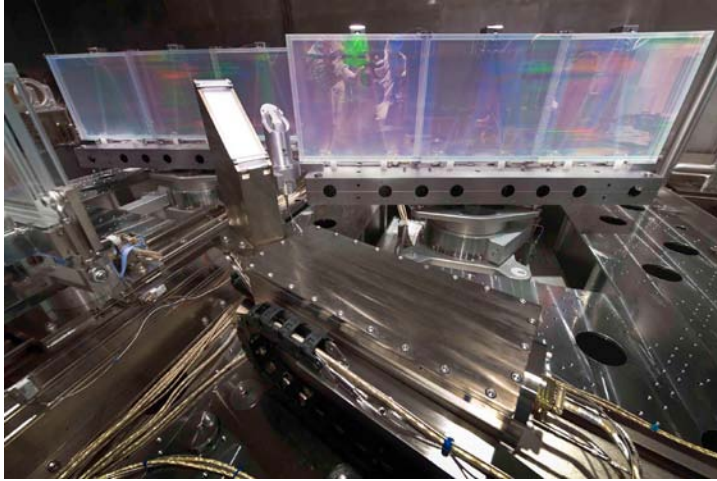


## About the Cover:

The cover of this issue of the LLE Review features Thanh Nguyen, project team leader for the OMEGA EP grating inspection system (GIS), the subject of this issue's feature article (see p. 165). The photograph shows the author examining the GIS hardware on the upper compressor table of the grating compressor chamber (GCC), which is normally maintained at vacuum. The GIS is a line-scanned, dark-field imaging system that detects damage features *in situ* on the final tiled-grating assembly of the pulse-compression system on OMEGA EP. A portion of the pulse compressor's first tiled-grating assembly can be seen in the mirror's reflection on the right side of the image. The GIS has allowed the Omega EP facility to identify potential damage on critical optics while maintaining the pulse compressor in a vacuum environment—a necessary capability for maximizing the performance and availability of the short-pulse laser system.



The image at the left shows another view of the GIS within the GCC. The GIS is in the foreground, shown extended to one end of its scan range. The enclosure nearest to the viewer is a pressure vessel containing the imaging optics and linear charge-coupled-device array. The periscope assembly and illumination system both extend vertically from the pressure vessel and are oriented to illuminate and view the fourth tiled-grating assembly (TGA4), visible in the background at the left of the image (shown rotated away from its normal use angle). The first tiled grating is on the right side of the image. The GIS projects a vertical line of illumination on TGA4 and images the light scattered from potential damage sites. The system is scanned horizontally to sequentially illuminate and image the entire grating surface, resulting in a 2-D defect map. The development

team faced many unique challenges in designing and operating such a scanning system in a thermally isolated vacuum environment. These are discussed in detail in the article on p. 165.

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