



## Iowa Science Teaching Section

## Iowa Academy of Science

**May 15, 2009**

Nadine Weirather, Editor

### ISTS E-Newsletter Contents:

- Messages from:
  - The ISTS Chair  
De Anna Tibben
  - The Fall Conference Chair  
Morgan Masters
  - The Vice Chair  
Kathy Megivern
- Announcements
- Opportunities
- Book Review
- News
- Your ISTS Leadership Team

Mark your calendars for  
fall learning and fun!!!!

IOWA SCIENCE TEACHING SECTION  
IOWA ACADEMY OF SCIENCE

### WINDOWS OF OPPORTUNITY IN SCIENCE EDUCATION

FALL CONFERENCE - OCTOBER 28, 2009

## **A Message From the ISTS Chair, De Anna Tibben:**

### **Hello! Greetings from your ISTS Chair!**

What an exciting time of year... graduation, final exams, grade calculations, restocking chemistry store-rooms, filing away papers, putting away FOSS kits, packing up your classroom... well, I guess it's a hectic time of year, too! As you finish out your school year, I hope you are able to reflect on some positive learning experiences that occurred for your students over the year. Was there a lesson that you developed good questions for, was there an activity that seemed to pull the students in, possibly an event or field trip that allowed the learning to come alive for your students? Whatever it might have been, would you be willing to share your ideas and lessons with colleagues? I encourage you to submit a presentation proposal for the 2009 ISTS Fall Conference.

Here's a quick idea for student projects. Rather than having your students do a poster on a large poster board or display, or a written report, have your students make a project-file. Simply take a file folder and use it as the "poster." As students are working on their project, they are able to keep all their folders and materials within the file. Then to put it together, they can tape or glue the pictures and written statements to the inside of the folder - making it like a mini-poster. You are able to fold them up for easy transport to your grading site (like the lake over Memorial Day weekend). This quick idea came from Nancy Svien and Ann Lee - both Earth Science teachers at Ames High.

I hope you are able to enjoy this exciting (and hectic) time of year. What summer plans do you have? Are you taking any courses or professional development? Are you going to develop a lesson or unit that you've been thinking about? As you make your summer plans, I hope that you are able to enjoy, relax, and become re-energized for the 2009-10 school year!

Take care,  
De Anna Tibben

## **From your Fall Conference Chair, Morgan Masters:**

### **A 2009 Conference Update from your Program Chair**

Mark October 27<sup>th</sup> and 28<sup>th</sup> 2009 with a big **red** marker!

The ISTS Leadership Team is in the process of putting together the 2009 Iowa Science Teachers Fall Conference. We have put together what promises to be one of the greatest opportunities to share ideas with science colleagues from around the state.

We have an outstanding lineup of featured speakers. Topics include Black Holes, Learning through Inquiry; Iowa's Impact Crater; Building Conceptual Understanding; Iowa Core activities and assessment strategies; and Lessons learned from Ape Language Research.

A few of the reasons you should take advantage of this opportunity are:

1. Join us at the Science Center of Iowa on Tuesday evening prior to the conference. Visit with science colleagues from across the state in a relaxed atmosphere as you tour the Science Center and enjoy food, drink and music.
2. Attend one of the Interest Area Breakfasts Wednesday morning and listen a presentation by one of your interest area colleagues.
3. We have many outstanding presentations scheduled. (There is always room for more for you to present and share)
4. Our luncheon will be a great experience with a great menu and a fantastic speaker keeping you on the edge of your seat.
5. Network with science educators from across the state.
6. Visit a large hall filled with exhibitors ready to share innovative ideas, materials and supplies.
7. Attending a nationally recognized conference such as this has proved to be the most effective method of improving science education in the classroom.

So make plans to put the ISTS Conference on your calendar for next fall. Keep in mind that the "official" start of the conference is Tuesday, the 27<sup>th</sup> of October at the Science Center of Iowa with the President's Reception where you can meet our new ISTS chair Kathy Megivern.

Then join us on Wednesday, the 28<sup>th</sup> for presentations by your colleagues. What an excellent opportunity to hear and see what other teachers are doing in their classrooms. Even better yet, besides being a spectator, I urge you to also be a presenter. Everyone reading this message has some area of expertise that they should be willing to share.

