

PUBLICATIONS AND CONFERENCE PRESENTATIONS

Publications

G. Banas, H. E. Elsayed-Ali, F. V. Lawrence, Jr., and J. M. Rigsbee, "Laser Shock-Induced Mechanical and Microstructural Modification of Welded Maraging Steel," *J. Appl. Phys.* **67**, 2380–2384 (1990).

T. Boehly, B. Yaakobi, D. Shvarts, D. Meyerhofer, P. Audebert, J. Wang, M. Russotto, B. Boswell, R. Epstein, R. S. Craxton, and J. M. Soures, "X-Ray Laser Experiments Using Double Foil Nickel Targets," *Appl. Phys. B* **50**, 165–172 (1990).

B. Boswell, D. Shvarts, T. Boehly, and B. Yaakobi, "X-Ray Laser Beam Propagation in Double-Foil Targets," *Phys. Fluids B* **2**, 436–444 (1990).

W. R. Donaldson, A. M. Kadin, P. H. Ballentine, and M. Shoup, "Optically Activated High Temperature Superconductor Opening Switches," in *Digest of Technical Papers*, Seventh IEEE Pulsed Power Conference, edited by R. White and B. H. Bernstein (IEEE, New York, 1989), pp. 897–901.

H. E. Elsayed-Ali, "Hot Electron Relaxation in Metals," in *1989 Technical Digest Series, Volume 17, High Energy Density Physics with Subpicosecond Laser Pulses* (Optical Society of America, Washington, DC, 1989), pp. 58–65.

C. Immesoete, L. Forsley, and H. Kim, "Computer-Assisted Microballoon Selection for Laser Fusion Targets," in *Proceedings of the Forth Conference*, Rochester, NY, 19–23 June 1989, pp. 80–83.

- P. A. Jaanimagi, R. Saunders, C. Hestdalen, W. VanRemmen, and M. Russotto, "Pulse-Shape Measurements on OMEGA," *Ultrahigh Speed and High Speed Photography, Photonics, and Videography* (SPIE, Bellingham, WA, 1989), Vol. 1155, pp. 556–562.
- H. Kim, P.-C. Cheng, M. D. Wittman, and H.-J. Kong, "X-Ray Microscopy of Living Biological Specimens Using a Laser-Plasma as an X-Ray Source," *X-Ray Instrumentation in Medicine and Biology, Plasma Physics, Astrophysics, and Synchrotron Radiation* (SPIE, Bellingham, WA, 1989), Vol. 1140, pp. 256–261.
- H. G. Kim, P. C. Cheng, M. D. Wittman, and H. J. Kong, "Pulsed X-Ray Contact Microradiography and Its Applications to Structural and Developmental Botany," in *X-Ray Microscopy in Biology and Medicine*, edited by K. Shinohara *et al.* (Japan Sci. Soc. Press, Tokyo/Springer-Verlag, Berlin, 1990), pp. 233–242.
- L. E. Kingsley and W. R. Donaldson, "Electro-Optic Surface Field Imaging System," in *Digest of Technical Papers, Seventh IEEE Pulsed Power Conference*, edited by R. White and B. H. Bernstein (IEEE, New York, 1989), pp. 376–379.
- J. C. Lambropoulos, "Analysis of Thermal Stress, Fracture Strength and the Effect of Ion Exchange on High Average Power Phosphate Glass Slab Lasers," *J. Appl. Phys.* **67**, 1784–1792 (1990).
- R. L. McCrory, J. M. Soures, C. P. Verdon, F. J. Marshall, S. A. Letzring, T. J. Kessler, J. P. Knauer, H. Kim, R. L. Kremens, S. Skupsky, R. L. Keck, D. K. Bradley, W. D. Seka, P. A. Jaanimagi, J. A. Delettrez, and P. W. McKenty, "High Density Direct Drive Cryogenic Implosion Experiments," in *Plasma Physics and Controlled Nuclear Fusion Research-1988* (International Atomic Energy Agency, Vienna, 1989), Vol. 3, pp. 17–27.
- C. J. McKinstrie, G. G. Luther, and S. H. Batha, "Signal Enhancement in Collinear Four-Wave Mixing," *J. Opt. Soc. Am. B* **7**, 340–344 (1990).
- R. W. Short and S. Skupsky, "Frequency Conversion of Broad-Bandwidth Laser Light," *IEEE J. Quantum Electron.* **26**, 580–588 (1990).
- A. Simon and R. W. Short, "Reply to the Comments of Drake," *Phys. Fluids B* **2**, 227–228 (1990).
- M. L. Tsai and S. H. Chen, "Helical Sense in Thermotropic Liquid Crystal Copolymers in Relation to the Structure of Pendant Chiral Moiety," *Macromolecules* **23**, 1908–1911 (1990).
- M. L. Tsai, S. H. Chen, K. L. Marshall, and S. D. Jacobs, "Thermotropic and Optical Properties of Chiral Nematic Polymers," *Int. J. Thermophys.* **11**, 213–223 (1990).

