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### Research Summary:

My current research involves the development of laser-based instrumentation for investigating the interaction of light with nano-scale materials. Current instruments include a near-field scanning optical microscope, a confocal Raman microscope, and an ultrafast transient absorption system. I also provide user support and training for most of the laser-based instruments at the CNM.

### Selected Recent Publications

Formation of Oxides and Their Role in the Growth of Ag Nanoplates on GaAs Substrates, Y. Sun, C. Lei, D. Gosztola, and R. Haasch, *Langmuir*, **2008**, 24(20), 11928-11934.

Ultrafast Pulse Radiolysis Using a Terawatt Laser Wakefield Accelerator, D. A. Oulianov, R. A. Crowell, D. J. Gosztola, I. A. Shkrob, O. J. Korovyanko, and R. C. Rey-de-Castro, *J. Appl. Phys.*, **2007**, 101, 053102.

D. J. Liu, J. Yang, D. J. Gosztola, "Investigation of Aligned Carbon Nanotubes as a Novel Catalytic Electrode for PEM Fuel Cells", *ECS Transactions*, **2007**, 5 (1) 147-154.

I. A. Shkrob, M. C. Sauer, Jr., and D. Gosztola, "Efficient, Rapid One-Electron Photooxidation of Chemisorbed Polyhydroxyl Alcohols and Carbohydrates by TiO<sub>2</sub> Nanoparticles in an Aqueous Solution", *J. Phys. Chem. B*, **2004**, 108(33), 12512-12517.

J. Wang, D. Gosztola, S. V. Ruffle, C. Hemann, M. Seibert, M. R. Wasielewski, R. Hille, T. L. Gustafson, and R. T. Sayre, "Functional Asymmetry of Photosystem II D1 and D2 Peripheral Chlorophyll Mutants of *Chlamydomonas reinhardtii*.", *Proc. Natl. Acad. Sci. U.S.A.*, **2002**, 99(2), 4091-4096.

L. X. Chen, G. Jennings, T. Liu, D. J. Gosztola, J. P. Hessler, D. V. Scaltrito, G. J. Meyer, "Rapid Excited-State Structural Reorganization Captured by Pulsed X-Rays", L. X. Chen, G. Jennings, T. Liu, D. J. Gosztola, J. P. Hessler, D. V. Scaltrito, G. J. Meyer, *J. Am. Chem. Soc.*, **2002**, 124(36), 10861-10867.

L. X. Chen, W. J. H. Jäger, G. Jennings, D. J. Gosztola, and A. Munkholm, J. P. Hessler, "Capturing a Transient Molecular Structure by Time-domain Laser Pump/X-ray Probe XAFS", *Science*, **2001**, 292, 262-264.