Talk with your administrators soon and reserve these dates for next fall.

Morgan Masters  
ISTS Conference Program Chair 2009

## **Meet our Chair-Elect, Kathy Megivern:**

We welcome Kathy Megivern on the ISTS leadership team as our Chair-Elect. The information for this brief bio came from her school website:

Kathy teaches high school biology, geology, animal science, and plant science at Ankeny High School. She earned her Master's degree in geology from the University of Iowa. Her undergraduate degrees in biology and geology are from the University of Northern Iowa.

Kathy enjoys teaching because young adults have so much potential and so much energy. She enjoys helping her students see the value in using some of that boundless energy in developing their full potential.

Kathy enjoys sewing and crafts, music (listening, playing, writing), writing, and gardening. She fits these hobbies around her passions in sports and nature including hiking, backpacking and camping, travel, cross-country skiing, and more.

## Announcements

- **Iowa Has the Winning Team!**

### **Winning Teams Announced in National Community-Focused Sustainability Competition**

NSTA, in partnership with Siemens Foundation and Discovery Education, is thrilled to announce the national winning teams in the first-ever [Siemens We Can Change the World Challenge](#) environmental sustainability competition. The grand prize winners, team "Dead Weight" from **West Branch Middle School in West Branch, Iowa**.

Middle school students Jathan Kron (age 12), Justin Roth (age 13) and Brennan Nelson (age 12), along with their teacher, Hector Ibarra, raised awareness about the dangers of lead wheel weights in vehicles to help phase out this hazardous material in the tire industry.

The grand prize-winning team, will receive a comprehensive prize package, which includes an appearance on *Planet Green*, Discovery's 24-hour eco-lifestyle network; a once-in-a-lifetime Discovery Adventure Trip accompanied by a Discovery TV personality; a \$5,000 U.S. Savings Bond; a chance to present their project before a panel of environmental experts; a flip camera; and a *Siemens We Can Change the World Challenge* eco-friendly prize pack of school supplies.

### **Congratulations, West Branch!!**

- **Jan & Stoney Award**

This award, named in honor of the National Earth Science Teachers Association's (NESTA's) first President and its first Executive Advisor, is given at the discretion of the NESTA Executive Committee in recognition of an individual

or organization's efforts in promoting Earth Science education in keeping with the goals of NESTA. This award includes a plaque and a lifetime NESTA membership. The Jan Woerner and Harold B. Stonehouse (Stoney) Award is NESTA's highest form of recognition. In our entire history this award has only been presented to five individuals, and one organization, the Michigan Earth Science Teachers Association.

This year, in New Orleans, the Jan and Stoney Award was presented to Tom Ervin. Tom has been a NESTA board member continuously since 1992. He has served out two full six-year cycles of Presidency for NESTA. Tom has served on numerous NESTA committees, and special projects. He is currently the Editor of TES (*The Earth Scientist*), is one of the two At-Large Members on the Board of Directors, and is the Board of Director's Representative on the Executive Committee. He was previously honored with an NESTA Distinguished Service Award and was made a Fellow of the organization in 1998. Tom has also served as the President of the Iowa Science Teachers Section of the Iowa Academy of Science, as well as the Iowa Earth Science Teachers, is a Fellow of the Iowa Academy of Science, and holds the Heritage Honours Award for Lifetime Achievement from his Alma Mater, the University of Northern Iowa.



Dr. Michael Passow & Tom Ervin

## Opportunities

- **Biotech Summer Workshops**

**You Are Invited to Attend a Summer Workshop to Celebrate Our 25th Year**

This is a very special year for the Office of Biotechnology at Iowa State University as we celebrate our 25th anniversary. You are invited to help us celebrate by attending one or more of the biotechnology or bioethics workshops offered at the Biotechnology Outreach Education Center in Ames this summer.

Science, agriculture education, and family and consumer sciences educators in public or private schools or those who work with youth in 4-H or other community programs can update their biotechnology and bioethics teaching skills while they earn professional development or ISU graduate credits.

