MAST
MARYLAND ASSOCIATION OF SCIENCE TEACHERS

eRAPPER

Monthly Newsletter of the Maryland Association of Science Teachers
March 2010

Editor's Note

Welcome back everyone! Has your month been as busy as mine? I bet. Here we are chugging along in the school year. Those of us teaching biology are a bit focused on early May.

To that end, have you checked out the updated MSDE online course for biology? (http://msde.mdk12online.org/)

It's a good resource for remediation as well as activities for the classroom. I've used the carbohydrate simulation in my classes as well as parts of the mitosis lesson. Our colleagues at the state would love to hear feedback from us: what do we think and how have we used the site. Please send in any constructive criticism or enthusiastic praise!! Jackie's BookMark It! for March has two sites this month. Let me know if you use them and how they worked for you!

Gary has given us another fun demonstration this month. Dancing raisins looks like an engaging way to demonstrate density and the chemical reaction creating carbon dioxide. Let us know how you incorporated this demonstration into your classroom.

Do you have a great plan you'd like to implement? Could you use some funding to help move it along? Great timing as this month's issue contains information and an application for MAST's Mini-grants. Awards are available to MAST members with a great idea. Details start on page 9.

Another opportunity for grant money can be found on page 16. ACS has money for innovative teachers.

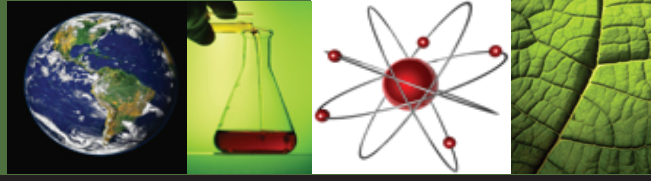
Be sure to read the President's message carefully. As I read it, my memory paraphrased Eldridge Cleaver's famous line, 'Be part of the solution not part of the problem'!

Did you attend the NSTA conference in Philadelphia? Would you be willing to share your learning? Would you be willing to share pictures? If so, send them my way and I'll put together a special column next month.

There is much more in this issue so please take your time reviewing it. Feel free to share it. And, of course, let me know what you think! I love hearing from my 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

New Science Standards—Be a Part of the Process

"The best way to predict the future is to invent it."
From the documentary "imagine it2" at imagineitproject.com

The atmosphere surrounding K-12 education is undergoing change. In recent weeks, we've seen the reauthorization of ESEA begin to burble to the top of the legislative agenda; we've heard about Common Core Standards; and we've seen the recent release of a draft version of new math and language arts standards. Additionally, since January 2009, the emphasis on STEM education from the federal level has been intense. As scientists and science educators, we have to be asking-- perhaps boldly so as to be noticed, perhaps more meekly so as to avoid notice—"What about science?" As we know, Science matters!

Change is coming to science education too, and we are fortunate that there is concerted effort among several leadership organizations in science education with a commitment to ensuring the change is strategic and measured. An unprecedented partnership has been formed recently between the National Science Teachers Organization (NSTA), the National Research Council's Board on Science Education (BOSE), the American Association for the Advancement of Science (AAAS), and Achieve. You may recall the high quality, individual efforts from the first three organizations during the 1990's that gave us the influential "Scope, Sequence, and Coordination Project," the "National Science Education Standards," and "Science for All Americans/Benchmarks." Now, they are joining forces to examine and implement the significant new knowledge in the areas of learning, cognition, and science as well as taking advantage of the winds of change to develop new science standards.

Their efforts are focused, and the timeline is condensed. But, by joining forces, the intention is to decouple a vastly complex process into a unified and manageable project that will positively impact how children learn science. The first step, well underway, involves the development of a Conceptual Framework. This phase is headed by BOSE and several content-specific subgroups led by some of the most respected minds in science education. The list of those involved is impressive, includes several Nobel laureates, and is independent of federal control. Their goals are lofty and complex, but generally this phase is to define knowledge that is core to science literacy with an emphasis on clarity such that educators can effectively see the vertical interrelationships among the grade levels and have sufficiently defined learning expectations that state and local curricula can ensure students graduate as scientifically literate. Their work began in November 2009, and the goal for completion of a draft conceptual framework is the summer of 2010. At that point, BOSE will make an unusual move to seek constituent feedback with an eye to revising and releasing a final Conceptual Framework around December 2010.

Achieve will assume leadership of the project at that point to leverage their expertise in learning standards to ensure a draft of new standards is available for public vetting by the spring of 2011—about 1 year from now. After revisions are incorporated, we can expect to see a final version of new science standards in December 2011--a very aggressive timeline!

