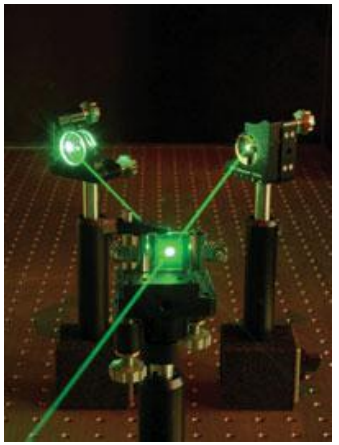
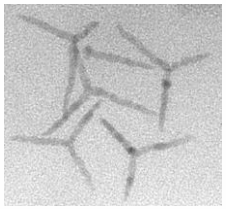
DEPARTMENT OF CHEMISTRY

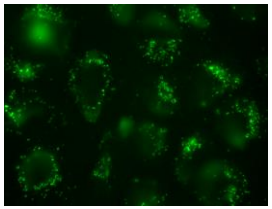
Photonic Materials and Characterization

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

- **Liang, Yichen; Winiarz, Jeffrey G.; "Practical correction of a phase-aberrated laser beam using a triphenyldiamine-based photorefractive composite" *Applied Physics B: Lasers and Optics* 2017, 123, 1-6.**
- **Moon, Jong-Sik; Stevens, Tyler E.; Monson, Todd C.; Huber, Dale L.; Jin, Sung-Ho; Oh, Jin-Woo; Winiarz, Jeffrey G.; "Sub-Millisecond Response Time in a Photorefractive Composite Operating under CW Conditions" *Scientific Reports* 2016, 6, 30810.**

MISSOURI S&T