Forthcoming Publications

G. Banas, F. V. Lawrence Jr., J. M. Rigsbee, and H. E. Elsayed-Ali, "Laser Shock Hardening of Welded Maraging Steel," to be published in *Surface Engineering: Current Trends and Future Prospects*, edited by S. A. Meguid (Elsevier Applied Science, Toronto, Canada, 1990).

S. H. Batha, D. D. Meyerhofer, A. Simon, and R. P. Drake, "Enhanced Scattering from Laser-Plasma Interactions," to be published in *Physical Review*.

H. C. Chen, G. Mourou, and R. Knox, "Time-Resolved Electron Diffraction from Pulse-Excited Crystalline Gold Films," to be published in the *Proceedings of 1989 Materials Research Society Fall Meeting: Beam-Solid Interactions*, Boston, MA, 27 November–2 December 1989; and in *Physical Review Letters*.

P. C. Cheng, V. H-K. Chen, H. G. Kim, and R. E. Pearson, "A Real-Time EPI-Fluorescent Confocal Microscope," to be published in *Journal of Microscopy*.

P. C. Cheng, V. H-K. Chen, H. G. Kim, and R. E. Pearson, "An EPI-Fluorescent Spinning-Disk Confocal Microscope," to be published in the *Proceedings of the 47th Annual Meeting of Electron Microscopy Society of America (EMSA)*, Austin, TX, 14–18 August 1989.

J. Deletrez, D. K. Bradley, P. A. Jaanimagi, and C. P. Verdon, "Effect of Barrier Layers in Burnthrough Experiments with 351-nm Laser Illumination," to be published in *Physical Review A*.

H. E. Elsayed-Ali, "Comments on 'Thermal Response of Metals to Ultrashort-Pulse Laser Excitation'," to be published in *Physical Review Letters*.

H. E. Elsayed-Ali and J. W. Herman, "Transient Surface Debye-Waller Effect," (invited paper) to be published in SPIE's *Proceedings of Picosecond and Femtosecond Spectroscopy from Laboratory to Real World*.

H. E. Elsayed-Ali and J. W. Herman, "An Ultrahigh Vacuum Picosecond Laser-Driven Electron Diffraction System," to be published in *Review of Scientific Instruments*.

H. E. Elsayed-Ali, T. Juhasz, G. O. Smith, and W. E. Bron, "Femtosecond Thermorefectivity and Thermotransmissivity of Polycrystalline and Single-Crystalline Gold Films," to be published in *Physical Review Letters*.

E. M. Epperlein, "Electron Kinetics in Laser-Driven Inertial Confinement Fusion," to be published in the *Proceedings of the Topical Conference on Research Trends in Nonlinear and Relativistic Effects in Plasmas*, San Diego, CA, 5–8 February 1990.

R. Epstein and S. Skupsky, "Anticipated Improvement in Laser Beam Uniformity Using Distributed Phase Plates with Quasi-Random Patterns," to be published in *Journal of Applied Physics*.

M. Y. Frankel and T. Y. Hsiang, "Picosecond Transient Behavior of Pseudomorphic High Electron Mobility Transistor—Simulations," to be published in *IEEE Transactions on Electron Devices*.

