecca 38, 39, 44, 61, 66, 72 Abshire, Wendy 43 Allen, David 87 Allen, Will 64 Almoite, Josh Ariel 87 Ammann, Rebecca 89 Anderson, Keaton 42 Anderson, Kevin 37, 51 Anderson, Michelle 51, 79 Antink-Meyer, Allison 47 Aprill, Howard 56 Armstrong, Kathy 36, 38, 40, 44, 49, 53 Artis, Rhulene 34 Avedian, Ray 52

## B

Badenhop, Brian 73, 77 Barrow, Lloyd 48 Bartels, Selina 52, 87 Bean, Andrew 34, 42 Beauchamp, Arthur 48 Beine, Abbey 82 Bell, Philip 70 Bendt, Danielle 42 Benton, Erik 36, 38, 40, 45, 50, 54 Berg, Ann 43 Berg, Craig 89 Bielec, Barbara 86 Biernat, Kathy 75 Biese, Joan 33, 64, 86 Binder, Wendy 42, 79 Boileau, Catherine 86 Boldt, Jenny 86, 88, 90 Bonner, Garnetta 48, 60 Borowczak, Mike 71 Bradley, Christy 52 Bridle, Chad 63, 68, 78 Brunsell, Eric 42 Bryan, Heather 73, 77 Burrows, Andrea 71

## C

Caffery, Pam 73 Cain, Dennis 34 Calhoun, Sara 79 Campbell, Brian 38, 40 Campbell, Natacia 51 Carlson, Nancy 48 Carnduff, Daniel 55 Carrol, Sean B. 37 Carter, David 62, 67, 73, 77, 81,83 Carter, Patrick 35 Carvan, Michael 89 Chambers, Nicoline 73 Chuboff, Mary 55, 63 Citron, Howard 85 Clark, Kelsey 82 Cleveland, Meghan 80 Colson, Mary 79 Colson, Russell 79 Cozza, Michele 67, 73, 77 Crocker, Betty 76 Crowther, David 37, 71 Curts, Gary 36 Cynkar, Tom 37, 39, 41, 45, 50, 54

## D

Daehler, Kirsten 52 Dammann, Doug 43 Davis, Adea 80 Day, Eric 56, 68 Dayton, Maria 37, 39, 41, 45, 50, 54 DeCristofano, Carolyn 72 Defenbaugh, Leah 71 Dennison, Robert 62 Derksen, Trevor 82 Dexheimer, Alex 71 Dipinto, Vito 33, 42 Dodd, Gregory 35, 48 Donna, Joel 42 Ε Edginton, Jennifer 43 Ell, Brian 37, 39, 41, 45, 50, 54 Evans, David 37 F Factor, Mary Beth 65 Farland-Smith, Donna 52

Farland-Smith, Donna 5 Farnsworth, Denise 57 Fassler, Amy 62, 77 Feineis, Shannon 55 Fennig, Vanessa 51 Fieldhouse, Ronn 61, 67, 72, 76 Fotsch, Fred 76, 81, 83 Frack, Michelle 52, 80 Friis, Michael 59 Froschauer, Linda 51 Fuelling, Allison 42 Fusinatto, Taylor 60 G Galvan, Patricia 87 Gane, Brian 76 Gapinski, Liesl 37 Garcia, Anthony 82 Gayton-Grabarski, Heather 75 Gentele, Vernon 88 Gillick, Claire 85 Gilliland, Byron 47, 69 Ginnett, Dorothy 47, 59 Gmurczyk, Marta 63, 68, 78 Gnanakkan, Dionysius 52 Goodwin, Debbie 43, 56, 78 Graves, Daniel 89 Greenler, John 89 Griffin-Wenzel, Michelle 37, 46,69 Gromko, Mary 37 Gundrum, Scott 46

