

Omega Laser Facility completes record 25,000 experiments

November 5 2013

The National Nuclear Security Administration (NNSA) today announced that the Omega Laser Facility, a national user facility for NNSA that is located at and operated by the University of Rochester's Laboratory for Laser Energetics (LLE) in Rochester, New York, recently conducted its 25,000th experiment to create and study extreme states of matter.

"The University of Rochester's Laboratory for Laser Energetics plays an important role in advancing NNSA's national security missions. It has made significant contributions to the Stockpile Stewardship Program," said NNSA Deputy Administrator for Defense Programs Don Cook.

"The Laboratory operates Omega as a very effective user facility. I congratulate the Omega team on this accomplishment and thank LLE for its sustained contributions to the stockpile mission."

The Omega Laser Facility is used for high [energy density](#) physics research, spanning from fundamental science experiments exploring the birth and death of stars, the hearts of planets, and the mysteries of magnetic reconnection, to [inertial confinement fusion](#) ignition, laser-plasma interactions and nuclear weapons research. The 25,000th target shot was a science experiment to study the properties of liquid deuterium at high pressure, which will help scientists figure out how to make fusion work in the laboratory and what is happening in the interior of giant planets like Jupiter and Saturn.

The Omega Laser Facility produces the most target shots out of NNSA's large [high energy](#) density facilities, answering vital physics questions and

supporting the development of diagnostics and experimental platforms for the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL) in Livermore, Calif. The Omega Laser Facility performs more than half of the target shots for external users, including for the private sector. The research conducted by LLE scientists and the operations of the laser facility support NNSA's Stockpile Stewardship Program and are funded by a cooperative agreement with NNSA. The LLE also educates advanced students in fields critical to NNSA.

The research activities conducted on the Omega Laser Facility include Inertial Confinement Fusion (ICF), weapons physics in support of the Stockpile Stewardship Program, and basic high energy density physics. The ICF research is carried out by scientists from LLE, LLNL, Los Alamos National Laboratory (LANL) and Sandia National Laboratories. Support of Stockpile Stewardship experiments are carried out by LANL, LLNL and LLE.

More information: www.lle.rochester.edu/

Provided by National Nuclear Security Administration

Citation: Omega Laser Facility completes record 25,000 experiments (2013, November 5) retrieved 28 April 2024 from <https://phys.org/news/2013-11-omega-laser-facility.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.
