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# PUBLICATIONS AND CONFERENCE PRESENTATIONS

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## Publications

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- X. D. Cao and D. D. Meyerhofer, "Soliton Collisions in Optical Birefringent Fibers," *J. Opt. Soc. Am. B* **11**, 380 (1994.)
- H. E. Elsayed-Ali, J. W. Herman, and E. A. Murphy, "Ultrafast Laser Superheating of Metal Surfaces," in *Beam Solid Interactions: Fundamentals and Applications*, edited by M. Natsi *et al.* (Materials Research Society, Pittsburgh, PA, 1993), Vol. 279, pp. 685–690.
- H. E. Elsayed-Ali and T. Juhasz, "Femtosecond Time-Resolved Thermomodulation of Thin Gold Films with Different Crystal Structures," *Phys. Rev. B* **47**, 13599 (1993).
- E. M. Epperlein, "Effect of Electron Collisions on Ion-Acoustic Waves and Heat Flow," *Phys. Plasmas* **1**, 109 (1994).
- E. M. Epperlein, R. W. Short, and A. Simon, "Transport and Sound Waves in Plasmas with Light and Heavy Ions," *Phys. Rev. E* **49**, 2480 (1994).
- S. D. Jacobs, "Progress at the Center for Optics Manufacturing," in *Optical Fabrication, Testing, and Surface Evaluation*, edited by J. Tsujiuchi (SPIE, Bellingham, WA, 1992), Vol. 1720, pp. 169–174.
- H. Kim and M. D. Wittman, "Interferometric Microscopy—An Overview of the Optical Characterization of Inertial-Fusion Targets," in *Multidimensional Microscopy*, edited by P. C. Cheng, T. H. Lin, W. L. Wu, and J. L. Wu (Springer-Verlag, New York, 1994), pp. 103–121.
- W. Kula and R. Sobolewski, "Charging Effect in Partially Oxygen-Depleted, Superconducting Y-Ba-Cu-O Thin Films," *Phys. Rev. B* **49**, 6428 (1994).
- W. N. Maung, D. P. Butler, W. Xiong, W. Kula, and R. Sobolewski, "Microwave Properties of Monolithic Y-Ba-Cu-O Transmission Line Devices Fabricated by the Laser-Writing Patterning Technique," in *High- $T_c$  Microwave Superconductors and Applications* (SPIE, Bellingham, WA, 1994), Vol. 2156, pp. 174–180.
- R. L. McCrory, "Direct-Drive Implosion Experiments for Laser Fusion on OMEGA and the OMEGA Upgrade," in *Proceedings of the 21st ECLIM*, edited by H. Fiedorowicz, J. Wolowski, M. Mroczkowski, M. Szczurek, and A. Ulino-wicz (ECLIM, Warsaw, Poland, 1992), pp. 197–200.
- D. D. Meyerhofer and J. Peatross, "Angular Distributions of High-Order Harmonics," in *Super-Intense Laser-Atom Physics*, edited by B. Piraux, A. L'Huillier, and K. Rzazewski, NATO ASI Series B, Physics, Vol. 316 (Plenum Press, New York, 1993), pp. 19–29.
- J. Peatross and D. D. Meyerhofer, "Measurement of the Angular Distribution of High-Order Harmonics Emitted from Rare Gases," in *OSA Proceedings on Shortwavelength V: Physics with Intense Laser Pulses*, edited by P. B. Corkum and M. D. Perry (Optical Society of America, Washington, DC, 1993), Vol. 17, pp. 122–126.
- L. Shi, T. Gong, X. Xiong, X. Weng, Y. Kostoulas, R. Sobolewski, and P. M. Fauchet, "Femtosecond Reflectivity of 60-K Y-Ba-Cu-O Thin Films," *Appl. Phys. Lett.* **64**, 1150 (1994).
- S. Skupsky and T. J. Kessler, "Speckle-Free Phase Plate (Diffuser) for Far-Field Applications," *J. Appl. Phys.* **74**, 4310 (1993).
- R. Sobolewski, W. Xiong, W. Kula, and J. R. Gavaler, "Laser Patterning of Y-Ba-Cu-O Thin-Film Devices and Circuits," *Appl. Phys. Lett.* **64**, 643 (1994).
- B. Soom, H. Chen, Y. Fisher, and D. D. Meyerhofer, "Strong  $K_\alpha$  Emission in Picosecond Laser-Plasma Interactions," in

OSA's *Proceedings on Shortwavelength V: Physics with Intense Laser Pulses*, edited by P. B. Corkum and M. D. Perry (Optical Society of America, Washington, DC, 1993), Vol. 17, pp. 192–195.

