
Publications and Conference Presentations

Publications

- R. Adam, W. Kula, R. Sobolewski, J. M. Murduck, and C. Pettiette-Hall, "Laser-Induced Modification of Transport Properties of Y-Ba-Cu-O Step-Edge Weak Links," *Appl. Phys. Lett.* **67**, 3801 (1995).
- R. Betti, V. Goncharov, R. L. McCrory, and C. P. Verdon, "Self-Consistent Cutoff Wave Number of the Ablative Rayleigh-Taylor Instability," *Phys. Plasmas* **2**, 3844 (1995).
- X. D. Cao and D. D. Meyerhofer, "Optimization of Pulse Shaping Using Nonlinear Polarization Rotation," *Opt. Commun.* **120**, 316 (1995).
- S.-H. Chen, J. C. Mastrangelo, H. Shi, A. Bashir-Hashemi, J. S. Li, and N. Gelber, "Novel Glass-Forming Materials. 1. Adamantane with Pendant Cholesteryl, Disperse Red 1, and Nematogenic Groups," *Macromol.* **28**, 7775 (1995).
- R. E. Giacone, C. J. McKinstrie, and R. Betti, "Angular Dependence of Stimulated Brillouin Scattering in Homogeneous Plasma," *Phys. Plasmas* **2**, 4596 (1995).
- D. Eimerl, J. E. Rothenberg, M. H. Key, S. V. Weber, C. P. Verdon, S. Skupsky, J. M. Soures, and R. S. Craxton, "Configuring NIF for Direct-Drive Experiments," in the *First Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion*, edited by M. André and H. T. Powell (SPIE, Bellingham, WA, 1995), Vol. 2633, pp. 170–182.
- K. Green, W. R. Donaldson, R. Sobolewski, A. Okishev, M. D. Skeldon, S. A. Letzring, and W. Seka, "Transient Microwave Bandwidth Measurements of Illuminated Silicon Switches for Optical Pulse-Shape Control of Laser-Fusion Drivers," in the *First Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion*, edited by M. André and H. T. Powell (SPIE, Bellingham, WA, 1995), Vol. 2633, pp. 615–621.
- J. Hecht, D. Ofer, U. Alon, D. Shvarts, S. A. Orszag, and R. L. McCrory, "Three-Dimensional Simulations and Analysis of the Nonlinear Stage of the Rayleigh-Taylor Instability," *Laser and Particle Beams* **13**, 423 (1995).
- S. D. Jacobs, "Nanodiamonds Enhance Removal in Magnetorheological Finishing," *Finer Points* **7** (4), 47 (1995).
- E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Colorimetry of Fractured Cholesteric Liquid Crystal Polymers," in the *Proceedings of the IS&T/SID Color Imaging Conference: Color Science, Systems, and Applications* (IS&T, Springfield, VA, 1995), pp. 60–62.
- W. Lang, W. Göb, W. Kula, and R. Sobolewski, "Anisotropic Magnetoresistance in the Normal State of Oxygen-Deficient YBa₂Cu₃O_{7-δ} Thin Films Induced by Superconducting Fluctuations," *Z. Phys. B* **98**, 453 (1995).
- K. L. Marshall, S. D. Jacobs, and J. E. Miller, "Midinfrared Modulation through the Use of Field-Induced Scattering in Ferroelectric Liquid Crystals," *Appl. Opt.* **34**, 6704 (1995).
- J. Peatross and D. D. Meyerhofer, "Intensity-Dependent Atomic-Phase Effects in High-Order Harmonic Generation," *Phys. Rev. A* **52**, 3976 (1995).
- B. E. Puchebner and S. D. Jacobs, "Development of New Bound Abrasive Polishers for Final Finishing of Optical Glasses," in *Optical Manufacturing and Testing* (SPIE, Bellingham, WA, 1995), Vol. 2536, pp. 256–264.

H. Shi and S.-H. Chen, "Effects of Stereochemistry, Mesogenic Core, and Spacer Length on Crystallization from Nematic and Isotropic Melts of Cyclohexane-Based, Glass-Forming Liquid Crystals," *Liq. Cryst.* **19**, 785 (1995).

