

# PUBLICATIONS AND CONFERENCE PRESENTATIONS

## Publications

J. J. Armstrong and T. J. Kessler, "Holographic Recording of Large-Aperture, High-Efficiency, High-Damage-Threshold, Transmission Diffraction Gratings," in the *Proceedings of SPIE's 1992 International Symposium on Optical Applied Science and Engineering*, San Diego, CA, 19–24 July 1992.

C. Bamber, W. R. Donaldson, E. Lincke, and A. C. Melissinos, "Electron Acceleration Using Laser-Driven Photoconductive Switching," *Nucl. Instrum. & Methods Phys. Res.* **A327**, 227 (1993).

Y.-H. Chuang, L. Zheng, and D. D. Meyerhofer, "Propagation of Light Pulses in a Chirped-Pulse-Amplification Laser," *IEEE J. Quantum Electron.* **29**, 270 (1993).

W. R. Donaldson and L. Mu, "The Effects of Doping on Photoconductive Switches as Determined by Electro-Optic Imaging," in *Optically Activated Switching II*, edited by G. M. Loubriel (SPIE, Bellingham, WA, 1992), Vol. 1632, pp. 81–87.

E. M. Epperlein and R. W. Short, "Comment on 'Modification of Stimulated Brillouin, Saturated Raman Scattering and Strong Langmuir Turbulence by Nonlocal Heat Transport'," *Phys. Fluids B* **4**, 4190 (1993).

J. Glanz, M. V. Goldman, D. L. Newman, and C. J. McKinstrie, "Electromagnetic Instability and Emission from Counterpropagating Langmuir Waves," *Phys. Fluids B* **5**, 1101 (1993).

T. Gong, P. M. Fauchet, J. F. Young, and P. J. Kelly, "Subpicosecond Hot-Hole Dynamics in Highly Excited GaAs," *Appl. Phys. Lett.* **62**, 522 (1993).

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D. Gupta, W. R. Donaldson, K. Kortkamp, and A. M. Kadin, "Optically Activated Opening Switches," in *Optically Activated Switching II*, edited by G. M. Loubriel (SPIE, Bellingham, WA, 1992), Vol. 1632, pp. 190–195.

W. Kula and Roman Sobolewski, "Measurements of Low Magnetic Field Microwave Absorption in 110-K Superconducting Bi-Sr-Ca-Cu-O Thin Films," *IEEE Trans. Appl. Supercon.* **3**, 1446 (1993).

J. C. Lambropoulos, S. D. Jacobs, S. J. Burns, and L. Shaw-Klein, "Effects of Anisotropy, Interfacial Thermal Resistance, Microstructure, and Film Thickness on the Thermal Conductivity of Dielectric Thin Films," in *Fundamental Issues in Small Scale Heat Transfer* (ASME, New York, 1992), Vol. 227, pp. 37–49.

Y. Lin and T. J. Kessler, "Raman Scattering in Air: A Four-Dimensional System Analysis," in *Design, Modeling and Control of Laser Beam Optics*, edited by Y. Kohanzadeh, G. N. Lawrence, J. McCoy, and H. Weichel (SPIE, Bellingham, WA, 1992), Vol. 1625, pp. 158–166.

R. L. McCrory, "Laser-Driven ICF Experiments," in *Nuclear Fusion by Inertial Confinement: A Comprehensive Treatise*, edited by G. Velarde, Y. Ronen, and J. M. Martinez-Val (CRC Press, Boca Raton, FL, 1993), Chap. 22, pp. 555–596.

C. J. McKinstrie and M. V. Goldman, "Three-Dimensional Instabilities of Counterpropagating Light Waves in Homogeneous Plasmas," *J. Opt. Soc. Am. B* **9**, 1778 (1992).

J. Peatross, B. Buerke, and D. D. Meyerhofer, "Sequential Ionization in  $^3\text{He}$  with a 1.5-ps, 1- $\mu\text{m}$  Laser Pulse," *Phys. Rev. A* **47**, 1517 (1993).

