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## Publications and Conference Presentations

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### Publications

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E. L. Alfonso, S.-H. Chen, R. Q. Gram, and D. R. Harding, "Properties of Polyimide Shells Made Using Vapor Phase Deposition," *J. Mater. Res.* **13**, 2988 (1998).

A. Babushkin, R. S. Craxton, S. Oskoui, M. J. Guardalben, R. L. Keck, and W. Seka, "Demonstration of the Dual-Tripler Scheme for Increased-Bandwidth Third-Harmonic Generation," *Opt. Lett.* **23**, 927 (1998).

R. Betti, "Beta Limits for the  $N=1$  Mode in Rotating-Toroidal-Resistive Plasmas Surrounded by a Resistive Wall," *Phys. Plasmas* **5**, 3615 (1998).

M. B. Campanelli and D. J. Smith, "A Wideband Optical Monitor for a Planetary-Rotation Coating System," in *Optical Interference Coatings*, Vol. 9, 1998 OSA Technical Digest Series (Optical Society of America, Washington, DC, 1998), pp. 426–429.

T. J. B. Collins, H. L. Helfer, and H. M. Van Horn, "Accretion Disk and Boundary Layer Models Incorporating OPAL Opacities," *Astrophys. J.* **502**, 730 (1998).

E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Color Gamut of Cholesteric Liquid Crystal Films and Flakes by Standard Colorimetry," *Color Res. Appl.* **23**, 210 (1998).

S. J. McNaught, J. P. Knauer, and D. D. Meyerhofer, "Photoelectron Initial Conditions for Tunneling Ionization in a Linearly Polarized Laser," *Phys. Rev. A* **58**, 1399 (1998).

S. Papernov, A. W. Schmid, and D. Zaksas, "Characterization of Freestanding Polymer Films for Application in 351-nm, High-Peak-Power Laser Systems," *Opt. Eng.* **37**, 677 (1998).

D. J. Smith, J. A. Warner, and N. LeBarron, "Uniformity Model for Energetic Ion Processes Using a Kaufman Ion Source," in *Optical Interference Coatings*, Vol. 9, 1998 OSA Technical Digest Series (Optical Society of America, Washington, DC, 1998), pp. 8–11.

A. R. Staley, D. J. Smith, R. C. Eriksson, and R. P. Foley, "Counter-Rotating Planetary Design Increases Production Capacity for Large Rectangular Substrates," in the *41st Annual Technical Conference Proceedings* (Society of Vacuum Coaters, Albuquerque, NM, 1998), pp. 193–196.

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### Forthcoming Publications

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E. L. Alfonso, S.-H. Chen, R. Q. Gram, D. R. Harding, and F. Y. Tsai, "Fabrication of Polyimide Shells by Vapor Phase Deposition for Use as ICF Targets," to be published in *Fusion Technology*.

A. Babushkin, J. H. Kelly, C. T. Cotton, M. Labuzeta, M. Miller, T. A. Safford, R. G. Roides, W. Seka, I. Will, M. D. Tracy, and D. L. Brown, "Compact  $\text{Nd}^{3+}$ -Based Laser System with Gain  $G_{\text{ss}} 10^{13}$  and 20-J Output Energy," to be published

in SPIE's *Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion*, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

R. Betti, V. Lobatchev, and R. L. McCrory, "Feedout, Secular Distortion, and R-T Seeding Induced by Long-Wavelength Perturbations in Accelerated Planar Foils," to be published in *Physical Review Letters*.

T. R. Boehly, R. L. McCrory, C. P. Verdon, W. Seka, S. J. Loucks, A. Babushkin, R. E. Bahr, R. Boni, D. K. Bradley, R. S. Craxton, J. A. Delettrez, W. R. Donaldson, R. Epstein, D. Harding, P. A. Jaanimagi, S. D. Jacobs, K. Kearney, R. L. Keck, J. H. Kelly, T. J. Kessler, R. L. Kremens, J. P. Knauer, 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, T. Safford, J. D. Schnittman, R. Short, M. J. Shoup III, M. Skeldon, S. Skupsky, A. W. Schmid, V. A. Smalyuk, D. J. Smith, J. M. Soures, M. Wittman, and B. Yaakobi, "Inertial Confinement Fusion Experiments with OMEGA—a 30-kJ, 60-Beam UV Laser," to be published in the Proceedings of the 1997 IAEA Conference, Osaka, Japan, 10–14 March 1997.

