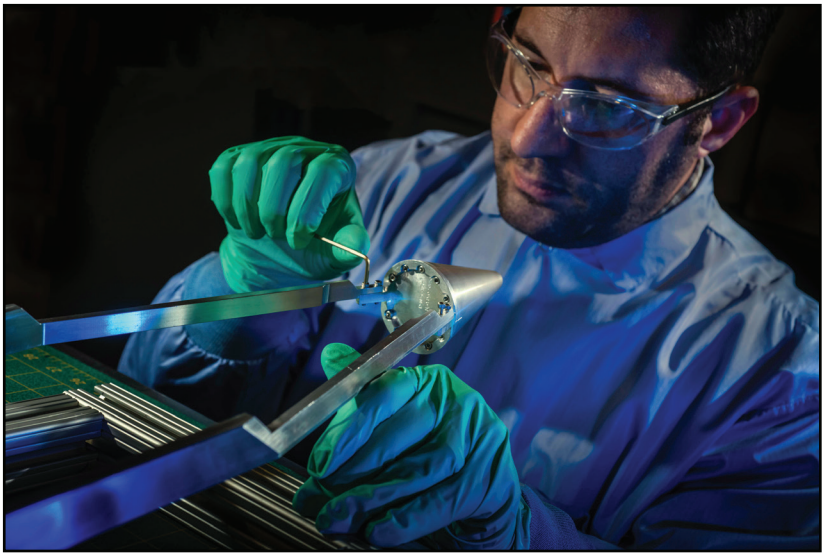
About the Cover:

The neutron-induced breakup cross sections of deuterium show two recent theoretical models (JENDL-4.0 and CENDL-3.0) and the results from past experiments. The most recent experiment used, for the first time, a laser-based facility (OMEGA) to generate a bright neutron source to induce the breakup of deuterium in nuclear reaction vessels positioned near the target chamber center. This new experimental configuration measured a larger energy spectrum—from 0.5 to 10 MeV—as compared to previous methods performed on accelerator-based platforms. The measured energy spectrum of neutrons produced from the breakup of deuterium is inconsistent with a two-nucleon-force model. The experimental data are more accurately described by the predictions of a recently developed theoretical framework that assumes the presence of a three-nucleon force used in modern theoretical models. A noticeable peak at 11.8 MeV, which has not been confirmed experimentally, represents the final-state interaction and is required to further develop an accurate description of the three-nucleon-force model. The bracket shown in the inset was designed with minimal mass in order to avoid additional neutron scattering along the detector's line of sight once it is positioned at target chamber center.



The photo on the right shows C. J. Forrest assembling a nuclear reaction vessel that is attached to a specially designed bracket mounted in one of the ten-inch manipulator diagnostic ports on the target chamber.

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.

For questions or comments, contact Sid Sampat, Editor, Laboratory for Laser Energetics, 250 East River Road, Rochester, NY 14623-1299, (585) 275-2596.

Worldwide-Web Home Page: http://www.lle.rochester.edu/

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