## Η

Halzen, Francis 59 Handelsman, Jo 46 Haroldson, Rachelle 35, 42 Hartman, Matthew 40, 81 Hausman, C. Meghan 69 Hawes, Jennifer 82 Herlache, Amanda 56, 59 Herman, Tim 68, 77, 82, 88 Hesselbach, Renee 34, 56, 89 Hodgson-Drysdale, Tracy 46 Hoffman, Elissa 59 Hoida, Jessica 35 Hougham, Justin 89 Huddleston, D.J. 55 Huncosky, Kathy 34, 48, 52, 85 Hunt, Jane 73, 77 I Janshego, William 42, 59 Jarchow, Mark 82 Jesse, Elizabeth 63

Johnson, Jeremy 67 Jordan, Janet 88 Jostpille, Jeff 73, 77

## K

Kaleuati, Karen 70, 85, 86 Kapitan, Kaitlin 82 Karre, Nancy 56 Kasparie, Diane 59 Keeley, Page 49, 60, 75 Keil, Jennifer 63, 68, 78 Kendrick, Sarah 74 Kessler, James 60, 66, 71, 75 King, Ken 79 Kirby, Melissa 47 Kish, John 34 Kline, Kathleen 47 Kneser, Debra 69 Knoell, Donna 59, 79 Knox, Brian 66 Ko, Eun Kyung 55 Kraves, Sebastian 62 Kulesza, Joe 56 Kurth, Lynn 47

## L

Lach, Michael 76 La Combe, Angela 56 Lambertsen, Sophia 38, 39, 44, 61, 66, 72 Lancor, Rachael 51 Lederman, Judith 52, 71, 87 Lederman, Norman 52, 71, 87 Leiterman, Sandra 33, 71, 74 LePretre, Dawnne 87 Lester, Erin 70 Linnen, Linda 43 Littleton, Georgia 48, 60 Loehr, John 43 Long, Kathy 36 Loosen, Suzanne 60 Luczaj, John 70 Luepke, Judi 86 Lukens, Jeffrey 34, 49, 53, 75, 81, 83

## M

MacDonald, Rita 69 Maday-Travis, Lewis 80 Maier, Frederick 78, 85 Malkin, Linda 57

# **Index of Participants**

Malone, Molly 48, 90 Marry, Stephanie 55 Martin, Lisa 74 Martin, Obie 81 Martinez, Liz 48 Marvel, Mike 38, 50, 62 Mason, Kevin 88 Mattox, Stephen 80, 90 McAtee, Mark 60 McDaniel, Darrell 33 McDonald, Jim 66, 76 McDowell, Rebecca 75 McGinnis, Patty 51 McMahon, Jeffrey 78 McMillan, Chuck 83 Meyers, Bridget 68 Meyer, Steve 71 Mikolajczyk, Callie 80 Miller, Kate 65 Mills, Kat 36, 38, 40, 45, 50, 54 Milne, Caroline 51 Milo, Heather 45, 54 Minkoff, Benjamin 63 Mintz, Ellen 39, 50 Montero, Juliana 82 Mooney, Margaret 49, 53 Moorman, Matt 50 Moriarty, Ann 53 Morrison, Deb 70, 78 Ν

## Nelson, Elizabeth 75 Nelson, Sara 85 Newman, Patricia 72 Niemi, Kevin 64, 69 Nilsen, Cory 87 North, Jessica 57 Nothem, Amanda 70 Novak, Michael 80 Nydam, Andrew 35, 65, 88

## 0

Olson, Karen 85 Ostlund, Karen 43, 76 Oszuscik, Sarah 89

#### Р

Paradis, Jeff 70 Pattillo, Kelsie 60 Penchos, Jessica 45, 50 Penfield, Ken 57 Perna, Nicole 71 Perry, Anthony 71 Petering, Dave 89 Peters, Kyle 37 Petzold, Shelley 74 Phillips, Craig 53 Phillips, Jarod 45 Pinney, Brian 66 Plank, Larry 64, 70 Plumstead, Rosemary 87 Posekany, Dawn 61, 66, 72 Powers, Donald 53, 80 Prill, Frank 42

