## **IN BRIEF**

This volume of the LLE Review contains reports on OMEGA and GDL laser activities; characterization of laser-generated x-ray sources for nuclear level excitation; the physics of parametric instabilities driven by two pump beams in laser-produced plasmas; developments in advanced technology areas at LLE, specifically ultra-high-speed optoelectronic devices and methods and the modeling of thin-film features in physical vapor deposition; and the National Laser Users Facility activities for January-March 1986.

The following are highlights of articles contained in this issue:

- Parametric instabilities driven by more than one laser beam are analyzed for realistic laser-driven plasmas. Growth rates and thresholds for Raman scattering by these instabilities into specific angular directions are derived and 351-nm, OMEGA experiments are called on for comparison.
- OMEGA laser-plasma x-ray yields are analyzed for their suitability in pumping novel γ-ray laser configurations. First experiments along these lines are in progress.
- A new streak spectrograph combines an x-ray streak camera with a conically curved crystal x-ray spectrograph for time-resolved spectral analysis of laser-plasma x rays. The new spectrograph has improved x-ray collection efficiency with good spectral resolving power.

- The race for the fastest device switching times among high-speed electronic circuits is accelerated by the LLE opto-electronic sampling technique, which measured a 5-ps rise time in a permeable-base transistor.
- Growth abnormalities in physically vapor-deposited optical thin films are a vexing problem for film environmental stability and high-power laser compatibility. Film growth modeling helps in eliminating the cause of these abnormalities.

## CONTENTS

	Pag	e
IN BRIEF .		ii
CONTENT	S	v
Section 1 1.A 1.B	LASER SYSTEM REPORT	9 9 9
Section 2 2.A	PROGRESS IN LASER FUSION	1
2.B	in Laser-Fusion Plasmas5 Chacterization of Laser-Generated X-Ray Sources	1
2.C	for Nuclear Level Excitation	1
	Spectrograph for Laser-Plasma Studies	3
Section 3 3.A	ADVANCED TECHNOLOGY DEVELOPMENTS	4
3.B	The Five-Picosecond Transistor	4 8
Section 4	NATIONAL LASER USERS FACILITY NEWS	9
PUBLICAT	TIONS AND CONFERENCE PRESENTATIONS	



The x-ray transmission-grating streak spectrograph mounted on the OMEGA target chamber is adjusted by Robin Marjoribanks, a doctoral candidate in mechanical engineering. This instrument is used in the study of ionization in nonequilibrium plasmas.