

Science Undergraduate Laboratory Internship (SULI)

Summer 2005

Ames Laboratory
Iowa State University



IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY



From Student to Scientist...

In eight short weeks 10 undergraduate students from colleges and universities across the country experienced life in real-world research settings in laboratories at the Ames Laboratory and Iowa State University. The students were at the Lab and ISU as part of the Department of Energy's Science Undergraduate Laboratory Internship (SULI) Program.

The student internships focused on the research the students performed in laboratories under their mentors' guidance. But along the way, there was also time for other enrichment activities, such as presentations, lab tours and fun.

The 2005 SULI program culminated in an August 4 student research poster presentation, which was enthusiastically attended by scientists, staff and students.

Steve Karsjen

Steve Karsjen
Education Coordinator

Statistics

Student Data:

- 9 male, 1 female
- 2 freshmen, 2 sophomores, 4 juniors, 2 seniors

Colleges/Universities Represented:

- Buena Vista University, Storm Lake, IA
- Carleton College, Northfield, MN
- Central College, Pella, IA
- Clemson University, Clemson, SC
- Northwestern University, Evanston, IL
- Texas A & M University, College Station, TX
- Truman State University, Kirksville, MO
- University of Cincinnati, Cincinnati, OH
- University of Missouri-Rolla, Rolla, MO
- University of Wisconsin-Madison, Madison, WI

Program Dates:

- June 13 thru August 5 (8-week session)



Chris Wong, SULI student

Student/Mentor Introductions



Tom Maloney, SULI student, and Nicola Bowler, SULI mentor

"The SULI internship gives the student access to many aspects of professional research: laboratory experimentation, theoretical modeling, literature review and dissemination of results through poster presentation and writing a research article. This is a generous scheme, which is very valuable for students and mentors alike."

Nicola Bowler, SULI mentor



Andrew Shuff, SULI student, and Andreja Bakac, SULI mentor

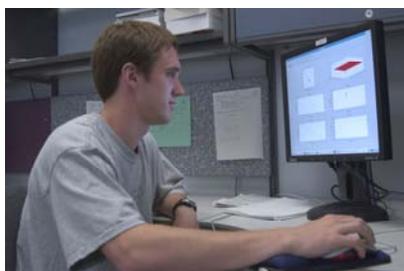
Laboratory Research



Amanda DeVries, SULI student



Tom Maloney, SULI student



Brian Langstraat, SULI student



David Sauer, SULI student

“The SULI program opened my eyes to diversity in the chemistry field as well as basic organic chemistry lab techniques that aren't always taught in the classroom. I worked alongside researchers, which I don't have the opportunity to do at the small school I attend. I am thankful for the brilliant interns, students and staff I met this summer, and I am thankful for the opportunity the SULI program gave me to further my education in a way I never imagined.”

*Amanda DeVries,
SULI student*



Travis Monk, SULI student



Andrew Shuff, SULI student



Eric Poweleit, SULI student

"I enjoyed my experience at Ames Lab because I feel it helped me grow as a chemist, a student and a person through my experiences in and outside the lab."

*Andrew Shuff,
SULI student*

Importance of Getting a Ph.D.



Special presentation by Dr. James Bloedel, vice provost for research, ISU.



Audience included students from the SULI program as well as Research Experience for Undergraduate (REU) students from the Computational Materials Chemistry Program of the ISU chemistry department.

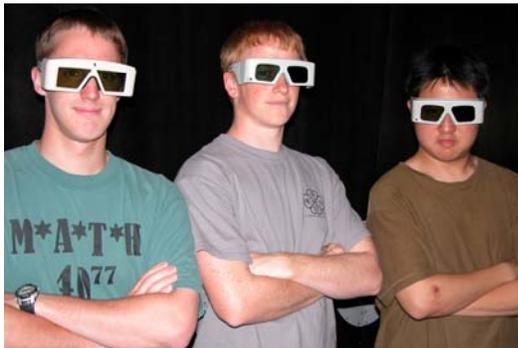
Virtual Reality Applications Center Tour



SULI students learn about ISU's 6-screen virtual reality research lab, called C6.



C6



SULI students up their "cool" factor by donning the appropriate eyewear before entering the C6 virtual reality chamber.

Graduate College Presentation



Renee Harris, graduate program coordinator for the ISU chemistry department, discusses the value of graduate college. Students were also given information on applying for graduate school at ISU.



“The SULI program at Ames Lab benefited me by providing a memorable research experience and convincing me that graduate school is where I need to be after I graduate.”

*Shamus Cronin,
SULI student*

Trip to the Science Center of Iowa



Students participate in a biofeedback experiment.



One SULI student leaves a lasting impression at the Science Center of Iowa.

