
Publications and Conference Presentations

Publications

T. R. Boehly, J. A. Delettrez, J. P. Knauer, D. D. Meyerhofer, B. Yaakobi, R. P. J. Town, and D. Hoarty, "Effect of Shock Heating on the Stability of Laser-Driven Targets," *Phys. Rev. Lett.* **87**, 145003 (2001).

A. E. Marino, S. R. Arrasmith, L. L. Gregg, S. D. Jacobs, G. Chen, and Y. Duc, "Durable Phosphate Glasses with Lower Transition Temperatures," *J. Non-Cryst. Solids* **289**, 37 (2001).

A. V. Okishev, R. Boni, M. Millecchia, P. A. Jaanimagi, W. R. Donaldson, R. L. Keck, W. Seka, K. V. Dukelsky, M. A. Eronyan, V. S. Shevandin, G. M. Ermolaeva, G. E. Nikolaev,

and V. B. Shilov, "Unique High-Bandwidth UV Fiber Delivery System for the OMEGA Diagnostics Applications," *IEEE J. Sel. Top. Quantum Electron.* **7**, 471 (2001).

V. A. Smalyuk, V. N. Goncharov, B. Yaakobi, J. A. Delettrez, F. J. Marshall, D. D. Meyerhofer, and S. P. Regan, "Evolution of Shell Nonuniformities Near Peak Compression of a Spherical Implosion," *Phys. Rev. Lett.* **87**, 155002 (2001).

Forthcoming Publications

A. Babushkin, M. J. Harvey, and M. D. Skeldon, "The Output Signal-to-Noise Ratio of a Nd:YLF Regenerative Amplifier," to be published in *Applied Optics*.

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

B. Buerke and D. D. Meyerhofer, "Accurate Measurement of Hydrogenic Tunneling Rates in a High-Intensity Laser Focus," to be published in *Physical Review Letters*.

T. J. B. Collins and S. Skupsky, "Imprint Reduction Using an Intensity Spike in OMEGA Cryogenic Targets," to be published in *Physics of Plasmas*.

W. R. Donaldson, J. H. Kelly, R. L. Keck, and R. Boni, "Predicting and Measuring Optical Pulse Shapes on the OMEGA Laser System," to be published in the *OSA Technical Digest*.

F. Y. Fan, S. W. Culligan, J. C. Mastrangelo, D. Katsis, and S. H. Chen, "Novel Glass-Forming Liquid Crystals. VI. High-Temperature Glassy Nematics," to be published in *Chemical Materials*.

J. A. Frenje, D. G. Hicks, C. K. Li, F. H. Séguin, R. D. Petrasso, K. Fletcher, H. Olliver, S. Padalino, S. Thompson, J. M. Soures, S. Roberts, C. Sorce, T. C. Sangster, and T. W. Phillips, "CR-39 Tract Detector Response to Charged Particles and Neutrons," to be published in the *Review of Scientific Instruments*.

M. J. Guardalben, L. Ning, N. Jain, D. J. Battaglia, and K. L. Marshall, "Experimental Comparison of a Liquid Crystal Point Diffraction Interferometer (LCPDI) and a Commercial Phase-Shifting Interferometer and Methods to Improve LCPDI Accuracy," to be published in *Applied Optics*.

O. A. Konoplev, Y. Fisher, and D. D. Meyerhofer, "Generation of a Picosecond Laser Pulse with an Intensity Contrast of Eleven Orders of Magnitude," to be published in *Optics Letters*.

V. Lobatchev and R. Betti, "Ablative Stabilization of the Deceleration-Phase Rayleigh–Taylor Instability," to be published in *Physical Review Letters*.

J. A. Marozas, "Self- and Cross-Phase Modulation of High-Intensity Laser Beams Emerging from a Diamond-Turned KDP Wedge," to be published in the *Journal of the Optical Society of America B*.

