
Publications and Conference Presentations

Publications

A. C. A. Chen, S. Culligan, Y. Geng, S. H. Chen, K. P. Klubek, K. M. Vaeth, and C. W. Tang, "Glassy Nematic Conjugated Oligomers: Materials for Organic Light-Emitting Diodes," in *Liquid Crystals VIII*, edited by I.-C. Khoo (SPIE, Bellingham, WA, 2004), Vol. 5518, pp. 77–91.

S. H. Chen, "Multifunctional Glassy Liquid Crystals for Photonics," *J. SID* **12**, 205 (2004).

R. Epstein, "On the Bell–Plesset Effects: The Effects of Uniform Compression and Geometrical Convergence on the Classical Rayleigh–Taylor Instability," *Phys. Plasmas* **11**, 5114 (2004).

S. Ghosh, R. Boni, and P. A. Jaanimagi, "Optical and X-Ray Streak Camera Gain Measurements," *Rev. Sci. Instrum.* **75**, 3956 (2004).

V. Yu. Glebov, C. Stoeckl, T. C. Sangster, S. Roberts, G. J. Schmid, R. A. Lerche, and M. J. Moran, "Prototypes of National Ignition Facility Neutron Time-of-Flight Detectors Tested on OMEGA," *Rev. Sci. Instrum.* **75**, 3559 (2004).

S. H. Glenzer, P. Arnold, G. Bardsley, R. L. Berger, G. Bonanno, T. Borger, D. E. Bower, M. Bowers, R. Bryant, S. Buckman, S. C. Burkhart, K. Campbell, M. P. Chrisp, B. I. Cohen, C. Constantin, F. Cooper, J. Cox, E. Dewald, L. Divol, S. Dixit, J. Duncan, D. Eder, J. Edwards, G. Erbert, B. Felker, J. Fornes, G. Frieders, D. H. Froula, S. D. Gardner, C. Gates, M. Gonzalez, S. Grace, G. Gregori, A. Greenwood, R. Griffith, T. Hall, B. A. Hammel, C. Haynam, G. Heestand, M. Henesian, G. Hermes, D. Hinkel, J. Holder, F. Holner, G. Holtmeier, W. Hsing, S. Huber, T. James, S. Johnson, O. S. Jones, D. Kalantar, J. H. Kamperschroer, R. Kauffman, T. Kelleher, J. Knight, R. K. Kirkwood, W. L. Kruer, W. Labiak, O. L. Landen, A. B. Langdon, S. Langer, D. Latray, A. Lee, F. D. Lee, D. Lund, B. MacGowan, S. Marshall, J. McBride, T. McCarville,

L. McGrew, A. J. Mackinnon, S. Mahavandi, K. Manes, C. Marshall, J. Menapace, E. Mertens, N. Meezan, G. Miller, S. Montelongo, J. D. Moody, E. Moses, D. Munro, J. Murray, J. Neumann, M. Newton, E. Ng, C. Niemann, A. Nikitin, P. Opsahl, E. Padilla, T. Parham, G. Parrish, C. Petty, M. Polk, C. Powell, I. Reinbachs, V. Rekow, R. Rinnert, B. Riordan, M. Rhodes, V. Roberts, H. Robey, G. Ross, S. Sailors, R. Saunders, M. Schmitt, M. B. Schneider, S. Shiromizu, M. Spaeth, A. Stephens, B. Still, L. J. Suter, G. Teitbohl, M. Tobin, J. Tuck, B. M. Van Winterghem, R. Vidal, D. Voloshin, R. Wallace, P. Wegner, P. Whitman, E. A. Williams, K. Williams, K. Winward, K. Work, B. Young, P. E. Young, P. Zapata, R. E. Bahr, W. Seka, J. Fernandez, D. Montgomery, and H. Rose, "Progress in Long Scale Length Laser–Plasma Interactions," *Nucl. Fusion* **44**, S185 (2004).

V. N. Goncharov and G. Li, "Effect of Electric Fields on Electron Thermal Transport in Laser-Produced Plasmas," *Phys. Plasmas* **11**, 5680 (2004).

O. V. Gotchev, P. A. Jaanimagi, J. P. Knauer, F. J. Marshall, and D. D. Meyerhofer, "KB–PJX—A Streaked Imager Based on a Versatile X-Ray Microscope Coupled to a High-Current Streak Tube," *Rev. Sci. Instrum.* **75**, 4063 (2004) (invited).

P. A. Jaanimagi, "Breaking the 100-fs Barrier with a Streak Camera," in *Fourth-Generation X-Ray Sources and Ultrafast X-Ray Detectors*, edited by R. O. Tatchyn, Z. Chang, J.-C. Kieffer, and J. B. Hastings (SPIE, Bellingham, WA, 2004), Vol. 5194, pp. 171–182.

S. D. Jacobs, "International Innovations in Optical Finishing," in *Current Developments in Lens Design and Optical Engineering V*, edited by P. Z. Mouroulis, W. J. Smith, and R. B. Johnson (SPIE, Bellingham, WA, 2004), Vol. 5523, pp. 264–272 (invited).