Canoe Trip on the Des Moines River



Iowa Cubs Baseball Game



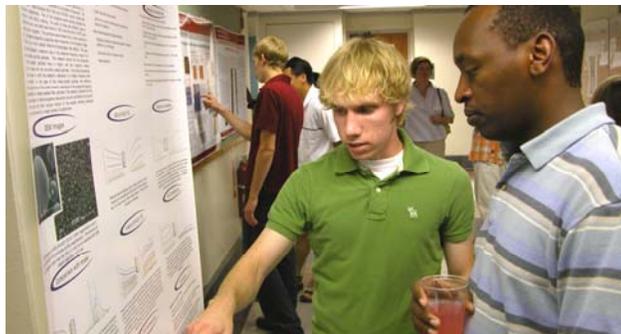
Following a presentation by Eli Rosenberg, professor and chair of ISU's physics and astronomy department, entitled "The Physics of Baseball," SULI students spent an evening at an Iowa Cubs baseball game.



Student Poster Presentation



David Sauer, SULI student, explains his presentation to Bruce Harmon, Ames Laboratory deputy director.



Tom Maloney, SULI student, makes a point about his research to an interested onlooker.



Brian Langstraat, SULI student, explains his poster. No, it has nothing to do with Pepsi.



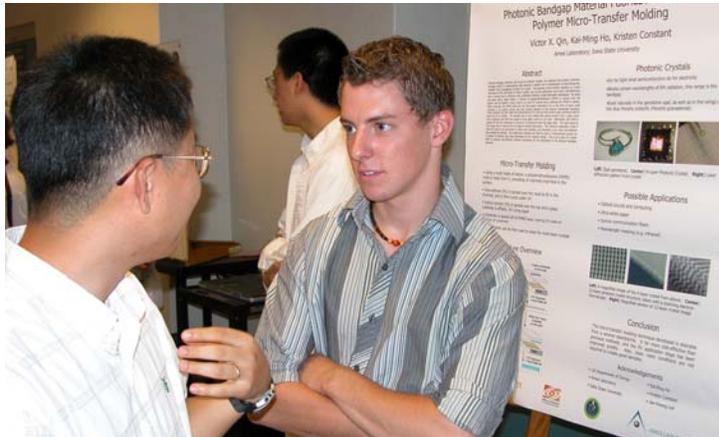
Amanda DeVries, SULI student, readies her response to a question as Chris Wong (center) gets demonstrative with his answer to a question.



Mentor, Bill McCallum (center), checks over his student, David Sauer's, poster.



Andrew Shuff, SULI student, gets a few pointers from Bob Angelici, Ames Laboratory senior chemist.



Travis Monk, SULI student, listens to a comment about his research.

"I got a chance to meet two SULI students having physics background for my photonic crystal fabrication. Since my experiments are mostly related to a three-dimensional microfabrication via layer-by-layer processing, the number of stacked layers is used as a barometer for showing the level of skill in the fabrication. The students had much more matured skill than I expected they would have at the beginning. They made six-layered 3D structures and more than that seems not a problem. Their achievement has a meaning not only for them but for us because this tells us that our newly developed fabrication method could be realized by new learners without difficulties. It was a pleasure to meet the SULI students who were aggressive in learning our experiments."

Jae-Hwang, SULI mentor

Student Networking After Hours



Shamus Cronin, SULI student



A little Frisbee toss helps pass the time at the students' apartment complex.

"My experience with the SULI program is colored (brightly) by the extremely high quality of the student that I worked with this summer. Shamus Cronin was the ideal prototype of a SULI student, willing and able to jump into the project that we designed and was always friendly and positive. I only hope that he got half as much enjoyment out of his experience as I and my group members received during his stay at Ames Lab. His experimental results were of high (publishable) value, and his careful analysis will help us to develop at least one new manuscript. My only complaint is that the program was too short. Sign me up again!"

Iver Anderson, SULI mentor



SULI students frequently shared mealtimes together during their summer internship.

Student Participants

James (Shamus) Cronin, senior
Amanda DeVries, junior
Brian Langstraat, freshman
Thomas Maloney, sophomore
Travis Monk, senior
Eric Poweleit, junior
Xueying V. (Victor) Qin, freshman
David Sauer, sophomore
Andrew Shuff, junior
Christopher Wong, junior

Ames Laboratory Mentors

Iver Anderson
Senior Metallurgist, Ames Lab; Adjunct Professor, ISU

Andreja Bakac
Senior Chemist, Ames Lab

Nicola Bowler
Associate Scientist, Center for Nondestructive Evaluation, ISU

Kristen Constant
Associate Professor, Materials Science & Engineering, ISU

Kai-Ming Ho
Senior Physicist, Ames Lab; Distinguished Professor, Physics & Astronomy, ISU

George Kraus
Director, Bio-related Initiatives, Ames Lab; Professor, Chemistry, ISU

Jae-Hwang Lee
Graduate Assistant, Physics and Astronomy, ISU

Surya Mallapragada
Program Director, Materials Chemistry, Ames Lab; Associate Professor, Chemical Engineering, ISU

Bill McCallum
Senior Metallurgist, Ames Lab; Adjunct Professor, Materials Science and Engineering, ISU

Gordon Miller
Associate; Professor and Chair, Chemistry, ISU

Masha Sosonkina
Scientist I, ISU



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