
Publications and Conference Presentations

Publications

S.-H. Chen, J. C. Mastrangelo, T. N. Blanton, A. Bashir-Hashemi, and K. L. Marshall, "Novel Glass-Forming Liquid Crystals. IV. Effects of Central Core and Pendant Group on Vitrification and Morphological Stability," *Liq. Cryst.* **21**, 683 (1996).

C. T. Cotton, "Design of an All-Spherical, Three-Mirror, Off-Axis Telescope Objective," in *OSA Proceedings of the International Optical Design Conference*, edited by G. W. Forbes (Optical Society of America, Washington, DC, 1994), Vol. 22, pp. 349–351.

D. Golini, S. Jacobs, Y. Zhou, E. Fess, and M. Atwood, "Aspheric Surface Generation Requirements for Magneto-rheological Finishing," in *OSA TOPS on Extreme Ultraviolet Lithography, 1996*, edited by G. D. Kubiak and D. Kania (Optical Society of America, Washington, DC, 1996), Vol. 4, pp. 98–102.

S. D. Jacobs, B. E. Gillman, J. C. Lambropoulos, T. Fang, Y. Zhou, D. Golini, and M. Atwood, "The Effect of the Coolant on the Glass Work and the Diamond Tool in Deterministic Microgrinding," in *Precision Grinding of Brittle Materials* (ASPE, Raleigh, NC, 1996), pp. 121–126.

Y. Lin, T. J. Kessler, and G. N. Lawrence, "Design of Continuous Surface-Relief Phase Plates by Surface-Based Simulated Annealing to Achieve Control of Focal-Plane Irradiance," *Opt. Lett.* **21**, 1703 (1996).

C. J. McKinstrie and E. A. Startsev, "Electron Acceleration by a Laser Pulse in a Plasma," *Phys. Rev. E* **54**, R1070 (1996).

C. I. Moore, J. P. Knauer, and D. D. Meyerhofer, "Reply to Comment on 'Observation of the Transition from Thomson to Compton Scattering in Multiphoton Interactions with Low-Energy Electrons'," *Phys. Rev. Lett.* **77**, 2335 (1996).

J. D. Schnittman and R. S. Craxton, "Indirect-Drive Radiation Uniformity in Tetrahedral Hohlraums," *Phys. Plasmas* **3**, 3786 (1996).

F. Yang, J. Y. Zhou, V. Kordonski, and S. D. Jacobs, "Indentation Size Effect of Thermoset Polymer: Allyl Diglycol Carbonate (CR-39)," *J. Mater. Sci. Lett.* **15**, 1523 (1996).

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*.

R. Betti, V. N. Goncharov, R. L. McCrory, and C. P. Verdon, "Linear Theory of the Ablative Rayleigh-Taylor Instability," to be published in the Proceedings of the 24th ECLIM, Madrid, Spain, 3–7 June 1996.

T. R. Boehly, D. L. Brown, R. S. Craxton, R. L. Keck, J. P. Knauer, J. H. Kelly, T. J. Kessler, S. A. Kumpan, 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, H. Shi, T. N. Blanton, and A. Bashir-Hashemi, "Novel Glass-Forming Organic Materials.

3. Cubane with Pendant Nematogens, Carbazole, and Disperse Red 1," to be published in *Macromolecules*.

S.-H. Chen, H. Shi, B. M. Conger, D. Katsis, and J. C. Mastrangelo, "Novel Vitrified Liquid Crystals and Potential Applications," to be published in the Proceedings of the Materials Research Society 1996 Spring Meeting, San Francisco, CA, 8–12 April 1996.

S.-H. Chen, H. Shi, B. M. Conger, J. C. Mastrangelo, and T. Tsutsi, "Novel Vitrifiable Liquid Crystals as Optical Materials," to be published in *Advanced Materials*.

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*.

A. V. Chirokikh, W. Seka, A. Simon, and R. S. Craxton, "Brillouin Scattering in Long-Scale-Length Laser Plasmas," to be published in *Physics of Plasmas*.

