

# PUBLICATIONS AND CONFERENCE PRESENTATIONS

## Publications

B. Yaakobi, T. Boehly, P. Bourke, Y. Conturie, R. S. Craxton, J. Delettrez, J. M. Forsyth, R. D. Frankel, L. M. Goldman, R. L. McCrory, M. C. Richardson, W. Seka, D. Shvarts and J. M. Soures, "Characteristics of Target Interaction with High Power UV Laser Radiation," *Opt. Comm.* **39**, 175-179 (1981).

M. A. True, J. R. Albritton and E. A. Williams, "Fast Ion Production by Suprathermal Electrons in Laser Fusion Plasmas," *Phys. Fluids* **24**, 1885-1893 (1981).

T. M. Nordlund and W. H. Knox, "Lifetime of Fluorescence from Light-Harvesting Chlorophyll a/b Proteins," *Biophys. J.* **36**, 193-201 (1981).

T. C. Bristow, R. S. Craxton, J. Delettrez, A. Entenberg, J. Forsyth, W. Friedman, L. Goldman, F. Kalk, S. Letzring, M. Lubin, R. L. McCrory, J. Rizzo, W. Seka, S. Skupsky, J. M. Soures, E. Thorsos, C. P. Verdon and B. Yaakobi, "Symmetrically Illuminated Laser Fusion Implosion Experiments at the Laboratory for Laser Energetics," *Plasma Physics and Controlled Nuclear Fusion Research 1980*, **2**, 25-30 (1981).

T. Sizer, J. D. Kafka, A. Krisiloff and G. Mourou, "Generation and Amplification of Sub-Picosecond Pulses Using a Frequency Doubled Neodymium YAG Pumping Source," *Opt. Comm.* **39**, 259-262 (1981).

Y. Conturie, B. Yaakobi, U. Feldman, G. A. Doschek and R. D. Cowan, "Observation of New Lines of Xe XLIV, XLV, XLVI, and XLVII in the Range 2.5-3.0 Å from Laser-Imploded Targets," *J. Opt. Soc. Am.* **71**, 1309-1314 (1981).

J. A. Abate, "Flashlamp-Induced Thermal Distortion in an Active-Mirror Nd:Glass Laser Amplifier," *SPIE Vol. 293 Wavefront Distortions in Power Optics*, 114-125 (1981).

G. Albrecht, A. Antonetti and G. Mourou, "Temporal Shape Analysis of Nd<sup>3+</sup>:YAG Active Passive Mode-Locked Pulses," *Opt. Comm.* **40**, 59-61 (1981).

R. E. Hopkins, "Geometrical Optics in a Laser Laboratory," *SPIE Vol. 288 Los Alamos Conference on Optics*, 568-579 (1981).

## Forthcoming Publications

W. Seka, R. S. Craxton, J. Delettrez, L. Goldman, R. Keck, R. L. McCrory, D. Shvarts, J. M. Soures and R. Boni, "Measurements and Interpretation of the Absorption of 0.35 $\mu$ m Laser Radiation on Planar Targets," accepted by *Optics Communications*.

D. H. Berwald and J. A. Maniscalco, "Performance and Economic Analysis of Several Laser Fusion Breeder Fueled Electricity Generation Systems," accepted by *Nuclear Technology/Fusion*.

M. Chou and G. A. Zawadzka, "Long-Pulse N<sub>2</sub> UV Lasers at 357.7, 380.5, and 405.9 nm in N<sub>2</sub>/Ar/Ne/He Mixture," accepted by *IEEE Journal of Quantum Electronics*.

G. A. Mourou and T. Sizer, "Generation of Pulses Shorter than 70 fs with a Synchronously-Pumped CW Dye Laser," accepted by *Optics Communications*.

## Conference Presentations

Y. Conturie, "Soft X-Ray Population Inversion from Aluminum Targets Irradiated by a Frequency-Tripled Nd:Glass Laser," presented at the Annual Meeting of the Optical Society of America, Kissimmee, Florida, October 1981.

