



eRAPPER

Monthly Newsletter of the Maryland Association of Science Teachers
March/April 2011

Editor's Note

Hello everyone! It's been a very busy winter and feels like an even busier spring coming up! It would be terrific if the snow would take a break, wouldn't it?

This month's issue is a plethora of terrific information. Some you can use tomorrow in your classroom and some provide opportunities for professional growth this spring.

It's time to submit your recommendations for this year's MAST Excellence Awards. Please use the submission form enclosed to send in your referrals. Also, if you could use some funding for an exciting lesson, consider MAST Mini-Grants. See page 12 for more information.

Take some time to review this month's Teacher to Teacher feature and the new Demo of the Month! Your colleagues are dedicated to providing useful tools for you to employ right away in your classrooms. Please send in any suggestions you may have for future issues.

Enjoy the article summarizing the interview with Michelle Shearer who is the Maryland State Teacher of the Year and National Finalist.

The Opportunities section this month is chock full of new and exciting opportunities for your consideration. Pay special attention to the MAST events coming this spring. Free to members!!

Let me know what you think! I love hearing from colleagues all over the state.

Thank you very much for your time, attention and participation.

Donna

Donna Balado, Carroll County • dmbalad@carrollk12.org





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President's Message

Is it spring yet? Technically and scientifically, yes. But as I write my e-Rapper message the news is calling for a snow/slushy mix for the next few days. This is the time of year, where students and teachers wait eagerly for warmer days. This is also the time of year when students and teachers begin to feel the burn out of the school year. The MSAs are almost behind us. Unfortunately, sometimes when the tests are completed students turn off their learning, after all, the curriculum has been taught and tested. For a teacher who is looking at the remaining ten weeks of the school year, it may seem like an eternity. However, there is still a lot of science going on in the state of Maryland.

I'm sure that your students will continue to have questions about earthquakes, tsunamis, and nuclear power with the news focused on Japan. One of the debates that my students have been having is which energy source should the United States move towards, if we move away from nuclear power. At the top of the United States' list is natural gas. Even Obama has come out in support of natural gas exploration, touting natural gas as part of the long-term solution for the nation's energy requirements. I just watched the movie "Gasland", a movie by Josh Fox that documents America's quest for natural gas through hydraulic fracturing. "Gasland" was nominated for an Academy Award. The movie is moving and heartbreaking as it details the environmental devastation left behind by hydraulic fracturing. Watching the movie begs the question if natural gas is the best direction for the United States?

What does hydraulic fracturing have to do with Maryland? [The Marcellus Shale](#), a reservoir of natural gas, stretches through western Maryland. In fact, the Maryland Geological Survey has a site on the Marcellus Shale for information. Western Maryland is sitting on amazing source of natural gas, but is it safe. Just this past week, the Maryland House of Representatives voted 98 – 40 for a de-facto moratorium on hydraulic fracturing and Marcellus Shale drilling in the western part of the state. The legislation would put the moratorium in place until 2013, allowing time for a major two-year drinking water and environmental impact assessment. The legislation will now move to the state Senate. Who is fighting this legislation? The oil and natural gas lobbies.

Topics, like the one outlined above, engage students in a world-view and a back-yard view. Chemistry, geology, physics, biology and environmental science are all interwoven into hydraulic fracturing. The science is rigorous, the news relevant and the topic of fossil fuel energy dependence isn't going away.

Mona

The Maryland Association of Science Teachers (MAST), a local affiliate of the National Science Teachers Association, is a professional, non-profit organization dedicated to science education in the state of Maryland. It strives to make science accessible and enjoyable to the citizens of Maryland by promoting and supporting career education in science and technology, instruction for general science literacy, and science outreach programs in all geographic regions of Maryland.

MAST PHILOSOPHY AND GOALS

The Maryland Association of Science Teachers, dedicated to scientific literacy, cares deeply about its mission and members engaged in science education. Its members believe that science is a human endeavor employing careful observation and reasoning necessary for professional and personal problem solving and decision making in our increasingly more technological society. To support this MAST promotes science research, applied science, and science education as professional careers. It also understands that science literacy opens doors for all Marylanders to pursue alternative technology careers, and to understand and enjoy the world they live in.

To these ends, MAST has the following goals:

- 1) provide science educators at all academic levels in the state of Maryland with the opportunities for professional development through the presentation and exchange of knowledge, strategies, and resources;
- 2) acknowledge the accomplishments of exemplary science teachers, students, and administrators;
- 3) encourage and utilize partnerships with business, professional organizations, and science resource centers;
- 4) broaden the base of support in MAST through increased membership throughout the five designated regions;
- 5) provide financial support for outstanding science-related educational programs.



Each month E-rapper will feature a site for you to bookmark for future use in your instruction. We are featuring two sites this month, one for elementary and middle school and one for all grade level teachers. Bookmark them both even if you can't explore them right away.

The first site, Science Inquirer is a must visit for all grade level teachers and is my new favorite url. Subjects include Chemistry, Biology, Physics, forensics and Earth Science.

