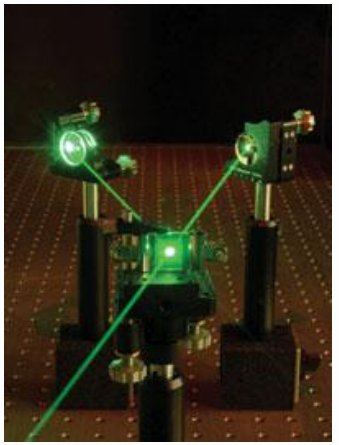
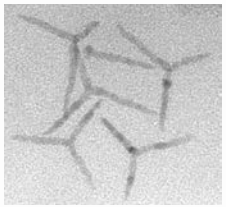
DEPARTMENT OF CHEMISTRY

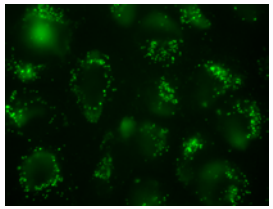
Photonic Materials and Characterization

Research Topics

- Photorefractive materials
  - Photosensitization with nanocrystals to enhance the spectral response
  - Enhancement of response time for real-time applications
- Holographic Characterizations
  - Degenerate four-wave mixing
  - Two-beam coupling
  - Response time
- Nanomaterials
  - Synthesis and characterization of narrow band-gap semiconductor nanocrystals
  - Exotic geometries such as core/shell, etc.
- Photoconductive materials
  - Quantification of quantum efficiency
  - Onsager modeling
  - Time-of-flight mobility characterizations







Photosensitization of optical composites using spectrally tailored semiconductor nanocrystals

PoC

- Jeffrey Winiarz, Assoc. Prof., Chemistry
- Phone: 573-341-6733
- Email: winiarzj@mst.edu

Funding

- NIH, US Army, Missouri Research Board, IGERT

Keywords

- Photorefractive, Photoconductive, Holography, Nanomaterials

Significant achievements

- Moon, Jong-Sik; Liang, Yichen; Stevens, Tyler E.; Monson, Todd C.; Huber, Dale L.; Mahala, Benjamin D.; Winiarz, Jeffrey G.; "Off-Resonance Photosensitization of a Photorefractive Polymer Composite Using PbS Nanocrystals" Journal of Physical Chemistry C 2015, 119, 13827-13835.
- Liang, Yichen; Moon, Jong-Sik; Mu, Ruipu; Winiarz, Jeffrey G.; "Functionalization of CdSe semiconductor nanocrystals with organic charge-transporting ligands" Journal of Materials Chemistry C: Materials for Optical and Electronic Devices 2015, 3, 4134-4140.

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