M. Y. Frankel, D. R. Dykaar, T. Y. Hsiang, K. H. Duh, and P. C. Chao, "Non-Invasive, Picosecond Transient Characterization of Pseudomorphic High Electron Mobility Transistor (HEMT)," to be published in *IEEE Transactions on Electron Devices*.

R. Q. Gram, M. D. Wittman, C. Immesoete, H. Kim, R. S. Craxton, N. Sampat, S. Swales, G. Pien, J. M. Soures, and H. Kong, "Uniform Liquid-Fuel Layer Produced in a Cryogenic Inertial Fusion Target by a Time-Dependent Thermal Gradient," to be published in *Journal of Vacuum Science and Technology A*.

C. Immesoete, S. Scarantino, H. Kim, and L. Forsley, "Computer-Assisted Microballoon Selection for Inertial Confinement Fusion Targets," to be published in *Journal of Vacuum Science and Technology A*.

H. G. Kim, C. K. Immesoete, and S. Scarantino, "Computer-Assisted Microballoon Selection for Inertial Fusion Targets," to be published in the *Proceedings of the Seventh Target Fabrication Specialists Meeting*, Livermore, CA, 25–29 September 1989.

H. G. Kim, R. Q. Gram, M. D. Wittman, C. Immesoete, R. S. Craxton, N. Sampat, S. Swales, G. Pien, and J. M. Soures, "Uniform Liquid Fuel Layer Produced in a Cryogenic Target by a Time-Dependent Thermal Gradient," to be published in the *Proceedings of the Seventh Target Fabrication Specialists Meeting*, Livermore, CA, 25–29 September 1989.

L. E. Kingsley and W. R. Donaldson, "Electro-Optic Imaging of Surface Electric Fields in High-Power Photoconductive Switches," to be published in *IEEE Transactions on Electron Devices*.

J. C. Lambropoulos and S.-S. Hwang, "Film Thermal Conductivity and Laser Damage Resistance of Optical Thin Films," to be published in *Proceedings of a Symposium on Electro-Optics and Non-Linear Optics*, 1st International Congress on Ceramic Science and Technology, Anaheim, CA, 1–3 November 1989.

J. C. Lee and S. D. Jacobs, "Design and Construction of 1064 nm Liquid Crystal Laser Cavity End Mirrors," to be published in *Applied Physics Letters*.

J. C. Lee, S. D. Jacobs, and K. J. Skerrett, "Laser Beam Apodizer Utilizing Gradient-Index Optical Effects in Liquid Crystals," to be published in *Optical Engineering*.

J. C. Lee, S. D. Jacobs, T. Gunderman, A. Schmid, T. J. Kessler, and M. D. Skeldon, "TEM₀₀ Mode and Mono-Mode Laser Operation with a Cholesteric Liquid Crystal Laser End Mirror," to be published in *Optics Letters*.

G. G. Luther and C. J. McKinstrie, "The Transverse Modulational Instability of Colinear Waves," to be published in *Journal of the Optical Society of America B*.

R. L. McCrory, "New Research Trends in Inertial Confinement Fusion," to be published in the *Proceedings of the Topical Conference on Research Trends in Nonlinear and Relativistic Effects in Plasmas*, La Jolla, CA, 5–8 February 1990.

R. L. McCrory and C. P. Verdon, "Computer Modeling and Simulation in Inertial Confinement Fusion," to be published in *Il Nuovo Cimento*.

P. W. McKenty, C. P. Verdon, S. Skupsky, R. L. McCrory, D. K. Bradley, W. Seka, and P. A. Jaanimagi, "Numerical Modeling of Effects of Power Imbalance on Irradiation Nonuniformities," to be published in the *Journal of Applied Physics*.

C. J. McKinstrie and G. G. Luther, "The Modulational Instability of Colinear Waves," to be published in *Physica Scripta, Special Issue on Large-Amplitude Waves in Plasmas*.

D. D. Meyerhofer, S. Augst, Y. H. Chuang, J. Delettrez, and M. C. Richardson, "Comparison of Multiphoton and Collisional Ionization in High Intensity Laser-Plasma Interactions," to be published in the *Proceedings of the Topical Meeting on High Energy Density Physics with Subpicosecond Lasers*, Snowbird, UT, 11–13 September 1989.

