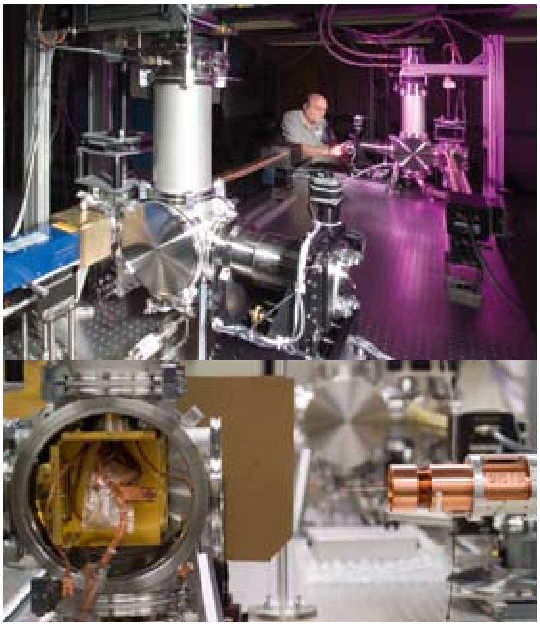
About the Cover:

Cryogenic direct-drive targets scaled from NIF ignition and high-gain target designs are a critical element of LLE's experimental program. A major recent accomplishment has been optimizing the layering process and producing cryogenic targets with a consistently high quality (see **Cryogenic Targets: Current Status and Future Development**, p. 57). A cryogenic target implosion is shown where the cryogenic target handling equipment and many target diagnostics in the OMEGA target chamber are illuminated by unconverted 2ω laser light. The target is delivered in a moving cryostat to target chamber center and the target is exposed when the thermal shrouds (seen in the upper central portion of the image) are pulled away from the target support. Senior Technical Associates Steven Verbridge (left) and Alfred Weaver (right) prepare a cryogenic target system with the thermal shrouds removed (lower left-hand inset) for a final evaluation before the equipment is returned to service. The calculated power spectrum for the first 100 modes, which meets the NIF roughness specification, is superimposed (lower right-hand inset) on an Aitoff projection of the thickness variations in a 95-μm-thick cryogenic DT-ice layer.



The inside cover photo shows Research Engineer Mark Wittman preparing the cryogenic fill-tube test facility for experiments that will study target layering in NIF-scale targets and fast-ignition targets. This facility is independent of the OMEGA Cryogenic Target Handling System and will be used to define the engineering requirements and protocol for achieving high-quality ice layers in cryogenic targets that are substantially larger than targets fielded on OMEGA, or contain features that will likely perturb the ice layer, such as the fill tube, a fast-ignition cone, or a "Saturn ring." The upper image shows the two cryostats, the x-ray phase-contrast imaging system, the optical shadowgraphy imaging system, and the target positioning system. The lower image shows a target attached to a fill tube that is about to be installed into the cryogenic system.

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