LLE's Summer High School Research Program

During the summer of 2000, 14 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 modeling and characterization, diagnostic development, hydrodynamics modeling, liquid crystal chemistry, superconductors, optical coatings, laser damage, and the development of a novel laser glass (see Table 84.V).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included lasers, fusion, holography, optical materials, nonlinear optics, the OMEGA Cryogenic Target System, and scientific ethics. 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 with the High School Student Summer Research Symposium on 23 August 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 seventeen high school students have now participated in the program since it began in 1989. The students this year were selected from approximately 70 applicants.

In 1997, LLE added a new component to its high school outreach activities: an annual award to an Inspirational Science Teacher. This award honors teachers who have inspired High School Program participants in the areas of science, mathematics, and technology and includes a $1000 cash prize. Teachers are nominated by alumni of the High School Program. Mr. James Shannon of Pittsford Mendon High School was the recipient of LLE's 2000 William D. Ryan Inspirational Teacher Award. Mr. Shannon, a chemistry teacher, was nominated by three alumni of the Research Program—Mr. Chen-Lin Lee (participant 1994), Mr. Steven Corsello (participant 1998), and Ms. Leslie Lai (participant 1998). Mr. Lee writes, "One person (Mr. Shannon) stands out most in providing me encouragement and confidence to further my studies in engineering." He adds, "He loves interacting with students, he loves teaching, and he loves chemistry." Mr. Corsello writes, "Mr. Shannon's unique teaching style enables his students to better understand chemistry." Ms. Lai writes, "He devoted his time to each student and made it easier for everyone to learn the material," and "He is one of the most encouraging people I have ever met." Ms. Kathleen Walling, principal of Pittsford Mendon High School, adds, "Jim is one of the most talented and dedicated teachers at this high school and has long been a favorite of students and parents," and "Jim has gone far above and beyond the requirements of his job description time and time again."

Table 84.V: High School Students and Projects—Summer 2000.

Name	High School	Supervisor	Brief Project Title
Andrew Campanella	Webster	P. Jaanimagi	Large-Area, Low-Voltage X-Ray Source
Jill Daum	Rushville	D. Smith/J. Taniguchi	Experimental Simulation of Damage in Spatial-Filter Lenses
Abraham Fetterman	Pittsford Mendon	M. Skeldon	Modeling Pulse Shape Distortions in the OMEGA Laser
Ming-fai Fong	Pittsford Sutherland	S. Regan	Experimental Investigation of Smoothing by Spectral Dispersion (SSD) with Apertured Near Fields
Robert Forties	Irondequoit	F. Marshall	X-Ray Sensitivity Measurements of Charge Injection Devices
Binghai Ling	Brighton	R. Epstein	Simulation of Plasma Spectra and Images of Foil Targets Using the Prism SPECT3D Radiation-Transport Post-Processor
Anne Marino	Hilton	S. Jacobs	Developing a Durable Phosphate Glass with a Low Glass Transition Temperature
Elizabeth McDonald	Harley	J. Zuegel	Adapting ASBO/VISAR for Foam Targets
Ronen Mukamel	Brighton	S. Craxton	Modeling the Spectra of Frequency-Converted Broadband Laser Beams on OMEGA
Gloria Olivier	Honeoye Falls-Lima	K. Marshall	Improving the Visible Selective Reflection in Lyotropic Cellulose Urethane Liquid Crystals
Colin Parker	Brighton	J. Marozas	Dynamic Focal Spot Size Using a Static Phase Plate
Priya Rajasethupathy	Brockport	J. Delettrez	Improving Equation-of-State Tables
John Savidis	Gates-Chili	R. Sobolewski	Characterization of Ultrafast Superconducting Optoelectronic Devices
Stephanie Wolfe	Spencerport	D. Smith/J. Oliver	Coatings for Ultraviolet Lithography