J. A. Marozas, S. P. Regan, J. H. Kelly, D. D. Meyerhofer, W. Seka, and S. Skupsky, "Laser Beam Smoothing Caused by the Small-Spatial-Scale β -Integral," to be published in the *Journal of the Optical Society of America B*.

J. A. Marozas, J. D. Zuegel, D. Jacobs-Perkins, and J. H. Kelly, "Angular Spectrum Representation of Pulsed Laser Beams with Two-Dimensional Smoothing by Spectral Dispersion," to be published in the *Journal of the Optical Society of America B*.

R. L. McCrory, R. E. Bahr, R. Betti, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, J. Frenje, V. Yu. Glebov, V. N. Goncharov, O. V. Gotchev, R. Q. Gram, D. R. Harding, D. G. Hicks, P. A. Jaanimagi, R. L. Keck, J. H. Kelly, J. P. Knauer, C. K. Li, S. J. Loucks, L. D. Lund, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. F. B. Morse, R. D. Petrasso, P. B. Radha, S. P. Regan, S. Roberts, F. Séguin, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, J. M. Soures, C. Stoeckl, R. P. J. Town, M. D. Wittman, B. Yaakobi, and J. D. Zuegel, "OMEGA ICF Experiments and Preparation for Direct-Drive Ignition on NIF," to be published in the proceedings of the 18th IAEA Fusion Energy Conference.

F. H. Séguin, C. K. Li, D. G. Hicks, J. A. Frenje, R. D. Petrasso, J. M. Soures, V. Yu. Glebov, C. Stoeckl, P. B. Radha, D. D. Meyerhofer, S. Roberts, C. Sorce, T. C. Sangster, and M. D. Cable, "Diagnostic Use of Secondary D³He Proton Spectra for D-D OMEGA Targets," to be published in *Physics of Plasmas*.

A. B. Shorey, S. D. Jacobs, W. I. Kordonski, and R. F. Gans, "Understanding the Mechanism of Glass Removal in Magnetorheological Finishing (MRF)," to be published in *Applied Optics*.

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

M. D. Skeldon, "An Optical-Pulse-Shaping System Based on an Electro-Optic Modulator Driven by an Aperture-Coupled-Stripline Electrical-Waveform Generator," to be published in *Journal of the Optical Society of America B*.

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

E. A. Startsev and C. J. McKinstrie, "Relativistic Ponderomotive Dynamics of a Test Particle in a Plasma," to be published in *Physical Review E*.

F. Y. Tsai, E. L. Alfonso, S. H. Chen, and D. R. Harding, "Processing Vapor-Deposited Polyimide," to be published in the *Journal of Applied Physics*.

B. Yaakobi, C. Stoeckl, T. Boehly, D. D. Meyerhofer, and W. Seka, "Measurement of Preheat due to Fast Electrons in Laser Implosions," to be published in SPIE's Proceedings of the XXVI European Conference on Laser Interaction with Matter.

J. D. Zuegel and D. W. Jacobs-Perkins, "An Efficient, High-Frequency Bulk Phase Modulator," to be published in *Applied Optics*.

J. D. Zuegel and S. A. Letzring, "Bulk Microwave Phase Modulators for Smoothing by Spectral Dispersion," to be published in *Applied Optics*.

Conference Presentations

G. Chen, Y. Du, A. Marino, L. L. Gregg, S. R. Arrasmith, and S. D. Jacobs, "Effect of SnO on Chemical Durability of Phosphate Glasses," The International Congress on Glass ICG 2001, Edinburgh, Scotland, 2–6 July 2001.

The following presentations were made at the 14th Target Fabrication Meeting, West Point, NY, 15–19 July 2001:

E. L. Alfonso, R. Q. Gram, and D. R. Harding, "CFD Modeling of Temperature/Pressure Gradients While Cooling Thin-Walled Direct-Drive Capsules."

R. Q. Gram and D. R. Harding, "Filling and Cooling Thin-Walled Cryogenic Targets."

L. D. Lund, D. R. Harding, D. J. Lonobile, D. Jacobs-Perkins, and T. Hinterman, "Alignment, Vibration, and Shroud Retraction: Initial Performance of the OMEGA Cryogenic Target Handling System."

