IN BRIEF

This volume of the LLE Review comprises reports on the performance of the active-mirror-boosted glass development laser (GDL) single-beam system; the implementation of multichannel, soft x-ray diagnostic instrumentation; computer simulation of recent OMEGA laser implosion experiments; materials and ultrafast technology developments in the LLE advanced technology program; and the National Laser Users Facility activities for October–December 1985.

The following are some highlights of the work described in this issue:

- The active-mirror booster stage on GDL brings single-beam, 1054-nm output energy near the kilojoule level for 1-ns pulses.
- Measurements of soft x-ray emission from 100 to 200 eV are now possible with the help of a four-channel, GHz-bandwidth diode spectrometer, which is fully integrated into a digital data acquisition system.
- Comparison of experimental data and predictions of one-dimensional numerical simulations of OMEGA implosion experiments reveal discrepancies that can be resolved by two-dimensional calculations. The consequences of irradiation nonuniformities are well accounted for and required improvements for future experiments are identified.
- The technique of pulse chirping allows simple temporal stretching and recompression operations to be carried out on picosecond

pulses, to amplify such pulses in compact systems and avoid the dangers of optical nonlinearities due to high peak powers.

- High-average-power glass lasers require glasses with improved thermal-shock resistance. Recent gains in ion-exchange surface treatments of a phosphate-composition glass have led to a fivefold increase in thermal-shock resistance for that glass.

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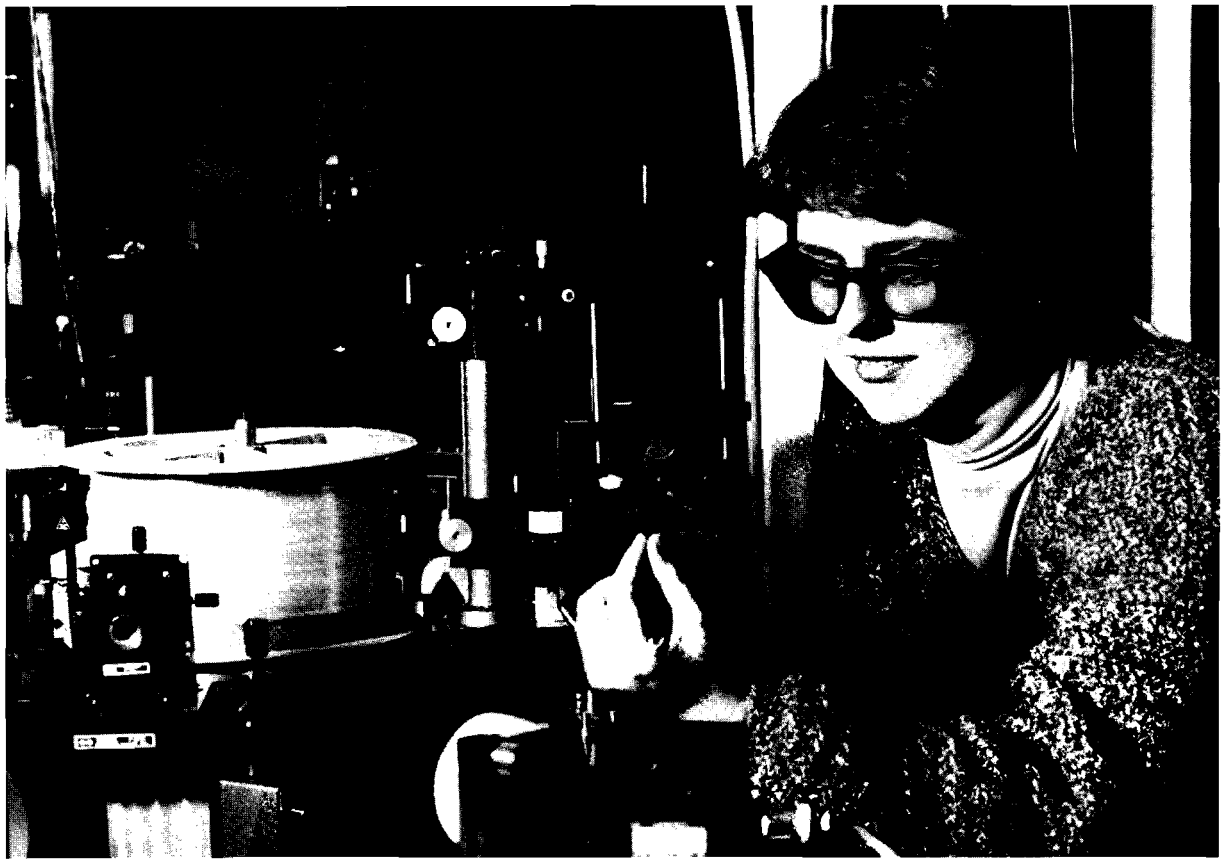

Donna Strickland, a graduate student in optics and a member of the Picosecond Research Group, is shown aligning an optical fiber. The fiber is used to frequency chirp and stretch an optical pulse that can later be amplified and compressed in order to achieve high-peak-power pulses.