<http://scienceinquirer.wikispaces.com/>

This site contains sections on;

- Misconception Podcasts- go to the power point section and find quizzes and answers on the podcasts. Physics, Biology, Chemistry, Weather, Electricity, Environment, and Magnetism are just some of the subjects covered in these interesting 4-5 minute mini lessons.
- An extensive list of free stuff for teachers, (that includes books and pamphlets you can download for class use). Download reading materials to support your curriculum. It is cheaper than buying books, offers differentiation in your classroom, and makes administrators happy you aren't spending money!
- A section on grants-Need I say more, they are the antidote to Budget Cuts!
- Slow motion videos- These videos are short and easy to work into your curriculum.
- Digital microscope pictures- Check this out! They will even take requests from students and teachers and post pictures of items. Email them the name of the item you want to see under the digital microscope. I am going to use a butterfly wing scales picture as a visual hook for one of my warm-ups.
- Earth Science resources. This is full of information for those of you teaching earthquakes.

The second site is from our friends in Canada. This site provides support to elementary and middle school teachers.

<http://www.ecokids.ca/pub/teachers/index.cfm?CFID=2012225&CFTOKEN=54154175>

Ecokids Earth day Canada is bursting with resources for the classroom. As you navigate through the site you will find interactive games, quizzes, readings, printable worksheets, lesson plans, and videos. Subject matter includes, but is not limited to wildlife, food chains, climate change, energy, water, waste and land use.

I will be posting this url for students to access at home. The numerous interactive games are great. The video clips range in length allowing you to choose short clips to start a discussion for the day. The one drawback I see about the site is that the contest is only open to Canadian residents.

Jackie Geer, Montgomery County

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TEACHER TO TEACHER

Tips from the Trenches: Lessons Learned at a STEM Conference

I recently attended the College of Southern Maryland's first-annual STEM conference. Speakers included 2011 Maryland Teacher of the Year Michelle Shearer, Indiana University Emeritus Professor of Biology Craig E. Nelson, and many other STEM educators.

Below are some of the take-away challenges that stayed with me long after the conference. Thank-you to both presenters for sharing their expertise!

Michelle Shearer says. . .break down the scientist stereotype.

A common misconception, particularly at the Advanced Placement level, is that science is a clique designed for certain types of thinkers. Ms. Shearer has made it her mission to integrate students of all abilities and interests into her AP Chemistry course with tremendous success. She even taught AP Chemistry to Deaf students in Frederick for several years. Her students are a testament to her philosophy that all of us are living science and can harness its power through education.

Teaching students of varied abilities propels teachers to instruct outside the box. This benefits all learners, not just those with special needs. To make a non-traditional science student successful, the teacher must rethink everything. This process is time-consuming and challenging, but its benefits are great. In a culture where our science students are frustrated (and often dropping-out) at the college level, Ms. Shearer's thoughts challenge us to equip all learners for a lifetime of science learning.

Dr. Nelson says. . .college = collaboration.

Dr. Nelson made a compelling argument for culture and collaboration. Through collaboration, he has seen struggling college freshmen (often from low-support backgrounds) become confident peer leaders. Just a few simple changes to our instruction can make collaborative study groups effective. Over-achievers, for example, often perform well but lack the confidence to lead their peers. By placing high-performing students together, they can learn to rely upon themselves and teach one another, freeing up teacher resources to empower low-performing students. When professors modeled a few examples for small groups of low-performing students, they soon learned to help one another and perform at levels comparable to their peers.

According to Dr. Nelson, it is time teachers stop fighting collaboration and start integrating it where and how they can. Students desire collaboration, and we should tap in to engage and empower learning within our science classrooms. See *Cooperative Learning in Higher Education: Across the Disciplines, Across the Academy* by Barbara Millis for more details.

Do you have a question you want answered or advice that would help other teachers? Email us back and your ideas may appear in a future column!

Vikki Bol, Calvert County

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TEA BAG ROCKET

Students love demos that involve fire and action. In this demo, you use a simple tea bag and transform it into a rocket launch that takes off and has lots of science associated with it. Here's what you do.

1. Take an ordinary tea bag (Lipton's tea bags work best.)
2. Take the bag out of the paper wrapper. Using scissors, cut the top portion where the string and staple are located. Make your cut as straight as possible.
3. Unfold the remaining tea bag and dump the tea into a bowl or cup and place the tea to the side.
4. With the paper of the tea bag, open it up and you have a cylinder of the bag that is open on each end.
5. Balance the cylinder on a non-burnable, flat surface.
6. Using a match, rapidly light the very top of the tea bag on two sides so the bag burns down to the bottom at a fairly even rate.
7. When the bag burns down to the bottom, you have a cylindrical "cage" of ash remaining, which is suddenly lifted into the air about 5 – 6 feet.
8. The ash is not burning so you don't have to worry about it catching the ceiling or other things on fire as it "soars".

SO HOW DOES IT WORK? AND WHAT'S THE SCIENCE?

As the fire burns down, the air in the cylinder is being heated more than the air around the cylinder. This causes that small column of air to be much less dense than the air around it. As the fire goes out, that hot, less dense air is jettisoned up by convection (hot air rising.) The paper used in tea bags contains clay powder, which is noncombustible and insoluble to make the tea bag soft and pliable. That leaves a network of ash that serves as the rocket.