J. M. Soures, "High-Technology Advances from LLE Research," *Rochester Business Profiles Journal*, August 1991, 40–41.

J. M. Soures, "Solid State Lasers for ICF," in *Nuclear Fusion by Inertial Confinement*, edited by G. Velarde, Y. Ronen, and J. M. Martinez-Val (CRC Press, 1993), Chap. 14, pp. 351–370.

J. M. Soures, "The OMEGA Upgrade Laser Facility for

Direct-Drive Experiments," *J. Fusion Energy* **10**, 295 (1991).

J. Sweetser, T. J. Dunn, I. A. Walmsley, C. Radzewicz, S. Palese, and R. J. D. Miller, "Characterization of an FM Mode-Locked Nd:YLF Laser Synchronized with a Passively Mode-Locked Dye Laser," *Opt. Commun.* **97**, 379 (1993).

C. J. Twomey, S.-H. Chen, T. Blanton, A. W. Schmid, and K. L. Marshall, "Solid Polymers Doped with Rare Earth Metal Compounds. III. Formation and Stability of Macromolecular Complexes Comprising Neodymium Nitrate and Dipivaloylmethane in Poly(Ethylene Oxide)," *J. Polym. Sci. B, Polym. Phys.* **32**, 551 (1994).

### Forthcoming Publications

S. Alexandrou, C.-C. Wang, R. Sobolewski, and T. Y. Hsiang, "Generation of Subpicosecond Electrical Pulses by Nonuniform Illumination of GaAs Transmission Line Gaps," to be published in the *IEEE Journal of Quantum Electronics*.

S. Alexandrou, C.-C. Wang, M. Currie, R. Sobolewski, and T. Y. Hsiang, "Loss and Dispersion at Subterahertz Frequencies in Coplanar Waveguides and Varying Ground-Plane Widths," to be published in *SPIE Vol. 2149: Technologies for Optical Fiber Communications*.

R. Betti, V. Goncharov, R. L. McCrory, E. Turano, and C. P. Verdon, "Multiple Cutoff Wave Numbers of the Ablative Rayleigh-Taylor Instability," to be published in *Physical Review Letters*.

X. D. Cao, G. P. Agrawal, and C. J. McKinstrie, "Self-Focusing of Chirped Optical Pulses in Nonlinear Dispersive Media," to be published in *Physical Review A*.

X. D. Cao and D. D. Meyerhofer, "Nonlinear Birefringence of Optical Fibers," to be published in *Optics Communications*.

M. J. Cumbo and S. D. Jacobs, "Determination of Near-Surface Forces in Optical Polishing Using Atomic Force Microscopy," to be published in *Nanotechnology*.

J. A. Delettrez, D. K. Bradley, and C. P. Verdon, "The Role of the Rayleigh-Taylor Instability in Laser-Driven Burnthrough Experiments," to be published in *Physics of Fluids B*.

W. R. Donaldson and L. Mu, "Effect of Illumination Uniformity on GaAs Photoconductive Switches," to be published in the *IEEE Journal of Quantum Electronics*.

E. M. Epperlein, "Fokker-Planck Modeling of Electron Transport in Laser-Produced Plasmas," to be published in *Laser & Particle Beams*.

E. M. Epperlein, "Implicit and Conservative Difference Scheme for the Fokker-Planck Equation," to be published in the *Journal of Computational Physics*.

E. M. Epperlein and R. W. Short, "Comments on 'Theory and Three-Dimensional Simulation of Light Filamentation in Laser-Produced Plasmas' [Phys. Fluids B 5, 2243 (1993)]," to be published in *Physics of Fluids B*.

E. M. Epperlein and R. W. Short, "Generalized Electron Fluid Equations in the Presence of Laser Irradiation," to be published in *Physics of Plasmas*.

E. M. Epperlein and R. W. Short, "Nonlocal Electron Transport in the Presence of High-Intensity Laser Irradiation," to be published in *Physical Review E*.

D. Fried, R. E. Glens, J. D. B. Featherstone, and W. Seka, "The Nature of Light Scattering in Dental Enamel and Dentin at Visible and Near Infrared Wavelengths," to be published in *Applied Optics*.