H. Shi and S.-H. Chen, "Novel Glass-Forming Liquid Crystals. III. Helical Sense and Twisting Power in Chiral Nematic Systems," *Liq. Cryst.* **19**, 849 (1995).

A. Simon, "Parametric Excitation of Bernstein Modes in Laser-Produced Plasma," *Phys. Plasmas* **2**, 3832 (1995).

M. D. Skeldon, A. Okishev, A. Babushkin, and W. Seka, "Transient Stimulated Brillouin Scattering Pulse Compression for Photoconductive Switch Activation," in the *First*

Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion, edited by M. André and H. T. Powell (SPIE, Bellingham, WA, 1995), Vol. 2633, pp. 422–429.

C. J. Twomey, T. N. Blanton, K. L. Marshall, S. H. Chen, and S. D. Jacobs, "Some Dynamic Features of the Preparation of Liquid Crystalline Elastomers," *Liq. Cryst.* **19**, 339 (1995).

M. Yu and C. J. McKinstrie, "Impulse Response of a Nonlinear Dispersive Wave," *Phys. Rev. E* **52**, 6826 (1995).

J. D. Zuegel and W. Seka, "Direct Measurement of $^4I_{11/2}$ Terminal-Level Lifetime in Nd:YLF," *IEEE J. Quantum Electron.* **31**, 1742 (1995).

Forthcoming Publications

E. L. Alfonso, S.-H. Chen, M. D. Wittman, S. Papernov, and D. Harding, "A Parametric Study of Microencapsulation Approach to the Preparation of Polystyrene Shells" to be published in *Polymer Preprints*.

R. Betti, V. N. Goncharov, R. L. McCrory, P. Sorotokin, and C. P. Verdon, "Self-Consistent Stability Analysis of Ablation Fronts in Inertial Confinement Fusion," to be published in *Physics of Plasmas*.

T. R. Boehly, D. L. Brown, R. S. Craxton, R. L. Keck, J. P. Knauer, J. H. Kelly, T. J. Kessler, S. J. Loucks, S. A. Letzring, F. J. Marshall, R. L. McCrory, S. F. B. Morse, W. Seka, J. M. Soures, and C. P. Verdon, "Initial Performance Results of the OMEGA Laser System," to be published in *Optics Communications*.

S.-H. Chen, J. C. Mastrangelo, and H. Shi, "Novel Low Molar Mass, Glass-Forming Liquid Crystals: Molecular Design, Synthesis, and Morphological Stability," to be published in the *Proceedings of Polymers for Advanced Optical Applications*.

S.-H. Chen, H. Shi, J. C. Mastrangelo, and J. J. Ou, "Thermotropic Chiral Nematic Side-Chain Polymers and Cyclic Oligomers," to be published in *Progress in Polymer Science*.

C. T. Cotton, "Design Considerations for the OMEGA Upgrade Final Focus Lens," to be published in the *Proceedings of SPIE's 1995 International Symposium on Optical Science, Engineering, and Instrumentation*, San Diego, CA.

C. T. Cotton, "The Design of an All-Spherical, Three-Mirror, Off-Axis Telescope Objective," to be published in the *OSA Proceedings of the International Optical Design Conference '94*, Rochester, NY.

P. M. Fauchet, L. Tsybeskov, C. Peng, S. P. Duttagupta, J. von Behren, Y. Kostoulas, J. V. Vandyshev, and K. D. Hirshman, "Light-Emitting Porous Silicon: Materials Science, Properties, and Device Applications," to be published in the *IEEE Journal of Selected Topics in Quantum Electronics*.

D. Fried, R. E. Glens, J. D. B. Featherstone, and W. Seka, "Permanent and Transient Changes in the Reflectance of CO₂ Laser-Irradiated Dental Hard Tissues at $\lambda = 9.3, 9.6, 10.3,$ and $10.6 \mu\text{m}$ and at Fluences between $1\text{--}20 \text{ J/cm}^2$," to be published in *Lasers in Surgery and Medicine*.

V. N. Goncharov, R. Betti, R. L. McCrory, P. Sorotokin, and C. P. Verdon, "Self-Consistent Stability Analysis of Ablation Fronts with Large Froude Numbers," to be published in *Physics of Plasmas*.