WHAT DO I DO WITH TEA I DUMPED OUT?

I normally do this demo several times. I save the tea and use it our traditional tea pot that has the filter cup. You can also put it in a Mr. Coffee type coffee maker and make yourself a nice cup of tea.

Enjoy!

Gary Fuhrman, Carroll County



The Maryland Association of Science Teachers annual award program recognizes excellence in science teaching, administration, and outreach in Maryland. Each year, the Maryland Association of Science Teachers honors a group of people who have made outstanding contributions to science education for the State of Maryland. Awards are presented in the areas of elementary school science, middle school science, senior high science, college science, science education administration, and science outreach. If you know someone who deserves to be recognized for his or her contributions in one of these areas, we encourage you to submit a nomination packet.

Below, you will find the nomination packet. So many wonderful people who have earned this award never receive it because no one takes the step to nominate them.

The nominee and nominator do not need to be MAST members. Winners receive statewide recognition, a monetary award, and a year membership in MAST. Application packets are due on **Friday, May 20, 2011** to:

Carl Bilotta
C/o Deer Crossing Elementary School
10601 Finn Drive
New Market, MD 21774

240-236-5900

Carl.Bilotta@fcps.org



MAST ANNOUNCES ANOTHER ROUND OF EXCELLENCE AWARDS

MARYLAND ASSOCIATION OF SCIENCE TEACHERS AWARD FOR EXCELLENCE IN SCIENCE EDUCATION 2011

Candidate's Name _____
Home Address _____
City _____ State _____ Zip _____

School/Institution _____
School Address _____
City _____ State _____ Zip _____

School Phone Number _____ Home Phone _____
Fax _____ Email _____

Type of Institution: Public _____ Private _____
LEA/County _____

Name of Supervisor _____ Email _____
Name of Principal _____ Email _____

Name of Local Newspaper _____

Signature of Candidate

Signature of Nominator

Print Name of Nominator

Candidates Information:

I. Years of Service
_____ Teaching
_____ Other (specify)

Area of Consideration
_____ Elementary
_____ Middle/Junior High
_____ Senior High
_____ College
_____ Administration/Supervision
_____ Museum/Outreach

MARYLAND ASSOCIATION OF SCIENCE TEACHERS AWARD FOR EXCELLENCE IN SCIENCE EDUCATION 2011

PLEASE COMPLETE THIS SECTION ON ADDITIONAL SHEETS. This section may be completed by the nominator or nominee. (May be submitted electronically.)

- I. Chronological Professional History (list most recent first)
Dates _____ Position _____

- II. Professional Memberships (Educational and Scientific)

- III. Provide examples of your activities in science teaching/education which demonstrate excellence in science education in the following areas: (may be submitted in outline form)
 - A. Innovative Approaches
 - B. Leadership
 - C. Professional Activities and Growth
 - D. Other

- IV. Attach additional information (references, letters, articles, etc.) to this form when you submit the packet. (Letters of recommendation may be sent electronically)

Return the nomination packet by Friday, May 20th, 2011 to:

**Carl Bilotta
Chair MAST Awards Committee
C/o Deer Crossing Elementary School
10601 Finn Drive
New Market, MD 21774**

240-236-5900

Carl.bilotta@fcps.org



MAST ANNOUNCES ANOTHER ROUND OF INSTRUCTIONAL MINI-GRANTS

MAST will award instructional Mini-grants to MAST members for the 2011-2012 school year. With the success of previous years' Instructional Mini-Grant Programs, the MAST Executive Board has decided to continue the program. Each award will be for a sum of money up to \$500 to enable a teacher to purchase supplies and equipment for new and innovative projects to supplement his or her classroom instructional program.

Applicants, who must be MAST members, should submit an application via email showing a timeline, detailed budget, and plan for evaluation of the project. They should indicate how the project incorporates current science education reform movements such as the National Science Education Standards, Project 2061, Benchmarks, Maryland State Department of Education Content Standards and county outcomes among others. They should show evidence that their principal understands the scope of the project and concurs with its implementation. The merit of a proposal will be judged on the above criteria as well as the number of students that will benefit. Projects that will reach students at more than one grade level are especially encouraged. Upon acceptance, applicants must also provide a digital media record of how the funds were used with students.

Applicants can check the MAST web site for an application form and a rubric used in evaluating proposals. The deadline for submitting a mini-grant proposal is **Friday, April 15, 2011**. Proposal must be submitted as a Word document via email to carl.bilotta@fcps.org. The principal's letter of support should also be emailed or postmarked by April 15, 2011 to:

Carl Bilotta
Chair MAST Awards Committee
C/o Deer Crossing Elementary School
10601 Finn Drive
New Market, MD 21774

240-236-5900

Carl.Bilotta@fcps.org

An Interview by Elizabeth McCook, former MAST president and fortunate colleague of Michelle Shearer at Urbana High School- February 2011.

Years ago, Michelle Shearer, while still majoring in chemistry as a college student, spent some time volunteering in a deaf school. It was then that she realized she liked teaching. She enjoyed the energy and enthusiasm these students had for science. This fit right in with her family as her dad is a chemist and her mother an elementary school teacher.