The workshops, instructed by Mike Zeller and Clark Wolf, will be held in the Biotechnology Outreach Education Center (BOEC) on the Iowa State campus in Ames. Iowa teachers can receive stipends of \$50 per day to help cover their costs of attending. ISU Extension educators or personnel can receive travel reimbursements of up to \$50 per day to help cover their expenses. Materials and stipends for the workshops are funded by Iowa State's Office of Biotechnology and by the Iowa Biotechnology Association. Upon completion of any of the workshops, Iowa teachers are eligible to receive free supplies and equipment for specific lab protocols from the Office of Biotechnology.

For more information about the biotechnology education workshops see the descriptions that follow, contact Mike Zeller or Lori Miller toll-free in Iowa at (800) 643-9504, or e-mail [mzeller@iastate.edu](mailto:mzeller@iastate.edu) or [lorimill@iastate.edu](mailto:lorimill@iastate.edu). For more information about the bioethics workshop, please contact Clark Wolf at (515) 294-3068 or e-mail [jwcwolf@iastate.edu](mailto:jwcwolf@iastate.edu). The deadline for registering for the 2009 summer workshops offered by the Office of Biotechnology at Iowa State University is May 29. To register for any workshop, please contact Lori or use the online registration or PDF forms available at [www.biotech.iastate.edu/ed\\_resources/regis\\_form\\_summer2009.html](http://www.biotech.iastate.edu/ed_resources/regis_form_summer2009.html).

### **June 8-11**

#### **Biotechnology Education Workshop I for Science, Agriculture, and Family and Consumer Sciences Educators, Iowa State University, Ames**

2 professional development credits - \$25

1-2 ISU graduate credits - \$374 per credit

\$200 stipend for Iowa schoolteachers (\$50 per day)

Travel reimbursement available for ISU Extension educators/personnel (up to \$50 per day).

This workshop course is directed at science, agriculture, and family and consumer sciences educators who want to gain the basic knowledge and laboratory skills necessary to teach biotechnology in their classrooms. Teachers will learn how to prepare and instruct the laboratories in DNA extraction and quantification from various sources, DNA transformation, DNA fingerprinting, bioinformatics, bioethics, and more. Educators will prepare and perform the lab protocols as the students would do in class.

### **June 16-18**

#### **Bioethics Workshop Iowa State University, Ames**

1 professional development credit - \$25

1 ISU graduate credit - \$374 per credit

\$100 stipend for Iowa schoolteachers (\$50 per day)

Travel reimbursement available for ISU Extension educators/personnel (up to \$50 per day)

This course is designed for educators who are interested in discussing bioethics with their students or extension audiences. The focus will be on ethical issues in biotechnology, especially agricultural biotechnology, but other topics relevant to both agriculture and human health will be covered. Students will work through activities and case studies that they can take home and use with their classes. Pedagogical issues in teaching bioethics will also be covered, including appropriate objectives for bioethics units; various approaches to bioethics pedagogy; how to relate bioethics issues to personal ethical issues familiar to students; how to help students identify ethical issues; how to address bioethics while respecting diversity of views in the classroom; and assessment for bioethics units.

**July 7-10**

**Biotechnology Education Workshop II - Advanced Workshop for Science, Agriculture, and Family and Consumer Sciences Educators Iowa State University, Ames**

2 professional development credits - \$25

1-2 ISU graduate credits - \$374 per credit

\$200 stipend for Iowa schoolteachers (\$50 per day)

Travel reimbursement available for ISU Extension educators/ personnel (up to \$50 per day)

This advanced workshop is open to science, agriculture, and family and consumer sciences educators who have attended one of the previous biotechnology workshops. Educators will learn how to prepare and instruct advanced biotechnology laboratories in their classrooms. Activities will include marker assisted selection, DNA isolation, recombinant DNA techniques, DNA amplification, restriction analysis of DNA, bioinformatics, sequencing, genomics, bioethics, and more. Educators will prepare and perform the lab protocols as their students will do in class.

**Interested in attending the basic workshop June 23-24 at Southeastern Community College in West Burlington? Please contact:**

**Cathy Ziglar, Biology Instructor  
Southeastern Community College  
(319) 752-2731**

- **[NASA Research Opportunity for HS Students](#)**  
from the *NSTA Express*, May 11, 2009

**NASA Invites High School Students to Apply for Inspire Project**  
NASA's Interdisciplinary National Science Program Incorporating Research

Experience, known as Inspire, is accepting applications from high school students through **June 30**. NASA will make selections in September.