T. B. Norris, X. J. Song, G. Wicks, W. J. Schaff, L. F. Eastman, and G. A. Mourou, "Electric Field Dependence of the Tunneling Escape Time of Electrons from a Quantum Well," to be published in the *Proceedings of Picosecond Electronics and Optoelectronics Conference*, Salt Lake City, UT, 8–10 March 1989.

T. B. Norris, N. Vodjdani, B. Vinter, C. Weisbuch, and G. A. Mourou, "Time-Resolved Observation of Luminescence from a Charge-Transfer State in Double Quantum Wells," to be published in the *Proceedings of the Optical Society of America, Quantum Wells for Optics and Optoelectronics*, Salt Lake City, UT, 6–8 March 1989.

D. Y. Park, W. Seka, Y. Lin, and D. L. Brown, "Operational Characteristics of an Imaging, Unstable Ring Resonator Using Nd:YLF as Active Medium," to be published in *Proceedings of the Ninth Workshop on Laser Interaction and Related Plasma Phenomena*, Monterey, CA, 6–10 November 1989.

Conference Presentations

The following presentations were made at the SPIE's OE/LASE Conference '90, Los Angeles, CA, 14–19 January 1990:

S. Augst, D. D. Meyerhofer, C. I. Moore, and J. Peatross, "Tunneling Ionization and Harmonic Generation in Krypton Gas Using a High-Intensity, 1 μm , 1 ps, Laser."

H. Chen, Y. H. Chuang, R. Epstein, D. D. Meyerhofer, S. Uchida, and B. Yaakobi, "Spectroscopic Investigation of Plasma Produced with High-Intensity, 1 μm , 1 ps, Laser Pulses."

H. E. Elsayed-Ali and J. W. Herman, "Transient Surface Debye-Waller Effect."

D. D. Meyerhofer, H. Chen, Y. -H. Chuang, J. Delettrez, R. Epstein, S. Uchida, and B. Yaakobi, "High Intensity, Short-Pulse (1 ps), Laser-Plasma Interaction at 1 μm ."

The following presentations were made at the 20th European Conference on Laser Interaction with Matter (ECLIM), Schliersee, Federal Republic of Germany, 22–26 January 1990:

R. L. McCrory, J. M. Soures, C. P. Verdon, F. J. Marshall, S. A. Letzring, S. Skupsky, R. L. Kremens, J. P. Knauer, H. Kim, R. Short, T. Kessler, R. S. Craxton, J. Delettrez, R. L. Keck, and D. K. Bradley, "Cryogenic SSD Direct-Drive Implosions on OMEGA."

W. Seka, J. M. Soures, and J. Kelly, "Energy Balance, Power Balance, and Intensity Balance for Direct-Drive Laser Fusion Experiments."

The following presentations were made at the Topical Conference on Research Trends in Nonlinear and Relativistic Effects in Plasmas, La Jolla, CA, 5–8 February 1990:

E. M. Epperlein, "Electron Kinetics in Laser-Driven Inertial Confinement Fusion."

R. L. McCrory, "New Research Trends in Inertial Confinement Fusion."

P. H. Ballentine, A. M. Kadin, W. R. Donaldson, J. H. Scofield, and L. J. Bajuk, "Optically Triggered Switching of Superconducting $\text{YBa}_2\text{Cu}_3\text{O}_7$ Thin Films," presented at the SPIE Conference on High Tc Superconductivity: Thin Films and Applications, San Diego, CA, 17–21 March 1990.

A. Simon, "Nonlinear Aspects of Raman Scattering in Plasma," presented at the NAS and ASUSSR Workshop on Optical and Plasma Physics, Irvine, CA, 26–30 March 1990.

T. Juhasz, G. O. Smith, W. E. Bron, and H. E. Elsayed-Ali, "Hot Electron Relaxation in Gold Films with Different Structures," presented at the APS Meeting, Anaheim, CA, 12–16 March 1990.

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