About the Cover:

Top left: LLE developed a spatially resolved electron temperature (SR-Te) diagnostic to measure the temperature profiles within the hot spot of cryogenic implosions on OMEGA. Shown in the image is the SR-Te instrument and the diagnostic team led by R. Shah.

Top center: LLE deployed a new microscope to measure submicron features in cryogenic DT capsule targets. The microscope was installed in Fill and Transfer Station #2 (FTS#2) where targets, traveling in the Moving Cryostat Transport Carts (MCTC's), are imaged without the MC shroud. Shown here are the MCTC operator M. Coffey, microscope operator D. Bredesen, and FTS#2 operator B. Ruth working together to perform the measurements.

Top right: The Multi-Terawatt (MTW) Laser at LLE delivered its 10,000th laser shot on 26 May 2020. The milestone shot was taken in support of an external campaign for L3Harris Technologies (L3H). The image shows the experimental lead C. Stillman, L3H Scientist and LLE Ph.D. graduate, standing next to the MTW compression chamber, overlooking the target chamber. The inset image is the interferometry data acquired during this shot.

Middle left: OMEGA experiments study thermal transport in laser-heated gas-jet plasmas across high magnetic fields generated by the recently upgraded dual magneto-inertial fusion electrical discharge system (MIFEDS). Thomson scattering was used to diagnose the plasma conditions.

Middle right: To adapt to social distancing, travel restrictions, and other COVID-19 preventive measures, LLE has implemented a new *remote-PI* operation protocol that brings the Omega Laser Facility to users. LLE researchers and our external users around the globe have been participating in the *remote-PI* operation to safely and effectively conduct experiments remotely. Shown here are the control rooms of OMEGA (top) and OMEGA EP (bottom) Laser Systems. The shot director in each case is in touch with the Principal Investigator via the *ShotStream* Zoom meeting during the entire campaign. Details of the *remotePI* operation were published in G. Pien *et al.*, ICUIL *News* **11**, 10 (2020).

Bottom left: LLE scientists developed a novel dephasingless laser-wakefield accelerator (DLWFA) concept based on flying-focus technology that combines special optics to shape an ultrashort, high-intensity laser pulse. The DLWFA concept would produce an accelerator that uses laser light to accelerate particles to very high energy levels in meters. This exciting work was published in the journal Physical Review Letters [J. P. Palastro *et al.*, **124**, 134802-3 (2020)] and also highlighted by the DOE Office of Science.

Bottom right: The femtosecond damage-test system employs a 20- to 30-fs pulse duration laser with a central wavelength tunable between 820 nm and 970 nm. The system is also designed to study dynamics with femtosecond resolution. Shown here is K. Kafka, scientist in the Optical Materials group, working in the dynamics chamber. With the lid open, optics showcasing the system are partially visible.

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