- S. D. Jacobs and E. Kowaluk, "Glass Art 'Sparkles' at OSA-OF&T's First Contest and Auction," OSA Focal Point Newsletter, Winter 2004.
- J. P. Knauer and N. C. Gindele, "Temporal and Spectral Deconvolution of Data from Diamond, Photoconductive Devices," *Rev. Sci. Instrum.* **75**, 3714 (2004).
- J. A. Koch, T. W. Barbee, Jr., S. Dalhed, S. Haan, N. Izumi, R. W. Lee, L. A. Welser, R. C. Mancini, F. J. Marshall, D. Meyerhofer, T. C. Sangster, V. A. Smalyuk, J. M. Soures, L. Klein, and I. Golovkin, "Core Temperature and Density Gradients in ICF," in *Atomic Processes in Plasmas: 14th APS Topical Conference on Atomic Processes in Plasmas*, edited by J. S. Cohen, S. Mazevet, and D. P. Kilcrease (American Institute of Physics, New York, 2004), pp. 53–60.
- T. Z. Kosc, K. L. Marshall, A. Trajkovska-Petkoska, R. Varshneya, and S. D. Jacobs, "Development of Polymer Cholesteric Liquid Crystal Flakes for Electro-Optic Applications," *Opt. Photonic News* **15**, 33 (2004).
- J.-C. Lin, M. Z. Yates, A. Trajkovska-Petkoska, and S. D. Jacobs, "Electric-Field-Driven Assembly of Oriented Molecular-Sieve Films," *Adv. Mater.* **16**, 1944 (2004).
- F. J. Marshall, J. A. Oertel, and P. J. Walsh, "Framed, 16-Image, Kirkpatrick-Baez Microscope for Laser-Plasma X-Ray Emission," *Rev. Sci. Instrum.* **75**, 4045 (2004).
- K. L. Marshall, E. Kimball, S. McNamara, T. Z. Kosc, A. Trajkovska-Petkoska, and S. D. Jacobs, "Electro-Optical Behavior of Polymer Cholesteric Liquid Crystal Flake/Fluid Suspensions in a Microencapsulation Matrix," in *Liquid Crystals VIII*, edited by I.-C. Khoo (SPIE, Bellingham, WA, 2004), Vol. 5518, pp. 170–181.
- R. L. McCrory, "Recent Progress in Inertial Confinement Fusion in the United States," *Nucl. Fusion* **44**, S123 (2004).
- C. Niemann, G. Antonini, S. Compton, S. H. Glenzer, D. Hargrove, J. D. Moody, R. K. Kirkwood, V. Rekow, J. Satariano, C. Sorce, W. Armstrong, R. Bahr, R. Keck, G. Pien, W. Seka, and K. Thorp, "Transmitted Laser Beam Diagnostic at the OMEGA Laser Facility," *Rev. Sci. Instrum.* **75**, 4171 (2004).
- A. V. Okishev and J. D. Zuegel, "Highly Stable, All-Solid-State Nd:YLF Regenerative Amplifier," *Appl. Opt.* **43**, 6180 (2004).
- R. Rey-de-Castro, D. Wang, X. Zheng, A. Verevkin, R. Sobolewski, M. Mikulics, R. Adam, P. Kordoš, and A. Mycielski, "Subpicosecond Faraday Effect in $\text{Cd}_{1-x}\text{Mn}_x\text{Te}$ and Its Application in Magneto-Optical Sampling," *Appl. Phys. Lett.* **85**, 3806 (2004).
- J. Sanz, R. Betti, R. Ramis, and J. Ramírez, "Nonlinear Theory of the Ablative Rayleigh-Taylor Instability," *Plasma Phys. Control. Fusion* **46**, B367 (2004).
- R. W. Short and A. Simon, "Theory of Three-Wave Parametric Instabilities in Inhomogeneous Plasmas Revisited," *Phys. Plasmas* **11**, 5335 (2004).
- V. A. Smalyuk, V. N. Goncharov, T. R. Boehly, J. P. Knauer, D. D. Meyerhofer, and T. C. Sangster, "Self-Consistent Determination of Rayleigh-Taylor Growth Rates and Ablation-Front Density in Planar Targets Accelerated by Laser Light," *Phys. Plasmas* **11**, 5038 (2004).
- C. Stoeckl, W. Theobald, T. C. Sangster, M. H. Key, P. Patel, B. B. Zhang, R. Clarke, S. Karsch, and P. Norreys, "Operation of a Single-Photon-Counting X-Ray Charge-Coupled Device Camera Spectrometer in a Petawatt Environment," *Rev. Sci. Instrum.* **75**, 3705 (2004).
- L. Zheng, J. C. Lambropoulos, and A. W. Schmid, "UV-Laser-Induced Densification of Fused Silica: A Molecular Dynamics Study," *J. Non-Cryst. Solids* **347**, 144 (2004).

