

SciMo Says

**The Newsletter for Science in Motion at Susquehanna University
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Director's Column

Happy New Year! Everyone at Science in Motion sincerely hopes the New Year will bring prosperity to all and continued funding for our program. If you have not already taken the time to **write your legislators**,



Yvonne Monahan's Shikellamy High School students attempt to determine the brand of plastic wrap found at the crime scene using an FTIR.

please do so now! We are updating our legislator list on the SIM website to reflect the changes that occurred during the November elections. Please let us know if you have any trouble identifying to whom you should address your letters. If you could **send a copy to SIM**, it will help greatly when I visit legislators in February asking for their support to continue funding the program.

On Tuesday, December 16th, I accompanied Jaclyn Todd to Yvonne Monahan's classroom at Shikellamy High School for Chemistry Crime Scene. The Chem I and Advanced Chemistry students jumped right into the experiments and began narrowing down the suspects on the first day!

SIM is still accepting reservations for spring semester visits and drops. Please submit your reservation forms on-line for visits/drops during

January through June 2009. To go directly to the SIM reservation form just control click on <http://www.susqu.edu/sim/reservation.htm>. To check the ME's available dates control click on <http://www.susqu.edu/sim/Available%20Dates%20for%20ME%27s.htm>.

Madge Schworer, Biology Mobile Educator Says...

I am back in the Bio van and have started with visits in our new year! I am looking forward to visiting with many of you again. Look over your calendar and send in those reservations for your spring Science in Motion activities today!

Mike McDevitt, Biology Mobile Educator Says...

I hope everyone had a wonderful holiday season. Thank you for all your cooperation and collegiality over the past several months. I have learned a tremendous amount of biology over those months. As I remove

my Madge alias and don my Greg mask for the second semester, I am sure I will be learning even more biology throughout the winter and spring. I am especially looking forward to the January and February streamside visits as part of our Water Quality program. I wonder if any of those streams have a run of winter steelhead?

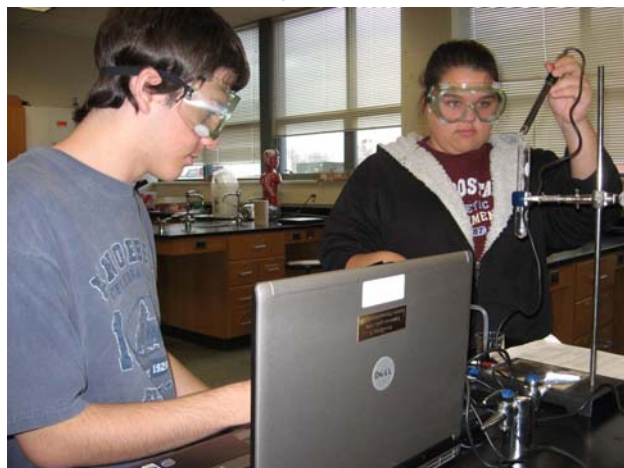
During December, the biology van made visits to **Milton High School** with **Kathy Bower** and **Jocelyn Bailey**. Their students participated in our *DNA fingerprinting* experiments. During this time, I enjoyed the hospitality of their class mascot, Bear. He graciously allowed my presence in his lab where he totally entertained while scurrying about the room in his traveling plastic ball. He showed that the ball had reverse and forward gears and a GPS as illustrated by returning to his correct room location after escaping to the hallway. Thanks Bear.

Other visits included the biology crime scene at **Berwick High School** with **Gary Stair** and his students. At **Danville High School**, **Donna Wood** and her forensic students tried out the Vernier *No Dumping* experiment from the Forensics lab manual, essentially a soil analysis lab. I believe this lab will require some tweaking at the summer workshop.

As I sit here writing this it is 8 degrees with a strong breeze with 6 inches of snow and ice on the ground, perfect Holiday weather. Hopefully when you read this its in the 50 degree range and the snow and ice has retired for the season.

Jaclyn Todd, Chemistry/Physics Mobile Educator Says...

