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Research Summary:

- Synthesis and characterization of metallic and metal oxide nanoparticles.
- Oligonucleotide synthesis.
- Modification of nanoparticle surfaces with biomolecules and small molecules.
- Study of the chemical and physical properties of conjugated nanoparticle-biomolecule and nanoparticle-small molecule structures (e.g., optical, electron transfer).
- Use of functionalized nanomaterials in the areas of biology, energy, and catalysis.

Selected Recent Publications:

S. J. Hurst; H. D. Hill; R. J. Macfarlane; J. Wu; V. P. Dravid; C. A. Mirkin. "Synthetically Programmable DNA Binding Domains in Aggregates of DNA-Functionalized Gold Nanoparticles," *Small* **2009**, 5, 2156.

J. E. Millstone; **S. J. Hurst;** G. S. Métraux; J. I. Cutler; C. A. Mirkin. "Colloidal Gold and Silver Triangular Nanoprisms," *Small* **2009**, 5, 646.

H. D. Hill; **S. J. Hurst;** C. A. Mirkin. "Curvature-Induced Base Pair "Slipping" Effects in DNA-Nanoparticle Hybridization," *Nano Lett.* **2009**, 9, 317.

S. J. Hurst; H. D. Hill; C. A. Mirkin. "Three-Dimensional Hybridization with Polyvalent DNA-Gold Nanoparticle Conjugates," *J. Am. Chem. Soc.* **2008**, 130, 12192.

S. J. Hurst; M. S. Han; A. K. R. Lytton-Jean; C. A. Mirkin "Screening the Sequence Selectivity of DNA-Binding Molecules using a Gold Nanoparticle-Based Colorimetric Approach," *Anal. Chem.* **2007**, 79, 7201.

S. J. Hurst; A. K. R. Lytton-Jean; C. A. Mirkin. "Maximizing DNA Loading on a Range of Gold Nanoparticle Sizes," *Anal. Chem.* **2006**, 78, 8313.

S. J. Hurst; E. K. Payne; L. Qin; C. A. Mirkin. "Multisegmented One-Dimensional Nanorods Prepared By Hard Template Synthetic Methods," *Angew. Chem. Int. Ed.* **2006**, *45*.