Mrs. Shearer is currently a Chemistry teacher at Urbana High School in Frederick County, where she teaches AP Chemistry. She also has spent a few years in the past teaching Chemistry at the Maryland School for the Deaf in Frederick. Mrs. Shearer thinks “there’s a scientist in every student!” She supports STEM education as a national priority for all students, including minorities, women, special needs children, and children of all ages. She and her husband, George, a physics teacher at Urbana, have a daughter Carly who is five years old.

Her selection as Maryland Teacher of the Year gave her the prize of a new Chevy Cruz, a cash award, national travel opportunities and a Josten’s ring. However, with this recognition Mrs. Shearer now also has many obligations as she is to represent teachers from Maryland and for Maryland with speaking engagements, task forces, curricular committees, along with local committees and curriculum development. She has completed many TV, telephone and radio interviews and continues to participate in events that involve shaping education in Maryland. She has spoken to education majors at local universities and she will travel to Annapolis to meet with the legislators. She will be recognized and celebrated at Camden Yards with the other Maryland Teacher of the Year candidates, whom she went with to a retreat in Smith Island. With all of these commitments, Michelle has been provided a co-teacher for the rest of this semester who teaches along with her when she is in school and teaches for her when she is out of school, which has often been as much as 2 days per week.

When asked what advice she would give to science teachers in Maryland, Mrs. Shearer believes that all science teachers should anchor their science teaching in inquiry based instruction where the students are able to design their own experiments so they may take ownership of their learning and that technology is only a tool for learning. She thinks that new teachers should try to connect with a veteran science teacher at their school because of their experiences and the great ideas they use to engage learners. It is not necessary to reinvent the wheel and veteran teachers can be great resources. Although all teachers, she added, must then incorporate their own personal touches to their teaching style and classrooms.

Along with her recognition in Maryland, Mrs. Shearer has recently been named as one of four National Finalists for National Teacher of the Year. Her 2 day interview will occur next month in Washington DC and will include a TV taping, a dinner and an hour-long interview that will begin with her keynote address to the committee. MAST wishes her well with this great experience.

2011 has been designated the International Year of Chemistry

All chemistry teachers should be aware that the United Nations and the International Union of Pure and Applied Chemistry (IUPAC) have designated 2011, The International Year of Chemistry.

I encourage you to go to the American Chemical Society website (www.acs.org) and click on the International Year of Chemistry logo. There are lots of activities and resources for use by teachers, including an interactive calendar that features a short article on a variety of chemistry related topics, such as important discoveries, new developments, and other interesting information.

The focus of the celebration is to make the public more aware of the benefits to humanity that chemistry has made. Also, the designation hopes to stress the important role chemistry has to play in addressing global problems, notably, food, water, health, energy, and transportation.



Three Maryland Science Teachers Selected For Fellowship Program in Prestigious NSTA New Science Teacher Academy

ANNAPOLIS, Md. — November 15, 2010 — The National Science Teachers Association (NSTA), the largest professional organization in the world promoting excellence and innovation in science teaching and learning, in partnership with Astellas Pharma US, Inc. (“Astellas”); Bayer Corporation; and ServiceMaster, today announced that three out of the 47 science teachers chosen as Fellows in the 2010 NSTA New Science Teacher Academy are from Maryland. Selected from hundreds of applicants nationwide, the Fellows (listed below) will participate in a year-long professional development program designed to help promote quality science teaching, enhance teacher confidence and classroom excellence and improve teacher content knowledge.

Maitland P. Simmons-NSTA Fellows

- Donna Balado, Westminster High School (Westminster, Md.)
- Benjamin Brooks, Colonel Zadok Magruder High School (Rockville, Md.)
- Cristine Sanchez, Baltimore Polytechnic Institute (Baltimore, Md.)

“Each of the Fellows has conveyed a strong desire to develop their skills as teachers so that they can better foster their students’ interest in science,” said NSTA Executive Director Francis Eberle. “We are very proud of this year’s group of Fellows and are grateful for their commitment to science education and to their students.”

The 2010 Fellows were selected on the basis of several criteria, including showing evidence of a solid science background and displaying a strong interest in growing as a professional science educator. Each Fellow will receive a comprehensive NSTA membership package, online mentoring with trained mentors who teach in the same discipline, and the opportunity to participate in a variety of web-based professional development activities, including web seminars. In addition, each Fellow will receive financial support to attend and participate in NSTA’s 2011 National Conference on Science Education in San Francisco.

Astellas will fund the participation of 12 science teachers as Astellas-NSTA Fellows. Bayer Corporation will support 10 teachers as Bayer-NSTA Fellows and ServiceMaster will support two teachers, one as a TruGreen-NSTA Fellow and the other as a Terminix-NSTA Fellow. The remaining 24 science teachers will be supported by an endowment through NSTA and named Maitland P. Simmons-NSTA Fellows.

Launched during the spring of 2007, the NSTA New Science Teacher Academy, co-founded by the Amgen Foundation, was established to help reduce the high attrition rate in the science teaching profession by providing professional development and mentoring support to early-career science teachers. Since its inception, the Academy has provided high-quality professional development to nearly 600 science teachers nationwide.

