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Theme: Nanophotonics

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**Research Summary:**

Current research focuses on the new physical phenomena that can arise when light interacts with nanomaterials. By designing, fabricating, and optically characterizing hybrid nanostructures, we have the potential to achieve unprecedented control over the flow of energy on the nanometer scale. Optical measurements on the single-nanostructure level and on femtosecond time scales provide otherwise inaccessible information about the relationship between nanoscale structure and physical properties.

**Selected Recent Publications:**

M. Pelton, J. Aizpurua, and G. W. Bryant, "Metal-nanoparticle plasmonics," *Laser Photonics Rev.* **2**, 135 (2008).

I. Jung, M. Vaupel, M. Pelton, R. Piner, D. A. Dikin, S. Stankovich, J. An, and R. S. Ruoff, "Characterization of thermally reduced graphene oxide by imaging ellipsometry," *J. Phys. Chem. C* **112**, 8499 (2008).

I. Jung, M. Pelton, R. Piner, D. A. Dikin, S. Stankovich, S. Watcharotone, M. Hausner, and R. S. Ruoff, "Simple approach for high-contrast optical imaging and characterization of graphene-based sheets," *Nano Lett.* **7**, 3569 (2007).

M. Pelton, G. Smith, N. F. Scherer, and R. A. Marcus, "Evidence for a diffusion-controlled mechanism for fluorescence blinking of colloidal quantum dots," *Proc. Natl. Acad. Sci. USA* **104**, 14249 (2007).

K. C. Toussaint, Jr., M. Liu, M. Pelton, J. Pesic, M. J. Guffey, P. Guyot-Sionnest, and N. F. Scherer, "Plasmon resonance-based optical trapping of single and multiple Au nanoparticles," *Optics Express* **15**, 12017 (2007).