
LLE's Summer High School Research Program

During the summer of 2004, 16 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 laser optics modeling, analysis of OMEGA implosion experiments, hydrodynamics modeling, cryogenic target characterization, liquid crystal physics and chemistry, materials science, the development and control of laser fusion diagnostics, and OMEGA EP laser system design and engineering (see Table 100.III).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included laser physics, fusion, holographic optics, fiber optics, femtosecond lasers and their applications, computer-controlled optics manufacturing, and global warming. 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 25 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 bound into a permanent record of their work that can be cited in scientific publications. These reports are available by contacting LLE.

One hundred and seventy-six high school students have now participated in the program since it began in 1989. This year's students were selected from approximately 50 applicants.

At the symposium, LLE presented its eighth William D. Ryan Inspirational Teacher Award to Mr. Claude Meyers, a former physics teacher at Greece Arcadia High School. This award is made to a teacher who motivated one of the participants in LLE's Summer High School Research Program to study in the areas of science, mathematics, or technology and includes a \$1000 cash prize. Teachers are nominated by alumni of the summer program. Mr. Meyers was nominated by David Bowen, a participant in the 2001 Summer Program. "Claude Meyers impressed me as someone who was easily capable of being a college professor, or even a serious, doctorate-carrying researcher," David writes in his nomination letter. According to David, Mr. Meyers was an outstanding physics teacher with a deep love and understanding of physics, who was able to impart his students with excitement and respect for the principles of physics.

Table 100.III: High School Students and Projects—Summer 2004.

Name	High School	Supervisor	Project Title
Daniel Balonek	Byron-Bergen HS	D. Jacobs-Perkins	Mechanical Characterization of Cryogenic Targets
Gregory Balonek	Byron-Bergen HS	S. Craxton	How Good Is the Bright-Ring Characterization of Cryogenic Target Uniformity?
Robert Balonek	Byron-Bergen HS	D. Lonobile	Design and Fabrication of a Handheld, Fiber Optic-Coupled, Coolant Water Flow Detector Test Fixture
Bruce Brewington	Fairport HS	S. Craxton	3-D Characterization of Deuterium-Ice-Layer Imperfections
Daniel Butler	Brighton HS	R. Boni	Automated Focusing of the ROSS Streak Tube Electron Optics
Jeremy Chang	Penfield HS	M. Guardalben	Grating Compressor Modeling
Joseph Dudek	Honeoye-Falls-Lima HS	C. Stoeckl	Hexapods and Multiple Coordinate Systems
Laurie Graham	Bloomfield HS	S. Regan	Experimental Investigation of Far Fields on OMEGA
Jivan Kurinec	Rush-Henrietta HS	M. Bonino/ D. Harding	Material Properties of Spider Silk at Cryogenic Temperatures
Jonathan Kyle	Gates-Chili HS	J. DePatie	Two-State Motor Controller
Ted Lambropoulos	Pittsford-Mendon HS	J. Marozas	Optimal Pinhole Loading via Beam Apodization for OMEGA EP
Yekaterina Merkulova	Penfield HS	J. Delettrez	Spatial Distribution of the Reflected Laser Light at the Experimental Chamber Wall
Arun Thakar	Pittsford-Mendon HS	R. Epstein	Numerically Calculated Spherical Rayleigh-Taylor Growth Rates
Glen Wagner	Fairport HS	T. Kosc/ K. Marshall	Computer Modeling of Polymer Cholesteric Liquid Crystal Flake Reorientation
Tina Wang	Webster-Schroeder HS	V. Smalyuk	Modeling of X-Ray Emission in Spherical Implosions on OMEGA
Ariel White	East Irondequoit-Eastridge	K. Marshall	Photopatterning of Liquid Crystal Alignment Cells