Happy New Year everyone! I hope you all had a great holiday and a relaxing break. This month, I spent some time at **Lewisburg High School**. **Angela Gockley's** chemistry students performed the lab *Combined Radiation Experiment*. In this lab, students use a Vernier radiation monitor to measure the



Jocelyn Bailey's Milton High School students attempt to determine the pH value of classroom-made acid rain.

absorption of alpha, beta, and gamma radiation by air, cardboard paper, aluminum and lead. Then I was off to visit the chemistry students of **Jocelyn Bailey** at **Milton High School**. Her students performed the lab *Acid Rain* in which they simulate the formation of acid rain by generating three gaseous oxides and then bubbling those gases into water. Then they use our Vernier pH probes to measure the pH of the three resulting acidic solutions and compare their strengths.

Brandon White of **Danville High School** used our theatre filters and food dyes this month to perform the labs *Visible Spectra of Commercial Dyes* and *Transmittance of Theatrical Lighting Filters*. In the commercial dye lab, students use a Vernier

Spectrometer, or Spectro-Vis, to measure the absorbance of food dyes and compare the spectra of the dyes to the spectra of various commercial products such as mouthwashes and drinks. In the lighting filter lab, they use the Spectro-Vis to measure the percent transmittance of various theatrical lighting filters and compare the values to published information. **John Tamblin's** chemistry students at **Hughesville High School** performed the lab *GC of Alcohols*. His students analyzed various compounds using our gas chromatographs to determine their various components. The popular *Chemistry Crime Scene* spent some

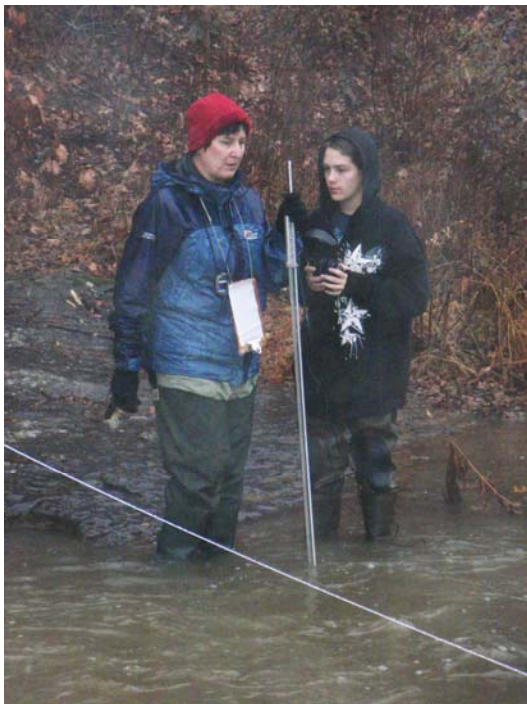
time at **Mt. Carmel** and **Shikellamy High Schools** this month. Chemistry students performed a variety of crime scene investigations over the course of the week such as *Melting Point Analysis*, *Fabric Analysis*, *Infrared Spectroscopy* and *Paper and Gas Chromatography* using high-tech equipment in a forensic manner.

Also at **Shikellamy High School**, the students of **Sheila Furr** enjoyed our liquid nitrogen demonstration. Students witness an array of fun and exciting demonstrations such as hammering a nail into wood using a banana, and smashing grapes, onions and racquet balls into solid pieces. They also enjoyed ice cream made from liquid ice cream mix and liquid nitrogen. The liquid nitrogen display was also offered to **Tracy Hepner's Selinsgrove High School** students. **Joshua Greene** used many of SIM's supplies this month to perform the labs *Endothermic and Exothermic Reactions*, *Freezing and Melting of Water*, and *Beer's Law* in his chemistry classes at **Bloomsburg Christian High School**. New SIM teacher **Brian Tomko** brought SIM into his **Greenwood High School** chemistry classes to perform two FTIR labs. His chemistry students used our Fourier Transform Infrared Spectrophotometers to examine organic liquid compounds in the lab *Identifying Organic Compounds using Infrared Spectroscopy*. They also performed the lab *Determination of Trans-Fatty Acids by IR Spectroscopy* where they determine different types of fatty acids in food samples such as Crisco shortening, butter, margarine and olive oil. The students were able to determine the identity of unknown samples by comparing the wave-numbers of their peaks in the spectrum produced to a table of known values.

You can begin to send in your reservation forms for the spring semester now! Many of you are beginning to request drop-off's as you become well-rehearsed and familiar with our labs. Due to limited computers, you'll want to get those reservation forms in soon to ensure you reserve the equipment. Feel free to e-mail me about any specific days or labs. I hope you all have a great 2009!