- T. Gong, J. F. Young, G. W. Wicks, P. J. Kelly, and P. M. Fauchet, "Hot-Carrier Dynamics Near the Fermi Edge of N-Doped GaAs," to be published in *Semiconductor Science and Technology*.
- T. Gong and P. M. Fauchet, "Carrier-Carrier Interactions in GaAs Investigated by Femtosecond Spectroscopy," to be published in the *Proceedings of SPIE's OE/LASE '93*, Los Angeles, CA, 16–23 January 1993 (invited).
- D. Gupta, W. R. Donaldson, and A. M. Kadin, "Fast Inductively Coupled Superconducting Opening Switch Triggered by Short Laser Pulses," to be published in the *Proceedings of the 9th International Pulsed Power Conference*, Albuquerque, NM, 21–23 June 1993.
- D. Gupta, W. R. Donaldson, and A. M. Kadin, "A Laser-Triggered, Inductive Opening Switch Using High-Temperature Superconducting Thin Films," to be published in *Advances in Cryogenic Engineering*.
- D. Gupta, "A New Optically Triggered Superconducting Opening Switch for High-Power Applications," to be published in *Research Reports of the Link Energy Fellows*.
- J. W. Herman, H. E. Elsayed-Ali, and E. A. Murphy, "Time-Resolved Structural Studies of the Low-Index Faces of Lead," to be published in *Physical Review B*.
- S. D. Jacobs, K. L. Marshall, and A. Schmid, "Liquid Crystals for Laser Applications," to be published in the *CRC Handbook of Laser Science and Technology, Supplement 2: Optical Materials*.
- A. M. Kadin, D. Gupta, D. D. Mallory, M. Takahashi, W. R. Donaldson, and J. K. Truman, "Fabrication, Properties, and Applications of In-Situ Sputtered YBCO Films," to be published in the *Proceedings of the 6th Annual Conference on Superconductivity and Applications*, Buffalo, NY, 15–17 September 1992.
- H. Kim, J. M. Soures, and P.-C. Cheng, "Confocal Microscopic Characterization of Laser-Fusion Target," to be published in the *Proceedings of the 39th AVS National Symposium and Topical Conferences*, Chicago, IL, 9–13 November 1992.
- E. M. Korenic, S. D. Jacobs, J. K. Houghton, F. Kreuzer, and A. Schmid, "Nematic Polymer Liquid-Crystal Waveplate for High-Power Lasers at 1054 nm," to be published in *Applied Optics*.
- E. M. Korenic, K. L. Marshall, and J. A. Maiolo, "Blending Polysiloxane 'Glass Resins' to Produce Optical Films with a Specific Refractive Index," to be published in *Optics and Photonics News*.
- Y. Kostoulas, P. M. Fauchet, T. Gong, B. C. Tousley, G. W. Wicks, and P. Cooke, "Femtosecond Carrier Dynamics in Low-Temperature-Grown III - V Semiconductors," to be published in the *Proceedings of SPIE's OE/LASE '94*, Los Angeles, CA, 22–28 January 1994.
- Y. Kostoulas, T. Gong, A. I. Lobad, and P. M. Fauchet, "Investigation of Carrier-Carrier Scattering by Three-Pulse Probe Spectroscopy," to be published in *Semiconductor Science and Technology*.
- Y. Kostoulas, T. Gong, G. W. Wicks, and P. M. Fauchet, "Femtosecond Carrier Dynamics in Low-Temperature-Grown InP," to be published in *Applied Physics Letters*.
- W. Kula and R. Sobolewski, "Electric-Field-Effect Devices Based on Partially Oxygen-Depleted, Superconducting Y-Ba-Cu-O Thin Films," to be published in *Advances in Cryogenic Engineering*, Volume 40.
- W. Kula and R. Sobolewski, "Electric-Field Effect in Partially Deoxygenated YBCO Thin Films," to be published in *Physica B*.
- B. S. W. Kuo and A. W. Schmid, "Effects of Thin-Film Thermal Conductivity on the Optical Damage Threshold of a-Si Film on c-Si Substrate at 1064 nm," to be published in the *Journal of Applied Physics*.
- Y. Lin and T. J. Kessler, "Raman Scattering: A Four-Dimensional System," to be published in *Applied Optics*.
- A. I. Lobad, S. M. Mehta, B. C. Tousley, P. J. Rodney, and P. M. Fauchet, "The Starting Mechanism in Coupled-Cavity Mode-Locked Laser Systems," to be published in the *IEEE Journal of Quantum Electronics*.
- A. I. Lobad, P. J. Rodney, B. C. Tousley, S. M. Mehta, and P. M. Fauchet, "The Starting Mechanism in Coupled-Cavity,

Mode-Locked Laser Systems," to be published in the *Proceedings of SPIE's OE/LASE '94*, Los Angeles, CA, 22–29 January 1994.