B. M. Conger, H. Shi, S.-H. Chen, and T. Tsutsui, "Polarized Fluorescence from Vitrified Liquid Crystalline Films," to be published in the Proceedings of the Materials Research Society 1996 Spring Meeting, San Francisco, CA, 8–12 April 1996.

B. DeMarco, C. W. Barnes, K. Kearney, and R. L. Kremens, "Neutron Yield Measurement on the OMEGA Laser System," to be published in the *Review of Scientific Instruments*.

R. Epstein, "Properties of the Speckle of Focused, Phase-Converted Laser Beams and the Reduction of Time-Averaged Irradiation Nonuniformity in Laser-Driven Plasmas due to Target Ablation," to be published in the *Journal of Applied Physics*.

P. M. Fauchet, "Photoluminescence and Electroluminescence from Porous Silicon," to be published in the *Journal of Photoluminescence* (invited).

P. M. Fauchet, "Porous Silicon: Photoluminescence and Electroluminescent Devices," to be published in the *Light Emission in Silicon, Semiconductors, and Semimetals Series*.

P. M. Fauchet, Ju. V. Vandyshev, Z. Xu, C. W. Rella, H. A. Schwettman, and G. W. Wicks, "Mid-Infrared Femtosecond Spectroscopy of Intersubband Hot Hole Relaxation in Quantum Wells," to be published in the Proceedings of OSA's Tenth International Topical Meeting on Ultrafast Phenomena, San Diego, CA, 28 May–1 June 1996.

D. Fried, R. E. Glena, 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, and C. P. Verdon, "Self-Consistent Stability Analysis of Ablation Fronts with Small Froude Numbers," to be published in *Physics of Plasmas*.

V. N. Goncharov and R. Betti, "Growth Rate of the Ablative Rayleigh-Taylor Instability for Indirect-Drive ICF," to be published in *Physics of Plasmas*.

M. J. Guardalben, "Canoscopic Alignment Methods for Birefringent Optical Elements in Fusion Lasers," to be published in *Optics & Photonics News*.

O. E. Hanuch, V. B. Agrawal, S. Papernov, M. delCerro, and J. V. Aquavella, "Posterior Capsular Polishing with the Nd:YLF Picosecond Laser: Model Eye Study," to be published in *Investigative Ophthalmology*.

D. Jacobs-Perkins, M. Currie, C.-C. Wang, C. Williams, W. R. Donaldson, R. Sobolewski, and T. Y. Hsiang, "Subpicosecond Imaging System Based on Electro-Optic Effect," to be published in the *IEEE Journal on Selected Topics in Quantum Electronics*.

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.