S. Skupsky, T. J. Kessler, S. A. Letzring, and Y.-H. Chuang, "Laser-Beam Pulse Shaping Using Spectral Beam Deflection," *J. Appl. Phys.* **73**, 2678 (1993).

R. Sobolewski, W. Xiong, and W. Kula, "Patterning of Thin-Film, High- $T_c$  Circuits by the Laser-Writing Method," *IEEE Trans. Appl. Supercon.* **3**, 2986 (1993).

## Forthcoming Publications

S. Alexandrou, R. Sobolewski, C.-C. Wang, and T. Y. Hsiang, "Subpicosecond Electrical Pulse Generation in GaAs by Nonuniform Illumination of Series and Parallel Transmission-Line Gaps," to be published in the *Proceedings of Ultrafast Electronics & Optoelectronics*, San Francisco, CA, 25–27 January 1993.

S. Alexandrou, C.-C. Wang, T. Y. Hsiang, M. Y. Liu, and S. Y. Chou, "A 75-GHz Silicon Metal-Semiconductor-Metal Schottky Photodiode," to be published in *Applied Physics Letters*.

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*.

J. J. Armstrong and T. J. Kessler, "Large-Aperture, High-Efficiency Holographic Gratings for High-Power Laser Systems," to be published in the *Proceedings of SPIE's OE/LASE '93*, Los Angeles, CA, 16–23 January 1993.

C. Bamber, W. R. Donaldson, E. Lincke, and A. C. Melissinos, "A Pulsed-Power Electron Accelerator Using Laser-Driven Photoconductive Switches," to be published in the *Proceedings of the Third Advanced Accelerator Concepts Workshop*, Port Jefferson, NY, 15–19 June 1992.

R. Betti and J. P. Freidberg, "Destabilization of the Internal Kink by Energetic-Circulating Ions," to be published in *Physical Review Letters*.

X. D. Cao and C. J. McKinstrie, "Solitary-Wave Stability in Birefringent Optical Fibers," to be published in the *Journal of the Optical Society of America B*.

X. D. Cao and D. D. Meyerhofer, "Soliton Collisions in Optical Birefringent Fibers," to be published in *Optics Letters*.

W. R. Donaldson and L. Mu, "Transmission-Line Modeling of Photoconductive Switches," to be published in the *Proceedings of SPIE's OE/LASE '93*, Los Angeles, CA, 16–23 January 1993.

W. R. Donaldson and A. C. Melissinos, "A Novel High Brilliance Electron Source," to be published in the *Proceedings of the Third Advanced Accelerator Concepts Workshop*, Port Jefferson, NY, 15–19 June 1992.

H. E. Elsayed-Ali, J. W. Herman, and E. A. Murphy, "Ultrafast Laser Superheating of Metal Surfaces," to be published in the *Materials Research Society Symposia Proceedings*.

H. E. Elsayed-Ali and T. Juhasz, "Femtosecond Time-Resolved Thermomodulation of Thin Gold Films with Different Crystal Structures," to be published in *Physical Review B*.

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*.

P. M. Fauchet, D. Hulin, A. Mourchid, and R. Vanderhaghen, "Ultrafast Thermal Nonlinearities in Amorphous Silicon," to be published in *Ultrafast Laser Probe Phenomena in Semiconductors and Superconductors*.

P. M. Fauchet, "Picosecond Spectroscopy in Solids with a Free-Electron Laser," to be published in *Spectroscopic Characterization Techniques for Semiconductor Technology IV* (invited paper).

P. M. Fauchet and T. Gong, "Femtosecond Dynamics of Hot Carriers in GaAs," to be published in the *Proceedings of SPIE's 1992 Symposium on Compound Semiconductor Physics and Devices*, Somerset, NJ, 22–26 March 1992 (invited paper).

D. Fried, J. D. B. Featherstone, D. Glana, B. Bordin, and W. Seka, "The Light-Scattering Properties of Dentin and Enamel at 543, 632, and 1053 nm," to be published in the *Proceedings of the OSA Annual Meeting*, Toronto, Canada, 3–8 October 1993.