J. H. Kelly, T. R. Boehly, J. M. Soures, D. L. Brown, R. Boni, R. S. Craxton, R. L. Keck, T. J. Kessler, R. Kremens, S. A. Kumpan, S. A. Letzring, S. J. Loucks, R. L. McCrory, S. F. B. Morse, W. Seka, S. Skupsky, and C. P. Verdon, "The Activation of the Upgraded OMEGA Laser at the University of Rochester," to be published in the *SPIE Proceedings of the 15th International Conference on Coherent and Nonlinear Optics*, St. Petersburg, Russia, June 1995.

O. A. Konoplev and D. D. Meyerhofer, "Dynamic Range Limitations in High-Contrast, Noncollinear Autocorrelators," to be published in *Generation, Amplification, and Measurement of Ultrashort Laser Pulses III*.

Y. Kostoulas, K. B. Ucer, L. Waxer, G. W. Wicks, I. A. Walmsley, and P. M. Fauchet, "Ultrafast Carrier Lifetime in Low-Temperature-Grown GaAs, InP, and InGaP," to be published in the *Proceedings of LEOS '94 7th Annual Meeting*, Boston, MA, 31 October–3 November 1994.

T. Kotseroglou, C. Bamber, S. Boege, U. Haug, A. C. Melissinos, D. D. Meyerhofer, W. Ragg, C. Bula, K. T. McDonald, E. Prebys, D. L. Burke, P. Chen, R. C. Field, G. Horton-Smith, A. C. Odian, J. C. Spencer, D. Walz, S. Berridge, W. Bugg, K. Shmakov, and A. Weidemann, "Studies of Nonlinear QED with an Ultra-Intense Laser," to be published in *Generation, Amplification, and Measurement of Ultrashort Laser Pulses III*.

W. Kula, R. Adam, and R. Sobolewski, "Y-Ba-Cu-O Thin-Film Structures with a Nonuniform In-Depth Oxygen Concentration Profile," to be published in the *Institute of Physics Conference Series*.

J. C. Lambropoulos, T. Fang, B. Puchebner, and S. D. Jacobs, "The Effect of Coolant Surface Tension in Deterministic Microgrinding of Glass," to be published in the *International Symposium on Manufacturing Practices and Technologies*, New Orleans, LA, 5–8 November 1995.

Y. Lin, T. J. Kessler, and G. N. Lawrence, "Design of Continuous Surface-Relief Phase Plates by Simulated Annealing to Achieve Control of Focal Plane Irradiance," to be published in *Optics Letters*.

R. S. Marjoribanks, F. W. Budnik, H. Chen, and D. D. Meyerhofer, "Plasma Electron Temperature in Picosecond Laser Plasmas from Quasi-Steady Ratio of Isoelectronic Lines," to be published in the *Journal of the Optical Society of America B*.

J. C. Mastrangelo, T. N. Blanton, and S.-H. Chen, "Morphology and Its Stability of Cyclohexane and Biocyclooctene Rings Containing Pendant Disperse Red 1," to be published in *Chemistry of Materials*.

J. C. Mastrangelo and S.-H. Chen, "Novel Glass-Forming Organic Materials. 2. Cyclohexane and Bicyclooctene with

Pendant Pyrene and Carbazole," to be published in *Chemistry of Materials*.

S. M. McCormack, D. Fried, J. D. B. Featherstone, R. E. Glens, and W. Seka, "Scanning Electron Microscope Observations of CO₂ Laser Effects on Dental Enamel," to be published in the *Journal of Dental Research*.

R. L. McCrory, J. M. Soures, C. P. Verdon, T. R. Boehly, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, S. D. Jacobs, R. L. Keck, J. H. Kelly, T. J. Kessler, H. Kim, J. P. Knauer, R. L. Kremens, S. A. Kumpan, S. A. Letzring, F. J. Marshall, P. J. McKenty, S. F. B. Morse, A. Okishev, W. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, M. Tracy, and B. Yaakobi, "Direct-Drive Laser Fusion Experimental Program at the University of Rochester Laboratory for Laser Energetics," to be published in the *Proceedings of the Conference on Plasma Physics and Controlled Nuclear Fusion Research*, Madrid, Spain, September 1994.