R. Bingham, R. Short and E. Williams, "Modulational Instability of a Standing Electromagnetic Wave," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

T. Boehly, L. M. Goldman, M. C. Richardson, W. Seka, J. M. Soures and R. S. Craxton, "Ion Blow-Off Measurements of 0.35  $\mu$ m Laser Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

T. Bristow, B. Brinker, J. Boles, A. Entenberg, R. Hutchison, L. Iwan, S. Letzring, S. Kacendar, R. Nimick, R. Peck, W. Seka, J. M. Soures, D. Villeneuve, B. Yaakobi and M. C. Richardson, "Initial Target Experiments with OMEGA," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

R. S. Craxton, J. Delettrez, R. L. McCrory, D. Shvarts, T. Boehly, R. Keck,

W. Seka and B. Yaakobi, "Simulations of Short Wavelength Laser-Plasma Interaction Experiments," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

J. Delettrez and S. Skupsky, "Target Designs for the 0.35  $\mu\text{m}$  Implosion Experiments on the OMEGA Laser System," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

R. Epstein, D. Shvarts, J. Delettrez, R. L. McCrory and C. P. Verdon, "Self-Consistent Flux Limitation of Transport Coefficients in Hot Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

W. D. Friedman, S. Kumpan, D. Villeneuve, J. Hoose and R. Hopkins, "Laser Beam Characterization Experiments on the OMEGA Facility," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

L. M. Goldman, M. C. Richardson, W. Seka, K. Tanaka, R. Bingham and E. Williams, "Raman Backscattering from UV Laser-Produced Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

S. Kacendar, L. M. Goldman, A. Entenberg, and S. Skupsky, "Measurement of Fuel  $\rho R$  in Laser Fusion Using CR-39 Solid-State Track Detectors," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

R. L. Keck, R. S. Craxton, L. M. Goldman, W. Seka and J. M. Soures, "Continuum X-Ray Measurements of Laser Plasmas Generated by 0.35  $\mu\text{m}$  Irradiation," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

K. K. Lee, R. Hopkins and R. L. McCrory, "Uniformity of Illumination on Spherical Targets," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

S. Letzring, B. Brinker, A. Entenberg, R. Hutchison, L. Iwan, R. Nimick, R. Peck, M. C. Richardson, J. M. Soures, D. Villeneuve, J. Delettrez and D. Shvarts, "Irradiation Geometry Studies with Multiple Beams," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

R. S. Marjoribanks, M. C. Richardson, J. Delettrez, S. Letzring, W. Seka and D. Villeneuve, "Time-Resolved X-Ray Spectrometry from UV Laser-Produced Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

R. L. McCrory and D. Shvarts, "A Hybrid Model for Thermal Electron Transport Simulation for Laser Fusion Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

M. C. Richardson, L. M. Goldman, W. Seka, J. M. Soures, K. Tanaka, R. Bingham and E. Williams, "Raman Side-Scattering and Evidence of  $2\omega_p$  Instability in UV Laser Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

W. Seka, L. M. Goldman, J. Hoose, M. C. Richardson, J. M. Soures, B. Yaakobi, D. Villeneuve, T. Boehly, R. Keck, K. Tanaka, R. Boni, R. S.

Craxton, J. Delettrez, R. L. McCrory and D. Shvarts, "Laser-Plasma Interaction Experiments at  $0.35 \mu\text{m}$ ," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

R. W. Short, R. Bingham and E. A. Williams, "Filamentation Instability in Flowing Plasma," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

D. Shvarts, R. S. Craxton, J. Delettrez, R. L. McCrory, C. P. Verdon and B. Yaakobi, "Analysis of Thermal Transport Inhibition in Intense Laser-Plasma Interactions," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

S. Skupsky, "Charge-Particle Energy Loss in High-Z High-Density Matter," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

J. M. Soures, L. M. Goldman, M. C. Richardson, W. Seka, K. Tanaka, R. Bingham and E. Williams, "Experimental Evidence of Parametric Instabilities in Laser Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