P. W. McKenty, C. Stoeckl, V. N. Goncharov, M. J. Bonino, V. Yu. Glebov, D. R. Harding, D. D. Meyerhofer, and R. L. McCrory, "The Role of Improved Target Surface Roughness in Recent OMEGA Gas-Filled Implosion Experiments."

D. D. Meyerhofer, C. Chiritescu, T. J. B. Collins, J. A. Delettrez, R. Epstein, V. Yu. Glebov, D. R. Harding, R. L. Keck, S. J. Loucks, L. D. Lund, R. L. McCrory, P. W. McKenty, F. J. Marshall, S. F. B. Morse, S. P. Regan, P. B. Radha, S. Roberts, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, C. Stoeckl, J. M. Soures, R. P. J. Town, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, K. Fletcher, C. Padalino, C. Freeman, N. Izumi, R. Lerche, T. W. Phillips, and T. C. Sangster, "Cryogenic-Target Experiments on OMEGA."

S. G. Noyes, M. J. Bonino, D. Turner, J. Tidu, and D. R. Harding, "Target Fabrication Techniques at LLE."

S. Skupsky, R. Betti, V. N. Goncharov, R. L. McCrory, P. W. McKenty, R. P. J. Town, D. D. Meyerhofer, and D. R. Harding, "Wetted-Foam Target Designs for the NIF and OMEGA."

F.-Y. Tsai, E. L. Alfonso, S. H. Chen, D. R. Harding, and T. N. Blanton, "Effects of Processing Conditions on the Quality and Properties of Vapor-Deposited Polyimide Shells."

M. D. Wittman, D. R. Harding, P. W. McKenty, H. Huang, L. S. Iwan, T. J. Kessler, L. Elasky, and J. Sailer, "Layering and Characterization of Solid Deuterium Fuel Layers in Permeation-Filled Cryogenic Targets for OMEGA."

A. V. Tikhonravov, M. K. Trubetskov, I. V. Kockikov, J. B. Oliver, and D. J. Smith, "Real-Time Characterization and Optimization of *E*-Beam Evaporated Optical Coatings," Optical Interference Coatings, Topical Meeting and Tabletop Exhibit, Banff, Alberta, Canada, 15–20 July 2001.

S. D. Jacobs, S. R. Arrasmith, I. A. Kozhinova, S. R. Gorodkin, L. L. Gregg, H. J. Romanofsky, and T. D. Bishop II, "Effects of Changes in Fluid Composition on Magnetorheological Finishing of Glasses and Crystals," 10th International Conference on Precision Engineering (ICPE), Yokohama, Japan, 18–20 July 2001.

The following presentations were made at SPIE's 46th Annual Meeting, The International Symposium on Optical Science and Technology, San Diego, CA, 29 July–3 August 2001:

S. R. Arrasmith, S. D. Jacobs, J. Lambropoulos, A. Maltsev, W. Kordonski, D. Golini, and E. Cleaveland, "The Use of Magnetorheological Finishing (MRF) to Relieve Residual Stress and Subsurface Damage on Lapped Semiconductor Silicon Wafers."

J. E. DeGroot, S. D. Jacobs, L. L. Gregg, and A. E. Marino, "Quantitative Characterization of Optical Polishing Pitch."

I. A. Kozhinova, S. R. Arrasmith, J. C. Lambropoulos, S. D. Jacobs, and H. J. Romanofsky, "Anisotropy in MRF Removal Rate for a Sapphire Single Crystal."

The following presentations were made at the EuroConference on Advanced Diagnostics for Magnetic and Inertial Fusion, Varenna, Italy, 3–7 September 2001:

R. L. Keck, W. R. Donaldson, V. Yu. Glebov, P. A. Jaanimagi, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, W. Seka, C. Stoeckl, and R. Boni, “Laser and X-Ray Irradiation Diagnostics That Have Paved the Path Toward Significantly Improved ICF Target Performance.”