R. L. McCrory, J. M. Soures, C. P. Verdon, T. R. Boehly, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, P. A. Jaanimagi, S. D. Jacobs, R. L. Keck, J. H. Kelly, T. J. Kessler, H. Kim, J. P. Knauer, R. L. Kremens, S. A. Kumpan, S. A. Letzring, F. J. Marshall, P. W. McKenty, S. F. B. Morse, A. Okishev, W. Seka, R. W. Short, M. D. Skeldon, S. Skupsky, M. Tracy, and B. Yaakobi, "Experiments on the OMEGA to Validate High-Gain, Direct-Drive Performance on the National Ignition Facility," to be published in the *Proceedings of the 12th International Conference on Laser Interaction and Related Plasma Phenomena*, Osaka, Japan, April 1995.

D. D. Meyerhofer, J. P. Knauer, S. J. McNaught, and C. I. Moore, "Observation of Relativistic Mass Shift Effects during High-Intensity Laser-Electron Interactions," to be published in the *Journal of the Optical Society of America B*.

D. Ofer, U. Alon, D. Shvarts, R. L. McCrory, and C. P. Verdon, "Modal-Model for the Non-Linear Multi-Mode Rayleigh-Taylor Instability," to be published in *Physics of Plasmas*.

A. Okishev, M. D. Skeldon, S. A. Letzring, W. R. Donaldson, A. Babushkin, and W. Seka, "The Pulse-Shaping System for the 60-Beam, 30-kJ (UV) OMEGA Laser," to be published in the *Proceedings of Laser Optics '95 Conference*, St. Petersburg, Russia, 27 June–1 July 1995.

S. Papernov and A. W. Schmid, "A Comparison of Laser-Induced Damage Morphology in Three Model Thin-Film

Systems: HfO_2 , Y_2O_3 , and Ta_2O_5 ," to be published in the Proceedings of the XXVI Annual Symposium on Optical Materials for High Power Lasers, Boulder, CO, 24–26 October 1994.

J. Z. Roach, A. Ninkov, S. W. Swales, and T. Morris, "Design and Evaluation of a Screen CCD Imaging System," to be published in Optical Engineering.

H. Shi and S.-H. Chen, "Dynamic Mechanical Properties of Cyclohexane-Based Glass-Forming Liquid Crystals and a Linear Side-Chain Polymer Analogue," to be published in Liquid Crystals.

A. Simon, "Comparison Between SBS Theories and Experiment," to be published in the Proceedings of the La Jolla Summer School '95, Plasma Physics and Technology (AIP).

E. J. Turano, C. J. McKinstrie, and R. E. Giacone, "One-Dimensional Stimulated Raman Scattering of Short Laser Pulses," to be published in Physics of Plasmas.

C. P. Verdon and R. L. McCrory, "Direct-Drive Capsule Physics," to be published in the Proceedings of ECLIM '94, Oxford, England, September 1994.

C.-C. Wang, M. Currie, D. Jacobs-Perkins, R. Sobolewski, T. Y. Hsiang, and M. J. Feldman, "Electro-Optic Measurements of Single-Flux Quantum Pulses," to be published in the Institute of Physics Conference Series.

M. D. Wittman, R. Q. Gram, H. Kim, C. K. Immesoete, S. G. Noyes, and S. Scarantino, "Increased Retention Time for Hydrogen and Other Gases by Polymer Shells Using Opti-

cally Transparent Aluminum Layers," to be published in the Journal of Vacuum Science and Technology.

W. Xiong, Y. Kostoulas, X. Weng, P. M. Fauchet, and R. Sobolewski, "Femtosecond Study of the Electronic Structure in Semiconducting Y-Ba-Cu-O," to be published in Physical Review B.

B. Yaakobi, D. Shvarts, R. Epstein, and Q. Qu, "X-Ray Back-lighting Imaging of Mixed Imploded Targets," to be published in Laser and Particle Beams.

