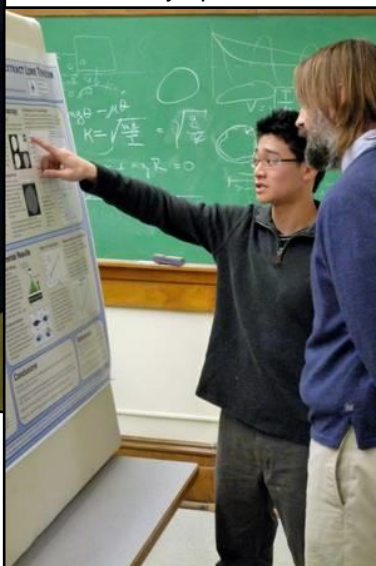


**Greetings from the lab**, another school year has started and it is time again to recap the adventures of Augsburg Biophysicists. This summer five students worked in the lab. Andrew Nguyen continued his work on line tension measurements in lipid monolayers and Tom Lopez improved his magnetic needle viscometer. Nate Johnson also returned to the lab; he began a new project to try to measure the bending and stiffness properties of lipid membranes. We also welcomed two new students: Nick Ward and Nick Hudson. Nick Ward refurbished an alternating deposition Langmuir-Blodgett trough purchased off eBay. This gives the lab a powerful tool to complement existing experimental techniques. Nick Hudson worked with Dr. Michael Halter (NIST) to develop software for cell volume measurements. The hard work of these students continues to be the basis for the success of the lab in publications, presentations, and the development of equipment to be used by all Augsburg physics majors. Read on to learn more about their adventures!



Left: Tom Lopez discusses his magnetic needle viscometer with Dr. Hobbie at the NDSU Undergraduate Research Symposium.



Right: Andrew Nguyen discusses his model convolution experiments with Dr. Alexander Wagner.



Nick Ward, Tom Lopez, and Professor Stottrup attended the 2009 Tekne awards. Nick was fortunate to sit with Eric Jolly of the Minnesota Science Museum.

## 2009 Group Picture



Lab Alumni and current Lab members gathered this summer for the annual summer picnic. Ben Sonquist (not in photo) remembered the jalapeño lemonade!

## RECENT NEWS

- Nick Ward (2011) presented his work on refurbishing a Langmuir trough at the National McNair Scholar's conference at the University of New York Buffalo in July.
- Andrew Nguyen (2010) was awarded the Harvey W Wiley Scholarship by the Association of Analytical Communities. Andrew traveled to their national meeting in Philadelphia and presented a poster on this ongoing work with the lab.
- Professor Stottrup and his collaborators in the Wang lab had their paper titled *Surface Packing Characterization of Langmuir Monolayer-Anchored Enzyme* published in Langmuir.
- Lab members presented their results at the 3<sup>rd</sup> annual NDSU Undergraduate Research Symposium in October.
- Nate Johnson (2011) received the Rossing Fellowship in Physics. This \$10k award recognizes excellence in undergraduate physics students at ELCA related colleges.
- Tom Lopez (2011) and Professor Stottrup have incorporated the use of the Magnetic Needle Viscometer into the laboratory curriculum for sophomore physics majors.
- Professor Stottrup and collaborators at Saint Paul College received \$198k from the National Science Foundation to enhance the undergraduate curriculum in physics and chemistry in the area of Nanotechnology.

**Nanotechnology** Right: Prof. Stottrup and Saint Paul College Colleagues test drive a brand new SEM. Bottom: Researchers from St. Thomas, U of M, and Augsburg discussed topics in semiconductor physics.







## Scientist Profile:

Dr. Michael Halter,  
*National Institute of Standards  
and Technology (NIST)*

*For this issue we caught up with one of the lab's collaborators to discuss career paths in science. Dr. Halter has worked at NIST since 2006. He has expertise in fluorescence microscopy techniques. He has been a friend and advocate of Augsburg since 2005. Thanks Mike!*

**When did you know that you liked science? Do you like science?** I grew up liking math and science. My father was an engineer so as a family, we'd go to science centers and play math games. At school, I always liked my math and science classes. For a career, I never stopped wanting to learn more. Eventually, I ended up getting a PhD and becoming a scientist. I like science to this day - it is a good fit for me as a career.

