

SciMo Says

**The Newsletter for Science in Motion at Susquehanna University
Volume VIII Issue 2 October 2008**

Director's Column

On Saturday, September 6, 2008, SU-SIM had a display at the Susquehanna Valley Mall. We were set up from 10 am to 3 pm in the center court Bon Ton area of the mall with several hands-on activities for visitors.



Dr. Courtney Thomas, SIM Director, helps two young visitors make DNA necklaces.

Visitors made a DNA necklace, explored cricket respiration, solved a crime scene using PCR (polymerase chain reaction), used infrared spectroscopy (FTIR) to examine plastics, determined their pressure underfoot, explored the spectra of cool pops or just enjoyed liquid nitrogen ice cream. We used this opportunity to make parents, students and teachers aware of the free services SIM offers to improve secondary science instruction in the Susquehanna Valley. This event was instead of the SIM Mole Day Dinner.

I would like to invite teachers to **continue signing up for SIM visits/drops now through December 2008.**

Available dates for each ME are updated regularly on the SIM website. I will make a separate announcement in November when we open reservations for spring SIM visits/drops. Please submit reservation forms for the fall

semester now, but hold off sending spring reservations.

Mike McDevitt, Biology Mobile Educator Says...

As with any science, I am finding that in Biology there can be many titles for the same experiment and several terms for the same piece of apparatus or lab procedure. Hopefully, I can maintain a positive learning curve. A noted difference between 2002-03 and now is there are more equipment drops on my schedule. The SIM teachers have truly become masters of our equipment. I am sure this allows maximum exposure and hands-on opportunities for the students.

Of course this position offers opportunity for travel. September included van trips to **Milton High School** where I placed microscopes and to **Line Mountain** and **Williamsport High Schools** where I dropped equipment for enzyme experiments. **Central Columbia** and **Tri-Valley High Schools** received SIM visits involving our *Energy in Foods* experiment. I traveled to **North Schuylkill High School** for *EKG monitoring*, and I participated (learning curve) in a crime scene week on the Biology side of things at **Central Columbia**.

On the humorous side, several interesting and unanticipated questions have been asked. At our



Mike McDevitt, SIM Mobile Educator, makes liquid nitrogen ice cream while visitors look on.

Susquehanna Valley Mall day...Can I have your autograph? Answer...sure, immediately my radar suspected something. Turns out, faculty from **Danville High School** offered bonus points for attendance at our presentations at the Susquehanna Valley Mall and proof involved my signature in their notebooks. At **Central Columbia High School**, Energy in Foods lab..... Is this all you do, burn stuff all year? Answer...no, in the spring I am allowed to freeze everything. Finally...what happens to a Science in Motion Crime Scene lab when all the electrical power to the school goes out? Answer...thanks to Greg Stout's superb planning we use

battery operated light boxes to view the gels. To all the teachers I have and will visit, thank you for your patience.

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

Welcome back everyone! I hope your school year is off to a great start. We are getting very busy at SIM so be sure to get your reservation forms in as soon as possible.

I began the Science in Motion school year with a trip to **Hughesville High School** to visit chemistry teacher **John Tamblin**. His chemistry students used our FTIR's to examine organic compounds using Infrared Spectroscopy. The SIM staff then headed up to **Juniata College** for our annual sharing workshop. We met with the other SIM sites from around the state and we learned a few new labs that we will be able to share with all of you very soon. We also had our first **Susquehanna Valley Mall Day** this month on September 6th. We had a variety of hands-on experiments displayed all afternoon at the front entrance to the mall. Visitors were able to use the FTIR to examine the spectrum from various plastic films. They also enjoyed walking and hopping across our Novel pressure plate platforms and seeing the graphic display of their foot pressure.



Susquehanna Valley Mall visitors enjoyed the hands-on science labs.

Back on the road, I was off to **Muncy High School**. **Robin Peterman's** chemistry students experimented to determine the alcohols in various solutions using the Gas Chromatographs. I then stopped by to see **Sheila Furr** at **Shikellamy High School**. Her chemistry students determined the melting point for a variety of white powders using our Melting temperature apparatus. I then headed to **Central Columbia** to visit the students of **Lee Ercoloni**. His students performed a variety of crime scene investigations such as *Melting Point Analysis, Fabric Analysis, Paper Chromatography and Spectroscopy* using high-tech equipment in a forensic manner. **Clark Sarge** and **Larry Flint's** physics students at **Williamsport High School** experimented with our Vernier motion detectors and digital cameras this month. With LoggerPro software and the digital cameras, students can add video of their experiment and synchronize it with the data they collect. They performed the lab *Ball Toss with Video Analysis*. In this lab, students analyze position, velocity, and acceleration-time graphs produced on the computer as a ball is tossed in the air and they capture live footage of the Vernier experiment. They can then compare how the graph and the video look at different points during the flight of the ball. Their physics students also performed the lab *Graph Matching* where the students use a Vernier Motion detector to analyze and graph their own movement. They predicted and tested position vs. time as well as velocity vs. time graphs. **Deborah Slattery** and **Erica Merriett** at **Danville High School** also borrowed our GC's this month to analyze the alcohols in solutions. They noticed the GC's running slow and determined that our GC columns may need to be replaced. Information like this is always welcome and helpful at SIM because our equipment spends a great deal of time out at various locations. **John Hernandez** brought SIM into his classes this month to show his **Sunbury Christian High School** students the wonders of our *Starry Night* software. This stunningly realistic software makes it easy to bring the universe into your very own classroom. The software is accompanied by a guide that offers step-by-step exercises, activities, extensions and resources to cover any astronomy lesson.