## R

Rademacher, Tammy 57 Rappuhn, Joshua 88 Reiser, Brian 80 Renish-Ratelis, Sarah 80, 85 Robinson, Preston III 78 Rohlinger, Spencer 85 Rohr, Dennis 70 Rosa, Holly 46 Ross, Sarah 87 Royal, Jessica 79 Royce, Christine Anne 37, 44,60 Rukes, Sherri 47, 51 Russell, Penny 61, 88 Ruud, Ruth 51, 89 Ryan, Jodi 57 Ryczkowski, Jayne 69 S

Saddler, Jillian 50, 62

Sampson, Victor 43, 56, 65

Sanchez, Cynthia 36, 38, 39,

Sagen, Erron 75

44, 49, 53

Sanders, Matt 82

Savatski, Jane 59

Sandrin, Rochelle 74

Schaeffer, Kelly 52, 79, 87 Scheckel, Lawrence 52 Schmoldt, Terrie 52 Schneider, Melanie 64 Schreiber, Amanda 82 Schultz, Forrest 46 Scianni, Renee 34 Scolavino, Ray 37, 82 Senese, Matthew 42, 59 Sever, Pamela 52 Shah, Jay Garvey 66, 80 Shirey, Katherine 65, 74 Singh, Abha 79 Siriano, Emily 90 Siudzinski, Lee 75 Smith, John 87 Smithson, Barbette 48, 60 Sneider, Cary 42 Sostock, Matt 82 Sotak, Bob 64, 70 Spahos, Aimee 57 Stafford, William 85 Stankovic, Emily 60 Starr, Mary 40 Stilwell, Kim 48, 66, 74 Stober, Rebecca 63, 68, 78 Swanson, Jennifer 72

## Т

Tangen, Travis 78 Teisan, June 43, 74, 85 Texley, Juliana 47, 65, 80, 89 Thibodeaux, Stacy 49, 76 Thomas, Brian 39, 62 Thompson, Christopher 48, 85 Thompson, Kenetia 70 Ticha, Jonathan 85 Tighe, Damon 50, 54, 63, 68, 74, 82, 83 Tison, Roy "Jack" 78, 85 Tomasiewicz, Henry 89 Totz, Jenna 68, 76 Tournis, Anthony 33, 42 Trevino, Saul 63, 68, 78 Truemper, Amy 90 Turner, Ken Jr. 47, 64

### V

Vanchena, Kylie 82 Van Hoeck, Kathy 67, 82 Vick, Matthew 59, 64, 79 Vick, Nicole 37 Villanueva, Melanie 48 Vlahovic, Michelle 55 Vogt, Gina 39, 40, 45, 73 Vonk, Matthew 79 Voss, Dan 88

## W

Wakely, Alexandra 40 Warren, Debbi 68 Waterman, Ed 73, 77 Watters, Brandon 76, 81, 83 Weber, Dan 34, 56 Weld, Jeffrey 34 Wells, Joseph 42 West, Andrew 57 Westfall, Seth Marie 42 Whitsett, John 69 Whitsett, Sue 70 Willard, Ted 36, 71, 79 Williams, Nicole 46 Witthun, Brian 53 Witty, Kyle 34 Wood, Darrick 36, 38, 40, 44, 49, 53 Wood, Steve 47 Wozniak, Carl 86 Wysession, Michael 62, 67 Y Young, Donna 44, 65

# Ζ

Zaidi, Sania 76 Zenchak, John 56 Zenchak, Kristi 56 Zenner, Colleen 51 Zimny, Judy 61 Zivic, Aliza 88 Zylstra, Lesley 34

# Notes

# Notes

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	11:00 a.m.–12:00 p.m.	Biology with Vernier
	12:30–1:30	Integrating Chromebook™ with Vernier Data-Collection Technology
	2:00-3:00	Integrating iPad <sup>®</sup> with Vernier Data-Collection Technology
	3:30-4:30	Physics and Physical Science with Vernier



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