B. Yaakobi, R. Epstein, C. F. Hooper, Jr., D. A. Haynes, Jr., and Q. Su, "Diagnosis of High-Temperature Implosions Using Low- and High-Opacity Krypton Lines," to be published in the Journal of X-Ray Science and Technology.

B. Yaakobi, Q. Su, R. S. Craxton, and R. Epstein, "Diagnosis of Core-Shell Mixing Using Absorption and Emission Spectra of a Doped Layer," to be published in the Journal of Quantitative Spectroscopy and Radiative Transfer.

X. Zhou, S. Alexandrou, and T. Y. Hsiang, "Monte Carlo Investigation of the Intrinsic Mechanism of Subpicosecond Pulse Generation by Nonuniform Illumination," to be published in Applied Physics Letters.

J. D. Zuegel and W. Seka, "Upconversion and Reduced $^4\text{F}_{3/2}$ Upper-State Lifetime in Intensely Pumped Nd:YLF," to be published in Optics Letters.

J. D. Zuegel and W. Seka, "Direct Measurements of Lower-Level Lifetime in Nd:YLF," to be published in the Bulletin of the American Physical Society.

Conference Presentations

S. A. Letzring, "Initial Results from the Upgrade to the OMEGA Laser Facility and Plans for a Cryogenic Target System," 42nd National Symposium of the American Vacuum Society, Minneapolis, MN, 16–20 October 1995.

S. Papernov, A. W. Schmid, J. Anzelotti, D. Smith, and Z. R. Chrzan, "AFM-Mapped, Nanoscale, Absorber-Driven Laser Damage in UV High-Reflector Multilayers," XXVII Annual Symposium on Optical Materials for High Power Lasers, Boulder, CO, 30 October–1 November 1995.

J. D. Zuegel and W. Seka, "Upconversion and Reduced ${}^4F_{3/2}$ Upper-State Lifetimes in Intensely Pumped Nd:YLF," LEOS '95 8th Annual Meeting, San Francisco, CA, 30 October–2 November 1995.

J. C. Lambropoulos, T. Fang, B. Puchebner, and S. D. Jacobs, "The Effect of Coolant Surface Tension in Deterministic Microgrinding of Glass," International Symposium on Manufacturing Practices and Technologies, New Orleans, LA, 5–8 November 1995.

The following presentations were made at the 37th Annual Meeting, APS Division of Plasma Physics, Louisville, KY, 6–10 November 1995:

R. Betti, S. Cowley, and J. P. Freidberg, "Kinetic Effects on the Resistive Wall Mode."

T. R. Boehly, D. L. Brown, R. S. Craxton, R. L. Keck, J. P. Knauer, J. H. Kelly, T. J. Kessler, S. J. Loucks, S. A. Letzring, F. J. Marshall, R. L. McCrory, S. F. B. Morse, W. Seka, J. M. Soures, and C. P. Verdon, "Initial Performance Results from the OMEGA Laser Facility."

R. Boni, R. L. Keck, T. R. Boehly, O. R. Lopez-Raffo, S. A. Letzring and S. Scarantino, "The Energy-Balance Diagnostic for the OMEGA Laser System."

D. K. Bradley, J. A. Delettrez, P. A. Jaanimagi, and P. M. Bell, "Time-Resolved Imaging on the Upgraded OMEGA Laser System."

A. V. Chirikikh, A. Simon, W. Seka, and R. S. Craxton, "Simulations of SBS in Long-Scale-Length Laser Plasmas of Variable Density: The Inability of Linear Theory to Explain Experimental Observations."

R. S. Craxton and S. Skupsky, "Two-Dimensional SSD and Polarization Wedges for OMEGA and the National Ignition Facility."

J. A. Delettrez, D. K. Bradley, and C. P. Verdon, "Comparison of a One-Dimensional Mix Model for the Linear and Weakly Nonlinear Regime of the Rayleigh-Taylor Instability with Two-Dimensional *ORCHID* Results."

R. Epstein, J. A. Delettrez, C. P. Verdon, U. Alon, and D. Shvarts, "Simulations in One Dimension of Fuel-Pusher Mixing in Laser-Driven Implosions."