The selectees will participate in an online learning community in which students and parents have the opportunity to interact with their peers and NASA engineers and scientists. It also provides appropriate grade level educational activities, discussion boards, and chat rooms for participants and their families to gain exposure to the many career opportunities at NASA.

Students selected for the online learning community will have the option to compete for experiences during the summer of 2010 at NASA facilities and participating universities throughout the nation. The Inspire project is designed to encourage 9th through 12th grade students to pursue careers in science, technology, engineering and math. The summer experience provides students a hands-on opportunity to investigate education and careers in those disciplines. For information about the project, including details about how to apply, visit the [Inspire website](http://www.nasa.gov/offices/education/programs/descriptions/INSPIRE_Project.html) at [http://www.nasa.gov/offices/education/programs/descriptions/INSPIRE\\_Project.html](http://www.nasa.gov/offices/education/programs/descriptions/INSPIRE_Project.html).

- **Vernier Workshop Coming to Ames, Iowa, in July**

Vernier Software & Technology will host 21, hands-on workshops in 15 cities around the U.S., giving science and math educators the opportunity to learn techniques for teaching scientific exploration, both in and out of the classroom. Attendees will learn how to integrate computers and the Vernier LabQuest handheld data-collection device into any science or math curriculum. Several workshops will cover experiments required by the College Board for Advanced Placement (AP). Each workshop includes breakfast, lunch and a cd containing the experiments. The cost of the workshop is \$99.00.

For more information about the workshops visit <http://www.vernier.com/workshop/summer.html>

Contact: Daylene Long  
Vernier Software & Technology  
503-277-2299  
[dlong@vernier.com](mailto:dlong@vernier.com)

Kati Elliott  
KEH Communications  
410-975-9638  
[kati@kehcomm.com](mailto:kati@kehcomm.com)

- **Free Book Offer for NSTA Members**

Dear NSTA member,

We have a great opportunity for you. At *Science, Naturally!*, we are committed to increasing science literacy by exploring and demystifying key

science topics. We are excited to introduce you to our latest title and share with you a *very* exciting offer!

*One Minute Mysteries: 65 Short Mysteries You Solve with Science!* presents science-through-literature with a clever twist. Kids love to solve the mysteries, but need to tap into their science knowledge to do so. Geared to students in grades 4-8, each story challenges a student's knowledge in earth, space, life, physical, chemical and general science. And the best part... each mystery can be read in less than one minute!

This book is receiving tremendous acclaim. In addition to the "NSTA Recommends" designation, it received two stars from *Science Books & Films* (their highest rating), won a NAPAA Award Honor title, was a Finalist in the National Best Books Awards and was featured on NPR's "Science Friday with Ira Flatow."

We want every science teacher to know about this book. We would love to **give you the book for FREE** (a \$9.95 value). All we ask is that you pay the shipping (just \$5). You can order one free copy, or **get more at half price** to share with your colleagues.

Ordering the book is simple. Call us (1-866-SCI-9876), send us an email ([Info@ScienceNaturally.com](mailto:Info@ScienceNaturally.com)), fax us your request (202-558-2132) or place your order online at [www.ScienceNaturally.com](http://www.ScienceNaturally.com) via our secure server. If ordering online, please use the following coupon codes during checkout:

**NSTA** (one copy of the book free, \$5 shipping),

**NSTAPIus** (first book is free, additional copies are \$5 each, shipping is \$6)

Order your copies today! Offer expires **June 15**, 2009. Thank you for letting us share our new book with you. Please don't hesitate to contact us for further information.