## Could you give us a sketch of your educational history?

I had a good high school experience at a Reitz Memorial, a Catholic high school in Evansville, Indiana. I then earned a four year degree studying Materials Science and Engineering at Purdue University in West Lafayette, Indiana. Afterwards, I went straight into a PhD program in the Bioengineering Department at the University of Washington in Seattle, Washington. I finished that degree at the end of 2004. I did a short postdoc in Professor Sarah Keller's lab in the Chemistry Department at the University of Washington. From 2006-2007, I was a NIST/NRC postdoc working in the Cell and Tissue Measurements group at the National Institute of Standards and Technology in Gaithersburg, Maryland.

## How would you describe your research field? Are you an engineer, physicist, chemist?

I would describe myself as a Bioengineer. My favorite projects involve applying engineering strategies to further our understanding of biology.

## What brought you to a NIST?

At the end of 2005, I was awarded a NIST/NRC Postdoctoral Fellowship. I moved to NIST at the beginning of 2006.

## What is different about doing science at NIST rather than working in academia or somewhere in industry?

I've never worked in industry and I was always working as a trainee in academia. Therefore, I cannot make comparisons from experience. That said, in my work I am often thinking about developing tools and technologies that might be useful to industry or academia. A big difference between academia and NIST is that NIST is not a training facility. So, there are few students. I would presume that in industry some thought must be given to developing products for profit. At NIST we are not trying to make a profit, but would prefer to develop tools that enable industry to function more efficiently and compete better globally.

**What is the favorite part of your day?** Talking science – I've always liked talking science.

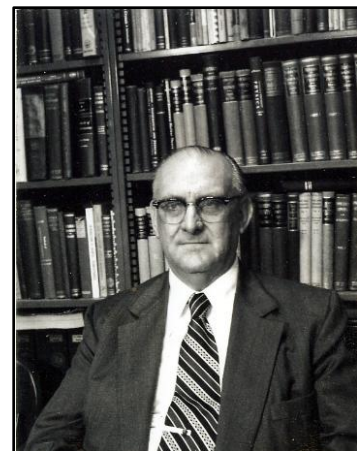
## How did you become associated with the Augsburg College Lipids Lab?

I met Professor Stottrup at the University of Washington in Seattle. He was in the Physics Department, but we both worked with Langmuir monolayers (we were part of the proud few!).

**What advice would you have for students interested in careers in science?** Be certain that you like it – any career will be a good one if you first start by doing it and discovering whether or not you like doing it. Take MATH and SCIENCE (or ENGINEERING) classes. Do some research and ask you advisor questions that you can't answer yourself. When you do experiments, try to understand what you're doing and why you're doing it.

## Biophysicist Profile: Otto Schmitt

Minnesota is home to a rich heritage in the advancement of biophysics. Dr. Otto Schmitt, one of the founding members of the Biophysical Society and inventor of the Schmitt trigger, spent his career at the University of Minnesota. During his career Dr. Schmitt published over 250 papers and held several patents (~60). He is widely credited with the term biomimetic or "biomimicking." This was a guiding principle in Dr. Schmitt's work: the imitation of nature could be used in engineering to benefit humanity. You can learn more about Otto Schmitt at the Bakken Museum (Minneapolis, MN).



## KEEPING TRACK OF ALUMNI

*If you are a Lipid Labs Alum please drop us a line and let us know how you are doing.*

**Special Thanks To:** Professors Wang, Zhu and members of their labs for their continuing support; Erkan Tuzel, Sylvio May, Dan Kroll, and the rest of the NDSU soft matter physicists; Mike Halter and his colleagues at NIST; Augsburg College and URGO; Dean and Amy Sundquist; Research Corporation; The McNair Program; and MN Space Grant.

**GET INVOLVED!** We have many great projects for students in the lab. If you're interested in becoming involved, please contact:

Ben Stottrup, Assistant Professor of Physics  
Augsburg College  
2211 Riverside Ave.  
Minneapolis, MN 55454  
stottrup@augsborg.edu  
(612) 330-1035  
<http://www.augsburg.edu/ppages/~stottrup>