- J. H. Kelly, T. R. Boehly, J. M. Soures, D. L. Brown, R. Boni, R. S. Craxton, R. L. Keck, T. J. Kessler, R. L. 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 1st Annual International Conference on Solid-State Lasers for Application to Inertial Confinement Fusion (ICF), Monterey, CA, 30 May–2 June 1995.
- O. A. Konoplev and D. D. Meyerhofer, "Cancellation of *B*-Integral Accumulation in CPA Lasers," to be published in the Proceedings of OSA's Tenth International Topical Meeting on Ultrafast Phenomena, San Diego, CA, 28 May–1 June 1996.
- E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Colorimetry of Cholesteric Liquid Crystals," to be published in the Bulletin of the American Physical Society.
- K. S. Lebedev, E. A. Magulariya, S. G. Lukishova, S. V. Belyaev, N. V. Malimonenko, and A. W. Schmid, "Reflective Nonlinearities of Nonabsorbing Chiral Liquid Crystals: Frustration of Selective Reflection by Powerful Laser Radiation," to be published in the Bulletin of the American Physical Society.
- M. Lindgren, M. Currie, C. Williams, T. Y. Hsiang, P. M. Fauchet, R. Sobolewski, S. H. Moffat, R. A. Hughes, J. S. Preston, and F. A. Hegmann, "Intrinsic Photoresponse of a Y-Ba-Cu-O Superconductor," to be published in Physical Review Letters.
- M. Lindgren, M. Currie, C. Williams, T. Y. Hsiang, P. M. Fauchet, S. H. Moffat, R. A. Hughes, J. S. Preston, and F. A. Hegmann, "Ultrafast Photoresponse and Pulse Propagation in High- T_c Superconducting Y-Ba-Cu-O Thin-Film Devices," to be published in the IEEE Journal on Selected Topics in Quantum Electronics.
- S. G. Lukishova, S. V. Belyaev, K. S. Lebedev, E. A. Magulariya, A. W. Schmid, and N. V. Malimonenko, "cw and High-Repetition-Rate Lasing in Nd:YAG Resonators with Chiral-Nematic Liquid-Crystal Mirrors: A Study of Nonlinear Responses," to be published in Quantum Electronics.
- S. G. Lukishova, S. V. Belyaev, K. S. Lebedev, E. A. Magulariya, A. W. Schmid, and N. V. Malimonenko, "Nonlinear Bleaching in the Selective Reflection of Nonabsorbing Chiral-Nematic Liquid-Crystal Thin Films," to be published in JETP Letters and in Molecular Crystals and Liquid Crystals.
- F. J. Marshall and J. A. Oertel, "A Framed Monochromatic X-Ray Microscope for ICF," to be published in the Review of Scientific Instruments.
- 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.
- J. C. Mastrangelo, S.-H. Chen, T. N. Blanton, and A. Bashir-Hashemi, "Vitrification and Morphological Stability of Liquid Crystals," to be published in the Proceedings of the Materials Research Society Symposium Proceedings 1996 Spring Meeting, San Francisco, CA, 8–12 April 1996.
- S. M. McCormack, D. Fried, J. D. B. Featherstone, R. E. Glena, 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, "The LLE Direct-Drive Target Physics Experimental Program: First Year of ICF Experiments on OMEGA," to be published in the Proceedings of the 24th ECLIM, Madrid, Spain, 3–7 June 1996 (invited).
- C. J. McKinstrie and E. J. Turano, "Spatiotemporal Evolution of Parametric Instabilities Driven by Short Laser Pulses: One Dimensional Analysis," to be published in Physics of Plasmas.
- C. J. McKinstrie, V. A. Smalyuk, R. E. Giacone, and H. X. Vu, "Power Transfer between Crossed Laser Beams and the Associated Frequency Cascade," to be published in Physical Review E.
- 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.

A. Okishev and W. Seka, "Diode-Pumped Single-Frequency Nd:YLF Laser for the 60-Beam OMEGA Laser Pulse-Shaping System," to be published in *Solid State Lasers VI*.

R. D. Petrasso, C. K. Li, M. D. Cable, S. M. Pollaine, S. W. Haan, T. P. Bernat, J. D. Kilkenny, S. Cremer, J. P. Knauer, C. P. Verdon, and R. L. Kremens, "Implosion Symmetry and ρR Measurements of the National Ignition Facility from Nascent 31-MeV Tertiary Protons," to be published in *Physical Review Letters*.

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*.

J. Z. Roach and S. W. Swales, "A Network-Based Imaging System for the OMEGA Laser System," to be published in SPIE's Proceedings of the European Symposium on Lasers, Optics, and Vision for Productivity in Manufacturing I, Micropolis, Besancon, France, 10–14 June 1996.

A. W. Schmid, T. J. Kessler, S. Papernov, and J. Barone, "Low-Surface-Energy Photoresist as a Medium for Optical Replication," to be published in *Applied Physics Letters*.

H. Shi, D. Katsis, and S.-H. Chen, "Dynamics of Defect Annihilation in Vitrified Liquid Crystalline (VLC) Thin Films," to be published in the Proceedings of the Materials Research Society 1996 Spring Meeting, San Francisco, CA, 8–12 April 1996.