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President's Message

Clearly there is urgency to this mission. Importantly, however, this expediency is not at the expense of the thoughts and concerns of those most closely tied to the learning of students—the classroom teacher. There are several opportunities for you to be an active part of the process, but you've got to be ready. Don't miss your chance to determine the direction of science education for years to come. Our children's minds are our greatest natural resource, and we absolutely must be sure we don't squander any opportunities to help them grow and succeed.

Some important points to remember. This process is unprecedented and bold. The participants are learning as it unfolds. This project does not attempt to assail assessment of student learning. Though there is agreement among the leadership that accountability of learning is a high priority, it is far too complex to include in this already challenging project.

Recently, Francis Eberle, the Executive Director of NSTA, said, "The good news [in science education] is that everyone is looking at STEM education. The bad news is that everyone is looking at STEM education." You have the opportunity now, through your membership in MAST, to be a part of the process to determine where science and STEM education go in the future. Don't miss out. Contact me or any MAST Executive Board member anytime. Seize this opportunity to be a part of the solution. Science matters! Let's begin to make the future today.

Warmest regards

Mary

mcwelle@carrollk12.org

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Each month ***E-rapper*** will feature a site for you to bookmark for future use in your instruction. I am featuring two sites this month. Bookmark them both even if you can't explore them right away!!!

Check out **Toxtown**, http://toxtown.nlm.nih.gov, it is a student friendly website that provides an opportunity for students to explore without a lot of direction from the teacher. The site map with pictures guides you through the entire site.

In today's educational climate when we are promoting S.T.E.M. in our curriculum, a site such as Toxtown allows students to navigate a website while investigating chemicals, and the effects of those chemicals on human health, that might be present in their own environment.

Students and Teachers have access to short audio clips that allow you to integrate the mini- topics into a lesson as those needed hooks in our lessons. Also a printable brochure in both English and Spanish is available. A teacher page features classroom activities, resources and links that support biology and environmental science.

Our second featured website is
http://www.learnthings.co.za/CDrange/Sec_Science/Home/default.htm

This site offers great graphics and interactive short lessons of two to three minutes that supplement your curriculum. They help the graphic learner.

The site features physics, biology and chemistry concepts in two levels, labeled junior secondary and senior secondary. I recently used one of the mini lessons to show how balanced and unbalanced forces work. (The graphics on this site were so much more engaging than my hand drawn arrows and squares!)

Jackie Geer, Montgomery County

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MDK12.org – Tools for Planning, Assessment, and Instruction

Did you know that the Maryland State Department of Education has resources for parents, teachers, and students in all science courses? If you have never browsed the site, check it out over spring break!

Here are some great links to state-based teacher resources:

1.) **State Curriculum Toolkit** (http://mdk12.org/instruction/curriculum/science/vsc_toolkit.html)

Did your chemistry students learn the different bonds in biology? Does a seventh grader need to know how to convert from English to SI? Save yourself time and headaches by viewing skills and topics students should learn in K-12 and the pace at which they should be learned.

2.) **Writing Better Assessments** (http://mdk12.org/data/progress/assessing.html)

MSDE is committed to properly assessing learning. Use this link to help you write tests that assess learning outcomes. If you are overwhelmed by data analysis, the link also helps you formulate a classroom plan for analyzing student progress with measurable indicators.

3.) **Item of the Week** (http://mdk12.org/index.html - below "Assessments," bottom left hand links)

If you teach HSA or MSA courses, you can use these quick questions as warm ups that help students practice the types of questions they see on state tests.

4.) **Classroom-Focused Improvement** (http://mdk12.org/process/cfip/index.html)

If you team teach or plan vertical articulation, this link has fantastic resources for making meetings more effective. The link gives step-by-step plans for starting the school year off with effective CIP meetings, then leads meeting facilitators through a year's worth of agendas for improvement and development.

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

School Improvement in Maryland

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DEMO

OF THE MONTH

Dancing Raisins

I'm a firm believer that students should look forward to coming to science classes. There's a world of wonder in each of us and seeing science come alive through classroom demonstrations is an excellent way to engage students. This is the second in a series of demonstrations that can be used in most physical science classes at either middle school or high school levels.

Raisins are denser than water and, therefore, sink when placed in water. When raisins are placed in a solution of baking soda and vinegar, the raisins rise to the surface due to the carbon dioxide gas that adheres to them. When the raisins reach the surface, the gas is released, and the raisins sink again. The raisins appear to take turns riding up to the top and falling back to the bottom. It's fun to add a back-light to the beaker.

