
LLE's Summer High School Research Program

During the summer of 2006, 13 students from Rochester-area high schools participated in the Laboratory for Laser Energetics' Summer High School Research Program. The goal of this program is to excite a group of high school students about careers in the areas of science and technology by exposing them to research in a state-of-the-art environment. Too often, students are exposed to "research" only through classroom laboratories, which have prescribed procedures and predictable results. In LLE's summer program, the students experience many of the trials, tribulations, and rewards of scientific research. By participating in research in a real environment, the students often become more excited about careers in science and technology. In addition, LLE gains from the contributions of the many highly talented students who are attracted to the program.

The students spent most of their time working on their individual research projects with members of LLE's technical staff. The projects were related to current research activities at LLE and covered a broad range of areas of interest including computational hydrodynamics modeling, materials science, laser-fusion diagnostic development, fiber optics, database development, computational chemistry, and the computational modeling of electron, neutron, and radiation transport (see Table 108.VI).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included laser physics, fusion, holographic optics, fiber optics, liquid crystals, atomic force microscopy, and the physics of music. The students also received safety training, learned how to give scientific presentations, and were introduced to LLE's resources, especially the computational facilities.

The program culminated on 30 August with the "High School Student Summer Research Symposium," at which the students presented the results of their research to an audience

including parents, teachers, and LLE staff. The students' written reports will be made available on the LLE Web site and bound into a permanent record of their work that can be cited in scientific publications.

Two hundred and four high school students have now participated in the program since it began in 1989. This year's students were selected from approximately 60 applicants.

At the symposium, LLE presented its tenth William D. Ryan Inspirational Teacher Award to Mr. Thomas Lewis, a former earth science teacher (currently retired) at Greece Arcadia High School. This award is presented to a teacher who motivated one of the participants in LLE's Summer High School Research Program to study science, mathematics, or technology and includes a \$1000 cash prize. Teachers are nominated by alumni of the summer program. Mr. Lewis was nominated by Benjamin L. Schmitt, a participant in the 2003 Summer Program, with a letter co-signed by 13 other students. "Mr. Lewis was an inspirational, monumental educator (scientific and otherwise), developing a course to be known as 'Advanced Earth Science' as a response to the Advanced Placement science program," Benjamin writes in his nomination letter. "He provided constant challenges and supplied his students with current publications and electronic media about their individual interests." His pursuit of direct student encouragement and interaction came with weekly invitations to his home for star-viewing events. Mr. Lewis "holds one of the most distinguished records in the New York State High School Science Olympiad... spending countless hours each year outside of normal school hours to lead practices, assist with studying... the construction of technical event projects. His devotion to student learning was unmatched by any other teacher or Science Olympiad coach to succeed him." Mr. Lewis announced that he would donate his \$1000 award to the Science Olympiad.

Table 108.VI: High School Students and Projects—Summer 2006.

Name	High School	Supervisor	Project Title
Deshpreet Bedi	Brighton	F. Marshall	X-Ray Diffraction Measurements of Laser-Generated Plasmas
Ryan Burakowski	Churchville-Chili	T. Kosc	PCLC Flakes for OMEGA Laser Applications
Alexandra Cok	Allendale Columbia	S. Craxton	Optimization of Polar Direct Drive Beam Profiles for Initial NIF Targets
Zuzana Culakova	Brighton	K. Marshall	Organic Coatings for Hardening of Laser Optics
Eric Dobson	Harley	J. Delettrez	Modeling Collisional Blooming and Straggling of the Electron Beam in the Fast Ignition Scenario
Elizabeth Gregg	Naples Central	S. Mott/ J. Zuegel	Development of a Test Apparatus for the Optimization of Fiber Splicing
Daniel Gresh	Wheatland-Chili	R. Kidder	Implementing a Knowledge Database for Scientific Control Systems
Matt Heavner	Fairport	C. Stoeckl	Realtime Focal Spot Characterization
Sean Lourette	Fairport	C. Stoeckl	Neutron Transport Calculations Using Monte-Carlo Methods
Ben Matthews	York Central	D. Lonobile/ G. Brent	Precision Flashlamp Current Measurement—Thermal Sensitivity and Compensation Techniques
Ryan Menezes	Webster Schroeder	D. Harding	Evaluation of Confocal Microscopy for Measurement of the Roughness of Deuterium Ice
Rui Wang	Fairport	K. Marshall	Nickel Dithiolene Systems: Computational Modeling of Spectral Properties
Nicholas Whiting	Bloomfield	R. Epstein	Dynamic Energy Grouping in Multigroup Radiation Transport Calculations