T. Gong, K. B. Ucer, L. X. Zheng, G. W. Wicks, J. F. Young, P. J. Kelly, and P. M. Fauchet, "Femtosecond Carrier-Carrier Interactions in GaAs," to be

published in the *Proceedings of the Eighth International Conference on Ultrafast Phenomena*, Antibes-Juan-Les-Pins, France, 8–12 June 1992.

T. Gong, L. X. Zheng, K. B. Ucer, J. F. Young, P. J. Kelly, G. W. Wicks, and P. M. Fauchet, “The Role of Carrier-Carrier Interactions in Relaxation of Hot Carriers Excited at 2 eV in GaAs,” to be published in *Physical Review B*.

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.

T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, and P. M. Fauchet, “Femtosecond Optical Response of Y-Ba-Cu-O Thin Films: The Dependence on Optical Frequency, Excitation Intensity, and Electric Current,” to be published in *Physical Review B*.

T. Gong, L. X. Zheng, Y. Kostoulas, W. Xiong, W. Kula, K. B. Ucer, R. Sobolewski, and P. M. Fauchet, “Ultrafast Optical and Optoelectronic Response of Y-Ba-Cu-O Thin Films,” to be published in the *Proceedings of Ultrafast Electronics & Optoelectronics*, San Francisco, CA, 25–27 January 1993.

T. Gong, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, P. M. Fauchet, J. P. Zheng, H. W. Kwok, and J. R. Gavaler, “Femtosecond Spectroscopy of Y-Ba-Cu-O Thin Films,” to be published in the *Proceedings of the 6th Annual Conference on Superconductivity and Applications*, Buffalo, NY, 15–17 September 1992.

T. Gong, Y. Kostoulas, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, and P. M. Fauchet, “Femtosecond Optical Nonlinearities in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ,” to be published in the *Proceedings of SPIE's OE/LASE '93*, Los Angeles, CA, 16–23 January 1993.

D. Gupta, W. R. Donaldson, K. Kortkamp, and A. M. Kadin, “Optically Triggered Switching of Optically Thick YBCO Films,” to be published in *IEEE Transactions on Applied Superconductivity*.

D. Gupta, W. R. Donaldson, and A. M. Kadin, “Fast Optically Triggered Superconducting Opening Switches,” to be published in the *Proceedings of SPIE's OE/LASE '93*, Los Angeles, CA, 16–23 January 1993.

D. Gupta, W. R. Donaldson, and A. M. Kadin, “High-Temperature Superconducting Opening Switches,” to be published in the *Proceedings of the Fifth SDIO/ONR Pulse Power Meeting '92*, College Park, MD, 17–19 August 1992.

J. W. Herman, H. E. Elsayed-Ali, and E. A. Murphy, “Time-Resolved Structural Study of Pb(100),” to be published in *Physical Review Letters*.

S. D. Jacobs, A. Lindquist, M. J. Cumbo, B. A. Feltz, W. Czajkowski, D. Golini, J. Greivenkamp, D. T. Moore, and H. M. Pollicove, “Technical Advances in Process Science Research at the Center for Optics Manufacturing,” to be published in the *Proceedings of the 7th International Precision Engineering Seminar*.

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. Soares, 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.

H. Kim and M. D. Wittman, "Interferometric Microscopy—An Overview of the Optical Characterization of Inertial-Fusion Targets," to be published in *Multidimensional Microscopy*.

L. E. Kingsley and W. R. Donaldson, "Numerical Analysis of Electric Field Profiles in High-Voltage GaAs Photoconductive Switches and Comparison to Experiment," to be published in *IEEE Transactions on Electron Devices*.

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*.

W. Kula and R. Sobolewski, "Influence of the Crystalline Structure of Critical Current Density of Bi(Pb)-Sr-Ca-Cu-O Thin Films Superconducting above 100K," to be published in the *Proceedings of the 6th Annual Conference on Superconductivity and Applications*, Buffalo, NY, 15–17 September 1992.