W. Seka, R. S. Craxton, R. L. Keck, J. P. Knauer, D. D. Meyerhofer, S. P. Regan, C. Stoeckl, B. Yaakobi, R. E. Bahr, D. Montgomery, B. Baldis, and R. Kirkwood, “Laser–Plasma Interaction Diagnostics for ICF Fusion Research.”

C. Stoeckl, J. A. Delettrez, R. Epstein, V. Yu. Glebov, R. L. Keck, R. L. McCrory, P. W. McKenty, F. J. Marshall, D. D. Meyerhofer, P. B. Radha, S. P. Regan, S. Roberts, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, J. M. Soures, R. P. J. Town, B. Yaakobi, J. A. Frenje, C. K. Li, R. D. Petrasso, F. H. Séguin, K. Fletcher, S. Padalino, C. Freeman, N. Izumi, R. Lerche, T. W. Phillips, and T. C. Sangster, “Measuring Core Performance and Mix in Direct-Drive Spherical Implosions on OMEGA.”

The following presentations were made at the Second International Conference on Inertial Fusion Sciences and Applications, Kyoto, Japan, 9–14 September 2001:

C. K. Li, F. H. Séguin, J. A. Frenje, S. Kurebayashi, R. D. Petrasso, J. M. Soures, D. D. Meyerhofer, V. Yu. Glebov, P. B. Radha, S. Roberts, W. Seka, C. Stoeckl, and T. C. Sangster, “Charged-Particle Spectroscopy on OMEGA and Recent Results of Capsule Implosion Studies.”

D. D. Meyerhofer, J. H. Kelly, R. P. J. Town, L. J. Waxer, S. J. Loucks, R. L. McCrory, W. Seka, and S. Skupsky, “An Integrated Fast Ignitor Experiment for OMEGA.”

P. B. Radha, J. A. Delettrez, R. Epstein, V. Yu. Glebov, V. N. Goncharov, R. L. Keck, R. L. McCrory, P. W. McKenty, F. J. Marshall, D. D. Meyerhofer, S. P. Regan, S. Roberts, W. Seka, S. Skupsky, V. A. Smalyuk, C. Sorce, C. Stoeckl, J. M. Soures, R. P. J. Town, B. Yaakobi, J. D. Zuegel, J. A. Frenje, C. K. Li, C. K. Petrasso, F. H. Séguin, K. Fletcher, S. Padalino, C. Freeman, N. Izumi, R. Lerche, T. W. Phillips, and T. C. Sangster, “Compressed Core Conditions in Direct-Drive Spherical Implosions on OMEGA.”

S. P. Regan, B. Yaakobi, J. A. Delettrez, V. A. Smalyuk, F. J. Marshall, R. Epstein, V. Yu. Glebov, P. A. Jaanimagi, D. D. Meyerhofer, P. B. Radha, W. Seka, S. Skupsky, J. M. Soures, C. Stoeckl, R. P. J. Town, D. A. Haynes, Jr., C. F. Hooper, C. K. Li, R. D. Petrasso, and F. H. Séguin, “High-Density, Direct-Drive Implosions on OMEGA.”

S. Skupsky, R. Betti, T. J. B. Collins, V. N. Goncharov, D. R. Harding, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, and R. P. J. Town, “High-Gain, Direct-Drive Target Designs for the National Ignition Facility.”

R. P. J. Town, V. N. Goncharov, P. W. McKenty, J. A. Delettrez, R. Epstein, R. L. McCrory, P. B. Radha, S. Skupsky, V. Yu. Glebov, D. R. Harding, D. D. Meyerhofer, F. J. Marshall, S. P. Regan, W. Seka, V. A. Smalyuk, C. Stoeckl, J. M. Soures, B. Yaakobi, and J. D. Zuegel, “OMEGA Direct-Drive Cryogenic Target Physics.”