Forthcoming Publications

- V. Bagnoud, “A Front End for Multipetawatt Lasers Based on a High-Energy, High-Average-Power Optical Parametric Chirped-Pulse Amplifier,” to be published in *Frontiers in Optics 2004*.
- V. Bagnoud, M. J. Guardalben, J. Puth, J. D. Zuegel, T. Mooney, and P. Dumas, “A High-Energy, High-Average-Power Laser Using Nd:YLF Laser Rods Corrected by MRF,” to be published in *Applied Optics*.
- C. Bouvier, J. C. Lambropoulos, and S. D. Jacobs, “Fracture Toughness of ULE, Zerodur, Astrosital, and Corning 9600,” to be published in *Frontiers in Optics 2004*.
- J. Carpenter and S. D. Jacobs, “The *Middle School* Science of Liquid Crystal Mood Patches,” to be published in *OE Magazine*.
- S. Costea, S. Pisana, N. P. Kherani, F. Gaspari, T. Kostas, W. T. Shmayda, and S. Zukotynski, “The Use of Tritium in the Study of Defects in Amorphous Silicon,” to be published in the *Journal of Fusion Science and Technology*.
- R. S. Craxton and D. W. Jacobs-Perkins, “The Saturn Target for Polar Direct Drive on the National Ignition Facility,” to be published in *Physical Review Letters*.
- R. S. Craxton, F. J. Marshall, M. Bonino, R. Epstein, P. W. McKenty, S. Skupsky, J. A. Delettrez, I. V. Igumenshchev, D. W. Jacobs-Perkins, J. P. Knauer, J. A. Marozas, P. B. Radha, and W. Seka, “Polar Direct Drive—Proof-of-Principle Experiments on OMEGA and Prospects for Ignition on the NIF,” to be published in *Physics of Plasmas* (invited).
- J. E. DeGroot, S. N. Shafrir, J. C. Lambropoulos, and S. D. Jacobs, “Surface Characterization of CVD ZnS Using Power Spectral Density,” to be published in *Frontiers in Optics 2004*.
- V. Yu. Glebov, C. Stoeckl, T. C. Sangster, S. Roberts, and G. J. Schmid, “NIF Neutron Bang-Time Detector Prototype Test on OMEGA,” to be published in *IEEE Transactions on Plasma Science*.
- G. N. Gol’tsman, A. Korneev, I. Rubtsova, I. Milostnaya, G. Chulkova, O. Minaeva, K. Smirnov, B. Voronov, W. Slys, A. Pearlman, A. Verevkin, and R. Sobolewski, “Ultrafast Superconducting Single-Photon Detectors for Near-Infrared-Wavelength Quantum Communications,” to be published in *Physica Status Solidi*.
- L. Guazzotto, R. Betti, J. Manickam, S. Kaye, and J. L. Gauvreau, “Magnetorheological Equilibria with Toroidal and Poloidal Flow,” to be published in *Physics of Plasmas* (invited).
- D. R. Harding, F.-Y. Tsai, E. L. Alfonso, S. H. Chen, A. K. Knight, and T. N. Blanton, “Properties of Vapor-Deposited Polyimide Films,” to be published in the *Journal of Adhesion Science and Technology* (invited).
- P. A. Jaanimagi, R. Boni, D. Butler, S. Ghosh, W. R. Donaldson, and R. L. Keck, “The Streak Camera Development Program at LLE,” to be published in the *Proceedings of SPIE*.
- S. D. Jacobs, “Innovations in Optics Manufacturing,” to be published in *Frontiers in Optics 2004* (invited).
- J. Keck, J. B. Oliver, V. Gruschow, J. Spaulding, and J. D. Howe, “Process Tuning of Silica Thin-Film Deposition,” to be published in *Frontiers in Optics 2004*.
- J. Kitaygorsky, J. Zhang, A. Verevkin, A. Sergeev, A. Korneev, V. Matvienko, P. Kouminov, K. Smirnov, B. Voronov, G. Gol’tsman, and R. Sobolewski, “Origin of Dark Counts in Nanostructured NbN Single-Photon Detectors,” to be published in *IEEE Transactions on Applied Superconductivity*.
- J. P. Knauer, K. Anderson, P. B. Radha, R. Betti, T. J. B. Collins, V. N. Goncharov, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, and V. A. Smalyuk, “Improved Target Stability Using Picket Pulses to Increase and Shape the Ablator Adiat,” to be published in *Physics of Plasmas* (invited).
- A. Korneev, V. Matvienko, O. Minaeva, I. Milostnaya, I. Rubtsova, G. Chulkova, K. Smirnov, V. Voronov, G. Gol’tsman, W. Slys, A. Pearlman, A. Verevkin, and R. Sobolewski, “Quantum Efficiency and Noise Equivalent Power of Nanostructured, NbN, Single-Photon Detectors in the Wavelength Range from Visible to Infrared,” to be published in *IEEE Transactions on Applied Superconductivity*.

T. Z. Kosc, K. L. Marshall, A. Trajkovska-Petkoska, E. Kimball, and S. D. Jacobs, "Progress in the Development of Polymer Cholesteric Liquid Crystal Flakes for Display Applications," to be published in the Journal of Displays.

T. Kostas, N. P. Kherani, W. T. Shmayda, S. Costea, and S. Zukotynski, "Nuclear Batteries Using Tritium and Thin-Film Hydrogenated Amorphous Silicon," to be published in the Journal of Fusion Science and Technology.

I. A. Kozhinova, H. J. Romanofsky, and S. D. Jacobs, "Polishing of Prepolished CVD ZnS Flats with Altered Magneto-rheological (MR) Fluids," to be published in Frontiers in Optics 2004.

J. C. Lambropoulos and R. Varshneya, "Glass Material Response to the Fabrication Process: Example from Lapping," to be published in Frontiers in Optics 2004.

X. Li, Y. Xu, Š. Chromik, V. Štrbík, P. Odier, D. De Barros, and R. Sobolewski, "Time-Resolved Carrier Dynamics in Hg-Based High-Temperature Superconducting Photodetectors," to be published in IEEE Transactions on Applied Superconductivity.