H. Shi and S.-H. Chen, "Theory of Circularly Polarized Light Emission from Chiral Nematic Liquid Crystalline Films," to be published in the Proceedings of the Materials Research Society 1996 Spring Meeting, San Francisco, CA, 8–12 April 1996.

M. J. Shoup III, J. H. Kelly, and D. L. Smith, "Design and Testing of a Large-Aperture, High-Gain, Brewster's-Angle Zigzag Nd:Glass Slab Amplifier," to be published in *Applied Optics*.

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

J. M. Soures, S. J. Loucks, 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, R. Gram, D. R. Harding, P. A. Jaanimagi, S. D. Jacobs, K. Kearney, R. L. Keck, J. H. Kelly, T. J. Kessler, R. L. Kremens, J. P. Knauer, S. A. Letzring, D. J. Lonobile, L. D. Lund, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, A. Okishev, S. Papernov, G. Pien, W. Seka, R. W. Short, M. J. Shoup, III, M. D. Skeldon, S. Skupsky, A. W. Schmid, D. J. Smith, S. Swales, M. D. Wittman, and B. Yaakobi, "The Role of the Laboratory for Laser Energetics in the National Ignition Facility Project," to be published in *Fusion Technology*.

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 Optically 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*.

Z. Xu, Ju. V. Vandyshev, P. M. Fauchet, C. W. Rella, H. A. Schwettman, and C. C. Tsai, "Ultrafast Excitation and De-excitation of Local Vibrational Modes in a Solid Matrix: The Si-H Bond in Amorphous Silicon," to be published in the Proceedings of OSA's Tenth International Topical Meeting on Ultrafast Phenomena, San Diego, CA, 28 May–1 June 1996.

B. Yaakobi, F. J. Marshall, and J. A. Delettrez, "Abel Inversion of Cryogenic Laser Target Images," to be published in *Optics Communications*.

B. Yaakobi, F. J. Marshall, and R. Epstein, "High Temperature of Laser-Compressed Shells Measured with Kr^{+34} and Kr^{+25} X-Ray Lines," to be published in *Physical Review E*.

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*.

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

Conference Presentations

S.-H. Chen, H. Shi, B. M. Conger, and J. C. Mastrangelo, "Novel Vitrifiable Liquid Crystalline Materials," International LCD Symposium, Hsin-Chu, Taiwan, 8–9 July 1996 (invited).

D. D. Meyerhofer, "Multiphoton-Electron Scattering Experiments," International Conference on Atomic Physics, Amsterdam, Netherlands, 4–9 August 1996.

The following presentations were made at the XXI International Conference on Low Temperature Physics, Prague, Czech Republic, 8–14 August 1996:

R. Adam, W. Kula, J. M. Murduck, C. Pettiette-Hall, and R. Sobolewski, "Laser-Induced Modification of the Critical Current in Y-Ba-Cu-O Step-Edge Josephson Junctions."

M. Lindgren, M. Currie, C. Williams, S. H. Moffat, R. A. Hughes, F. A. Hegmann, J. S. Preston, T. Y. Hsiang, and R. Sobolewski, "Picosecond Photoresponse of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thin Films."

S. D. Jacobs and D. Golini, "Chemomechanical Aspects of Material Removal with Magnetorheological Finishing," A Workshop on Chemical-Mechanical Polishing, Lake Placid, NY, 18–21 August 1996.

M. Lindgren, M. Currie, C. Williams, S. H. Moffat, R. A. Hughes, F. A. Hegmann, J. S. Preston, T. Y. Hsiang, and R. Sobolewski, " $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ Thin Film Picosecond Photodetectors," 1996 Applied Superconductivity Conference, Pittsburgh, PA, 25–30 August 1996.

The following presentations were made at the 26th Anomalous Absorption Conference, Fairbanks, AK, 26–30 August 1996:

R. Betti, R. Epstein, V. N. Goncharov, R. L. McCrory, and C. P. Verdon, "Dynamic Stability and Linear Feedthrough in ICF Implosions."