V. Goncharov, R. Betti, R. L. McCrory, and C. P. Verdon, "Self-Consistent Cutoff Wave Number of the Ablative Rayleigh-Taylor Instability."

P. Jaanimagi, R. L. Kremens, P. W. McKenty, D. K. Bradley, K. Kearney, and C. P. Verdon, "Implosion Experiments on the Upgraded OMEGA Laser."

R. L. Kremens, K. Kearney, and M. A. Russotto, "Neutron Diagnostic Implementation on the OMEGA Laser System."

R. L. Kremens, D. L. Brown, J. T. Canosa, M. Litchfield, D. Lonobile, R. G. Roides, M. Thomas, and R. Weaver, "A Precision Electronic Timing System for the OMEGA Laser System."

S. A. Letzring, R. L. Fagaly, N. B. Alexander, R. A. Mangano, and C. R. Gibson, "Cryogenic Target System for the OMEGA Laser System."

J. S. Li and C. J. McKinstrie, "Effects of the Anti-Stokes Wave on Stimulated Brillouin Scattering."

F. J. Marshall, A. Hauer, J. Oertel, and R. Watt, "Monochromatic X-Ray Imaging of Laser-Fusion Targets Using a Kirkpatrick-Baez X-Ray Microscope."

F. J. Marshall, R. L. Keck, T. R. Boehly, J. P. Knauer, S. F. B. Morse, and J. M. Soures, "Uniformity Experiments on the University of Rochester's OMEGA 60-Beam, 30-kJ, UV Laser-Fusion Facility."

P. W. McKenty, C. P. Verdon, and D. K. Bradley, "Inertial Confinement Fusion Capsule Performance Under the Influence of Long-Wavelength Illumination Nonuniformities."

C. J. McKinstrie, R. E. Giacone, and H. X. Vu, "Interaction of Crossed Laser Beams in Homogeneous Plasma."

W. Seka, R. S. Craxton, C. Labaune, H. A. Baldis, N. Renard, E. Schifano, and A. Michard, "Characterization of a Long-Scale-Length Plasma Using SRS and Thomson Scattering."

R. W. Short and R. Grobe, "Diffractive Irradiation Patterns in a Spherically Symmetric Target Corona."

A. Simon, "Ion Jets and Recent Brillouin Experiments."

J. M. Soures, R. L. McCrory, C. P. Verdon, A. Babushkin, R. E. Bahr, T. R. Boehly, R. Boni, D. K. Bradley, D. L. Brown, J. A. Delettrez, R. S. Craxton, W. R. Donaldson, R. Epstein, P. A. Jaanimagi, K. Kearney, R. L. Keck, J. H. Kelly, T. J.

Kessler, R. L. Kremens, J. P. Knauer, S. J. Loucks, S. A. Letzring, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, A. Okishev, G. Pien, W. Seka, M. D. Skeldon, S. Skupsky, S. Swales, M. Wittman, and B. Yaakobi, "Direct-Drive Laser-Fusion Experiments with the OMEGA, 60-Beam, > 40-kJ, UV Laser System" (invited).

E. A. Startsev and C. J. McKinstrie, "Relativistic Ponderomotive Force of a Light Wave."

E. J. Turano, C. J. McKinstrie, and R. E. Giacone, "Two-Dimensional Stimulated Raman Scattering of Short Laser Pulses."

B. Yaakobi, R. Epstein, C. F. Hooper, Jr., D. A. Haynes, Jr., and Q. Su, "Diagnosis of High-Temperature Implosions Using Low- and High-Opacity Krypton Lines."

B. Yaakobi, D. Shvarts, R. Epstein, and Q. Su, "X-Ray Backlighting Imaging of Mixed Imploded Targets."

E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Colorimetry of Fractured Cholesteric Liquid Crystal Polymers," 3rd Color Imaging Conference: Color Science, Systems, and Applications, Scottsdale, AZ, 7–10 November 1995.

S.-H. Chen, J. C. Mastrangelo, and H. Shi, "Novel Low Molar Mass, Glass-Forming Liquid Crystals: Molecular Design, Synthesis, and Morphological Stability," Fourth Pacific Polymer Conference, Koloa, Kauai, HI, 12–16 December 1995.