

# PUBLICATIONS AND CONFERENCE PRESENTATIONS

## Publications

T. R. Boehly, R. S. Craxton, R. J. Hutchison, J. H. Kelly, T. J. Kessler, S. A. Kumpan, S. A. Letzring, R. L. McCrory, S. F. B. Morse, W. Seka, S. Skupsky, J. M. Soures, and C. P. Verdon, "The Upgrade to the OMEGA Laser System," in *Solid State Lasers III*, edited by G. J. Quarles (SPIE, Bellingham, WA, 1992), Vol. 1627, pp. 236–245.

D. K. Bradley, J. A. Delettrez, and C. P. Verdon, "Measurements of the Effect of Laser Beam Smoothing on Direct-Drive Inertial-Confinement-Fusion Capsule Implosions," *Phys. Rev. Lett.* **68**, 2774 (1992).

D. L. Brown, W. Seka, and S. Letzring, "Toward Phase Noise Reduction in a Nd:YLF Laser Using Electro-Optic Feedback Control," in *Solid State Lasers II* (SPIE, Bellingham, WA, 1991), Vol. 1410, pp. 209–214.

P. C. Cheng, H. G. Kim, and T. H. Lin, "The Study of Silica Deposition in the Leaf Blade of *Zea mays* L. by X-Ray Contact Microradiography and Confocal Microscopy," in *X-Ray Microscopy III*, edited by A. Michette, G. Morrison, and C. Buckley (Springer-Verlag, Berlin, 1992), Vol. 67, pp. 417–422.

T. Gong and P. M. Fauchet, "Femtosecond Nonlinearities and Hot-Carrier Dynamics in GaAs," in *Ultrafast Processes in Spectroscopy 1991*, edited by A. Laubereau and A. Seilmeier, Institute of Physics Conference Series No. 126 (IOP Publishing Ltd., Bristol, England, 1992), pp. 317–324.

- J. W. Herman and H. E. Elsayed-Ali, "Time-Resolved Study of Surface Disorder of Pb(110)," *Phys. Rev. Lett.* **68**, 2952 (1992).
- T. Juhasz, H. E. Elsayed-Ali, X. H. Hu, and W. E. Bron, "Time-Resolved Thermorefectivity of Thin Gold Films and Its Dependence on the Ambient Temperature," *Phys. Rev. B* **45**, 13819 (1992).
- J. H. Kelly, M. J. Shoup III, M. D. Sheldon, and S. T. Bui, "Design and Energy Characteristics of a Multisegment Glass Disk Amplifier," in *Solid State Lasers II*, edited by G. Dubé (SPIE, Bellingham, WA, 1991), Vol. 1410, pp. 40–46.
- J. H. Kelly, M. J. Shoup III, and M. M. Tedrow, "The Effect of Ionic and Particulate Platinum on the Performance of Large-Aperture Nd:Phosphate Glass Rod Amplifiers," in *Solid State Lasers III*, edited by G. J. Quarles (SPIE, Bellingham, WA, 1992), Vol. 1627, pp. 175–181.
- J. H. Kelly, M. J. Shoup III, M. M. Tedrow, and K. Thorp, "Energy Transport in a Modern Disk Amplifier," in *Solid State Lasers III*, edited by G. J. Quarles (SPIE, Bellingham, WA, 1992), Vol. 1627, pp. 286–297.
- H. Kim, B. Yaakobi, J. M. Soures, and P. C. Cheng, "Laser-Produced Plasma as a Source for X-Ray Microscopy," in *X-Ray Microscopy III*, edited by A. Michette, G. Morrison, and C. Buckley (Springer-Verlag, Berlin, 1992), pp. 47–53.
- Y. Lin, W. Seka, J. H. Eberly, H. Huang, and D. L. Brown, "Experimental Investigation of Bessel Beam Characteristics," *Appl. Opt.* **31**, 2708 (1992).
- M. K. Prasad, K. G. Estabrook, J. A. Harte, R. S. Craxton, R. A. Bosch, Gar. E. Busch, and J. S. Kollin, "Holographic Interferograms from Laser Fusion Code Simulations," *Phys. Fluids B* **4**, 1569 (1992).
- R. W. Short and E. M. Epperlein, "Thermal Stimulated Brillouin Scattering in Laser-Produced Plasmas," *Phys. Rev. Lett.* **68**, 3307 (1992).
- M. J. Shoup III, J. H. Kelly, M. M. Tedrow, F. A. Rister, and K. A. Thorp, "Mechanical Design of 15- and 20-cm Clear-Aperture Disk Amplifiers for the OMEGA Upgrade," in *Solid State Lasers III*, edited by G. J. Quarles (SPIE, Bellingham, WA, 1992), Vol. 1627, pp. 252–259.
- M. J. Shoup III, S. D. Jacobs, J. H. Kelly, C. T. Cotton, S. F. B. Morse, and S. A. Kumpan, "Specification of Large Aperture Nd:Phosphate Glass Laser Disks," in *Solid State Lasers III*, edited by G. J. Quarles (SPIE, Bellingham, WA, 1992), Vol. 1627, pp. 192–201.
- M. D. Skeldon, R. S. Craxton, T. J. Kessler, W. Seka, R. W. Short, S. Skupsky, and J. M. Soures, "Efficient Harmonic Generation with a Broadband Laser," in *IEEE J. Quantum Electron.* **28**, 1389 (1992).
- M. D. Skeldon, S. T. Bui, S. A. Letzring, and W. Siryk, "Implementation of Pulse Shaping on the OMEGA Laser System," in *Solid State Lasers III*, edited by G. J. Quarles (SPIE, Bellingham, WA, 1992), Vol. 1627, pp. 246–251.
- R. Sobolewski, "Prospects for High- $T_c$  Superconducting Optoelectronics," in *Superconductivity and Its Applications*, AIP Conference Proceedings 251, edited by Y. H. Kao, A. E. Kaloyeros, and H. S. Kwok (American Institute of Physics, New York, 1992), pp. 659–670.

