

August 2016 Progress Report on the Laboratory for Laser Energetics Inertial Confinement Fusion Program Activities



Summer High School Research Program: During the summer of 2016, 13 students from Rochester-area high schools participated in the Laboratory for Laser Energetics' (LLE) Summer High School Research Program [Fig. 1(a)]. The goal of this program, directed by Dr. Stephen Craxton, 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 [see Figs. 1(b) and Fig. 1(c)]. In addition, the students attended weekly seminars on technical topics associated with LLE's research.

The program culminated on 24 August 2016 with the "High School Student Summer Research Symposium," at which time 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 website and bound into a permanent record of their work that can be cited in scientific publications.

Three hundred and fifty-three high school students have now participated in the program since it began in 1989. This year's students were selected from nearly 60 applicants.

At the symposium, LLE presented its 20th annual William D. Ryan Inspirational Teacher Award to Mrs. Shayne Watterson, a chemistry teacher at Penfield 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. Mrs. Watterson was nominated by Emma Garcia and Felix Weilacher, participants in the 2014 program.

Omega Facility Operations Summary: The Omega Laser Facility conducted 191 target shots in August with an average experimental effectiveness (EE) of 94.5% [168 shots on the OMEGA laser with EE of 95.5% and 23 on OMEGA EP (including 16 joint shots with OMEGA) with an EE of 93.5%]. The ICF program accounted for 85 target shots for experiments carried out by LANL, LLE, and LLNL while the HED program had 25 shots for LANL and LLNL experiments. NLUF received 60 target shots for campaigns for the University of Michigan, MIT, Rice University, The University of Chicago, and the University of California, Berkeley. LLNL also conducted 21 shots for two LBS experiments.

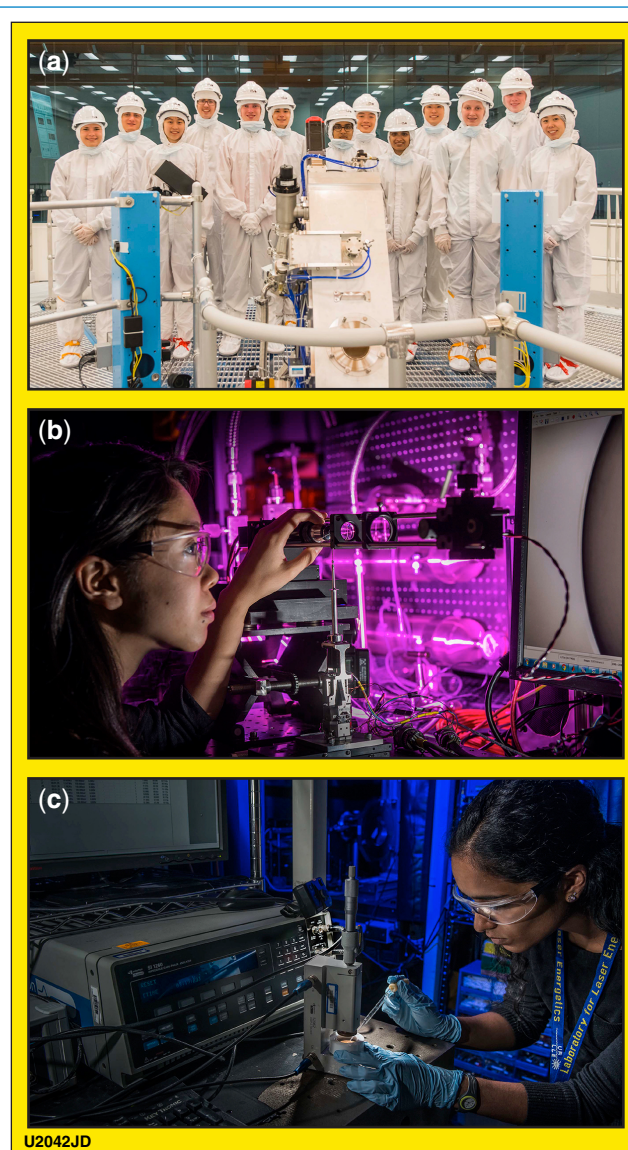


Figure 1. (a) 2016 Summer High School Research Program participants on top of the OMEGA EP target chamber structure. (b) Joy Zhang of Penfield High School at the digital microscope that is being developed for use on the target Fill and Transfer Station. Her advisor was Roger Janezic. (c) Sapna Ramesh, from Pittsford Mendon High School, is shown pipetting an oil sample to measure its electrical properties as part of her pulsed-power research project. Sapna's advisor was Kenneth Marshall.