Publications and Conference Presentations

Publications

S. R. Arrasmith, S. D. Jacobs, I. A. Kozhinova, L. L. Gregg, A. B. Shorey, H. J. Romanofsky, D. Golini, W. I. Kordonski, S. Hogan, and P. Dumas, "Studies of Material Removal in Magnetorheological Finishing (MRF) from Polishing Spots," in *Finishing of Advanced Ceramics and Glasses*, edited by R. Sabia, V. A. Greenhut, and C. G. Pantano, Ceramic Transactions, Vol. 102 (The American Ceramic Society, Westerville, OH, 1999), pp. 201–210.

A. Babushkin, W. A. Bittle, M. D. Skeldon, and W. Seka, "Diode-Pumped Regenerative Amplifier for the OMEGA Laser System," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, Washington, DC, 1999), pp. 407–408.

S.-H. Chen, J. C. Mastrangelo, and R. J. Jin, "Glassy Liquid Crystal Films as Broadband Polarizers and Reflectors via Spatially Modulated Photoracemization," Adv. Mater. **11**, 1183 (1999).

R. E. Giacone, C. J. McKinstrie, and T. Kolber, "Angular Dependence of Stimulated Brillouin Scattering in a Homogeneous Two-Dimensional Plasma," Phys. Plasmas **6**, 3587 (1999).

S. D. Jacobs, S. A. Arrasmith, I. A. Kozhinova, L. L. Gregg, A. B. Shorey, H. J. Romanofsky, D. Golini, W. I. Kordonski, P. Dumas, and S. Hogan, "An Overview of Magnetorheological Finishing (MRF) for Precision Optics," in *Finishing of Advanced Ceramics and Glasses*, edited by R. Sabia, V. A. Greenhut, and C. G. Pantano, Ceramic Transactions, Vol. 102 (The American Ceramic Society, Westerville, OH, 1999), pp. 185–199.

D. Katsis, P. H. M. Chen, J. C. Mastrangelo, S.-H. Chen, and T. N. Blanton, "Vitrified Chiral-Nematic Liquid Crystalline Films for Selective Reflection and Circular Polarization," Chem. Mater. **11**, 1590 (1999).

R. L. McCrory and J. M. Soures, "Status of Direct-Drive Inertial Confinement Fusion Research at the Laboratory for Laser Energetics," in *Current Trends in International Fusion Research*, edited by E. Panarella (NRC Research Press, Ottawa, Canada, 1999), pp. 251–259 (invited).

A. V. Okishev, D. Jacobs-Perkins, S. F. B. Morse, D. Scott, and W. Seka, "Prepulse Contrast Monitor for the OMEGA Driver Line," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, Washington, DC, 1999), pp. 406–407.

A. V. Okishev, "High-Repetition-Rate, Diode-Pumped, Multipass Preamplifier for the OMEGA Master Oscillator," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, Washington, DC, 1999), p. 407.

M. D. Skeldon, A. V. Okishev, R. L. Keck, and W. Seka, "An Optical Pulse-Shaping System Based on Aperture-Coupled Striplines for OMEGA Pulse-Shaping Applications," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (Optical Society of America, Washington, DC, 1999), p. 408.

V. A. Smalyuk, T. R. Boehly, D. K. Bradley, V. N. Goncharov, J. A. Delettrez, J. P. Knauer, D. D. Meyerhofer, D. Oron, D. Shvarts, Y. Srebro, and R. P. J. Town, "Nonlinear Evolution of Broad-Bandwidth, Laser-Imprinted Nonuniformities in Planar Targets Accelerated by 351-nm Laser Light," Phys. Plasmas **6**, 4022 (1999).

M. D. Wittman and R. S. Craxton, "Self-Interference Patterns and Their Application to Inertial-Fusion Target Characterization," Appl. Opt. **38**, 5365 (1999).