K. Tanaka, L. M. Goldman, W. Seka, R. Bingham, R. Short and E. Williams, "Time-Resolved Backscatter Spectra Around  $\omega_0$  from  $0.35 \mu\text{m}$  Laser Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

C. P. Verdon, R. L. McCrory and D. Shvarts, "Effects of Pusher-Fuel Interface Unstable Growth on Ignition of 'Levitated Fuel' Inertial Confinement Fusion Targets," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

D. Villeneuve, M. C. Richardson, W. Seka, R. Bingham, R. Short and E. Williams, "Filamentation in Short Wavelength Laser Plasmas," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

B. Yaakobi, T. Boehly, Y. Conturie, R. S. Craxton, J. Delettrez, J. M. Forsyth, R. D. Frankel, L. M. Goldman, R. L. McCrory, W. Seka and J. M. Soures, "Characteristics of Target Interaction with a Frequency Tripled Nd:Glass Laser of Power 0.1-0.2 TW," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

B. Yaakobi, T. Boehly, Y. Conturie, R. S. Craxton, J. Delettrez, J. M. Forsyth, R. D. Frankel, L. M. Goldman, R. L. McCrory, W. Seka and J. M. Soures, "Preheat Measurements in UV-Laser Target Interaction," presented at the Annual Meeting of the APS Division of Plasma Physics, October 1981.

B. A. Brinker and J. R. Miller, "Fabrication of Inertial Fusion Targets with Fill Support Capillaries," presented at the American Vacuum Society Meeting, November 1981.

D. Glocker and R. Wiseman, "A New Method for the Batch Production for Micro-Fresnel Zone Plates," presented at the American Vacuum Society Meeting, November 1981.

D. Glocker, J. Drumheller, and J. R. Miller, "Ion Beam Sputter Deposition onto Levitated and Stalk Mounted Laser Fusion Targets," pre-

sented at the American Vacuum Society Meeting, November 1981.

I. S. Goldstein, J. Varon and P. J. McHugh, "RF vs DC Sputter Gun Copper Coating of Laser Fusion Targets," presented at the American Vacuum Society Meeting, November 1981.

H. Kim, J. Mason, J. R. Miller, M. Mehicic and J. Lippert, "Improved Inertial Fusion Target Ablation Layer Fabrication Using Alkyl Substituted Di-Para-Xylylenes," presented at the American Vacuum Society Meeting, November 1981.

T. F. Powers, "Improved Nonconcentricity Characterization of Transparent Laser Fusion Targets by Interferometry," presented at the American Vacuum Society Meeting, November 1981.

Y. Conturie, J. Delettrez, B. Yaakobi and J. Forsyth, "Soft X-Ray Population Inversions in Laser-Produced Plasmas," presented at the 46th Statistical Mechanics Meeting, Rutgers, December 1981.

This report was prepared as an account of work conducted by the Laboratory for Laser Energetics sponsored in part by the Empire State Electricity Energy Research Corporation (ESEERCO), the General Electric Company (GE), the New York State Energy Research and Development Authority (NYSERDA), Northeast Utilities (NU), the Standard Oil Company (Ohio) (SOHIO), the University of Rochester (U of R), and various governmental agencies. Neither ESEERCO, GE, NYSERDA, NU, SOHIO, DOE, the U of R, the government, nor their members or employees, nor any persons acting on their behalf either:

- a. Makes any warranty or representation, express or implied with respect to the accuracy, completeness, or usefulness of the information contained in this report, or the use of any information, apparatus, method, or process disclosed in this report may not infringe privately owned rights; or
- b. Assumes liability with respect to the use of, or for damages resulting from the use of, any information, apparatus, method or process disclosed in this report.

Reference herein to any specific commercial product, process, or service by trade name, mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof.

Results reported in the LLE Review should not be taken as necessarily final results as they represent ongoing research. The views and opinions of authors expressed herein do not necessarily state or reflect those of any of the above sponsoring entities.