Sincerely,  
Denise Wright, *Science, Naturally!*  
Denise@ScienceNaturally.com  
[www.PlatypusMedia.com](http://www.PlatypusMedia.com)  
[Danielle@PlatypusMedia.com](mailto:Danielle@PlatypusMedia.com)

- **Dinosaur Science**

**Dinosaur Collecting Expedition in South Dakota Sponsored by The Children's Museum of Indianapolis**

Iowa teachers are invited to join expedition leader and teacher Rick Crosslin on this dinosaur expedition for teachers designed to do the science that normally you only read about in your textbooks. Spend two days collecting fossils for The Children's Museum at the Ruth Mason Quarry — the largest fossil bed of duckbilled dinosaurs in the world. Participants will visit the Black Hills Institute of

Geological Research and other sites.

**Dates: Thursday – Tuesday, July 9 – 14**

**Special Orientation: To be announced**

**Times: off-site times vary**

**Location: South Dakota**

**Fee: \$775 per person based on double occupancy**

**\$995 per person based on single occupancy**

**Registration and Full Payment Deadline: May 29**

\*Fees do not include transportation cost to South Dakota. Hotel cost and lunches on the days out at the dig site are included. While in South Dakota, transportation will be provided by museum staff.

**To register, contact Valerie Wells at (317) 334-3317. A \$100 nonrefundable down payment is required at the time of registration. For more information, contact Becky Wolfe at (317) 334-4618.**

## • Summer Modeling Workshops

SUMMER MODELING WORKSHOPS FOR HIGH SCHOOL AND MIDDLE SCHOOL SCIENCE TEACHERS:

Modeling Workshops in high school physics, chemistry, and/or physical science will be held in summer 2009 in Arizona, California, Miami FL, Chicago IL, Kansas, Maine, New Jersey, New York, North Carolina, Ohio, Philadelphia PA, Pittsburgh PA, Tennessee, Dallas TX, and Wisconsin. Pending funding, also in Georgia, New Orleans, and Missouri.

For details, visit <http://modeling.asu.edu> . Click on "Modeling Instruction Workshops Nationwide in Summer 2009".

At some sites, stipends and/or free tuition are available for in-state teachers. Teachers nationwide can apply for a stipend at Miami FL.

Modeling Workshops are peer-led. Content is re-organized around basic models to increase its structural coherence. Participants are supplied with a complete set of course materials and work through activities alternately in the roles of student or teacher, as they practice techniques of guided inquiry and cooperative learning.

Modeling Instruction is recognized by the U.S. Department of Education as an EXEMPLARY K-12 science program.

Jane Jackson, Co-Director, Modeling Instruction Program  
Box 871504, Dept. of Physics, ASU, Tempe, AZ 85287  
480-965-8438/fax:965-7565 <<http://modeling.asu.edu>>

## Book Review

This is a new “feature” of the ISTS newsletter. I am claiming no expertise in the area of reviewer, but I do like to read and have resources for help at different levels. Please let me know of a book you want me to review or a review you would like to do. Traci Maxted [tmxted@cr.k12.ia.us](mailto:tmxted@cr.k12.ia.us)

- **Prometheus Project Series: *Trapped and Captured***  
by Douglas E. Richards

Douglas E Richards, as a molecular biologist is well qualified to write about science. As a parent he is also well qualified to write about siblings and how they get along.

From his website: <http://www.douglaserichards.com/>

“I have a master’s degree in molecular biology, also known as genetic engineering, and an MBA, and I’ve been a biotechnology executive in California for many years. I am a frequent contributor of science pieces to *National Geographic KIDS* magazine.”

I personally really liked the two books. They were fun and fast to read. There was science as well as science fiction and a good story. The books are written for a middle school level, although I think many high school students would enjoy them as well. For input from some middle school students here are some quotes from Morgan Master’s 8th grade classes:

Sam (8th grade) - The Prometheus Project : *Trapped* - "This book really held my interest. I did not want to stop reading because I wanted to find out what was going to happen next. This would be a great book for any middle school student."

Jakyb - (8th grade) - "I liked both books, *Trapped* and *Captured*. This type of science fiction is really good and it was something different. I hope there are more books coming in this series."

I also asked our school librarian to read the books. I was concerned that the science might be too much for the “non-science types”. That was not at all the case. Her review is below. Both the librarian and language arts teachers I

contacted liked the books and were very pleased that the books had a mythology reference. The use of the books in cross-curricular activities would be easy to accomplish. There are also some lesson plans to do found at Science Net Links, a well regarded site:

<http://www.sciencenetlinks.com/lessons.cfm?BenchmarkID=1&DocID=518>

I am not as impressed with the lesson plans as with the books, but it is a good starting point to do some cross curricular planning.