J. R. Marciante, J. I. Hirsch, D. H. Raguin, and E. T. Prince, "Polarization-Insensitive, High-Dispersion TIR Diffraction Gratings," to be published in Frontiers in Optics 2004.

J. R. Marciante, J. I. Hirsch, D. H. Raguin, and E. T. Prince, "Polarization-Insensitive, High-Dispersion Total Internal Reflection Diffraction Gratings," to be published in the Journal of the Optical Society of America A.

A. E. Marino, K. Spencer, J. E. DeGroot, and S. D. Jacobs, "Chemical Durability of Phosphate Laser Glasses," to be published in Frontiers in Optics 2004.

F. J. Marshall, R. S. Craxton, J. A. Delettrez, D. H. Edgell, L. M. Elasky, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. Janezic, J. P. Knauer, P. W. McKenty, D. D. Meyerhofer, P. B. Radha, S. P. Regan, W. Seka, V. A. Smalyuk, C. Stoeckl, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "Direct-Drive, Cryogenic Target Implosions on OMEGA," to be published in Physics of Plasmas (invited).

R. L. McCrory, S. P. Regan, R. Betti, T. R. Boehly, R. S. Craxton, T. J. B. Collins, J. A. Delettrez, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, J. P. Knauer, S. J. Loucks, J. Marciante, J. A. Marozas, F. J. Marshall, A. Maximov, P. W. McKenty, D. D. Meyerhofer, J. Myatt, P. B. Radha, T. C. Sangster, W. Seka, S. Skupsky, V. A. Smalyuk, J. M. Soures, C. Stoeckl, B. Yaakobi, J. D. Zuegel, C. K. Li, R. D. Petrasso, F. H. Séguin, J. A. Frenje, S. Padalino, C. Freeman, and K. Fletcher, "Direct-Drive Inertial Confinement Fusion Research at the Laboratory for Laser Energetics: Charting the Path to Thermonuclear Ignition," to be published in Nuclear Fusion.

F. H. Mrakovcic, J. A. Randi, J. C. Lambropoulos, and S. D. Jacobs, "Subsurface Damage in Single-Crystal Sapphire," to be published in Frontiers in Optics 2004.

J. B. Oliver, "Thin-Film-Optics Design and Manufacturing Challenges for Large-Aperture, High-Peak-Power, Short-Pulse Lasers," to be published in Frontiers in Optics 2004 (invited).

S. Papernov and A. W. Schmid, "High-Spatial-Resolution Studies of UV-Laser Damage Morphology in SiO₂ Thin Films with Artificial Defects," to be published in the Proceedings of XXXVI Annual Symposium on Optical Materials for High Power Lasers.

J.-R. Park, W. R. Donaldson, and R. Sobolewski, "Time-Resolved Imaging of a Spatially Modulated Laser Pulse," to be published in SPIE's Proceedings of LASE 2004.

A. Pearlman, A. Cross, W. Slysz, J. Zhang, A. Verevkin, M. Currie, A. Korneev, P. Kouminov, K. Smirnov, B. Voronov, G. Gol'tsman, and R. Sobolewski, "Gigahertz Counting Rates of NbN Single-Photon Detectors for Quantum Communications," to be published in IEEE Transactions on Applied Superconductivity.

P. B. Radha, T. J. B. Collins, J. A. Delettrez, Y. Elbaz, R. Epstein, V. Yu. Glebov, V. N. Goncharov, R. L. Keck, J. P. Knauer, J. A. Marozas, F. J. Marshall, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, W. Seka, D. Shvarts, S. Skupsky, Y. Srebro, and C. Stoeckl, "Multidimensional Analysis of Direct-Drive Plastic-Shell Implosions on the OMEGA Laser," to be published in Physics of Plasmas (invited).

P. B. Radha, V. N. Goncharov, T. J. B. Collins, J. A. Delettrez, Y. Elbaz, V. Yu. Glebov, R. L. Keck, D. E. Keller, J. P. Knauer, J. A. Marozas, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, D. Shvarts, S. Skupsky, Y. Srebro, R. P. J. Town, and C. Stoeckl, "Two-Dimensional Simulations of Plastic-Shell, Direct-Drive Implosions on OMEGA," to be published in *Physics of Plasmas*.

J. A. Randi, J. C. Lambropoulos, and S. D. Jacobs, "Subsurface Damage in Single Crystalline Optical Materials," to be published in *Applied Optics*.

S. P. Regan, J. A. Marozas, R. S. Craxton, J. H. Kelly, W. R. Donaldson, P. A. Jaanimagi, D. Jacobs-Perkins, R. L. Keck, T. J. Kessler, D. D. Meyerhofer, T. C. Sangster, W. Seka, V. A. Smalyuk, S. Skupsky, and J. D. Zuegel, "Performance of a 1-THz-Bandwidth, 2-D Smoothing by Spectral Dispersion and Polarization Smoothing of High-Power, Solid-State Laser Beams," to be published in the *Journal of the Optical Society of America B*.

S. P. Regan, T. C. Sangster, D. D. Meyerhofer, K. Anderson, R. Betti, T. R. Boehly, T. J. B. Collins, R. S. Craxton, J. A. Delettrez, R. Epstein, O. V. Gotchev, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, P. A. Jaanimagi, J. P. Knauer, S. J. Loucks, L. D. Lund, J. A. Marozas, F. J. Marshall, R. L. McCrory, P. W. McKenty, S. F. B. Morse, P. B. Radha, W. Seka, S. Skupsky, H. Sawada, V. A. Smalyuk, J. M. Soures, C. Stoeckl, B. Yaakobi, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "Direct-Drive Inertial Confinement Fusion Implosions on OMEGA," to be published in *Astrophysics and Space Science*.