T. R. Boehly, D. D. Meyerhofer, J. P. Knauer, D. K. Bradley, R. L. Keck, J. A. Delettrez, V. A. Smalyuk, J. M. Soures, and C. P. Verdon, "Laser Imprinting Studies Using Multiple-UV-Beam Irradiation of Planar Targets."

D. K. Bradley, J. A. Delettrez, and P. A. Jaanimagi, "Initial Mix Experiments on the 60-Beam OMEGA Laser System."

R. S. Craxton and J. D. Schnittman, "Tetrahedral Hohlräume—A Way to Achieve Time-Independent Uniformity on the NIF?"

S. Cremer and S. Skupsky, "Diagnosing High- ρR Implosions Using Elastically Scattered DT Neutrons."

J. A. Delettrez, D. K. Bradley, and C. P. Verdon, "Modeling of Mix due to the Rayleigh-Taylor Instability in Burnthrough Experiments Using the One-Dimensional Hydrodynamic Code *LILAC*."

R. Epstein, "Time Averaging of Irradiation Nonuniformity in Laser-Driven Plasmas due to Target Ablation."

A. C. Gaeris, Y. Fisher, J. A. Delettrez, and D. D. Meyerhofer, "Brillouin Scattering of Picosecond Laser Pulses in Preformed, Short-Scale-Length Plasmas."

V. N. Goncharov, R. Betti, R. L. McCrory, and C. P. Verdon, "Ablative Rayleigh-Taylor Instability: Applications of the Linear Theory to Target Designs Relevant to Inertial Confinement Fusion."

C. J. McKinstrie and E. A. Startsev, "Multiple-Scale Derivation of the Relativistic Ponderomotive Force."

J. D. Schnittman and S. M. Pollaine, "Tetrahedral Hohlräume on the NIF."

W. Seka and A. V. Chirikikh, "Plasma Diagnostics on OMEGA."

R. W. Short, "Filamentation of Laser Light in Inhomogeneous Plasmas: Effects of Refraction and Plasma Flow."

A. Simon, "Raman Scattering in Gas-Filled Hohlräume and Gasbags."

V. A. Smalyuk, C. J. McKinstrie, R. E. Giacone, and H. X. Vu, "Power Exchange between Crossed Laser Beams and the Associated Frequency Cascade."

E. A. Startsev and C. J. McKinstrie, "Electron Acceleration by a Laser Pulse in a Plasma."

R. P. J. Town, R. W. Short, and C. P. Verdon, "Fokker-Planck Simulations of Foam-Buffered Targets."

E. J. Turano and C. J. McKinstrie, "Spatiotemporal Evolution of Stimulated Raman Scattering."

O. A. Konoplev, L. Zheng, and D. D. Meyerhofer, "Ultrashort-Pulse Laser Technique to Measure Crystal Axis Orientation," SOMR-96, Rochester, NY, 28 August 1996.

S. G. Lukishova, K. S. Lebedev, E. A. Magalariya, S. V. Belyaev, N. V. Malimonenko, and A. W. Schmid, "Nonlinear Bleaching of Non-absorbing Cholesteric Liquid-Crystal Mirrors by cw and Pulsed High-Power Laser Radiation," Europe-EQEC '96, Hamburg, Germany, 8-13 September 1996.

The following presentations were made at the Eleventh Target Fabrication Specialists' Meeting, Orcas Island, WA, 9-12 September 1996:

M. Bonino, R. Q. Gram, D. Harding, S. Noyes, J. Soures, and M. Wittman, "Retention of D₂ and DT in Plastic Shell Targets Using Thin Aluminum Layers."

M. D. Wittman, S. A Letzring, K. J. Lintz, S. Scarantino, D. R. Harding, S. J. Loucks, J. M. Soures, W. T. Shmayda, and R. Matsugu, "An Overview of the Tritium-Filling Capabilities at the Laboratory for Laser Energetics."

D. D. Meyerhofer, "Multiphoton-Electron Scattering Experiments," International Conference on Multiphoton Physics, Garmish-Partenkirchen, Germany, 30 September-4 October 1996.