

## 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.

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