

## Welcome!

UW-STOUT -  
Keeping Applied  
Science Alumni  
Informed

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### SPECIAL POINTS OF INTEREST:

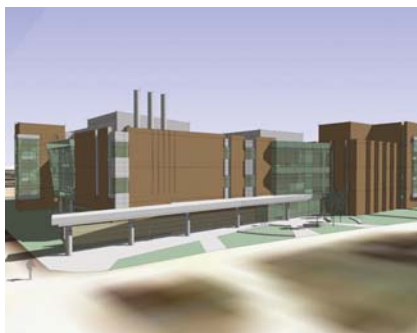
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Hello Alumni and Friends of the Applied Science program at UW-Stout. Welcome to the inaugural issue of WISCI, a newsletter designed to foster communication between alumni, friends and the university to tell you what's happening with the program and the Stout campus.

First, I assumed the role of the program director from Dr. Forrest Schultz in August of 2006. After five years of work to get the applied science program up and running, he became department chair in the chemistry department and chair of the faculty senate. He has laid the groundwork for a great future for the program. I thank Forrest for all of his efforts in the initial building of this program.

As for the Applied Science program, we have come a long way from seven students six years ago to more than 120 students as of this fall. Our programs have expanded, from our original offerings, "laboratory sales and support" and "laboratory management," to biotechnology, materials science and nanoscience. In the fall of 2008 we will also begin offering a concentration in Environmental Science. Each of these programs attracts unique students with a passion for science. On succeeding pages you will find articles highlighting some of the outstanding

achievements of just a few applied science students. There are many more students engaged in projects that not only add to their personal knowledge but which also make a real contribution to the greater well being of UW-Stout and the wider community. With ever-expanding concentration options and growth in the program, the future of applied science at Stout is exciting.



**New science building**

Helping our ability to attract great science students is a new \$43 million science building. I know many of you have heard rumors of this in the past, but it is a reality now. The planned start of construction is July of 2008, with completion in September of 2010. Phase I construction plans include a new 90,000 sq. ft. building addition on the north side of Jarvis Hall. This will be followed by Phase II construction to renovate the current Jarvis Hall. Phase III construction includes removing the old lecture halls and build-

ing new, modern ones. The new building will be a great addition to the campus, really putting the science on display. The building will include some great new items such as a clean room to be utilized by the nanoscience and biotechnology groups, a cold room as well as innovative and flexible classroom and laboratory spaces for students and faculty to engage in creative activities.

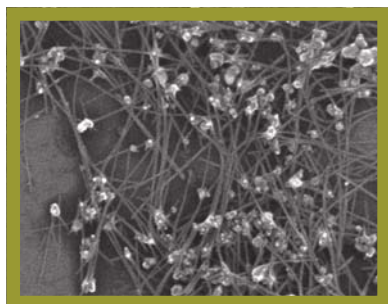
Many great things have happened on campus since the program began in 2000. Most recently UW-Stout was designated "Wisconsin's polytechnic university" by the Board of Regents. This has been a good move to raise the profile of the program and promote the sciences across campus, the UW System and the Midwest.

Please read this newsletter and learn some of the ways the program continues to grow and be successful. What inspires this desire to stay in touch with you is the goal of keeping our programs relevant as well as cutting edge. What better way to do that than by communicating with the alumni and friends that are out in the world representing the Applied Science Program?

- Charles Bomar  
Program Director

# Freshman Selected for NIST Research

If one of the purposes of an internship is to try out a career, then Jarrod Feight has done this in spades. Feight, a freshman majoring in Applied Science, received a Summer Undergraduate Research Fellowship (SURF program) to the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland. The award of this fellowship was no small achievement, with 400-500 nationwide applicants and only 100 interns into the program.



Nanotubes in a group

Feight worked with students from University of California-Berkeley, Notre Dame, University of Maryland, Harvard and Georgia Tech, to name a few.

So how did he spend his time at NIST? "I worked in the nanoscale metrology division under Dr. Andras Vladar and Dr. Mike Postek." Feight said "My project consisted of research on carbon nanotubes and their reactions with a scanning electron microscope (a high-powered microscope that uses a beam of electrons to create an image). I worked on this project with another student from Georgia Tech, Drew Buckingham, to achieve some amazing images of carbon nanotubes using the electron microscopes. We started from scratch creating a process for imaging the samples."

Now back on the Stout campus, Jarrod is continuing his scanning

electron microscope (SEM) research with Dr. Forrest Schultz, deepening the knowledge and experience gained at NIST and sharing what he's learned with other



Isolated nanotube

stu-

ents. So while the benefits of spending a summer at NIST have given Feight a real taste of what scientific research is at the highest level, it has also inspired other students and highlighted the caliber of the Stout Applied Science program.

## Students Experience Out-of-This-World Co-op

Becky Valaske and Heather Patnode spend this past summer completing an international co-op experience in Delhi, India at the Institute of Genomics and Integrative Biology, a research and development institute focusing on genomics and bioinformatics.