The NSTA New Science Teacher Academy is a component of the John Glenn Center for Science Education campaign, a five-year \$43 million national effort to make excellence in science teaching and learning a reality for all U.S. students. This effort, one of the most significant ever undertaken by NSTA, will fund a body of forward-thinking programs and a state-of-the-art facility designed to promote leadership, learning, and advocacy in science education.

For a list of the 2010 Fellows or to learn more about the NSTA New Science Teachers Academy, please visit www.nsta.org/academy.

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The Arlington, VA-based National Science Teachers Association (www.nsta.org) is the largest professional organization in the world promoting excellence and innovation in science teaching and learning for all. NSTA's current membership includes approximately 60,000 science teachers, science supervisors, administrators, scientists, business and industry representatives, and others involved in science education.

About Astellas Pharma US, Inc. and Science WoRx

The Astellas culture and brand is committed to building community, helping others, encouraging integrity and inspiring people to make a difference, today, tomorrow and every day. Astellas Pharma US, Inc., located in Deerfield, Illinois, is a U.S. affiliate of Tokyo-based Astellas Pharma Inc. Astellas is a pharmaceutical company dedicated to improving the health of people around the world through the provision of innovative and reliable pharmaceutical products. The organization is committed to becoming a global category leader in focused areas by combining outstanding R&D and marketing capabilities. In the U.S., Astellas markets products in the areas of Anti-Infectives, Cardiology, Dermatology, Neuroscience, Transplant, and Urology. For more information about Astellas Pharma US, Inc., please visit our website at www.astellas.us or follow us on Twitter (@AstellasUS).

Established in 2010, Science WoRx is a mentoring program and online resource network to support science teachers' needs in and outside the classroom. Created by Astellas Pharma US, Inc., the program seeks to increase understanding of the role that science plays in human health and medicine, and to inspire the next generation of scientists.

About Bayer Corporation and Making Science Make Sense

Bayer Corporation, headquartered in Pittsburgh, is a subsidiary of Bayer AG, an international health care, nutrition and high-tech materials group based in Leverkusen, Germany. The company's products and services are designed to benefit people and improve their quality of life. At the same time Bayer creates value through innovation, growth and high earning power. The Corporation is committed to the principles of sustainable development and to its role as a socially and ethically responsible corporate citizen. Economy, ecology and social responsibility are corporate policy objectives of equal rank. In North America, Bayer had 2009 net sales of approximately 7.7 billion euros (about \$10.7 billion) and employed 16,300 at year end. For more information, go to www.bayerus.com.

Formalized in 1995, Making Science Make Sense is Bayer's Presidential award-winning initiative that advances science literacy across the United States through hands-on, inquiry-based science learning, employee volunteerism and a national public education campaign led by astronaut, scientist and educator, Dr. Mae C. Jemison.

About ServiceMaster

ServiceMaster currently serves residential and commercial customers through a network of more than 5,100 company-owned locations and franchised licenses. The company's brands include TruGreen, TruGreen LandCare, Terminix, American Home Shield, ServiceMaster Clean, Merry Maids, Furniture Medic, and Ameri-Spec. The core services of the company include lawn care and landscape maintenance, termite and pest control, home warranties, cleaning and disaster restoration, house cleaning, furniture repair, and home inspection. For more information, go to <http://www.servicemaster.com/>.

Kate Falk, NSTA
(703) 312-921

kfalk@nsta.org

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MARM 2011 – May 21-24 • You are cordially invited to participate in MARM 2011. Registration and Abstract Submission Now Open!

The Chemical Society of Washington Section of the American Chemical Society will host the 42nd Middle Atlantic Regional Meeting (MARM 2011) on the campus of the University of Maryland in College Park, Maryland from Saturday, May 21, to Tuesday, May 24. The meeting's theme for this event is "International Year of Chemistry 2011." This meeting will feature national and international leaders in the chemical sciences and will include a broad selection of exciting and informative symposia.

Keynote speakers include Eric Wachsman and Clifton Barry.

Several Workshops are planned, and there will be events that feature career development, funding opportunities, and education. Website: www.marmacs.org

- Meet your colleagues
- Accelerate your career
- Renew, Reward, Re-energize
- Make sure you attend
- Networking Opportunities
- Catalyst for success
- Top speakers
- Be part of it!

Be part of this special event with speakers from industry, education and government at a variety of TECHNICAL AND POSTER SESSIONS.

Symposia focused on - Life Sciences, Materials Sciences, Chemical Education, Supramolecular Chemistry and Molecular Recognition, Advances in Organic Synthesis, Nucleic Acid Chemistry, Bioactive Small Molecule Design and Discovery, and Medicinal Chemistry of Anticancer Drugs. Synthetic Chemistry, Damage, Repair, and Mutation of DNA, Frontiers of Structure and Dynamics Using NMR Spectroscopy, Medicinal Chemistry of Anticancer Drugs, and Nanoparticle Metrology. New Technologies for Lithium Ion Batteries, Chemistry of Graphitic Materials, Advances in Terahertz and IR Spectroscopy. Redefining the Kilogram and Avogadro's Number, Metal-Mediated Small Molecule Activation and Functionalization, and Chemistry and Materials Composition of Cultural Heritage Materials. Ambient Ionization Methods in Biological Mass Spectrometry, Neutraceutical and Food Chemistry: An Exciting Career for Chemists, Applied Methods for Separation Science, the Chromatography Award Symposium, and Cheminformatics and Bioinformatics: Working Together to Address Systems Chemical Biology.

