David Gosztola

Principal Technical Specialist, Nanoscience

Nanophotonics & Biofunctional Structures Group

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Education

Ph.D. Analytical Chemistry, Purdue University
B.Sc. Chemistry, Indiana University

Awards and honors

- Pacesetter Award, Argonne National Laboratory (2011)
- Pacesetter Award, Argonne National Laboratory (2002)
- R&D 100 Award (1993)
- Pacesetter Award, Argonne National Laboratory (1993)

Research interests

- Development of laser-based instrumentation for investigating the interaction of light with nanoscale materials.
- Ultrafast photochemistry, interfacial dynamics, electrochemistry, ultrafast laser-based instrumentation design.

Professional Experience

Argonne National Laboratory - Center for Nanoscale Materials (CNM) *2006-present*

- Ultrafast dynamics and spectroscopy of nanomaterials
- Provide user support for suite of laser-based optical characterization tools.

Argonne National Laboratory - Radiation and Photochemistry Group *2000-2006*
Chemist

- Developed laser-driven picosecond electron beam and x-ray source for ultrafast pulsed radiolysis experiments.

Argonne National Laboratory –Molecular Photonics/Artificial Photosynthesis Group *1990-2000*
Postdoc, Assistant Chemist, Chemist

- Ultrafast photo induced electron transfer studies of biomimetic compounds.
- Developed regeneratively amplified femtosecond Ti:Sapphire laser system for transient absorbance.
- Developed solid-state tunable laser for resonance Raman measurements

Princeton University – Chemistry Department *1988-1990*
Postdoc, Assistant Chemist, Chemist

- Raman spectroscopy of heme-like molecules
- Development of fiber optic based spectrometer for simultaneous Raman and absorption measurements

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Selected Publications

Selected from 110+ publications:

1. "Development Characteristics of Polymethyl Methacrylate in Alcohol/Water Mixtures: A Lithography and Raman Spectroscopy Study", L. E. Ocola, M. Costales, and **D. Gosztola**; *Nanotechnology*, **2016**, 27, 035302.
2. "Linking Group Influences Charge Separation and Recombination in all-Conjugated Block Copolymer Photovoltaics", J. W. Mok, Y.-H. Lin, K. G. Yager, A. D. Mohite, W. Nie, S. B. Darling, Y. Lee, E. Gomez, **D. Gosztola**, R. D. Schaller, and R. Verduzco; *Adv. Funct. Mater.*, **2015**, 25(35), 5578–5585.
3. "Photoexcited Carrier Dynamics of In2S3 Thin Films", R. McCarthy, R. Schaller, **D. Gosztola**, G. Wiederrecht, and A. Martinson; *J. Phys. Chem. Lett.*, **2015**, 6, 2554–2561.
4. "A Raman-based Investigation of the Fate of Li2MnO3 in Lithium- and Manganese-Rich Cathode Materials for Lithium Ion Batteries", Q. Wu, V. Maroni, **D. Gosztola**, D. J. Miller, D. Dees, and W. Lu.; *J. Electrochem. Soc.*, **2015**, 162(7), A1255-A1264.
5. "Enhancement of Local Piezoresponse in Polymer Ferroelectrics via Nanoscale Control of Microstructure", Y. Y. Choi, P. Sharma, C. Phatak, **D. J. Gosztola**, Y. Liu, J. Lee, A. Gruverman, S. Ducharme, and S. Hong; *ACS Nano*, **2015**, 9(2), 1809–1819.
6. "Visualizing the Nonequilibrium Dynamics of Photoinduced Intramolecular Electron Transfer with Femtosecond X-ray Pulses", S. E. Canton, K. S. Kjær, G. Vankó, T. B. van Driel, S. Adachi, A. Bordage, C. Bressler, P. Chabera, M. Christensen, A. O. Dohn, A. Galler, W. Gawelda, **D. Gosztola**, K. Haldrup, T. Harlang, Yizhu Liu, K. B. Møller, Z. Németh, S. Nozawa, M. Pápai, T. Sato, T. Sato, K. Suarez-Alcantara, T. Togashi, K. Tono, J. Uhlig, D. A. Vithanage, K. Wärnmark, M. Yabashi, J. Zhang, V. Sundström* and M. M. Nielsen; *Nature Commun.*, **2015**, 6, 6359.
7. "Selective Functionalization of the nanogap of a Plasmonic Dimer", X. Zhou, C. Deeb, S. Kochtcheev, G. Wiederrecht, P.-M. Adam, J. Béal, J. Plain, **D. Gosztola**, J. Grand, N. Felidj, H. Wang, A. Vial, and R. Bachelot; *ACS Photonics*, **2015**, 2(1), 121-129.
8. "Exceptional Enhancement of Raman Scattering on Silver Chlorobromide Nanocube Photonic Crystals: Chemical and Photonic Contributions", Z. Li, **D. J. Gosztola**, C.-J. Sun, S. M. Heald, and Y. Sun; *J. Mat. Chem. C*, **2015**, 3(11), 2455-2461.
9. "Photo-excited Carrier Dynamics of Cu2S Thin Films"; S. C. Riha, R. D. Schaller, **D. J. Gosztola**, G. P. Wiederrecht, and A. B. F. Martinson; *J. Phys. Chem. Lett.*, **2014**, 5(22), 4055–4061.
10. "Vibrational Dynamics of the Host Framework in Sn Clathrates", B. M. Leu, M. Sturza, M. Y. Hu, **D. Gosztola**, V. Baran, T. F. Fässler, and E. E. Alp; *Phys. Rev. B.*, **2014**, 90, 104305.
11. "Symmetrical Impedance Study on Inactivation Induced Ageing of Lithium Electrodes for Rechargeable Batteries", J.-J. Woo, V. Maroni, G. Liu, J. T. Vaughey, **D. Gosztola**, K. Amine, and Z. Zhang; *J. Electrochem. Soc.*, **2014**, 161(5), A827-A830.
12. "Stimuli-responsive Magnetic Nanomicelles as Multifunctional Therapeutic and Imaging Agents," D-H. Kim, E. A. Vitol, J. Liu, S. Balasubramanian, **D. J. Gosztola**, E. Cohen, V. Novosad, and E. A. Rozhkova; *Langmuir*, **2013**, 29(24), 7425–7432.
13. "CO2 Pre-activation in Photo-induced Reduction Via Surface Functionalization of TiO2 Nanoparticles," D. Finkelstein-Shapiro, S. J. Petrosco, N. Dimitrijevic, **D. Gosztola**, K. A. Gray, T. Rajh, P. Tarakeshwar, and V. Mujica; *J. Phys. Chem. Lett.*, **2013**, 4(3), 475–479.

Patents

- No. 8,922,094 B2 *Microelectromechanical (MEMS) Manipulators for Controlling Nanoparticle Coupling Interactions*. D. Lopez, G. Wiederrecht, **D. Gosztola**, and D. Mancini
- No. 5,539,100 *Organic Solid State Switches Incorporating Porphyrin Compounds and Method for Producing Organic Solid State Optical Switches*. M. R. Wasielewski, G. L. Gaines III, M. P. Niemczyk, D. G. Johnson, **D. J. Gosztola**, and M. P. O'Neil