Becky enjoyed six weeks and Heather stayed for three months. While there, Valaske worked in a lab with several graduate students and completed a project studying the interactions between cationic surfactants and oligonucleotides. Patnode's project worked on *in situ* hybridization of zebra fish. These studies involved research techniques that they had previously little to no exposure to, providing

valuable learning experience. It wasn't all work and no play, however, as both were able to immerse themselves in a completely different cul-



Becky and Heather in front of the Taj Majal

ture. Co-workers shared their traditions and holiday celebration stories as well as introduced the girls to local foods in many restaurants in and around Delhi.

And speaking of other places, Valaske and Patnode were also fortunate enough to travel to other cities in India, including Agra and Jaipur, both of which were very different from Delhi. Valaske's comment about her Summer '07 Co-op sums it up well: "Because of this co-op I feel that I have a better understanding of India's amazing culture."



Jaipur

## Lake Huron Sinkholes in Thunder Bay: How Low Can You Go?

In 2006 the National Science Foundation awarded Dr. Steve Nold an award to investigate microorganisms and their activities in newly discovered submerged sinkholes in the Thunder Bay National Marine Sanctuary, Lake Huron. These sinkholes are fed by groundwater and have apparently created biogeochemical "hot spots" which are teaming with novel microbial species, creating the perfect opportunity for original research. Two students, Heidi Zajack and Michael Bellecourt, both Applied Science-Biotechnology majors, were heavily involved with Dr. Nold's research. Here is their story.

Hi, my name is Heidi Zajack. I am a third year Applied Science - Biotechnology major at UW-Stout, and I'm Michael Bellecourt, a fourth year Applied Science - Biotechnology major at UW-Stout. As Applied Science students it is always exciting to have the opportunity to work on original research in and out of the laboratory. This past summer (continuing from the previous school year) we worked with Dr. Steve Nold, an associate professor of biology, on a project studying samples from sinkholes in Lake Huron, Michigan. The project we are working on is funded by the National Science Foundation, and we hope to generate data that will allow us to classify and learn about the bacterial species living in the freshwaters of Lake Huron. This project involves many different areas of study and has several goals, and both of us have worked on different research this summer.

*Heidi Zajack:* This summer has held many long and satisfying days for me as I worked in the biology laboratory on campus. Although I have been working with the Lake Huron samples over the past school year, this summer pre-

sented new techniques and data analysis tools that have furthered my understanding of lab work. Since one of our goals is to identify the bacteria of the sinkholes and create a catalog for future reference, I worked with DNA extraction, sequence analysis, and species comparison. By working with these techniques on research in the laboratory, I have been able to further my understanding of biotechnology and gain a greater appreciation for the end results. My greatest accomplishment from the summer is creating a clone library catalog of the Lake Huron samples, and also deepening my understanding of recombinant DNA technology. Now when I go to my science classes I am able to understand the processes explained in the text books because I have actually performed those techniques during my summer.

*"I never dreamed that I'd be doing my own research as an undergrad."*  
-Michael

*Michael Bellecourt:* My work over the summer actually has its roots in last September when Dr. Nold asked if I'd like to work on this research opportunity. Rather than jump into the current projects, Dr. Nold and I decided that it would be a worthwhile experience to ask the NSF for a supplement. That way, he could fund new avenues of research for me to take on. I spent the next semester writing up a proposal; one that the NSF quickly approved. The Lake Huron sinkholes are full of sediments that have a significant amount of poorly degraded carbon. It became my job to find out where all this carbon was



**Field sampling, July 2007**

was coming from, and we realized that a technique called "stable isotope analysis" would help me do so. To accomplish this goal, I accompanied Dr. Nold on a sampling trip in June. An entire week of full work days was spent on field work, collecting all sorts of samples: sediment cores, water samples, and bacterial mat samples.



**BIO-370, Fall 2007**

In order to perform stable isotope analysis on these samples, the usage of a mass spectrometer is required. This sophisticated piece of machinery tells us the mass of each individual molecule that passes through it. The University of Minnesota's Duluth campus was more than willing to host me for a week while I prepared my samples for analysis. Work on this data is still ongoing, but soon I will have data that I can have published in a peer-reviewed paper. This opportunity has been an absolutely wonderful one for me; as a high school student, I never would have dreamed that I'd be doing my own research as an undergraduate. It has definitely helped in supplementing an already stellar academic career here at UW-Stout.

Overall this has been a great experience working on campus and in the lab this summer. We have learned many new techniques and have a greater appreciation and understanding of our major. After conducting research in the lab this summer, we both feel one step closer to being scientists.

**UW-STOUT-**  
**Keeping Applied Science Alumni Informed**

The goal of this newsletter is to keep alumni in touch with the Applied Science program. Please update your contact information so that we can keep in touch with you in upcoming newsletters. Share this with your other Applied Science alumni that you are in contact with, we would love to keep them informed also. Please mail these contacts to the address on the below or send your updated information at [apsc@uwstout.edu](mailto:apsc@uwstout.edu). We would love to hear from you!

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Comments:



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