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. 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*.

S.-H. Chen, B. M. Conger, J. C. Mastrangelo, and A. S. Kende, "Synthesis and Optical Properties of Thermotropic Polythiophene and Poly(P-Phenylene) Derivatives," to be published in *Macromolecules*.

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).

T. J. B. Collins, A. Frank, J. E. Bjorkman, and M. Livio, "Supernova 1987A: Rotation and a Binary Companion," to be published in *Astrophysical Journal*.

T. J. B. Collins, H. L. Helfer, and H. M. VanHorn, "A Model for QPO's in CV's Based on Boundary-Layer Oscillations," to be published in *Astrophysical Journal, Letters*.

B. M. Conger, J. C. Mastrangelo, D. Katsis, and S.-H. Chen, "Fluorescence of Pyrenyl and Carbazolyl Derivatives in Isotropic and Helically Aligned Solid Films," to be published in the *Journal of Physical Chemistry A*.

S. Cremer, C. P. Verdon, and R. D. Petrasso, "Tertiary Proton Diagnostics in Future ICF Experiments," to be published in *Physics of Plasmas*.

M. Currie, R. Sobolewski, and T. Y. Hsiang, "Subterahertz Signal Crosstalk in Transmission Line Interconnects," to be published in *Applied Physics Letters*.

F. Dahmani, J. C. Lambropoulos, A. W. Schmid, S. J. Burns, and C. Pratt, "Nanoindentation Technique for Measuring Residual Stress Field Around a Laser-Induced Crack in Fused Silica," to be published in the *Journal of Materials Science*.

F. Dahmani, J. C. Lambropoulos, A. W. Schmid, S. Papernov, and S. J. Burns, "Fracture of Fused Silica with 351-nm-Laser-Generated Surface Cracks," to be published in the *Journal of Materials Research*.

F. Dahmani, A. W. Schmid, J. C. Lambropoulos, and S. J. Burns, "Laser-Fluence and Laser-Pulse Number Dependence of Birefringence and Residual Stress near Laser-Induced Cracks in Fused Silica," to be published in *Applied Optics*.

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

V. N. Goncharov, "Ablation Front Oscillations During the Shock Transit Time," to be published in *Physical Review Letters*.

K. Green, W. Seka, M. D. Skeldon, R. L. Keck, A. V. Okishev, and R. Sobolewski, "Improving the Microwave Bandwidth of Photoconductive Switches Used in the OMEGA Pulse-Shaping System," to be published in SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998.

K. S. Il'in, I. I. Milostnaya, A. A. Verevkin, G. N. Gol'tsman, E. M. Gershenzon, and R. Sobolewski, "Ultimate Quantum Efficiency of a Superconducting Hot-Electron Photodetector," to be published in *Applied Physics Letters*.

S. D. Jacobs, W. I. Kordonski, and H. M. Pollicove, "Precision Control of Aqueous Magnetorheological Fluids for Finishing of Optics," to be published in the Proceedings of ERMR 1997, Yonezawa, Japan, 22–25 July 1997.

S. D. Jacobs, H. M. Pollicove, W. I. Kordonski, and D. Golini, "Magnetorheological Finishing (MRF) in Deterministic Optics Manufacturing," to be published in the Proceedings of ICPE '97, Taipei, Taiwan, 20–22 November 1997.