R. Rey-de-Castro, D. Wang, A. Verevkin, A. Mycielski, and R. Sobolewski, "Cd_{1-x}Mn_xTe Semimagnetic Semiconductors for Ultrafast Spintronics and Magneto-Optics," to be published in *IEEE Transactions on Nanotechnology*.

A. L. Rigatti, "Cleaning Process Versus Laser Damage Threshold of Coated Optical Components," to be published in *Frontiers in Optics 2004*.

S. N. Shafir, J. C. Lambropoulos, and S. D. Jacobs, "Loose Abrasive Lapping of Optical Glass with Different Lapping Plates and Its Interpretation," to be published in *Frontiers in Optics 2004*.

A. Trajkovska-Petkoska, R. Varshneya, T. Z. Kosc, K. L. Marshall, and S. D. Jacobs, "Enhanced Electro-Optic Behavior for Shaped PCLC Flakes Made by Soft Lithography," to be published in *Advanced Functional Materials*.

D. Wang, A. Verevkin, R. Sobolewski, R. Adam, A. van der Hart, and R. Franchy, "Magneto-Optical Kerr Effect Measurements and Ultrafast Coherent Spin Dynamics in Co Nano-Dots," to be published in *IEEE Transactions on Nanotechnology*.

T. Yasuda, K. Fujita, T. Tsutsui, Y. Geng, S. W. Culligan, and S. H. Chen, "Carrier Transport Properties of Monodisperse Glassy-Nematic Oligofluorenes in Organic Field-Effect Transistors," to be published in *Chemistry of Materials*.

J. D. Zuegel, "Wavefront Correction Extends the Capabilities of Large-Aperture Nd:YLF Laser Rods," to be published in *Laser Focus World*.

Conference Presentations

The following presentations were made at the International Conference on Ultrahigh Intensity Lasers: Development, Science, and Emerging Applications, North Lake Tahoe, NV, 3–7 October 2004:

J. Bromage, J. D. Zuegel, D. Vickery, L. J. Waxer, D. Irwin, R. Boni, R. Jungquist, and C. Stoeckl, “High-Intensity Diagnostics for OMEGA EP.”

T. J. Kessler, J. Bunkenburg, H. Hu, C. Kellogg, L. S. Iwan, and W. Skulski, “Design Strategies and Technology Demonstrations for the Tiled Grating Compressor.”

A. W. Schmid, T. Z. Kosc, A. Kozlov, A. L. Rigatti, and J. B. Oliver, “A Short-Pulse, Laser-Damage Update on OMEGA EP.”

C. Stoeckl, “OMEGA EP: A High-Energy Petawatt Laser at LLE.”

J. D. Zuegel, V. Bagnoud, I. A. Begishev, M. J. Guardalben, and J. Puth, “Performance of the OMEGA EP’s Prototype-OPCPA Front End.”

J. R. Marciante, J. I. Hirsh, D. H. Raguin, and E. T. Prince, “Polarization-Insensitive, High-Dispersion TIR Diffraction Gratings,” *Diffraction Optics and Micro-Optics*, Rochester, NY, 10–13 October 2004.

The following presentations were made at Optical Fabrication and Testing, Rochester, NY, 10–13 October 2004:

C. Bouvier, J. C. Lambropoulos, and S. D. Jacobs, “Fracture Toughness of ULE, Zerodur, Astrosital, and Corning 9600.”

J. E. DeGroot, S. N. Shafir, J. C. Lambropoulos, and S. D. Jacobs, “Surface Characterization of CVD ZnS Using Power Spectral Density.”

S. D. Jacobs, “Innovations in Optics Manufacturing” (invited).

J. Keck, J. B. Oliver, V. Gruschow, J. Spaulding, and J. D. Howe, “Process Tuning of Silica Thin-Film Deposition.”

I. A. Kozhinova, H. J. Romanofsky, and S. D. Jacobs, “Polishing of Prepolished CVD ZnS Flats with Altered Magneto-rheological (MR) Fluids.”

A. E. Marino, K. Spencer, J. E. DeGroot, and S. D. Jacobs, “Chemical Durability of Phosphate Laser Glasses.”

F. H. Mrakovcic, J. A. Randi, J. C. Lambropoulos, and S. D. Jacobs, “Subsurface Damage in Single-Crystal Sapphire.”

J. B. Oliver, “Thin-Film-Optics Design and Manufacturing Challenges for Large-Aperture, High-Peak-Power, Short-Pulse Lasers” (invited).

S. N. Shafir, J. C. Lambropoulos, and S. D. Jacobs, “Loose Abrasive Lapping of Optical Glass with Different Lapping Plates and Its Interpretation.”

The following presentations were made at *Frontiers in Optics, The 88th Annual Meeting—Laser Science XX*, Rochester, NY, 10–14 October 2004:

V. Bagnoud, “A Front End for Multipetawatt Lasers Based on a High-Energy, High-Average-Power Optical Parametric Chirped-Pulse Amplifier.”