Materials

1 1000-mL beaker (If not available, use a empty two-liter soft drink bottle with the top cut off)

3 Tsp baking soda

4-5 Tbsp vinegar 12- 15 raisins

Water

Procedure

1. Pour the baking soda on the bottom of the container. Add tap water about ¾ full. Stir the solution until the baking soda dissolves. (By doing this before class time, students don't realize what's happening at first.)
2. When you're ready to start the demo, separate the raisins and add them to the container, telling students you're going to make the raisins dance.
3. Pour in the "dance potion" by adding the acetic acid (vinegar). If the raisins do not begin to "dance" after a few minutes, add more sodium hydrogen carbonate and acetic acid.
4. You can substitute dried spaghetti noodles broken into one inch pieces if you like.

Gary Fuhrman, Carroll County

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Science Reviews
Chemistry in a minute

CHEMISTRY

Teaching science in elementary school? Are you wishing you had some help? Well, here you go! Each month, you will see a new feature entitled, "Science Reviews in a Minute." These science reviews provide students in grades 3-5 with a quick thought provoking science question. These reviews will also offer teachers the opportunity to access science review questions without having to do all the work of searching. Teachers' creativity will generate the most appropriate use for their classrooms. However, some ideas for use include morning work time, as a station during language arts time, follow-up work for when students have completed work, and right after lunch or recess. If you find these reviews helpful, have more to offer or have found ways to incorporate them into your day, please let us know and we'll include them in this column!

Below is a picture of various beads that all have different sizes, shapes, and colors. Which statement best describes their characteristics?

(Image courtesy of Google images)

a. Compound
b. Mixture
c. Solution
d. Substance

Carl Bilotta, Frederick County

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MAST 2010 Mini-Grants

MAST ANNOUNCES ANOTHER ROUND OF INSTRUCTIONAL MINI-GRANTS

MAST will award instructional Mini-grants to MAST members for the 2009-2010 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 time-line, 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. 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, March 26, 2010**. 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 **March 26, 2010** to:

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

240-236-5900
Carl.Bilotta@fcps.org

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MARYLAND ASSOCIATION OF SCIENCE TEACHERS

2010 Mini-Grant Application Form for MAST Members

ALL APPLICATIONS MUST BE RECEIVED VIA EMAIL NO LATER THAN MARCH 26, 2010.
Applicants will be notified of Mini-grant awards by early April.

Member's Name _____

Project Title _____

Home Address _____

Phone (home) _____ e-mail _____

School Name _____

School Address _____

School Phone _____ fax _____

Focus of the Proposal _____

(National Science Education Standards, Project 2061, Benchmarks, Maryland State Department of Education Content Standards and county outcomes, other)

Grade-level/s of students affected by grant _____

Number of students affected by grant _____

Amount requested (Maximum $500) _____

Statement of the Proposal _____

Proposal Objectives/ Goals _____

On separate page/s submit a minimum of a paragraph each addressing the following points:

- The project time-line including projected date for required article for the MAST Rapper
- A plan for evaluation
- How your project incorporates the ideas of current science education reform movements
- A detailed budget for the project, including names of suppliers (not to exceed $500). (Receipts of expenditures will be required by the MAST treasurer.)
- **A principal letter that shows evidence of their understanding of the scope of the project and that they concur.**

Criteria that will be used to judge the merit of the proposal will include the above items as well as the number and grade level/s of students that will benefit. Projects that will reach students at more than one grade level and for more than one year are especially encouraged. For your information, a rubric for the evaluation of the projects is included at the end of this application.

Proposals must be sent electronically in MS Word format by March 26, 2010 to: **carl.bilotta@fcps.org.**

The original of your principal's letter of support for the project's implementation during the 2010-2011 school year should be postmarked by March 26, 2010 and be mailed to:

Carl Bilotta
c/o Deer Crossing Elementary School
10601 Finn Drive • New Market, MD 21774
240-236-5900 • Carl.Bilotta@fcps.org

If you are not a MAST member, please send your membership application form (on the web site or in the MAST Rapper) and dues to the membership chairman. Only Mini-Grant applications from current members will be considered.