M. J. Zuerlein, D. Fried, J. D. B. Featherstone, and W. Seka, "Optical Properties of Dental Enamel in the Mid-IR Determined by Pulsed Photothermal Radiometry," IEEE J. Sel. Top. Quantum Electron. **5**, 1083 (1999).

Forthcoming Publications

R. Adam, M. Currie, C. Williams, R. Sobolewski, O. Harnack, and M. Darula, "Direct Observation of Subpicosecond Single-Flux-Quantum in Pulse-Driven Y-Ba-Cu-O Josephson Junctions," to be published in Applied Physics Letters.

R. Betti, "Radial Discontinuities in Tokamak MHD Equilibria with Poloidal Flow," to be published in Physics of Plasmas.

R. Betti and J. P. Freidberg, "Low-β, Magnetohydrodynamic Tokamak Equilibria with Poloidal Transonic Flow," to be published in Physical Review Letters.

T. R. Boehly, A. Babushkin, D. K. Bradley, R. S. Craxton, J. A. Delettrez, R. Epstein, T. J. Kessler, J. P. Knauer, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, W. Seka, S. Skupsky, V. A. Smalyuk, R. P. J. Town, and B. Yaakobi, "Laser-Uniformity and Hydrodynamic-Stability Experiments at the OMEGA Laser Facility," to be published in Laser and Particle Beams.

J. L. Chaloupka and D. D. Meyerhofer, "Observation of Electron Trapping in an Intense Laser Beam," to be published in Physical Review Letters.

J. L. Chaloupka and D. D. Meyerhofer, "Characterization of a Tunable Single-Beam Ponderomotive-Optical Trap," to be published in the Journal of the Optical Society of America B.

S.-H. Chen, J. C. Mastrangelo, B. M. Conger, and D. Katsis, "Design, Synthesis, and Potential Application of Glass-Forming Functional Organic Materials," to be published in the Proceedings of the 6th International Polymer Conference, Kusatsu, Japan, 20–24 October 1997 (invited).

S.-H. Chen, R. J. Jin, D. Katsis, J. C. Mastrangelo, S. Papernov, and A. W. Schmid, "Selective Reflection and Polarization Band of Glassy Chiral-Nematic Films Broadened by Photoracemization," to be published in Liquid Crystals.

M. Currie, C.-C. Wang, R. Sobolewski, and T. Y. Hsiang, "Picosecond Nodal Testing of Centimeter-Size Superconducting Nb Microstrip Interconnects," to be published in Applied Superconductivity.

F. Dahmani, J. C. Lambropoulos, A. W. Schmid, S. Papernov, and S. J. Burns, "Crack Arrest and Stress Dependence of Laser-Induced Surface Damage in Fused Silica and Borosilicate Glass," to be published in Applied Optics.

F. Dahmani, A. W. Schmid, J. C. Lambropoulos, and S. J. Burns, "Lifetime Prediction of Laser-Precracked Fused Silica Subjected to Subsequent Cyclic Laser Pulses," to be published in the Journal of Materials Science.

F.-Y. Fan, J. C. Mastrangelo, D. Katsis, and S.-H. Chen, "Novel Glass-Forming Liquid Crystals V. Nematic and Chiral-Nematic Systems with an Elevated Glass Transition Temperature," to be published in Liquid Crystals.

V. N. Goncharov, J. A. Delettrez, S. Skupsky, and R. P. J. Town, "Modeling Laser Imprint for Inertial Confinement Fusion Targets," to be published in Physical Review Letters.

K. Green and R. Sobolewski, "Extending the *S*-Parameter Approach to Linear Time-Varying Microwave Devices: Part I. Analysis," to be published in IEEE Microwave Theory and Techniques.

K. S. Il'in, M. Lindgren, M. Currie, S. I. Cherednichenko, A. D. Semenov, G. N. Gol'tsman, E. M. Gershenzon, and R. Sobolewski, "Picosecond Hot-Electron Energy Relaxation in NbN Superconducting Photodetectors," to be published in Applied Physics Letters.