R. S. Marjoribanks, F. W. Budnik, H. Chen, and D. D. Meyerhofer, "Plasma Electron Temperature in Picosecond Laser Plasmas from Quasi-Steady Ratio of Isoelectronic Lines," to be published in *Physical Review Letters*.

F. J. Marshall, J. A. Delettrez, R. Epstein, and B. Yaakobi, "Diagnosis of Laser-Target Implosions by Space-Resolved Continuum Absorption X-Ray Spectroscopy," to be published in *Physical Review E*.

R. L. McCrory, "Progress Toward Ignition with Direct Drive," to be published in *Concerning Major Systems in Science and Technology*.

L. Mu and W. R. Donaldson, "Simulating Photoconductive Switches in a Microwave Transmission Line," to be published in the *Proceedings of the 9th IEEE International Pulsed Power Conference*, Albuquerque, NM, 21–23 June 1993.

S. Papernov and A. W. Schmid, "Atomic Force Microscopy Studies of Laser-Triggered Morphology Changes in  $Y_2O_3$  Monolayer Coatings," to be published in *SPIE's Proceedings of the Annual Symposium on Optical Materials for High Power Lasers*.

S. Papernov and A. W. Schmid, "Atomic Force Microscopy Observations of Water-Induced Morphological Changes in  $Y_2O_3$  Monolayer Coatings," to be published in *SPIE's Proceedings of the Annual Symposium on Optical Materials for High Power Lasers*.

J. Peatross, J. L. Chaloupka, and D. D. Meyerhofer, "High-Order Harmonic Generation with an Annular Laser Beam," to be published in *Optics 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. K. Samarabandu, R. Acharya, C. D. Edirisinghe, P. C. Cheng, H. Kim, T. H. Lin, R. G. Summers, and C. E. Musial, "Analysis of Multi-Dimensional Confocal Images," to be published in the *Proceedings of the SPIE Symposium "Biomedical Imaging"*, San Diego, CA, 24 February 1991.

A. W. Schmid, K. L. Marshall, and S. D. Jacobs, "Comment to 'Ultraviolet Filters Using Liquid Crystal Molecules' [J. Appl. Phys. 74, 4867 (1993)]," to be published in the *Journal of Applied Physics*.

H. Shi and S. H. Chen, "Novel Glassy Nematic and Chiral Nematic Oligomers Derived from 1,3,5-Cyclohexanetricarboxylic and (1R,3S)-(+)-Camphoric Acids," to be published in *Liquid Crystals*.

R. Sobolewski, W. Xiong, W. Kula, and B. McIntyre, "Electrical and Structural Properties of the YBCO Superconducting-Semiconducting Interface," to be published in *Physica B*.

R. Sobolewski, L. Shi, W. Xiong, X. Weng, Y. Kostoulas, and P. M. Fauchet, "Femtosecond Optical Response of Y-Ba-Cu-O Films and Their Applications in Optoelectronics," to be published in the *Proceedings of SPIE's OE/LASE '94* (invited).

C. J. Twomey, S.-H. Chen, T. Blanton, A. W. Schmid, and K. L. Marshall, "Solid Polymers Doped with Rare Earth Metal Salts. II. Thermal Behavior and Morphology of the Neodymium Acetate-Poly(Ethylene Oxide) System," to be published in the *Journal of Polymer Science, Polymer Physics Edition*.

C. J. Twomey, S.-H. Chen, T. N. Blanton, A. W. Schmid, and K. L. Marshall, "Stoichiometry and Morphology in Terbium Nitrate-Poly(Ethylene Oxide) Macromolecular Complex," to be published in the *Journal of Polymer Science, Polymer Physics Edition*.

C. J. Twomey, S.-H. Chen, T. N. Blanton, A. W. Schmid, and K. L. Marshall, "Poly[(Methylene Oxide)Oligo(Ethylene Oxide)]vs Poly(Ethylene Oxide) as Hosts for Neodymium Compounds," to be published in the *Journal of Polymer Science, Polymer Physics Edition*.

C.-C. Wang, S. Alexandrou, D. Jacobs-Perkins, and T. Y. Hsiang, "Comparison of the Picosecond Characteristics of Silicon and Silicon-on-Sapphire Metal-Semiconductor-Metal Photodiodes," to be published in *Applied Physics Letters*.