MEETING HIGHLIGHTS include a Sunday dedicated to Science Education & Career Development. There will be Workshops, Short Courses, Vendor Exhibitions, and a special symposium on Degree Opportunities at Federal Laboratories will also be featured.

Email: contacts@marmacs.org

General Chair: Mike Doyle

Program Chair: Phil DeShong

Treasurer: Carl Womack

Exhibits Chair: Dolores Jackson

Flinn Scientific Announces

Free Online Safety Training Videos for Science Teachers

Flinn Scientific's highly regarded safety training is now available to all science teachers—everywhere and anytime—absolutely free on the Flinn Web site at www.flinnsci.com.

The critical safety information every high school and middle school science teacher needs to know is covered: liability, right-to-know laws, personal protective equipment, MSDS requirements and so much more. The videos are efficiently organized in concise chapters for easy viewing.

Discover how Flinn's safety training will give all science teachers the confidence and knowledge to improve laboratory safety:

- Comprehensive Safety Training—10 Major Topics, Over 40 Videos
- Maximum Convenience—Available online 24/7
- Get Flinn Certified in Safety by Taking Online Assessments
- Free Professional Development Opportunities
- No Fees! It's All Free!

Teachers have the option of viewing individual videos or following a course sequence and completing online assessments to receive certification. All science teachers can be "Flinn Certified in Safety." Additional free videos covering the following topics are also available: Laboratory Design, Safety and the Law, and Cleaning the Chemical Storeroom.

To begin your free safety training go to flinnsci.com and click on "Free Online Laboratory Safety Training"

For more information please contact:

Flinn Scientific, Inc.

P.O. Box 219

Batavia, IL 60510

1-800-452-1261

E-mail: flinn@flinnsci.com

Web site: www.flinnsci.com

Spring 2011 Professional Development Opportunities

Dates: Tuesday, March 22 – Urbana MS, Frederick, MD

4:00 – 7:00PM

DiscoverGenomics! mobile laboratory will be onsite

Tuesday, May 24 – Hereford HS, Parkton, MD

4:00 – 7:00PM

MdBioLab mobile laboratory will be onsite

Cost: Free MAST members
\$10 Non-MAST members
\$15 Non-MAST members, includes one-year membership

Program description: MdBio Foundation, the J. Craig Venter Institute (JCVI) and the Maryland Association of Science Teachers (MAST) will hold two sessions of a two-hour professional development workshop following a light dinner and networking for Maryland science teachers.

The session includes a presentation from JCVI's Dr. Orianna Bretschger, a scientist in the Electromicrobiology group at JCVI-West in San Diego working on microbial fuel cells. The session also includes two hands-on workshops:

- Introduction of Winogradsky columns and expanded molecular analysis activities JCVI offers for schools
- Inquiry-based activity focused on methods to remove oil from the environment, including oil eating microbes

The workshops include suggestions on how to incorporate each activity at all grade levels; teachers will leave with full activities for both workshops that they can use in their classroom.

Maryland middle and high school science teachers

Register online: Visit www.mdbiolab.org to register online for one of these sessions

Primary contact: Jennifer Colvin
Director of Education & Workforce Programs, MdBio Foundation
9713 Key West Ave, Suite 100, Rockville, MD 20805
240.243.4053 jcolvin@mdbiolab.org

Climate Science Workshop - The Impacts of Climate Change on Living Resources in the Chesapeake Bay

The NOAA Environmental Science Training Center is offering a series of workshops for environmental educators on climate change and the impacts of climate change on the Chesapeake Bay. This workshop will bring together educators and scientists across the Chesapeake Bay region to explore the science that drives our understanding of climate change and find ways to incorporate that science into our education programs for students, teachers and the general public. Session 2 of this four-part workshop series is intended to be a collaborative process that will provide participants with:

- In-depth knowledge of the impacts of climate change on living resources in the Bay and its watershed
- An introduction to scientific work being conducted in the Bay area that explores questions related to climate change,
- Access to resources for teaching about climate change,
- Experience with hands-on activities for exploring issues related to a changing climate, and
- Opportunities for stewardship actions that can address the causes and the consequences of a changing climate.

Each workshop session is meant to be independent of the others, you do not have to have attended the 1st session in order to register for the other sessions. For more information on the workshop and registering:

<http://chesapeakebay.noaa.gov/environmental-science-training-center/upcoming-trainings>

American Association for the Advancement of Science (AAAS) Innovative High School Science Teacher Award - Deadline: May 27, 2011

http://www.aaas.org/aboutaaas/awards/hs_scied_leadership/

Call for nominations of U.S. high school science teachers for the 2011 AAAS Leadership in Science Education Prize. The \$1,000 prize honors a high school science teacher who has advanced science education by developing and implementing an effective strategy, activity, or program. The winner will also receive a complimentary one-year institutional subscription to Science magazine and be invited to attend and make a brief presentation at the annual Shanghai International Forum on Science Literacy of Pre-college Students as a guest of the Shanghai Association for Science and Technology.