S. D. Jacobs, S. A. Arrasmith, I. A. Kozhinova, L. L. Gregg, A. B. Shorey, H. J. Romanofsky, D. Golini, W. I. Kordonski, P. Dumas, and S. Hogan, "Magnetorheological Finishing: Computer Controlled Optics Manufacturing," to be published in the Bulletin of the American Ceramic Society.

J. P. Knauer, R. Betti, D. K. Bradley, T. R. Boehly, T. J. B. Collins, V. N. Goncharov, P. W. McKenty, D. D. Meyerhofer, V. A. Smalyuk, C. P. Verdon, S. G. Glendinning, D. H. Kalantar, and R. G. Watt, "Single-Mode Rayleigh–Taylor Growth-Rate Measurements with the OMEGA Laser System," to be published in Physics of Plasmas.

R. S. Knox, "Physical Aspects of the Greenhouse Effect and Global Warming," to be published in the American Journal of Physics.

M. Lindgren, W.-S. Zeng, M. Currie, R. Sobolewski, S. Cherednichenko, B. Voronov, and G. N. Gol'tsman, "Picosecond Response of a Superconducting Hot-Electron NbN Photodetector," to be published in Applied Superconductivity.

F. J. Marshall, "Direct-Drive, Hollow-Shell Implosion Studies on the 60-Beam, UV OMEGA Laser System," to be published in Physics of Plasmas.

C. J. McKinstrie and E. A. Startsev, "Forward and Backward Stimulated Brillouin Scattering of Crossed Laser Beams," to be published in Physical Review E.

A. B. Shorey, W. I. Kordonski, S. R. Gorodkin, S. D. Jacobs, R. F. Gans, K. M. Kwong, and C. H. Farney, "Design and Testing of a New Magnetorheometer," to be published in the Review of Scientific Instruments.

R. W. Short, "Stability of Self-Focused Filaments in Laser-Produced Plasmas," to be published in Physical Review Letters.

D. J. Smith, J. A. Warner, N. E. LeBarron, T. J. Kessler, S. LaDelia, J. P. Knauer, D. D. Meyerhofer, D. Oron, and D. Shvarts, "The Development of Ion-Etched Phase Plates," to be published in Applied Optics.

J. M. Soures, R. L. McCrory, R. Betti, W. Bittle, T. R. Boehly, R. Boni, D. K. Bradley, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, V. Glebov, V. N. Goncharov, D. R. Harding, P. A. Jaanimagi, R. L. Keck, J. H. Kelly, T. J. Kessler, J. P. Knauer, C. K. Li, S. J. Loucks, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, S. Padalino, R. Petrasso, P. B. Radha, S. Regan, W. Seka, R. W. Short, A. Simon, S. Skupsky, D. J. Smith, R. P. J. Town, B. Yaakobi, and J. D. Zuegel, "Recent Advances in Direct-Drive ICF Target Physics at the Laboratory for Laser Energetics," to be published in the Proceedings of the 1998 IAEA Conference, Yokohama, Japan, 19–24 October 1998.

Conference Presentations

The following presentations were made by R. P. J. Town at the 1999 Fusion Summer Study Workshop, Snowmass, CO, 11–23 July 1999: "The OMEGA Laser System," "Rayleigh–Taylor Experiments on the OMEGA Laser," and "Direct-Drive Issues on the NIF."

The following presentations were made at SPIE's International Symposium on Optical Science, Engineering, and Instrumentation, Denver, CO, 18–23 July 1999:

S. R. Arrasmith, I. A. Kozhinova, L. L. Gregg, H. J. Romanofsky, A. B. Shorey, S. D. Jacobs, D. Golini, W. I. Kordonski, P. Dumas, and S. Hogan, "Details of the Polishing Spot in Magnetorheological Finishing."

D. D. Meyerhofer, T. Ditmire, N. Hay, M. H. R. Hutchinson, M. B. Mason, and J. W. G. Tisch, "Measurements of the Spatio-Temporal Properties of High-Order Harmonics."