Y. Lin and T. J. Kessler, "Raman Scattering: A Four-Dimensional System," to be published in *Applied Optics*.

## Conference Presentations

The following presentations were made at the 2nd Israeli International Conference on "High  $T_c$  Superconductivity," Eliat, Israel, 4–7 January 1993:

W. Lang, G. Heine, C. Sekirnjak, P. Schwab, X. Z. Wang, D. Bauerle, W. Kula, and R. Sobolewski, "Transport Properties of Y-Ba-Cu-O and Bi-Sr-Ca-Cu-O Thin Films in the Thermodynamic Fluctuation Range."

R. Sobolewski, "Ultrafast High  $T_c$  Optoelectronics" (Invited).

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D. D. Meyerhofer, B. Buerke, and J. Peatross, "Sequential Ionization of  $^3\text{He}$  with 1.5-ps, 1- $\mu\text{m}$  Laser Pulses," SILAP III, Belgium, 8–14 January 1993.

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The following presentations were made at SPIE's OE/LASE '93, Los Angeles, CA, 16–23 January 1993:

J. J. Armstrong and T. J. Kessler, "Large-Aperture, High-Efficiency Holographic Gratings for High-Power Laser Systems."

Y.-H. Chuang, T. J. Kessler, and S. Skupsky, "Laser Beam Pulse Shaping Using Dispersive Spectral Filtering."

W. R. Donaldson and L. Mu, "Transmission-Line Modeling of Photoconductive Switches."

T. Gong and P. M. Fauchet, "Carrier-Carrier Interactions in GaAs Investigated by Femtosecond Spectroscopy."

T. Gong, Y. Kostoulas, L. X. Zheng, W. Xiong, W. Kula, R. Sobolewski, and P. M. Fauchet, "Femtosecond Optical Nonlinearities in  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$ ."

D. Gupta, W. R. Donaldson, and A. M. Kadin, "Fast, Optically Triggered Superconducting Opening Switches."

T. J. Kessler, Y. Lin, J. J. Armstrong, and B. Velazquez, "Phase Conversion of Lasers with High-Efficiency Distributed Phase Plates."

Y. Lin, T. J. Kessler, and J. J. Armstrong, "Laser System Power Balance Effects from Stimulated Rotational Raman Scattering in Air."

M. D. Skeldon and S. T. Bui, "Temporal Pulse-Width Control of a Regenerative Amplifier with Intracavity Etalons."

S. Skupsky and T. J. Kessler, "Strategies for Ultra-High Laser Uniformity Using Zero-Correlation Phase Masks."

B. Soom, X. D. Cao, H. Chen, S. Uchida, B. Yaakobi, and D. D. Meyerhofer, "Efficient  $K_\alpha$  Emission in High-Contrast, Short-Pulse, Laser-Plasma Interactions."

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The following presentations were made at Ultrafast Electronics & Optoelectronics, San Francisco, CA, 25–27 January 1993:

S. Alexandrou, R. Sobolewski, C.-C. Wang, and T. Y. Hsiang, "Subpicosecond Electrical Pulse Generation in GaAs by Nonuniform Illumination of Series and Parallel Transmission-Line Gaps."

A. Denysenko, S. Alexandrou, C.-C. Wang, R. Sobolewski, T. Hsiang, W. R. Donaldson, and D. K. Bradley, "Dielectric Determination of a Microstrip Channel Plate by Picosecond Electro-Optic Sampling."

T. Gong, L. X. Zheng, Y. Kostoulas, W. Xiong, W. Kula, K. B. Ucer, R. Sobolewski, and P. M. Fauchet, "Ultrafast Response of Y-Ba-Cu-O Thin Films."

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E. A. Murphy, H. E. Elsayed-Ali, and J. W. Herman, "Superheating of Bi(0001)," American Physical Society (APS), Seattle, WA, 22–26 March 1993.

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J. Peatross and D. D. Meyerhofer, "Measurement of the Angular Distribution of High-Order Harmonics Emitted from Rare Gases," Short Wavelength V: Physics with Intense Laser Pulses, San Diego, CA, 29–31 March 1993.

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