- D. Katsis, A. W. Schmid, and S.-H. Chen, "Mechanistic Insight into Circularly Polarized Photoluminescence from a Chiral-Nematic Film," to be published in *Liquid Crystals*.
- 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*.
- E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Cholesteric Liquid Crystal Flakes—a New Form of Domain," to be published in *Molecular Crystals and Liquid Crystals*.
- E. M. Korenic, S. D. Jacobs, S. M. Faris, and L. Li, "Cholesteric Liquid Crystal Transmission Profile Asymmetry," to be published in *Molecular Crystals and Liquid Crystals*.
- 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 Picosecond Response Times of Y-Ba-Cu-O Superconducting Photodetectors," to be published in *Applied Physics Letters*.
- 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*.
- J. A. Marozas, "The Cross-Phase Modulation Between Two Intense Orthogonally Polarized Laser Beams Co-Propagating through a Kerr-like Medium," to be published in *SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA 7–12 June 1998*.
- F. J. Marshall and G. R. Bennett, "A High-Energy X-Ray Microscope for ICF," to be published in the *Review of Scientific Instruments*.
- K. L. Marshall, J. Haddock, N. Bickel, D. Singel, and S. D. Jacobs, "Angular-Scattering Characteristics of Ferroelectric Liquid Crystal Electro-Optical Devices Operating in the TSM and ESM Modes," to be published in *Applied Optics*.
- K. L. Marshall, A. L. Rigatti, G. L. Mitchell, J. A. Pathak, A. R. Staley, and J. A. Warner, "An Aqueous Sol-Gel Coating for Epoxy Surfaces," to be published in *Optical Interference Coatings, 1998 OSA Technical Digest*.
- R. L. McCrory and J. M. Soures, "Status of Direct-Drive Inertial Confinement Fusion Research at the Laboratory for Laser Energetics," to be published in the *Proceedings of the 2nd Symposium on Current Trends in International Fusion Research: Review and Assessment, Washington, DC, 10–14 March 1997 (invited)*.
- P. W. McKenty, "Direct-Drive Capsule Requirements for the National Ignition Facility and OMEGA Laser Systems," to be published in *Fusion Technology*.
- P. W. McKenty and M. D. Wittman, "Characterization of Thick Cryogenic Layers Using an Interferometric Imaging System," to be published in *Fusion Technology*.
- B. Nodland and C. J. McKinstrie, "Propagation of a Short Laser Pulse in a Plasma," to be published in *Physical Review E*.
- A. V. Okishev, M. D. Skeldon, and W. Seka, "Multipurpose, Diode-Pumped Nd:YLF Laser for OMEGA Pulse Shaping and Diagnostics Applications," to be published in *SPIE's Proceedings on Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, Monterey, CA, 7–12 June 1998*.
- R. W. Short and A. Simon, "Collisionless Damping of Localized Plasma Waves in Laser-Produced Plasmas and Application to Stimulated Raman Scattering in Filaments," to be published in *Physics of Plasmas*.
- R. W. Short and A. Simon, "Landau Damping and Transit-Time Damping of Localized Plasma Waves in General Geometries," to be published in *Physics of Plasmas*.
- M. D. Skeldon, A. V. Okishev, R. L. Keck, W. Seka, and S. A. Letzring, "An Optical Pulse Shaping System Based on Aperture-Coupled Stripline for OMEGA Pulse Shaping Applications," to be published in *SPIE's Proceedings of Solid State Lasers for Application (SSLA) to Inertial Confinement Fusion, 3rd Annual International Conference, Monterey, CA, 7–12 June 1998*.

M. D. Skeldon, R. Saager, and W. Seka, "Quantitative Pump-Induced Wavefront Distortions in Laser-Diode- and Flash-Lamp-Pumped Nd:YLF Laser Rods," to be published in the IEEE Journal of Quantum Electronics.

V. A. Smalyuk, T. R. Boehly, D. K. Bradley, V. N. Goncharov, J. A. Delettrez, J. P. Knauer, D. D. Meyerhofer, D. Oron, and D. Shvarts, "Saturation of the Rayleigh-Taylor Growth of Broad-Bandwidth Laser-Imposed Nonuniformities in Planar Targets," to be published in Physical Review Letters.

V. A. Smalyuk, T. R. Boehly, D. K. Bradley, J. P. Knauer, and D. D. Meyerhofer, "Characterization of an X-Ray Radiographic System Used for Laser-Driven Planar Target Experiments," to be published in the Review of Scientific Instruments.

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.

R. Sobolewski, "Ultrafast Dynamics of Nonequilibrium Quasiparticles in High-Temperature Superconductors," to be published in Superconducting and Related Oxides: Physics and Nanoengineering III.

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

B. Yaakobi, F. J. Marshall, and D. K. Bradley, "Pinhole-Array X-Ray Spectrometer for Laser-Fusion Experiments," to be published in Applied Optics.