## Forthcoming Publications

Y. Lin and T. J. Kessler, "Raman Scattering in Air: A Four-Dimensional System Analysis," to be published in the *Proceedings of SPIE's OE/LASE*, Los Angeles, CA, 20–25 January 1992.

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

R. S. Marjoribanks, M. C. Richardson, P. A. Jaanimagi, and R. Epstein, "Electron Temperature Measurement in Laser-Produced Plasmas by Ratio of Isoelectronic Line Intensities," to be published in *Physical Review A*.

F. J. Marshall, J. G. Jernigan, T. Collins, J. F. Arens, and G. Pien, "Measuring Laser-Plasma X-Ray Emission Using Photodiode Arrays," to be published in the *Review of Scientific Instruments*.

P. S. Maruthi Sai, M. J. Levene, T. Gillbro, R. S. Knox, R. H. Hwang-Schweitzer, and S. Mahajan, "Time-Resolved Fluorescence of Phycoerythrocyanin-Containing Phycobilisomes from the Cyanobacterium *Westiellopsis Prolifica*," to be published in *Biophysical Journal*.

R. L. McCrory, J. M. Soures, J. P. Knauer, S. A. Letzring, F. J. Marshall, S. Skupsky, W. Seka, C. P. Verdon, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, R. L. Keck, T. J. Kessler, H. Kim, R. L. Kremens, P. W. McKenty, R. W. Short, and B. Yaakobi, "Short-Wavelength-Laser Requirements for Direct-Drive Ignition and Gain," to be published in *Lasers and Particle Beams*.

R. L. McCrory, R. E. Bahr, D. K. Bradley, D. L. Brown, R. S. Craxton, J. Delettrez, R. Epstein, P. A. Jaanimagi, T. Kessler, J. P. Knauer, S. Letzring, F. Marshall, P. W. McKenty, W. Seka, S. Skupsky, J. M. Soures, C. P. Verdon, and B. Yaakobi, "Direct-Drive Implosion Experiments for Laser Fusion on OMEGA and the OMEGA Upgrade," to be published in *Lasers and Particle Beams*.

R. L. McCrory, "Laser-Driven ICF Experiments," to be published in *Nuclear Fusion by Inertial Confinement*.

R. L. McCrory, "Direct-Drive Implosion Experiments for Laser Fusion on OMEGA and the OMEGA Upgrade," to be published in the *Proceedings of the 21st ECLIM*, Warsaw, Poland, 21–25 October 1991.

R. L. McCrory, "Irradiation Uniformity Requirements for Direct-Drive Laser Fusion," to be published in the *SPIE Proceedings of the XIV International Conference on Coherent and Nonlinear Optics*, St. Petersburg, Russia, 24–27 September 1991.

C. J. McKinstrie and R. Bingham, "Stimulated Raman Forward Scattering and the Relativistic Modulational Instability of Light Waves in Rarefied Plasma," to be published in *Physics of Fluids B*.

