

**Virginia Section – American Chemical Society  
Executive Committee Meeting  
Virginia Commonwealth University  
Saturday, January 18, 2014**

**Chemical Education Committee Report** (Submitted by Ryan Warren)

The Chemical Education Committee of the Virginia Section solicits proposals for grants to support science projects in grades K through 12. These \$50 to \$500 mini-grants are provided to teachers in the Virginia Section for the purchase of equipment and materials. The grant application can be downloaded at [http://virginia.sites.acs.org/chemical\\_education.htm](http://virginia.sites.acs.org/chemical_education.htm). Within the link, the user will find a grant application in PDF format and a copy of an approved grant application that can serve as a model for completing the application process. There have been two proposals submitted by area teachers since the May 17, 2013 Executive Meeting. A copy of each grant application is attached to this report.

**Summary of Grant Applications:**

- |  |                 |
|--|-----------------|
| <b>1. MathScience Innovation Center</b>                        | <b>\$500.00</b> |
| <b>2. Thomas Jefferson High School (Richmond City Schools)</b> | <b>\$500.00</b> |



# MathScience Innovation Center

*Imagine. Create. Lead.*

Date of Proposal: August 6, 2013

Name: Robin Newton (Community Partnerships); Dr. Patricia Miller, Faculty

School: MathScience Innovation Center

School District: Our Consortium includes 13 school divisions. Eight hold full membership: Chesterfield, Colonial Heights, Hanover, Henrico, King William, Petersburg, Powhatan and Richmond.

Five hold abbreviated memberships: Charles City, Dinwiddie, Goochland, Hopewell, and Prince George.

School Address: 2401 Hartman Street , Richmond, VA 23223

School Phone: 804-343-6525 x 227 (Newton)

Personal Phone: 804-747-1444

Email: rnewton@msinnovation.info

### Description/Objective of the project:

Using our 3-D printer, we would like to produce solid models of right- and left-handed quartz and austenite crystals for an activity in our lesson "Captivating Chirality". These models help to illustrate the relationship between the minerals' chiral molecular structures and the outward crystal forms. The lesson kit is used both in the classroom lesson and in professional development workshops for teachers in our participating school divisions. We currently use folded and glued paper models, which are labor intensive to construct and are too fragile for frequent transport and handling. Faculty member Jim Lehman has made a set of prototype crystal models. They work very well to illustrate the desired concepts, and they are also very sturdy. Your support would be used to purchase the "string" that feeds into the 3-D printer to produce the forms. We will include these in our "Chiral sample kit" for both educators and students.

### Itemized Budget:

Budget for August 2013	
Materials and	
Project Management	500
Total	\$500

Total Request: \$500.00

# Friends of the Center

# Annual Report 2012-2013

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Martin Mooradian

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MGC Advanced Polymers

Microsoft

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NACE International

NASA

NASA Engineering Design Challenge for Educators

**Danica Coleman Millner**  
Thomas Jefferson High School  
4100 W. Grace St.  
Richmond, VA 23230

September 12, 2013

**Ryan Warren**  
*Virginia Section of the American Chemical Society*

Dear Ryan Warren:

This grant proposal is being written to support a changing curriculum. AP Chemistry curriculum has been redesigned to support inquiry based teaching methods. With industries' growing need to have qualified science and math professionals, all curriculums must change. AP has taken the lead to help navigate this change. In order to meet the goals of the redesign, Thomas Jefferson High School needs your help.

Fortunately, the labs in the manual can support the IB Chemistry curriculum as well. Therefore, ACS assistance will affect all of the higher level chemistry students. It is the desire of the science department to create a learning environment that allows students to not only learn a topic, but apply the topic.

#### OBJECTIVE

This grant will be used to purchase the necessary laboratory supplies that will support the AP/IB Chemistry programs that emphasize guided/open inquiry.

#### SCOPE OF NEEDS

College Board has published a Lab Manual with several labs that are inquiry based. The labs can be used for IB and AP Chemistry. I have selected 11 of the 16 labs as the inquiry Labs that will support my instruction. They are *What is the relationship between the concentration of a solution and the amount of transmitted light through the solution?*, *What makes hard water hard?*, *How do you separate molecules that are attracted to one another?*, *What's in that bottle?*, *Using the Principle that each substance has unique properties to purify a mixture: An experiment in applying Green Chemistry to Purification.*, *How can we determine the actual percentage of hydrogen peroxide in a drugstore bottle of hydrogen peroxide?*, *How long will that marble statue last?*, *What is the rate law of the fading of crystal violet using Beer's Law? Can we make the colors and the initial concentration of an acid and a base influence the pH of the resultant solution during a titration?*, *The hand warmer design challenge: Where does the heat come from?*, and *The preparation and testing of an effective buffer: How do components influence a buffer's pH and capacity?*

#### CLOSING

Your assistance will aid in development of our students critical thinking skills as it apply to laboratory investigations. In addition, this approach to science instruction will better prepare them for college level science. The budget for this proposal is attached. My students and I thank you for your support in advance.

Sincerely,

**Danica Coleman Millner**  
*AP/IB Chemistry Teacher*  
*Thomas Jefferson High School*

Enclosure