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GRANT EVALUATION FORM

Evidence of linkage to:
National Science Education Standards, Project 2061, Benchmarks,
Maryland state content standards, MSPAP, Maryland and county outcomes, other
specific mention of linkage to focus area(s): mention how strategies support/address the focus _____**(5)**

Clearly defined objectives
specific mention of behavioral objectives/goals that support the focus _____**(5)**

Clearly defined product
a complete plan- engagement through evaluation _____**(5)**

Activities which support the objective
evidence of feasible and appropriate instructional activities which support objectives/goals _____**(5)**

Number of students/grade levels/years
evidence of several classes/grade levels involved _____**(3)**

number of students benefiting
continuation of project/investment for ____ years
Evidence of partnerships such as vendors, private sector, and other contributions _____**(1)**

Evidence of collaboration with other teachers
evidence of integration with other sciences or other content areas;
and/or evidence of peer collaboration or team teaching _____**(2)**

Detailed Budget
expenditures support only the proposed project, limited to materials, equipment;
detailed list with catalog numbers/supplier's name _____*(5)*

Timeline addresses project parameters
article for MAST Rapper after implementation _____**(5)**

Letter of support
support from principal indicating school's commitment _____**(1)**

Discretionary
committees impressions of likeliness to result in a quality product _____**(5)**

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Educational Opportunities

First ever USA Science & Engineering Festival provides many opportunities for teachers and students to participate

The first USA Science & Engineering Festival is an all out celebration of science and will descend on the greater Washington DC area in October 2010. The Festival kicks off on 10/10/10 and features several programs for local area schools, including the Nifty Fifty and Lunch with a Laureate program. The event culminates in a 2-day Expo on the National Mall, that gives students the chance to explore all facets of science and engineering through hundreds of free, hands-on activities. Over the next few months we will keep you abreast of the many opportunities for teachers and students to participate. For more information on the Festival visit www.usasciencefestival.org

Here are two great opportunities for your students (more programs will be announced soon):

Have your students create a hands-on science activity for the Expo on the National Mall:
The Expo will feature over 350 of the nation's leading science & engineering organizations with hands-on activities. High-school student groups or science clubs are invited to create exhibits to show others how much fun science can be.

Rubik's Cube Tournament for student teams – winning teams win cash prizes – free teacher workshop – first 30 teachers receive free Math Education Kit
The Tournament will consist of teams of eight, K-12 only, who will be competing for the fastest time to collectively solve 25 Rubik's Cubes. All teams will compete in the preliminary Tournament to be held on Thursday, October 21, 2010, at the National Electronics Museum. The top six finalists will advance to the Grand Final to be held on Saturday, October 23, 2010, as part of the USA Science & Engineering Festival Expo on the National Mall. **You *CAN* Do the Rubik's Cube** is a math education program that can be integrated into the school curriculum and/or used as an educational outreach activity through after school clubs, community youth organizations or any environment that encourages learning activities. The first 30 teachers/coaches who register a student team for the tournament AND attend the teacher/coach orientation workshop are eligible to receive a free Math Education Kit valued at $150. Registration Deadline April 30.

For more information about the Tournament visit
http://www.usasciencefestival.org/index.php?option=com_content&view=article&id=88&Itemid=93

Questions? Please email Ruth Kiefer at rkiefer@mindspring.com

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NSTA BALTIMORE AREA CONFERENCE

"Charting the Course to Excellence"

Baltimore, MD • November 11–13, 2010

CONFERENCE STRANDS include:

- Teaching Science in the 21st Century
- Embracing the World from our own Backyard: Environmental Education
- Building Tomorrow's Workforce: Science, Technology, Engineering and Mathematics Educ.

Please Contact Elizabeth McCook, NSTA Baltimore 2010 Program Chair, with your questions at Elizabeth.mccook@fcps.org

Transform Your Classroom with an ACS-Hach High School Chemistry Grant

The ACS-Hach High School Chemistry Grant is awarded to chemistry teachers with innovative ideas that transform classroom learning, foster student development, and reveal the wonders of chemistry. Applicants can request up to $1,500 to support their ideas.

Applications are due on April 1, 2010. Apply for the ACS-Hach High School Chemistry Grant today at www.acs.org/hach!

Kenetia K. Thompson

Program Manager, ACS-Hach Programs

1155 16th St., NW | Washington | DC 20036

T: 202 776 8178 | F: 202 833 7732

E: k_thompson2@acs.org

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Educate to Innovate – Join National Lab Day

On November 23rd, 2009 President Obama announced National Lab Day as part of the Administration's Educate to Innovate campaign. National Lab Day (NLD) is an effort to bring more authentic, hands-on, discovery-based lab experiences to students.

This year's National Lab Day will culminate in a series of events and activities at the local, regional and national level during the first week of May 2010. But it is more than just a day. It is a nationwide movement to support science, technology, engineering, and math (STEM) education in our schools. It is teachers working with community volunteers and communities rallying around teachers and scientists and other STEM professionals donating their time and expertise to our schools. National Lab Day seeks to foster partnerships between teachers, schools, STEM professionals, volunteers, federal agencies, and professional organizations that will continue long after the first National Lab Day.

