Cover Photos

Top left: OMEGA System Scientist, Tanya Kosc (right) and Laboratory Engineer Jeremy Zenkar (left) are shown aligning a diagnostic upgrade, which supports the multiple-pulse driver line (MPD). The MPD provides on-shot co-propagation of two separate pulse shapes in all 60 OMEGA beams.

Bottom left: The LLE Summer Research Program for High School Juniors completed its 27th year in 2015. Shown in this photograph is Gabriel Evans (McQuaid), advised by Walter Shmayda, who measured the hydrogen pressure over palladium hydride.

Center: Photograph of the inside of the OMEGA target chamber on a cryogenic DT target implosion that exceeded a milestone, creating a compressed fusion fuel pressure of 50 billion atm (50 Gbar). These experiments are part of an LLE campaign to demonstrate fuel pressures of 100 Gbar on OMEGA—the pressure required to demonstrate hydrodynamic equivalence on OMEGA to a direct-drive–ignition capsule at the National Ignition Facility (NIF).

Top right: Ph.D. candidate Sivan Salzman is shown measuring the surface texture of polycrystalline, chemical-vapor–deposited (CVD) zinc sulfide (ZnS) that was polished with an advanced acidic magnetorheological finishing (MRF) fluid developed at LLE. CVD ZnS is an important material used to produce infrared windows and domes. MRF polishing of such a material—where a magnetic material stiffens a fluid suspension in contact with a workpiece—opens the opportunity to produce complex and aerodynamic shapes.

Middle right: Research Engineer Chad Mileham is shown mounting a slit x-ray imager nose cone to a high-speed x-ray streak camera (PJX).

Bottom right: The photograph shows the installation of a next-generation temporal diagnostic (P11-NTD) nose-cone assembly into the target chamber.

Prepared for
U.S. Department of Energy
Albuquerque Service Center
DOE/NA/1944-1251

Distribution Category
October 2014–September 2015

Printed in the United States of America
Available from
National Technical Information Services
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
www.ntis.gov

The work described in this volume includes current research at the Laboratory for Laser Energetics, which is supported by New York State Energy Research and Development Authority, the University of Rochester, the U.S. Department of Energy Office of Inertial Confinement Fusion under Cooperative Agreement No. DE-NA0001944, and other agencies.

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