S. G. Lukishova, A. W. Schmid, C. M. Supranowitz, A. J. McNamara, R. W. Boyd, and C. R. Stroud, Jr., “Dye-Doped, Liquid-Crystal, Room-Temperature, Single-Photon Source.”

D. D. Meyerhofer, “Progress in Direct-Drive Inertial Confinement Fusion” (invited).

B. Yaakobi, D. D. Meyerhofer, T. R. Boehly, J. J. Rehr, B. A. Remington, P. G. Allen, S. M. Pollaine, and R. C. Albers, “Dynamic EXAFS Probing of Laser-Driven Shock Waves and Crystal-Phase Transformations” (invited).

L. D. Merkle, M. Dubinskii, L. B. Glebov, L. N. Glebova, V. I. Smirnov, S. Papernov, and A. W. Schmid, “Photo-Thermo-Refractive Glass Resistance to Laser-Induced Damage Near One Micron,” *7th Annual Directed Energy Symposium*, Rockville, MD, 18–21 October 2004.

D. R. Harding, M. Bobeica, and R. Q. Gram, "Target Injection Studies," 10th High Average Power Laser Meeting, Princeton, NJ, 27–27 October 2004.

B. Yaakobi, "EXAFS Study of Laser-Shocked Metals," 11th International Workshop on Radiative Properties of Hot Dense Matter, Santa Barbara, CA, 1–5 November 2004.

R. L. McCrory, S. P. Regan, S. J. Loucks, D. D. Meyerhofer, S. Skupsky, R. Betti, T. R. Boehly, R. S. Craxton, T. J. B. Collins, J. A. Delettrez, D. H. Edgell, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. L. Keck, J. P. Knauer, J. Marciante, J. A. Marozas, F. J. Marshall, A. V. Maximov, P. W. McKenty, J. Myatt, P. B. Radha, T. C. Sangster, W. Seka, V. A. Smalyuk, J. M. Soures, C. Stoeckl, B. Yaakobi, J. D. Zuegel, C. K. Li, R. D. Petrasso, F. H. Séguin, J. A. Frenje, S. Padalino, C. Freeman, and K. Fletcher, "Direct-Drive Inertial Confinement Fusion Research at the Laboratory for Laser Energetics: Charting the Path to Thermonuclear Ignition," 20th IAEA Fusion Energy Conference, Vilamoura, Portugal, 1–6 November 2004.

The following presentations were made at the 46th Annual Meeting of the APS Division of Plasma Physics, Savannah, GA, 15–19 November 2004:

K. Anderson, R. Betti, J. P. Knauer, V. A. Smalyuk, and V. N. Goncharov, "Simulations and Experiments on Adiabatic Shaping by Relaxation."

R. Betti and J. Sanz, "Nonlinear Ablative Rayleigh–Taylor Instability."

T. R. Boehly, E. Vianello, J. E. Miller, R. S. Craxton, V. N. Goncharov, I. V. Igumenshchev, D. D. Meyerhofer, D. G. Hicks, and P. M. Celliers, "Direct-Drive Shock-Timing Experiments Using Planar Targets."

M. Canavan, J. A. Frenje, C. K. Li, C. Chen, J. L. DeCiantis, J. R. Rygg, F. H. Séguin, and R. D. Petrasso, "A Modified Accelerator for ICF Diagnostic Development."

C. Chen, C. K. Li, J. A. Frenje, F. H. Séguin, R. D. Petrasso, T. C. Sangster, R. Betti, D. R. Harding, and D. D. Meyerhofer, "Monte Carlo Simulations and Planned Experiments for Studying Hot-Electron Transport in H₂ and D₂."

T. J. B. Collins, S. Skupsky, A. Frank, A. Cunningham, and A. Poludnenko, "Shock Propagation in Wetted Foam."

R. S. Craxton, F. J. Marshall, M. J. Bonino, R. Epstein, P. W. McKenty, S. Skupsky, J. A. Delettrez, I. V. Igumenshchev, D. W. Jacobs-Perkins, J. P. Knauer, J. A. Marozas, P. B. Radha, and W. Seka, "Polar Direct Drive—Proof-of-Principle Experiments on OMEGA and Prospects for Ignition on the NIF" (invited).

J. L. DeCiantis, F. H. Séguin, J. A. Frenje, C. Chen, C. K. Li, R. D. Petrasso, J. A. Delettrez, J. P. Knauer, F. J. Marshall, D. D. Meyerhofer, S. Roberts, T. C. Sangster, and C. Stoeckl, "Studying the Burn Region in ICF Implosions with Proton Emission Imaging."

J. A. Delettrez, S. Skupsky, C. Stoeckl, J. Myatt, and P. B. Radha, "Simulation of Enhanced Neutron Production for OMEGA EP Cryogenic Implosions."

D. H. Edgell, W. Seka, R. S. Craxton, L. M. Elasky, D. R. Harding, R. L. Keck, M. Pandina, M. D. Wittman, and A. Warrick, "Shadowgraphic Analysis Techniques for Cryogenic Ice-Layer Characterization at LLE."

D. H. Edgell, W. Seka, R. S. Craxton, L. M. Elasky, D. R. Harding, R. L. Keck, M. Pandina, M. D. Wittman, and A. Warrick, "Three-Dimensional Characterization of Ice Layers for Cryogenic Targets at LLE."