Human Health and Climate Change: NOAA-funded Studies Reveal the Connections

<http://oceanservice.noaa.gov/news/weeklynews/mar11/ohh-climate.html>

A panel of scientists recently unveiled new research funded by **NOAA's Oceans and Human Health Initiative** (OHHI) at the 177th annual meeting of the American Association for the Advancement of Science in Washington, DC. These three studies demonstrate how climate change could increase human-health risks originating from ocean, coastal, and Great Lakes ecosystems.

All of Earth's Water in a Single Sphere

<http://ga.water.usgs.gov/edu/2010/gallery/global-water-volume.html>

This illustration shows the size of a sphere that would contain all of Earth's water in comparison to the size of the Earth.

Consumption and the Environment Webinar Series

<http://yosemite.epa.gov/R10/ECOCOMM.NSF/climate+change/consumption>

This free webinar series is sponsored by EPA's West Coast Climate and Materials Management Forum, with archived presentations available after the webinar. The series, on the first Tuesday of the month, will explore how we can reduce greenhouse gases by making more sustainable choices that support a vital economy.

Global Climate Change Learning Modules from the Association of American Geographer's

<http://globalgeography.aag.org/GlobalClimateChange1e/index.html>

This learning module from the Association of American Geographer's Center for Global Geography Education examines how climates have changed historically, and how the climate is currently being influenced by the activities of humans. Four case studies are included in the module, each focusing on a different region - Australia, The United States, Singapore, and Southeast Asia. Free registration is required for complete access to all the resources.

The Natural Inquirer – Climate Change Edition

<http://www.naturalinquirer.org/Climate-Change-Edition-i-29.html>

The Natural Inquirer is a middle school science education journal produced by the United States Forest Service where scientists can share their research with middle school students. Each article tells you about scientific research conducted by scientists in the USDA Forest Service. In this edition the articles focus on the effect that climate change may have on animals, plants, and forests. You will also learn how scientists are studying climate change. Articles include:

- Back to the Future: Using Dead Trees to Predict Future Climates
- Did They Make the Gradient? Climate and Stream Temperatures Now and Into the Future
- It's a Small World: How Oceans and Climates Can Affect Wildland Fires Thousands of Miles Away
- Moving on Up: The Possible Impact of Climate Change on Forest Habitats
- The GLAS is Half Full: Satellites and Changing Tropical Forests
- There's Snow Place Like Home: Tracking the Range of Wolverines Over Time

From the Yale Forum on Climate Change and the Media: AAAS Media/Science Panel Highlights Differences Distinguishing Science and Journalism

<http://www.yaleclimatemediaforum.org/2011/03/aaas-media-science-panel-highlights-distinguishing-differences/>

An AAAS panel delves into the proper role of media in 'convincing' the public about climate change and explores differing views on what precisely makes news, helping illustrate scientists' and media's sometimes vast cultural differences.

Global Climate Change Issues and impacts: Oregon State University Extended Campus- On Line instruction.

When: June 20 – July 15

Cost: \$50.00 + 25.00 admission fee to OSU.

Important Notes:

- Students be admitted and registered for the course no later than June 19, 2011
- 808 is professional credit and does not apply to a degree.
- This course is in workshop format. All materials will all be posted on line at the beginning of the class and students can work through the course at their own pace, however it must be completed by the July 15 date.

Course description: This course is geared for teachers and will provide teaching curriculum and activities for the classroom. This subject can be overwhelming for students and course discussions will focus on not only materials that teach the major issues of climate change but will feature activities that present positive actions to empower students to feel they can make a difference. Climate change is being expressed in various bioregions of the world from coral reefs, to forests to tundra. Its impacts on the oceans, a major driver of weather and climate, as well as acidity and sea level rise will be presented.

Contact Vicki Osis vjosis@peak.org for more information and registration instructions.

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2011 Thacher Environmental Research Contest for Grades 9-12

Entries Due April 11

\$3,500 in Cash Awards Available!!!

One month remains until entries are due in the 2011 Thacher Environmental Research Contest. Sponsored by the Institute for Global Environmental Strategies, the contest challenges high school students (grades 9-12) to conduct innovative research on our changing planet using the latest geospatial tools and data, which in recent years have become increasingly accessible to the public.

The best projects will receive cash awards in the amount of \$2,000 for first place, \$1,000 for second place and \$500 for third place. Entries can be submitted by individuals or teams. In the case of team entries, the cash award will be split equally among the winning team members. Winners also will be featured in an Encyclopedia of Earth article.

In addition to the student prizes, teachers of the first-, second- and third-place students or teams will receive a \$200 amazon.com gift card. If participation is part of an after-school club or other activity independent of school, the student or team can identify an adult "coach" who would be eligible for this award (e.g., a parent, club leader, etc.).

Entries must be received by April 11, 2011, and will be judged by IGES staff.

For more information on the 2011 Thacher Environmental Research Contest, including a list of resources for geospatial data, please visit www.strategies.org/ThacherContest.

