
LLE's Summer High School Research Program

During the summer of 2009, 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 experimental diagnostic development, computational modeling of implosion physics, laser physics, experimental and theoretical chemistry, materials science, cryogenic target characterization, target vibration analysis, and computer control systems (see Table 120.VII).

The students attended weekly seminars on technical topics associated with LLE's research. Topics this year included laser physics, fusion, holography, glass fracture, nonlinear optics, electrostatics, and electronic paper. 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 26 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 forty-nine high school students have now participated in the program since it began in 1989. This year's students were selected from a record 80 applicants.

At the symposium LLE presented its 13th annual William D. Ryan Inspirational Teacher Award to Mr. Jeffrey Klus, a mathematics teacher at Fairport 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. Klus was nominated by Nicholas Hensel and Angela Ryck, participants in the 2008 Summer Program. Nick describes Mr. Klus as "a great teacher" with an "obvious enjoyment of teaching and the material he teaches. Sarcastic quips and quirky comments were always close at hand in class, bringing humor to the otherwise droll, factual world of mathematics...I will always remember Mr. Klus's love for teaching, his continually enjoyable humor, and the way he treated all of his students as equals...He inspired in me a fresh love for math." Angela agreed about the humor Mr. Klus brought to class. She wrote, "Mr. Klus is a legend in my school...His entertaining stories kept us laughing at our seats, and the kids who rarely smiled in math class beamed in his presence...My favorite thing about Mr. Klus is that he encourages students to try new things... Mr. Klus has had an enormous effect on my education, and he is truly an inspiration to me." Ms. Pam Ciranni, Assistant Principal of Fairport High School, added, "Jeff is the driving force behind the AP computer classes. He is an advisor to the masterminds and chess clubs. He is a mentor to the other teachers. He is a consummate professional, understands the students' needs, and acts with the students as a peer."

Table 120.VII: High School Students and Projects—Summer 2009.

Name	High School	Supervisor	Project Title
Dustin Axman	Irondequoit	R. Rombaut, R. Russo	A Graphical Network Interface to Oscilloscopes
Leela Chocklingham	Brighton	K. L. Marshall	Abrasion-Resistant Anti-Reflective Silane Sol-Gel Coatings
Ted Conley	McQuaid	J. Bromage	Automated Injection for High-Power Fiber Amplifiers
Cheryl Liu	Pittsford Sutherland	J. P. Knauer	Neutron Detection with High Bandwidth and High Dynamic Range
Trevor Lu	Webster Thomas	D. H. Edgell	X-Ray Phase-Contrast Characterization of Cryogenic Targets
Evan Miller	Pittsford Mendon	J. A. Delettrez	Electron Reflection in Monte Carlo Simulations with the Code GEANT
Lindsay Mitchel	Spencerport	R. S. Craxton	Exploration of the Feasibility of Polar Drive on the LMJ
Justin Owen	Irondequoit	R. Kidder, C. Kingsley, M. Spilatro	Using Networked Data Services for System Analysis and Monitoring
Ben Petroski	Livonia	W. T. Shmayda	Water Desorption from Copper at Room Temperature
Aaron Van Dyne	Brighton	J. A. Marozas	Optimization of 1-D Multiple-FM SSD Designs for OMEGA EP and the NIF
Marisa Vargas	Webster Thomas	C. Dorrer, K. L. Marshall	Laser Beam Shaping with Optically Patterned Liquid Crystals
Kate Walden	Wayne	T. C. Sangster, M. Burke	The Effect of Alcohol Hydroxide Solutions on the Bulk Etch Rate of CR-39
Victor Wang	Webster Thomas	K. L. Marshall	Computational Modeling of Optically Switchable Azobenzenes
Paul Watrobski	Penfield	W. Theobald	UV Probe Beam for Plasma Characterization and Channeling Experiments
Mia Young	Penfield	R. Epstein	Analysis of Implosion Radiographs
Harvest Zhang	Brighton	L. Lund	Resonance and Damping Characterization in Cryogenic Fusion Targets