R. Epstein, R. S. Craxton, J. A. Delettrez, F. J. Marshall, J. A. Marozas, P. W. McKenty, P. B. Radha, and V. A. Smalyuk, "Simulations of X-Ray Core Images from OMEGA Implosions Driven with Controlled Polar Illumination."

J. A. Frenje, C. K. Li, F. H. Séguin, J. L. DeCiantis, J. R. Rygg, M. Falk, R. D. Petrasso, J. A. Delettrez, V. Yu. Glebov, C. Stoeckl, F. J. Marshall, D. D. Meyerhofer, T. C. Sangster, V. A. Smalyuk, and J. M. Soures, "Measurements of Time Evolution of Ion Temperature of D³He Implosions on OMEGA."

M. C. Ghilea, D. D. Meyerhofer, T. C. Sangster, R. A. Lerche, and L. Disdier, "First Results from a Penumbra Imaging System Design Tool."

V. Yu. Glebov, C. Stoeckl, T. C. Sangster, C. Mileham, S. Roberts, and R. A. Lerche, "NIF Neutron Bang-Time Detector Development on OMEGA."

V. N. Goncharov, D. Li, and A. V. Maximov, “Effects of the Ponderomotive Terms in the Thermal Transport on the Hydrodynamic Flow in Inertial Confinement Fusion Experiments.”

O. V. Gotchev, T. J. B. Collins, V. N. Goncharov, J. P. Knauer, D. Li, and D. D. Meyerhofer, “Mass Ablation Rate and Self-Emission Measurements in Planar Experiments.”

L. Guazzotto, R. Betti, J. Manickam, S. Kaye, and J. L. Gauvreau, “Magnetorheological Equilibria with Toroidal and Poloidal Flow” (invited).

D. R. Harding, M. D. Wittman, L. M. Elasky, S. Verbridge, L. D. Lund, D. Jacobs-Perkins, W. Seka, D. H. Edgell, and D. D. Meyerhofer, “OMEGA Direct-Drive Cryogenic Deuterium Targets.”

I. V. Igumenshchev, “The Role of Viscosity in Simulations of Strong Shocks in Low-Density Foams.”

P. A. Jaanimagi, R. Boni, R. L. Keck, W. R. Donaldson, and D. D. Meyerhofer, “The Rochester Optical Streak System.”

J. P. Knauer, K. Anderson, P. B. Radha, R. Betti, T. J. B. Collins, V. N. Goncharov, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, and V. A. Smalyuk, “Improved Target Stability Using Picket Pulses to Increase and Shape the Ablator Adiat” (invited).

C. K. Li, C. Chen, J. A. Frenje, F. H. Séguin, R. D. Petrasso, J. A. Delettrez, R. Betti, D. D. Meyerhofer, J. Myatt, and S. Skupsky, “Linear-Energy Transfer and Blooming of Directed Energetic Electrons in Dense Hydrogenic Plasmas.”

D. Li and V. N. Goncharov, “Effects of the Temporal Density Variation and Convergent Geometry on Nonlinear Bubble Evolution in Classical Rayleigh–Taylor Instability.”

G. Li and V. N. Goncharov, “The Effect of Electromagnetic Fields on Electron-Thermal Transport in Laser-Produced Plasmas.”

J. A. Marozas, P. B. Radha, T. J. B. Collins, P. W. McKenty, and S. Skupsky, “Evolution of the Laser-Deposition Region in Polar-Direct-Drive Simulations on the National Ignition Facility (NIF).”

F. J. Marshall, R. S. Craxton, J. A. Delettrez, D. H. Edgell, L. M. Elasky, R. Epstein, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, R. Janezic, J. P. Knauer, P. W. McKenty, D. D. Meyerhofer, P. B. Radha, S. P. Regan, W. Seka, V. A. Smalyuk, C. Stoeckl, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, “High-Performance, Direct-Drive, Cryogenic Target Implosions on OMEGA” (invited).

A. V. Maximov, J. Myatt, R. W. Short, W. Seka, and C. Stoeckl, “Two-Plasmon-Decay Instability in Plasmas Irradiated by Incoherent Laser Beams.”

D. D. Meyerhofer, B. Yaakobi, T. R. Boehly, T. J. B. Collins, H. Lorenzana, B. A. Remington, P. G. Allen, S. M. Pollaine, J. J. Rehr, and R. C. Albers, “Dynamic EXAFS Probing of Laser-Driven Shock Waves and Crystal Phase Transformations.”

J. E. Miller, W. J. Armstrong, T. R. Boehly, D. D. Meyerhofer, W. Theobald, E. Vianello, J. Eggert, D. G. Hicks, and C. Sorce, “Time-Resolved Measurement of Optical Self-Emission for Shock Wave and Equation of State Studies.”

J. Myatt, A. V. Maximov, R. W. Short, J. A. Delettrez, and C. Stoeckl, “Numerical Studies of MeV Electron Transport in Fast-Ignition Targets.”

P. B. Radha, T. J. B. Collins, J. A. Delettrez, Y. Elbaz, R. Epstein, V. Yu. Glebov, V. N. Goncharov, R. L. Keck, J. P. Knauer, J. A. Marozas, F. J. Marshall, R. L. McCrory, P. W. McKenty, D. D. Meyerhofer, S. P. Regan, T. C. Sangster, W. Seka, D. Shvarts, S. Skupsky, Y. Srebro, and C. Stoeckl, “Multidimensional Analysis of Direct-Drive Plastic-Shell Implosions on OMEGA” (invited).