NLD Partners

National Lab Day is a partnership between federal agencies, foundations, professional societies, and other STEM-related organizations. The National Science Teachers Association is a founding partner of NLD. The National Institutes of Health, the National Science Foundation, and the Department of Energy are among the federal agencies providing support and expertise. The Jack D. Hidary, Bill and Melinda Gates and the MacArthur Foundations are joining with industry to finance the effort.

Getting Started

It's a simple process to join National Lab Day. Teachers register on the National Lab Day website (www.nationallabday.org) and describe the project they want or need in their classroom. Whether its additional lab equipment, personal mentoring from a scientist, a visit to a working lab, technology support, internships, help with a lesson plan, up-to-date career information, help with a science fair project, or just an extra set of hands for a class project, teachers know best what is needed to improve their students' hands-on learning experiences.

NLD is teacher driven. After posting their projects and requests, teachers will be matched with a list of local volunteers. These volunteers-- university STEM students, local scientists, engineers, STEM professionals and other members of the community who have also joined the NLD hub--will form a local community of support, helping the teacher to achieve desired objectives. The NLD website will also connect teachers to the resources, funding opportunities, and information on relevant programs and events that they need. Teachers can also use the site to connect with volunteers, raise funds, and schedule face-to-face meetings and events.

The Role of Volunteers

Volunteers will be able to browse teacher requests and will be automatically notified of any "matches" to teacher requests. Volunteers can respond to specific teacher requests or they can offer general expertise, resources, and/or assistance.

Learn more about National Lab Day at www.nationallabday.org, and join the scores of teachers who have already signed up to bring more hands on learning to their students.

National Lab Day
A National Barn-Raising for Hands-On Learning

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Maryland Association of Science Teachers
Continuing Education Event

MAST, NIH, and National Library of Medicine Invites you to a Continuing Education Event:

Expand Your Instructional Tool Kit with Online Resources from the National Library of Medicine (NLM)

United States National Library of Medicine National Institutes of Health

May 6th, 5:30 to 8:00 pm at the NIH campus, Bethesda, MD

Program

5:30-6:15 Arrival and a light supper with your colleagues

6:15-6:45 Session 1 6:50-7:20 Session 2 7:25-7:55 Session 3

Sessions Introduce the Following Web Resources:

Block One: Forensic View, Harry Potter's World and Visible Human Project
Learn about creative lesson plans to introduce or reinforce topics such as genetics, forensics, and biology

Block Two: Genetics Home Reference and Medline Plus
Discover resources that help link human biology to health and diseases

Block Three: Tox Town and ToxMap – Hands on session in the computer lab
Explore interactive environmental health sites to learn about the effects of toxicological hazards on human health

Costs: Free for MAST members; $10 for guests, or $15 to include this event & a 1-year MAST membership (regularly $15). Light supper included. Payment for the event will be taken at the door for guests & new members.

RSVP by April 30th. Session will fill up fast as this promises to be a great event. To RSVP please send an email to Jacquelyn_S_Geer@mcpsmd.org

Check for updates on this event at <http:www.emast.org>.

****Did you attend the MAST Fall Conference? If you did, then this meeting is free for you!****

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Maryland Association of Science Teachers

National Lab Week Event

MAST Invites you to celebrate National Lab Week with a hands-on workshop for elementary school teachers!

May 5th, 5:00 to 8:00 pm
at Elkton High School, Cecil County

Program

5:00-6:15 pm: Arrival and a light supper with your colleagues. Time to network and meet other elementary science teachers from Maryland.

6:00-7:45 pm: Five rotation periods (15 minutes) presented by teachers in Maryland with a focus on techniques for the elementary science classroom. Topics include: Biology, Physics, Chemistry, and Earth Science.

Costs: Free for MAST members; $10 for guests, or $15 to include this event & a 1-year MAST membership (regularly $15). Light supper included. Payment for the event will be taken at the door.

RSVP by April 30th. Session will fill up fast as this promises to be a great event. To RSVP please send an email to Mona Becker at mlbeck2@k12.carr.org

For directions and more information please contact Mona Becker at mlbeck2@k12.carr.org

Check for updates on this event at <http:www.emast.org>.

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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.

___ 1 year – $15.00
___ 3 year – $40.00
___ Student – $5.00 (1 year)

___ New
___ Renewal

Member Information – Please fill this out completely!

Last Name	First Name		Level – please check all that apply: ___ Pre-K ___ Elementary ___ Student ___ Supervisory ___ Middle/Jr. High ___ High School ___ College/University ___ Organization (please specify) ___ 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 3.10