From the pro – our school librarian - is this review: Thank-you Becky.

Douglas E. Richards' two books in the Prometheus Project series, Trapped and Captured, are written for middle schoolers but will appeal to anyone who enjoys a good adventure book. These short science fiction novels are pager turners and will keep your attention. Ryan and Regan, the children of top scientists, stumble onto a top secret project called Prometheus after overhearing their parents discuss their new jobs that forced them to move the children away from home and friends. Richards nearly seamlessly weaves scientific elements into the plot without sounding too heavy-handed. The children find that their move to the most boring place on Earth turns out to be anything but that as they encounter a mysterious alien world with surprises around every corner. In the first book, Trapped, Ryan and Regan have to travel back in time to save their mother's life. Richards adds elements of sibling rivalry to make the book seem more realistic. After a close call, Regan tells her brother, "Well, I guess your success at pulling off the most difficult break-in in history to get to the greatest treasure of all time might just qualify as clever. And, you even managed to do it without getting us all killed." The second book, Captured, picks up where the first one ends and leaves the reader hoping for a third book.

Becky Johnson, Librarian, Cedar Rapids Jefferson High School

## News

### • **NSTA President Raises Awareness of Importance of Elementary Science Education**

Dear Reader,

I'd like to share a recent Op-Ed piece on *Elementary Science in the K-12 System* I wrote for the May issue of NSTA Reports. One of my goals this year has been

to raise the awareness of the importance of elementary science as an integral part of a K-12 science program; and to encourage middle and high school teachers to speak out on the effect a diminished (and sometimes non-existent) elementary science program has on middle and high school science. It was a major topic at our 2008 Congress at Indianapolis and will continue to be a focus at this year's Congress.

You can access the article at:

<http://www.nsta.org/publications/news/story.aspx?id=55954>.

Best,  
Page Keeley, NSTA President

- **Understanding Science, One Website at a Time**  
from *NSTA Express*, March 9, 2009

A new website funded by the National Science Foundation offers a window to a better understanding about how dynamic and creative the scientific process really is.

Understanding Science at <http://undsci.berkeley.edu/> is a “fun, accessible, and free resource that accurately communicates what science is and how it really works.” The site, intended for both the general public and K-16 teachers, draws students into real-life examples and looks at the social side of science, science and society, and asks, “What has science done for you lately?” It also provides users with a comprehensive science toolkit. Teacher resources are targeted to specific grade bands.

- **The Year of Science - 2009**

Here is a great website that you might want to check out – lots of information, instructional strategies, and news. Each month has a theme.

<http://www.yearofscience2009.org>

Kathy McKee, Consultant, Science and Environmental Education  
Iowa Department of Education, Grimes State Office Building  
Des Moines, IA 50319  
515-281-3146

- **[News from The Space Place at NASA](#)**

### **1. Space Place Clubhouse Talk Show**

The Space Place (<http://spaceplace.nasa.gov>), NASA's award-winning web site for kids, presents the Space Place cartoon kids hosting their own talk show 'live' from the Space Place Clubhouse. Their guests are NASA scientists and engineers. The goal of Space Place Live! is to introduce kids to the human, down-to-Earth side of real scientists and engineers working in the space program. Each guest is presented as a passionate and accomplished role model for every child interested in science or engineering. In the latest episode, the kids interview a cartoon version of the GOES satellite Deputy Project Scientist, Andre Dress. Andre works at NASA's Goddard Space Flight Center in Greenbelt, Maryland. He talked with Kate and Kyo about preparing the new GOES-O weather satellite - and the team - for the most exciting day of the mission - the launch!

### **2. Scoring More Energy from Less Sunlight**

For spacecraft, power is everything. Without electrical power, satellites and robotic probes might as well be chunks of cold rock tumbling through space. Hundreds to millions of miles from the nearest power outlet, these spacecraft must somehow eke enough power from ambient sunlight to stay alive.

