

Christopher Tabor
Ph.D. Candidate

Personal Contact Information

800 Peachtree Street NW Unit 2405
Atlanta, GA 30308
(770) 714-9817

Work Contact Information

901 Atlantic Drive
Atlanta, GA 30332
(404) 894-4009

gtg911v@mail.gatech.edu

Education

Ph.D. Physical Chemistry, Georgia Institute of Technology, Atlanta, GA
Doctoral Thesis: **Optical and Catalytic Properties of Nanoparticles**
Advisor: **Dr. Mostafa A. El-Sayed**
(07/04-Present), Expected Graduation: August 2009 **GPA: 3.7**

B.S. Chemical Physics, with an emphasis in Chemistry and Mathematics
Centre College, Danville, KY (08/00-05/04) **GPA: 3.4**

Additional Relevant Graduate Level Courses:

- Management of Technology, Georgia Institute of Technology
- Analysis of Emerging Technologies, Georgia Institute of Technology

Publications

1. Mahmoud, Mahmoud; Tabor, Christopher; El-Sayed, Mostafa A. **SERS enhancement by aggregated silver nanocube monolayers assembled by the Langmuir-Blodgett technique at different surface pressures.** *Journal of Physical Chemistry ASAP*
2. Tabor, Christopher; Murali, Raghunath; Mahmoud, Mahmoud; El-Sayed, Mostafa A. **On the use of plasmonic nanoparticle pairs as a plasmon ruler: The dependence of the near-field dipole plasmon coupling on nanoparticle size and shape.** *Journal of Physical Chemistry A* **2009**, *113*, 1946-1953.
3. Yashan, H.; Eremenko, A.; Smirnova, N.; Suzer, S.; Ertas, G; Tabor, C. **Morphology and Optical Properties of Thin Silica Films Contained Bimetallic Ag/Au Nanoparticles.** *Theoretical and Experimental Chemistry*: (Accepted) **2008**
4. Tabor, Christopher; Narayanan, Radha; El-Sayed, Mostafa A. **“Catalysis with transition metal nanoparticles in colloidal solution: Heterogeneous or homogeneous”**, **2008**, Model Systems in Catalysis: From Single Crystals and Size-Selected Clusters to Supported Enzyme Mimics. *Springer* In Press (**Invited Book Chapter**)
5. Yashan, Halyna; Eremenko, Anna; Smirnova, Natalia; Krylova, Galina; Huang, Wenyu; and Tabor, Christopher; **Optical Spectra and Morphology of Photochemically Produced Ag/Au Bimetallic Clusters.** *Sol-Gel Methods for Materials Processing*. p. 473-480, **2008**.

6. Narayanan, Radha; Tabor, Christopher; El-Sayed, Mostafa A. **Can the observed changes in the size or shape of a colloidal nanocatalyst reveal the nanocatalysis mechanism type: Homogeneous or Heterogeneous?** *Topics in Catalysis* **2008** 48(1-4) 60-74. (Invited Review Article)
7. Mahmoud, Mahmoud; Tabor, Christopher; El-Sayed, Mostafa A; Ding, Yong; Wang, Zhong L. **A new catalytically active colloidal platinum nanocatalyst: The multiarmed nanostar single crystal.** *Journal of the American Chemical Society* **2008**, 130(14) 4590-4591.
8. Tabor, Christopher; Qian, Wei; El-Sayed, Mostafa A. **Dependence of the threshold energy of femtosecond laser ejection of gold nanoprisms from quartz substrates on the nanoparticle environment.** *Journal of Physical Chemistry C* **2007**, 111(25) 8934.
9. Eustis, Susie; Krylova, Galina; Smirnova, Natalie; Eremenko, Anna; Tabor, Christopher; Huang, Wenyu; El-Sayed, Mostafa A. **Using silica films and powders modified with benzophenone to photoreduce silver nanoparticles.** *Journal of Photochemistry and Photobiology, A: Chemistry* (2006), 181(2-3), 385-393.

Technical Skills

- **Nanoparticle Fabrication/Synthetic Techniques:** Photolithography (PL); Electron Beam Lithography (EBL); Software Pattern Writing for EBL; Nanosphere Lithography (NSL); Colloidal nanoparticle reduction techniques (gold spheres and rods; platinum spheres, cubes, and prisms); Langmuir-Blodgett (LB) Deposition
- **Micro/Nano characterization Techniques.** UV-Vis-NIR Absorbance, Fluorescence, Atomic Force Microscopy (AFM), Transmission Electron Microscopy (TEM), High Resolution Transmission Electron Microscopy (HRTEM), Scanning Electron Microscopy (SEM), Profilometry, Confocal Microscopy, Thin Film Characterization (Refractometry and Ellipsometry)
- **Chemical Analysis.** Raman and Surface Enhanced Raman Scattering Spectroscopy (SERS), High Pressure Liquid Chromatography (HPLC), FT-IR Spectroscopy, Attenuated Total Reflection (ATR) FT-IR
- **Cleanroom Processing:** Spin Coating, Reactive Ion Etching (RIE), Wet Chemical Etching, Metal Deposition, Thermal Processing, Nitride Deposition.
- **Ultrafast / Pulsed Laser Experience.** Nd:YAG Laser and Pumped MOPO Selected Wavelength Systems, Ti:Sapphire Femtosecond Laser and Pumped TOPAS Selected Wavelength Systems
- **Simulation and Theoretical Modeling.** DDA method - DDSCAT6.1 code