B. Yaakobi, F. J. Marshall, and D. K. Bradley, " $K\alpha$  Cold Target Imaging and Preheat Measurement Using Pinhole-Array X-Ray Spectrometer," to be published in the Review of Scientific Instruments.

B. Yaakobi and F. J. Marshall, "Imaging the Cold, Compressed Shell in Laser Implosions Using the  $K\alpha$  Fluorescence of a Titanium Dopant," to be published in the Journal of Quantitative Spectroscopy and Radiative Transfer.

L. Zheng and D. D. Meyerhofer, "Self- and Cross-Plate Modulation Coefficients in a KDP Crystal Measured by a Z-Scan Technique," to be published in the Journal of the Optical Society of America B.

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

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### Conference Presentations

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S. J. McNaught and D. D. Meyerhofer, "Precision Measurement of Electron Initial Conditions for Tunneling Ionization in an Elliptically Polarized Laser," Sixteenth International Conference on Atomic Physics, Windsor, Ontario, Canada, 3–7 August 1998.

D. T. Goodin, N. B. Alexander, I. Anteby, W. A. Baugh, G. E. Besenbruch, K. K. Boline, L. C. Brown, W. Engli, J. F. Follin, C. R. Gibson, D. R. Harding, E. H. Hoffmann, W. Lee, L. Lund, J. E. Nasise, A. Nobile, K. R. Schultz, and R. Stemke, "Status of the Design and Testing of the OMEGA Cryogenic Target System (OCTS)," 20th Symposium on Fusion Technology, Marseille, France, 7–11 September 1998.

The following presentations were made at the 1998 Applied Superconductivity Conference, Palm Springs, CA, 13–18 September 1998:

R. Adam, R. Sobolewski, W. Markowitsch, C. Stockinger, W. Lang, J. D. Pedarnig, and D. Bauerle, "Time and Temperature Evolution of the Photodoping Effect in Y-Ba-Cu-O Josephson Junctions and Thin Films."

R. Adam, M. Currie, R. Sobolewski, O. Harnack, and M. Darula, "Subpicosecond Measurements of Y-Ba-Cu-O Josephson Junction and Microbridge Integrated Structures."

M. Currie, D. Jacobs-Perkins, R. Sobolewski, and T. Y. Hsiang, "Subpicosecond Measurements of Single-Flux-Quantum Pulse Interactions."

M. Currie, D. Jacobs-Perkins, R. Sobolewski, and T. Y. Hsiang, "High-Frequency Crosstalk in Superconducting Microstrip Waveguide Interconnects."

K. S. Il'in, I. I. Milostnaya, A. A. Verevkin, G. N. Gol'tsman, M. Currie, and R. Sobolewski, "Quantum Efficiency and Time-Domain Response of NbN Superconducting Hot-Electron Photodetectors."

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The following presentations were made at the CEA-DOE Meeting, Bruyeres-le-Chatel, France, 14 September 1998:

R. L. McCrory, "The LLE Program Tests Critical Concepts of the Direct-Drive Ignition Demonstration Effort."

D. D. Meyerhofer, "Charged Particle Spectrometer (CPS) as Core Diagnostic for OMEGA Implosions."

W. Seka, "Beam Smoothing and Laser Imprinting."

The following presentations were made at the XXX Annual Symposium on Optical Materials for High Power Lasers, Boulder, CO, 28 September–1 October 1998:

F. Dahmani, J. C. Lambropoulos, S. Burns, S. Papernov, and A. W. Schmid, "How Small Stresses Affect 351-nm Damage Onset in Fused Silica."

O. M. Efimov, L. B. Glebov, S. Papernov, A. W. Schmid, and E. Van Stryland, "Laser-Induced Damage of Photo-Thermo-Refractive Glasses for Optical Holographic Elements Writing."

A. L. Rigatti, D. J. Smith, A. W. Schmid, S. Papernov, and J. H. Kelly, "Damage in Fused-Silica Spatial-Filter Lenses on the OMEGA Laser System."

D. J. Smith, J. A. Warner, N. LeBarron, and S. LaDelia, "Production of Distributed Phase Plates Using an Energetic Ion Process."