C.-C. Wang, M. Currie, S. Alexandrou, and T. Y. Hsiang, "Ultrafast, All-Silicon Light Modulator," to be published in *Optics Letters*.

C.-C. Wang, S. Alexandrou, D. Jacobs-Perkins, and T. Y. Hsiang, "Picosecond Characteristics of Silicon-on-Insulator Metal-Semiconductor-Metal Photodiodes," to be published in *SPIE's Proceedings of the Conference on Technologies for Optical Fiber Communications/High-Speed Optical Detectors*.

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, W. Kula, and R. Sobolewski, "Fabrication of High- $T_c$  Superconducting Electronic Devices Using the Laser-Writing Patterning Technique," to be published in *Advances in Cryogenic Engineering*.

W. Xiong, W. Kula, R. Sobolewski, W. N. Maung, and D. P. Butler, "Monolithic Y-Ba-Cu-O Electronic Devices Fabri-

cated Using the Laser-Writing Patterning Technique," to be published in *Superconductor Science and Technology*.

W. Xiong, W. Kula, R. Sobolewski, and J. R. Gavalier, "Laser Writing: A New Technique for Fabrication of Electronic and Optoelectronic Y-Ba-Cu-O Devices and Circuits," to be published in *SPIE Vol. 2160: Superconductive Devices and Circuits*.

B. Yaakobi, Q. Su, and F. J. Marshall, "Monochromatic Backlighting in Laser-Fusion Experiments," to be published in the *Journal of X-Ray Science Technology*.

B. Yaakobi, F. J. Marshall, R. Epstein, and Q. Su, "New Diagnostic Features in the Laser Implosions of Argon-Filled Targets," to be published in *Optics Communications*.

X. Zhou, S. Alexandrou, and T. Y. Hsiang, "Monte Carlo Investigation of the Mechanism of Subpicosecond Pulse Generation by Nonuniform Gap Illumination," to be published in *Applied Physics Letters*.

### Conference Presentations

W. Kula and R. Sobolewski "Electric-Field Effect in Partially Oxygen-Depleted, Superconducting Y-Ba-Cu-O Thin Films," 1994 Gordon Research Conference on Superconductivity, Oxnard, CA, 2-7 January 1994.

The following presentations were made at SPIE's OE/LASE '94, Los Angeles, CA, 22-28 January 1994:

S. Alexandrou, C.-C. Wang, M. Currie, R. Sobolewski, and T. Y. Hsiang, "Loss and Dispersion at Subterahertz Frequencies in Coplanar Waveguides and Varying Ground-Plane Widths."

D. P. Butler, W. N. Maung, W. Xiong, W. Kula, and R. Sobolewski, "Microwave Properties of Monolithic Y-Ba-Cu-O Transmission Line Devices Fabricated by the Laser-Writing Patterning Technique."

D. Fried, S. F. Borzillary, S. M. McCormack, R. E. Glana, J. D. B. Featherstone, and W. Seka, "The Thermal Effects on CO<sub>2</sub> Laser-Irradiated Dental Enamel at 9.3, 9.6, 10.3, and 10.6  $\mu\text{m}$ ."

Y. Kostoulas, P. M. Fauchet, T. Gong, B. C. Tousley, G. W.

Wicks, and P. Cooke, "Femtosecond Carrier Dynamics in Low-Temperature-Grown III-V Semiconductors."

A. I. Lobad, P. J. Rodney, B. C. Tousley, S. M. Mehta, and P. M. Fauchet, "The Starting Mechanism in Coupled-Cavity, Mode-Locked Laser Systems."

R. Sobolewski, L. Shi, W. Xiong, X. Weng, Y. Kostoulas, and P. M. Fauchet, "Femtosecond Optical Response of Y-Ba-Cu-O Films and Their Applications in Optoelectronics."

C.-C. Wang, S. Alexandrou, D. Jacobs-Perkins, and T. Y. Hsiang, "Picosecond Characteristics of Silicon-on-Insulator Metal-Semiconductor-Metal Photodiodes."

W. Xiong, W. Kula, R. Sobolewski, and J. R. Gavalier, "Laser Writing: A New Technique for Fabrication of Electronic and Optoelectronic Y-Ba-Cu-O Devices and Circuits."

W. R. Donaldson, D. Gupta, and A. M. Kadin "High-Temperature, Superconducting Switches for SMES Applications," The Advisory Group on Electron Devices 1994 High-Voltage Workshop, Smyrna, GA, 1-3 March 1994.



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