S. P. Regan, J. A. Delettrez, V. Yu. Glebov, V. N. Goncharov, J. A. Marozas, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, P. B. Radha, T. C. Sangster, V. A. Smalyuk, C. Stoeckl, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, “Experimental Investigation of the Effects of Irradiation Nonuniformities on the Performance of Direct-Drive Spherical Implosions.”

J. R. Rygg, F. H. Séguin, C. K. Li, J. A. Frenje, J. L. DeCiantis, R. D. Petrasso, J. A. Delettrez, V. N. Goncharov, P. B. Radha, V. Yu. Glebov, D. D. Meyerhofer, and T. C. Sangster, “Inference of Imprint at Onset of Deceleration Phase Using Shock-Burn Measurements.”

T. C. Sangster, J. A. Delettrez, V. Yu. Glebov, V. N. Goncharov, D. R. Harding, J. P. Knauer, F. J. Marshall, P. W. McKenty, D. D. Meyerhofer, P. B. Radha, S. P. Regan, S. Skupsky, V. A. Smalyuk, C. Stoeckl, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "High-Areal-Density Cryogenic D₂ Implosions on OMEGA."

H. Sawada, S. P. Regan, T. R. Boehly, I. V. Igumenshchev, V. N. Goncharov, F. J. Marshall, B. Yaakobi, T. C. Sangster, D. D. Meyerhofer, D. Gregori, D. G. Hicks, S. G. Glenzer, and O. L. Landen, "Diagnosing Shock-Heated, Direct-Drive Plastic Targets with Spectrally Resolved X-Ray Scattering."

F. H. Séguin, J. L. DeCiantis, J. A. Frenje, C. K. Li, J. R. Rygg, C. Chen, R. D. Petrasso, V. A. Smalyuk, F. J. Marshall, J. A. Delettrez, J. P. Knauer, P. W. McKenty, D. D. Meyerhofer, S. Roberts, T. C. Sangster, K. Mikaleian, and H. S. Park, "Relationship of Asymmetries in Fusion Burn and ρR to Asymmetries in Laser Drive for ICF Implosions at OMEGA."

W. Seka, C. Stoeckl, V. N. Goncharov, R. E. Bahr, T. C. Sangster, R. S. Craxton, J. A. Delettrez, A. V. Maximov, J. Myatt, A. Simon, and R. W. Short, "Absorption Measurements in Spherical Implosions on OMEGA."

R. W. Short, "Convective Versus Absolute Two-Plasmon Decay in Inhomogeneous Plasmas."

V. A. Smalyuk, V. N. Goncharov, T. R. Boehly, D. Li, J. A. Marozas, D. D. Meyerhofer, S. P. Regan, and T. C. Sangster, "Measurements of Imprinting with Laser Beams at Various Angles of Incidence in Planar CH Foils."

J. M. Soures, F. J. Marshall, J. A. Delettrez, R. Epstein, R. Forties, V. Yu. Glebov, J. H. Kelly, T. J. Kessler, J. P. Knauer, P. W. McKenty, S. P. Regan, W. Seka, V. A. Smalyuk, C. Stoeckl, J. A. Frenje, C. K. Li, R. D. Petrasso, and F. H. Séguin, "Polar-Direct-Drive Experiments on OMEGA."

C. Stoeckl, W. Theobald, J. A. Delettrez, J. Myatt, S. P. Regan, H. Sawada, T. C. Sangster, M. H. Key, P. Patel, R. Snively, R. Clarke, S. Karsch, and P. Norreys, "K-Shell Spectroscopy Using a Single-Photon-Counting X-Ray CCD in Ultrafast Laser-Plasma Interaction Experiments."

S. Sublett, J. P. Knauer, I. V. Igumenshchev, D. D. Meyerhofer, A. Frank, P. A. Keiter, R. F. Coker, B. H. Wilde, B. E. Blue, T. S. Perry, J. M. Foster, and P. A. Rosen, "Hydrodynamic Jet Experiments on OMEGA."

W. Theobald, C. Stoeckl, T. C. Sangster, J. Kuba, R. Snively, M. H. Key, R. Heathcoate, D. Neely, and P. Norreys, "X-Ray Line Emission Spectroscopy of 100-TW-Laser-Pulse-Generated Plasmas for Backlighter Development of Cryogenic Implosion Capsules."

E. Vianello, T. R. Boehly, R. S. Craxton, V. N. Goncharov, J. E. Miller, I. V. Igumenshchev, D. D. Meyerhofer, T. C. Sangster, D. G. Hicks, and P. M. Celliers, "The Effect of Incidence Angle on Laser-Driven Shock Strengths."

C. Zhou, J. Sanz, and R. Betti, "Asymptotic Bubble Evolution in the Bell-Plesset and Ablative Rayleigh-Taylor Instabilities."

C. W. Wu and D. R. Harding, "Growth of the Open-Networked Carbon Nanostructures at Low Temperature by Microwave Plasma Electron Cyclotron Resonance Chemical Vapor Deposition," 2004 MRS Fall Meeting, Boston, MA, 29 November–3 December 2004.

S. G. Lukishova, A. W. Schmid, R. S. Knox, P. Freivald, R. W. Boyd, and C. R. Stroud, Jr., "Deterministically Polarized Single-Photon Source," Quantum Optics II, Cozumel, Mexico, 6–9 December 2004.