That's no problem for large satellites that can carry immense solar panels and heavy batteries. But in recent years, NASA has been developing technologies for much smaller microsatellites, which are lighter and far less expensive to launch. Often less than 10 feet across, these small spacecraft have little room to spare for solar panels or batteries, yet must still somehow power their onboard computers, scientific instruments, and navigation and communication systems.

Space Technology 5 was a mission that proved, among other technologies, new concepts of power generation and storage for spacecraft.

"We tested high efficiency solar cells on ST-5 that produce almost 60 percent more power than typical solar cells. We also tested batteries that hold three times the energy of standard spacecraft batteries of the same size," says Christopher Stevens, manager of NASA's New Millennium Program. This program flight tests cutting-edge spacecraft technologies so that they can be used safely on mission-critical satellites and probes.

"This more efficient power supply allows you to build a science-grade spacecraft

on a miniature scale,” Stevens says.

Solar cells typically used on satellites can convert only about 18 percent of the available energy in sunlight into electrical current. ST-5 tested experimental cells that capture up to 29 percent of this solar energy. These new solar cells, developed in collaboration with the Air Force Research Laboratory in Ohio, performed flawlessly on ST-5, and they’ve already been swooped up and used on NASA’s svelte MESSENGER probe, which will make a flyby of Mercury later this year.

Like modern laptop batteries, the high-capacity batteries on ST-5 use lithium-ion technology. As a string of exploding laptop batteries in recent years shows, fire safety can be an issue with this battery type.

“The challenge was to take these batteries and put in a power management circuit that protects against internal overcharge,” Stevens explains. So NASA contracted with ABSL Power Solutions to develop spacecraft batteries with design control circuits to prevent power spikes that can lead to fires. “It worked like a charm.”

Now that ST-5 has demonstrated the safety of this battery design, it is flying on NASA’s THEMIS mission (for Time History of Events and Macroscale Interactions during Substorms) and is slated to fly aboard the Lunar Reconnaissance Orbiter and the Solar Dynamics Observatory, both of which are scheduled to launch later this year.

Thanks to ST-5, a little sunlight can go a really long way.

Find out about other advanced technologies validated in space and now being used on new missions of exploration at <http://nmp.nasa.gov/TECHNOLOGY/scorecard> . Kids can calculate out how old they would be before having to replace lithium-ion batteries in a handheld game at [http://spaceplace.nasa.gov/en/kids/st5\\_bats.shtml](http://spaceplace.nasa.gov/en/kids/st5_bats.shtml).

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This article was provided by the Jet Propulsion Laboratory, California Institute of Technology, under a contract with NASA.

### **3. Weather**

Find answers to hard questions at the SciJinks Weather Laboratory. Now, students can find answers to tidal mysteries on our web site.

What causes the tides? We might remember that it has something to do with the Moon. But then why do we have two high tides each day if the Moon only rises and sets once? And why don't the tides occur at the same time every day? All is revealed in a new "How & Why" page on the middle-school-level NOAA/NASA

SciJinks Weather Laboratory website, <http://scijinks.gov>. Click on the "How & Why" button.

Other how and why topics are listed at <http://scijinks.gov/weather/howwhy>. Additional weather-related resources for teachers are available at <http://scijinks.gov/en/educators>.

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## *[Iowa Science Teaching Section Information:](#)*

### **Iowa Academy of Science Mission:**

- **Promote scientific research and its dissemination**
- **Improve instruction in the sciences**
- **Promote public understanding of science**
- **Recognize excellence in science and science teaching**

**Check out past issues of the ISTS newsletter at:**

<http://ists.pls.uni.edu/newsletters/index.html>.

**Your ISTS Leadership Team can be found at:**

<http://ists.pls.uni.edu/officers.html>.

(We are always looking for good people. Send an e-mail to [dtibben@ames.k12.ia.us](mailto:dtibben@ames.k12.ia.us) if you wish to be more involved.)

**Invitation to improve/contribute to this newsletter:**

How best can this newsletter serve you? Do you have something to contribute for the good of the ISTS membership? Zing a line at [nweirather@central-lee.k12.ia.us](mailto:nweirather@central-lee.k12.ia.us) or [dtibben@ames.k12.ia.us](mailto:dtibben@ames.k12.ia.us).