C. J. McKinstrie and M. V. Goldman, "Three-Dimensional Instabilities of Counterpropagating Light Waves in Homogeneous Plasmas," to be published in the *Journal of the Optical Society of America B*.

- C. I. Moore, "Confinement of Electrons to the Center of a Laser Focus via the Ponderomotive Potential," to be published in the *Journal of Modern Optics*.
- J. Peatross, M. V. Fedorov, and D. D. Meyerhofer, "Laser Temporal and Spatial Effects on Ionization Suppression," to be published in the *Journal of the Optical Society of America B*.
- J. K. Samarabandu, R. Acharya, C. D. Edirisinghe, P. C. Cheng, H. Kim, T. H. Lin, R. G. Summers, and C. E. Musial, "Analysis of Multi-Dimensional Confocal Images," to be published in the *Proceedings of the SPIE Symposium "Biomedical Imaging,"* San Diego, CA, 24 February 1991.
- W. Seka, R. E. Bahr, R. W. Short, A. Simon, R. S. Craxton, D. L. Montgomery, and A. E. Rubenchik, "Nonlinear Laser-Matter Interaction Processes in Long-Scale-Length Plasmas," to be published in *Physics of Fluids B*.
- L. J. Shaw-Klein, S. D. Jacobs, S. J. Burns, and J. C. Lambropoulos, "Microstructural Control of Thin-Film Thermal Conductivity," to be published in the *Proceedings of the 23rd Boulder Damage Symposium on Optical Materials for High Power Lasers,* Boulder, CO, 23–25 October 1991.
- M. D. Skeldon and S. T. Bui, "The Temporal Mode Structure of a Regenerative Amplifier with Intracavity Etalons," to be published in the *Journal of the Optical Society of America B*.
- J. M. Soures, R. L. McCrory, T. R. Boehly, R. S. Craxton, S. D. Jacobs, J. H. Kelly, T. J. Kessler, J. P. Knauer, R. L. Kremens, S. A. Kumpan, S. A. Letzring, W. D. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, and C. P. Verdon, "The OMEGA Upgrade Laser for Direct-Drive Target Experiments," to be published in *Lasers and Particle Beams*.
- J. M. Soures, "Solid State Lasers," to be published in *Nuclear Fusion by Inertial Confinement,* edited by G. Velerade, Y. Ronen, and J. M. Martinez-Val.
- J. M. Soures, "High-Technology Advances from LLE Research," to be published in the *Rochester Business Profiles Journal*.
- J. M. Soures, "The OMEGA Upgrade Laser Facility for Direct-Drive Experiments," to be published in the *Proceedings of the Fusion Power Associates Annual Meeting and Symposium,* Princeton, NJ, 25–26 June 1991, and in the *Journal of Fusion Energy*.
- J. Sweetser, T. J. Dunn, I. A. Walmsley, C. Radzewicz, S. Palese, and R. J. D. Miller, "Characterization of an FM Mode-Locked Nd:YLF Laser Synchronized with a Passively Mode-Locked Dye Laser," to be published in the *Journal of the Optical Society of America B*.
- C. J. Twomey, S.-H. Chen, T. Blanton, A. W. Schmid, and K. L. Marshall, "Solid Polymers Doped With Rare Earth Metal Salts. II. Thermal Behavior and Morphology of the Neodymium Acetate-Poly(ethylene Oxide) System," to be published in *Journal of Polymer Science, Polymer Physics Edition*.
- R. Vanderhaghen, P. M. Fauchet, A. Mourchid, and D. Hulin, "The Cooling Rate of Hot Carriers in Disordered Semiconductors," to be published in the *Proceedings of QELS '92,* Anaheim, CA, 10–15 May 1992.

## Conference Presentations

H. Kim and P.-C. Cheng, "Confocal Microscopic Characterization of Laser-Fusion Target," Scanning 92, Atlantic City, NJ, 1–3 April 1992 (invited paper).

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The following presentations were made at CLEO '92, Anaheim, CA, 10–15 May 1992:

S. Alexandrou, R. Sobolewski, and T. Y. Hsiang, "Picosecond Separation of Electrical Transients Propagated on a Bent Coplanar Waveguide."

J. Armstrong and T. J. Kessler, "Holographic Recording of Large Aperture High-Efficiency, High-Damage Threshold Transmission Diffraction Gratings."