Greg Stout, Mobile Educator Says...

I trust that each of you had an enjoyable Christmas/New Years break and have been able to recharge your



Shikellamy High School student and teacher Mary Dahlmann conduct flow measurement of Little Shamokin Creek.



Loyalsock Township High School student sampling stream water from Miller's Run.

batteries for yet another semester of teaching. I too wish you the very best in this New Year!

Since our last newsletter, I attended the annual Pennsylvania Science Teachers Association conference in Hershey, Pa. While there I assisted in manning the Science in Motion Consortium's booth in the Exhibit Hall and attended our consortium's annual meeting in nearby Hummelstown. I also took advantage of the numerous science and Biology workshops offered during my time there and was able to network with many educators and vendors.



Teacher Gary Stair explains Photosynthesis to his Berwick High School students.



Christopher Emory and his students conducting Photosynthesis and Respiration experiments at Warrior Run High School.

We finished up our first half of water quality monitoring this past month in our Chesapeake Bay Commission (CBC) sponsored program. Teacher **Mary Dahlman** and her **Shikellamy High School** students met me at **Little Shamokin Creek** just outside of Sunbury where they braved inclement weather and rising, muddy stream water. They sampled water for shipment to the DEP lab in Harrisburg and performed their required flow measurements and water quality analyses. The very next day, I travelled north to meet **Loyalsock Township High School** students and teacher **Sarah Puderbach** at nearby **Miller's Run**. In spite of abundant rain and a winter storm advisory, Sarah and her students faithfully completed their necessary sampling and monitoring requirements.

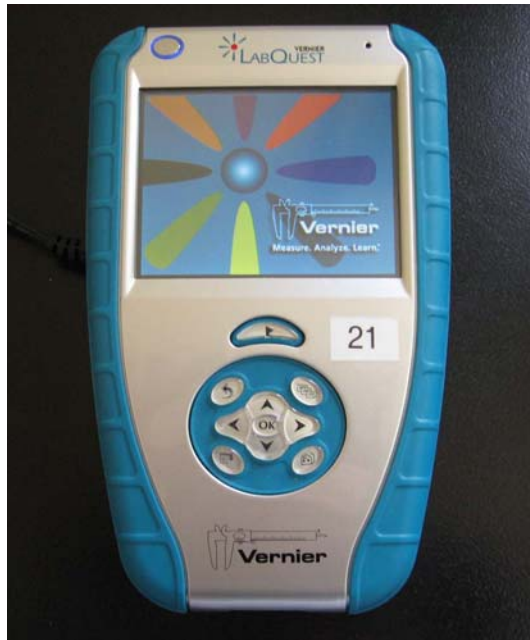
Vernier's Biology lab 31B, *Photosynthesis and Respiration*, was requested by several High Schools in the month of December. I spent two days at **Berwick High School** the week of the 8th, working with teacher **Allison Spencer** one day and **Gary Stair** the next. The following week I travelled to **Warrior Run High School** and worked with teacher **Christopher Emory** and his freshman classes. All of these students did an excellent job of following instructions and running the two separate experiments that demonstrate the differences in these two reactions.

I also wanted to let you know that I will be taking a break from my duties here at Science In Motion starting this January. I will be student teaching and hopefully obtaining my certification in Biology 9-12th grades. During this time, Mike McDevitt will cover both my CBC Water Quality visits as well as those Biology experiments on our website currently listed under my name.

Experiment of the Month

Periodic Trends

The experiment of the month for December is a new SIM lab titled *Periodic Trends*. *Periodic Trends* is an excellent lab for introducing and investigating the periodic table, elements and the chemical properties of the elements as a function of their atomic number.



LabQuest

In this lab, the students can choose or be assigned one property to study such as density, melting point, boiling point, valence electrons, electronegativity, first ionization energy, atomic radius, atomic volume, heat of fusion, heat of vaporization or specific heat. Each lab group determines the values of each element regarding their designated property. Then the students graph the property values of the elements vs. atomic number using a LabQuest Interface.

Students use the graphs to determine the general trends found on the periodic table. This allows them to understand the periodic table better and helps them to predict the recurring trends in the properties of the elements. Student groups can share their property information with the class to review many of the trends. This lab offers a different and an

interesting way to investigate the power of the periodic table.

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