Research Presentations

- Tabor, C.; Mahmoud, M.; Dreaden, E.; Murali, R.; El-Sayed, M.; “The Effect of Nanoparticle Shape on Dipole Plasmonic Coupling” Optical Metamaterials Workshop, Boulder, CO (September 2008)
- Tabor, C.; Mahmoud, M.; Dreaden, E.; Murali, R.; El-Sayed, M.; “The Effect of Nanoparticle Shape on Dipole Plasmonic Coupling” 236th **American Chemical Society National Meeting**, Philadelphia, PA (August 2008)
- Tabor, C.; Qian, W.; El-Sayed, M.A.; “Combining Lithographic and Photothermal Femtosecond Laser Ejection Techniques of Gold Nanoparticles to Synthesize Monodisperse Colloids”. 234th **American Chemical Society National Meeting**, Boston, MA (August, 2007)
- Tabor, C.; Qian, W.; El-Sayed, M.A.; “The Synthesis of Highly Monodisperse Colloidal Solutions of Nanoprisms: Using Femtosecond Laser Pulses and Nanosphere Lithography”. Georgia Institute of Technology, Graduate Student Symposium, Atlanta GA (March 2007)
- Tabor, C.; Qian, W.; El-Sayed, M.A.; “Photothermal Ejection of Gold Nanoprisms from Quartz Substrates into Liquid Media”. Electronic Processes in Organic Materials, Gordon Research Conference, Mount Holyoke College (July 2006).

Oral Presentations

- Tabor, Christopher "Some Radiative and Non-Radiative Properties of Plasmonic Nanoparticles: From Plasmon Driven Motion to Plasmonic Coupling for Advanced Plasmonic Rulers". The Ohio State University, **Invited Speaker: Coherent Seminar 2009** (February 2009).
- Tabor, C.; Qian, W.; El-Sayed, M.A.; “Creating Highly Monodisperse Colloidal Nanoparticle Solutions: Combining Lithographic and Photothermal Femtosecond Laser Ejection Techniques”. Environmental and Biological Applications of Lasers (EBAL) 2008, **Cairo, Egypt** (January, 2007)
- Tabor, C.; “Chemical Advances in Nanolithography” Ph. D. Candidacy proceedings. (November 2005)

Research Experience

- **Georgia Institute of Technology**, Atlanta, GA, USA. Optical and Catalytic Properties of Supported Noble Metal Nanoparticles (June 2004 – Present)
- **Oak Ridge National Laboratory**, Oak Ridge, TN, USA. Synthesis and characterization of ZnS nanoparticles: Investigation into size dependent fluorescence properties and various optical measurements. (June 2003 – August 2003)

Leadership and Teaching Experience

- **Mentor to Undergraduate Research Assistant:** Project Title: Plasmonic Coupling in Nanorod Dimer Assemblies as a Function of Orientation (June 2008-Present)
- **Summer Mentor to Undergraduate Intern:** Project Title: Kinetic Studies of the Catalysis of Platinum Nanoparticles of Various Shapes Analyzed by Raman Spectroscopy (June 2007 – August 2007)
- **Summer Mentor to NNIN Undergraduate Intern:** Project Title: A Kinetic Study of the Catalysis by Gold Nanoparticles Supported on a Substrate (June 2006 – August 2006)
- **Chemical Waste Management Captain:** Laser Dynamics Laboratory (August 2007-Present)
- **Cleanroom Tour Leader.** Introduced Exceptional High School Students to Current Research Completed inside the Microelectronics Research Center Cleanroom (April 2007)
- **Teaching Assistant,** General Chemistry Experimental Lab, Georgia Institute of Technology (08/04-12/04)
- **General Chemistry Tutor,** General Chemistry Student Tutor, Centre College (08/02-04/03)

Honors and Awards

- **Invited Coherent Seminar Graduate Student Speaker** – The Ohio State University, Spring 2009
- **American Chemical Society Outstanding Student Poster** – 236th National ACS Meeting Fall 2008.
- **First Runner-Up** Georgia Institute of Technology Graduate Student Symposium – Competitive Research Poster Competition 2007
- **GAANN** (Graduate Assistance in Areas of National Need) - Financial Stipend Award. (08/04-08/05)
- **Centre Fellowship Award** – (4 years) Financial Award for Outstanding Undergraduates (08/00-05/04)
- **KHEES Scholarship Award** – (4 years) Financial Award for Outstanding Undergraduates (08/00-05/04)