T. R. Boehly, R. S. Craxton, R. J. Hutchison, J. H. Kelly, T. J. Kessler, S. A. Kumpan, S. A. Letzring, R. L. McCrory, S. F. B. Morse, W. Seka, S. Skupsky, J. M. Soures, and C. P. Verdon, "The Upgrade to the OMEGA Laser System."

T. Y. Hsiang, S. Alexandrou, C.-C. Wang, R. Sobolewski, S. Y. Chou, and Y. Liu, "Picosecond Characterization of Nanometer-Scale Metal-Semiconductor-Metal Photodiodes."

L. E. Kingsley and W. R. Donaldson, "Electro-Optic Imaging of Ultrafast, High-Voltage GaAs Photoconductive Switches in Lock-On Mode."

R. L. McCrory, "Direct-Drive Target Physics: An Overview" (invited presentation).

S. M. Mehta, B. C. Tóusley, P. J. Rodney, A. I. Lobad, and P. M. Fauchet, "Spectral Dynamics Leading to Additive Pulse Mode-Locking in the NaCl Color Center Laser."

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The following presentations were made at QELS '92, Anaheim, CA, 10–15 May 1992:

T. Gong, K. B. Ucer, Y. Kostoulas, G. W. Wicks, and P. M. Fauchet, "Carrier-Carrier Interactions in the Presence of Dense Plasma in GaAs."

T. Gong, P. M. Fauchet, P. J. Kelly, and J. F. Young, "Subpicosecond Hot-Hole Dynamics in Highly-Excited GaAs."

R. Vanderhaghen, P. M. Fauchet, A. Mourchid, and D. Hulin, "The Cooling Rate of Hot Carriers in Disordered Semiconductors."

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The following presentations were made at the Optical Interference Coatings, Fifth Topical Meeting, Tucson, AZ, 1–5 June 1992:

R. G. Carnes and D. J. Smith, "A Physical Vapor Deposition System for OMEGA Upgrade Optics."

R. J. Sczupak and D. J. Smith, "Techniques and Applications for Large Aperture Structured Thin Films."

D. J. Smith, A. W. Schmid, Z. R. Chrzan, and S. Papernov, "Optical Coatings for the OMEGA Upgrade Laser."

J. D. Traylor and W. T. Pawlewicz, "Optical and Durability Properties of  $\text{Bi}_2\text{O}_3$ ,  $\text{Cr}_2\text{O}_3$ ,  $\text{HfO}_2$ ,  $\text{Ta}_2\text{O}_5$ ,  $\text{Y}_2\text{O}_3$ , and  $\text{ZrO}_2$ ."

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The following presentations were made at the Eighth International Conference on Ultrafast Phenomena, Antibes-Juan-Les-Pins, France, 8–12 June 1992:

T. Gong, K. B. Ucer, L. X. Zheng, G. W. Wicks, J. F. Young, P. J. Kelly, and P. M. Fauchet, "Femtosecond Carrier-Carrier Interactions in GaAs."

B. C. Tousley, S. M. Mehta, A. I. Lobad, P. J. Rodney, G. W. Wicks, and P. M. Fauchet, "Femtosecond Band Edge Carrier Dynamics in  $\text{In}_{0.53}\text{Ga}_{0.47}\text{As}$ ."

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S. D. Jacobs, "Progress at the Center for Optics Manufacturing," SPIE International Symposium on Optical Fabrication, Testing, and Surface Evaluation, Technical Conference 1720/75, Toyko, Japan, 10 June 1992.

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D. D. Meyerhofer, S. Augst, B. Buerke, and J. Peatross, "Laser Ionization of Noble Gases: Polarization and Pulse-Width Effects," IQEC '92, Austria Center, Vienna, 14–19 June 1992.

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C. Bamber, W. R. Donaldson, E. Lincke, and A. C. Melissinos, "A Pulse-Power Accelerator Using Laser-Driven Photoconductive Switches," Third Workshop on Advanced Accelerator Concepts, Long Island, NY, 14–20 June 1992.

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J. C. Lambropoulos, "Thermal Conductivity of Thin Films and Polycrystals," 6th International Conference on Intergranular and Interphase Boundaries in Materials, Thessaloniki, Greece, 21–26 June 1992.

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P. V. Schwartz, C. W. Liu, J. C. Sturm, T. Gong, and P. M. Fauchet, "Current Transport Properties of Semi-Insulating Oxygen-Doped Silicon Films for Use in High-Speed Photoconductive Switches," 1992 Electronic Materials Conference, Cambridge, MA, 24–26 June 1992.

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