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PUBLICATIONS AND CONFERENCE PRESENTATIONS

IN BRIEF

This volume of the LLE Review, covering the period July–September 1993, contains articles on self-focusing of broad-bandwidth laser light with angular dispersion, laser patterning of thin-film circuits, and construction of foam-shell fusion targets. Reports on the detailed designs of major subsystems of the OMEGA Upgrade and on the continuing activation of the upgraded Glass Development Laser system are summarized. Descriptions of research proposals for NLUF are also included in this issue.

Highlights of the research reported in this issue are

- Previous investigations of self-focusing behavior of broad-bandwidth laser light without angular dispersion showed only slight differences when compared to laser light with angular dispersion. A new, numerical investigation of self-focusing with applied angular dispersion shows the development of transverse amplitude modulation, which can act to enhance or impede instantaneous self-focusing. Averaging over one period of phase modulation with imposed bandwidth shows consistent smoothing of the beam, nearly replicating the original spatial profile, including smoothing of induced perturbations due to laser-system imperfections.
- A continuous-wave argon-ion laser beam is focused onto a Y-Ba-Cu-O thin-film circuit. The laser beam selectively heats the epitaxy, which enriches oxygen in irradiated regions alongside depleted regions. Oxygen

enrichment results in the formation of superconducting regions, while oxygen depletion results in semiconducting regions. This maskless operation yields applications in microbridges, coplanar transmisson lines, field-effect transistors, and photoconductive switches.

• One technique to form thick fusion fuel layers is to use a low-density polymer or aerosol foam matrix to hold the liquid DT. This issue summarizes the results of a collaborative experiment conducted at the Institute for Laser Engineering (ILE) to fabricate foam-shell targets with plastic-layer overcoats.