A. B. Shorey, L. L. Gregg, H. J. Romanofsky, S. R. Arrasmith, I. A. Kozhinova, and S. D. Jacobs, "A Study of Material Removal During Magnetorheological Finishing."

The following presentations were made at Inertial Fusion Sciences and Applications (IFSA) 1999, Bordeaux, France, 12–17 September 1999:

V. N. Goncharov, S. Skupsky, P. W. McKenty, J. A. Delettrez, R. P. J. Town, and C. Cherfiles-Clérouin, "Stability Analysis of Directly Driven OMEGA and NIF Capsules."

D. R. Harding, R. Q. Gram, M. D. Wittman, L. D. Lund, D. Lonobile, M. J. Shoup III, S. J. Loucks, G. Besenbruch, K. Schultz, A. Nobile, and S. Letzring, "Direct-Drive Cryogenic Targets and the OMEGA Cryogenic Target Handling System."

R. L. McCrory, R. E. Bahr, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, V. N. Goncharov, R. Q. Gram, D. R. Harding, P. A. Jaanimagi, R. L. Keck, J. P. Knauer, S. J. Loucks, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, P. B. Radha, S. P. Regan, W. Seka, S. Skupsky, V. A. Smalyuk, J. M. Soures, C. Stoeckl, R. P. J. Town, M. D. Wittman, B. Yaakobi, J. D. Zuegel, R. D. Petrasso, D. G. Hicks, C. K. Li, and O. V. Gotchev, "OMEGA Experiments and Preparation for Direct-Drive Ignition on the National Ignition Facility."

D. D. Meyerhofer, T. R. Boehly, D. K. Bradley, T. J. B. Collins, J. A. Delettrez, Y. Fisher, V. N. Goncharov, O. Gotchev, J. P. Knauer, P. W. McKenty, S. P. Regan, W. Seka, S. Skupsky, V. A. Smalyuk, R. P. J. Town, and B. Yaakobi, "Direct-Drive Imprinting and Rayleigh–Taylor Experiments on OMEGA."

W. Seka, D. D. Meyerhofer, S. P. Regan, R. S. Craxton, B. Yaakobi, C. Stoeckl, A. Simon, R. W. Short, and R. E. Bahr, "NIF-Scale Direct-Drive Interaction on OMEGA."

S. Skupsky, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, R. Epstein, V. N. Goncharov, P. W. McKenty, P. B. Radha, R. P. J. Town, D. D. Meyerhofer, W. Seka, and R. L. McCrory, "Simulation of OMEGA Experiments as a Prelude to Direct-Drive NIF Ignition Experiments."

B. Yaakobi, F. J. Marshall, V. Yu. Glebov, R. D. Petrasso, J. M. Soures, V. A. Smalyuk, D. D. Meyerhofer, W. Seka, J. A. Delettrez, and R. P. J. Town, "Spherical Implosion Experiments on OMEGA: Measurements of the Cold, Compressed Shell."

J. D. Zuegel, D. Jacobs-Perkins, J. Marozas, R. G. Roides, R. S. Craxton, J. H. Kelly, S. Skupsky, W. Seka, and S. Letzring, "Broadband Beam Smoothing on OMEGA with Two-Dimensional Smoothing by Spectral Dispersion."

S. R. Arrasmith, S. D. Jacobs, I. A. Kozhinova, A. B. Shorey, D. Golini, W. I. Kordonski, S. Hogan, and P. Dumas, "Development and Characterization of Magnetorheological Fluids for Optical Finishing," Fine Powder Processing '99, University Park, PA, 20–22 September 1999.

The following presentations were made at the Optical Society of America's Annual Meeting, Santa Clara, CA, 26 September–1 October 1999:

D. Golini and S. D. Jacobs, "Magnetorheological Finishing of Aspheres."

S. D. Jacobs, S. A. Arrasmith, I. A. Kozhinova, L. L. Gregg, H. J. Romanofsky, A. B. Shorey, D. Golini, W. I. Kordonski, P. Dumas, and S. Hogan, "Magnetorheological Finishing of KDP."