Check out our website to find available days as well as the equipment list and available labs. We continue to update these pages as things change. I anticipate working with many of you again and good luck with this school year.

Greg Stout, Mobile Educator Says...



Greg Stout, SIM Mobile Educator, discusses labs with mall visitors.

September is usually a busy month here at SIM and this year is no exception. Right after Labor Day my colleagues and I attended our annual Sharing Workshop at Juniata College. This is a time where we get to observe labs that are used at other SIM sites across the state and to share with them what we do at our site in the Central Susquehanna Valley.

On Saturday the 6th, we conducted our first ever Mall Day event at the nearby Susquehanna Valley Mall. We showcased some of our labs and enjoyed meeting and working with those that stopped by to visit us. It was really neat to see the interest expressed by so many, especially those at the elementary school age. I couldn't help

but hope that we may have played a role in developing some future scientists!



SIM Mobile Educator, Greg Stout, explains fingerprint identification to Central Columbia High School students.

On the 8th I visited teacher **Kristen Vitkauskas** and her students at **Southern Columbia High School** where I gave an overview of our Chesapeake Bay Commission (CBC) sponsored Water Quality Monitoring program. Two days later I was at **Central Columbia** and spent three days with **Lee Ercolani's** Genetics class doing a *Crime Scene Investigation*. On day one we did the fingerprint lab, day two we performed gel electrophoresis and day three we did blood typing on evidence collected from our crime scene and from our suspects. Fingerprint

and blood work had narrowed the suspects down to two. In spite of a power outage on the last day, the students used battery operated light boxes to view the DNA gel electrophoresis results and definitively identify as the perpetrator.

On the 15th, **Shikellamy High School** teacher **Sheila Furr** and her students completed their first stream sampling and monitoring visit at **Shamokin Creek** just outside of Sunbury. The next day I travelled to **Central Columbia** where I gave another CBC program overview to teacher **Greg Laubach's** students. Two days later, I gave another CBC program overview to **North Schuylkill** students in **John Slotterback's** classes.

Feel free to check our website for labs offered, available visit/drop dates and keep those reservation forms coming. We will do whatever we can to squeeze you in!



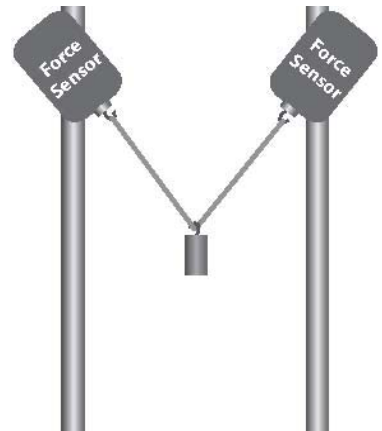
Shikellamy teacher, Sheila Furr, and two students performing flow rate measurement of Shamokin Creek.

Experiment of the Month

Tension and the Isosceles Triangle

This month's featured lab, **Tension and the Isosceles Triangle**, is a newly written physics lab that we have just added to our labs at SIM. The lab will allow students to study vector forces in an easily adjustable static situation. They will hang a hooked mass in the middle of a string and then attach two Vernier force sensors.

As shown to the right, the weight of the mass will straighten out the string. The Vernier force sensors will hang from two lab stand supports. The students will be able to measure the angle that the string makes with the horizontal with a protractor or determine the angle by measuring distances and using trigonometry. They will then measure the tension in the string by collecting data with Logger *Pro* and force sensors. They can mathematically calculate the tension and compare that result to the force sensor readings. They can adjust the angle by moving the lab stands closer together or farther apart to explore the relationship between tension in the string and the angle. As they move the lab stands and sensors, the angle the string makes with the horizontal changes, and that in turn changes the tension in the cord. How will the tension in the string change as they move the supports? Have your students explore.



Tension experiment set-up

This lab would be an educational and fun addition to any typical vector unit. Students should be enrolled or already through the trigonometry level of math and familiar with the ideas of and the math associated with vector quantities. Please contact me as soon as possible if you would like to find out more about the lab.

Save a Tree

If you wish to receive this newsletter in electronic format, please send us your e-mail address at sciencemotion@susqu.edu or phone us at 372-4779.

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