CONTACT

Dan Stillman

Institute for Global Environmental Strategies

(703) 312-7138 (Phone)

(703) 312-8657 (FAX)

Email: dan_stillman@strategies.org

Get your hands wet and feet muddy this summer!

The New England National Estuarine Research Reserves are excited to be offering four-day "Teachers on the Estuary" (TOTE) professional development workshops again this summer!

The workshops are research and field-based professional development opportunities designed to improve teachers' and students' understanding of estuaries and coastal climate change impacts using local research examples. The workshops will provide resources and hands-on experiences to support the incorporation of estuary, watershed and coastal climate change topics into classroom teaching.

Applications are due on April 29th for the 'Teachers on the Estuary' professional development workshops.

The workshops are designed for middle and high school teachers, but other educators are welcome to apply.

Participants will work with local scientists and coastal educators to explore estuary habitats, practice scientific field activities, understand how climate will shape our coasts and bring data into the classroom.

The workshops are free, but space is limited so an application is required (available on the websites listed below).

Lodging (if needed) and most meals will be provided.

Participating teachers will be awarded:

- \$200 project mini-grant
- \$150 of equipment
- \$100 stipend

2011 "Teachers on the Estuary" Opportunities

Maine Dates: July 11-14, 2011

Location: Wells National Estuarine Research Reserve, Wells, ME

Application: www.wellsreserve.org/blog/5-teachers_on_the_estuary

Rhode Island Dates: July 25 - 28, 2011

Location: Narragansett Bay National Estuarine Research Reserve, Prudence Island, RI and Audubon Society of Rhode Island, Environmental Education Center, Bristol, RI

Application: www.nbnerr.org/tote.htm

Massachusetts Dates: August 8-11, 2011

Location: Waquoit Bay National Estuarine Research Reserve, Falmouth, MA

Application: www.waquoitbayreserve.org/teacher-training.shtml

All applications are due by April 29, 2011.

The workshops are funded by a grant from the NOAA Bay-Watershed Education Training (B-WET) program.

Calling all K-8 teachers!

Tell NEEF what you need to incorporate more project-based environmental learning

The **National Environmental Education Foundation** (NEEF) wants to hear from you! Answer a survey and tell us what you need to incorporate more project-based environmental learning in your teaching, and you'll help inform the design of professional development opportunities for K-8 teachers.

As a thank you, the first 200 survey respondents will receive a Recycled Pen, Note and Flag Set by mail. Eligible respondents will also be entered into a random drawing to receive one 16 GB iPad 2 with Wi-Fi valued at \$499. Submit your survey by April 1 to be entered into the drawing.

Click here to take the survey

Eligible surveys must be received between **March 9, 2011** and **April 1, 2011**. The winner will be notified on April 4, 2011. No purchase necessary. All survey participants eligible for the drawing must be at least 18 years old, residents of the U.S., and meet all other eligibility requirements. Void where prohibited. For the complete contest rules see

http://eeweek.org/survey_drawing

CLIMATE CHANGE INDICATORS IN THE GULF OF MAINE

The EcoSystem Indicator Partnership (ESIP) of the Gulf of Maine Council on the Marine Environment has released "Climate Change in the Gulf of Maine", the second of seven indicator-specific fact sheets. The fact sheet summarizes data for three key indicators: sea level, air temperature and precipitation. It introduces the concept of indicators for tracking change and demonstrates their value in better understanding the wide-ranging effects being seen in the region - <http://www.gulfofmaine.org/esip>.

A feature story in NASA's Earth Observatory website addresses the relationship between ocean currents, temperatures, and the health of phytoplankton in the Northwest Atlantic Ocean. Images show the concentration of chlorophyll and sea surface temperatures -

<http://earthobservatory.nasa.gov/IOTD/view.php?id=49492&src=eoaiotd>.



MEMBERSHIP FORM

Welcome to MAST! Please print, complete, and mail this form to the address below.

Type of Membership – Please check one space in each column.

- | | |
|--|----------------------------------|
| <input type="checkbox"/> 1 year – \$15.00 | <input type="checkbox"/> New |
| <input type="checkbox"/> 3 year – \$40.00 | <input type="checkbox"/> Renewal |
| <input type="checkbox"/> Student – \$5.00 (1 year) | |

Member Information – Please fill this out completely!

Last Name		First Name		Level – please check all that apply: <input type="checkbox"/> Pre-K <input type="checkbox"/> Elementary <input type="checkbox"/> Student <input type="checkbox"/> Supervisory <input type="checkbox"/> Middle/Jr. High <input type="checkbox"/> High School <input type="checkbox"/> College/University <input type="checkbox"/> Organization (please specify) <input type="checkbox"/> Other (please specify)
Street Address				
City		State	Zip	
Local School System		School		
Home Phone	Work Phone	Cell Phone		
Email Address		Alternate Email Address		

I would like to donate \$ _____ to support:
 the MAST Awards for Excellence in Science Education Program
 the MAST Mini-Grants Program

Please make your check payable to the Maryland Association of Science Teachers (MAST) and send it with this completed application to:
 MAST
 P.O. Box 368
 Finksburg, MD 21048

For Office Use: Date Received _____ Amt Paid _____ Membership to: _____

Cash _____ Check Number _____ Check date _____ MER 4.11