

Sibel Ebru Yalcin

Ph.D, Post-Doctoral Research Associate

Center for Integrated Nanotechnologies (CINT)

Los Alamos National Laboratory (LANL)

Sandia National Laboratory, Albuquerque, NM

Cell Phone: (413) 658-5194,

Office Phone: (505) 667-0924

Email: seyalcin@lanl.gov

Career Interest

Scanning Probe Microscopy, Instrumentation, Experimental Condensed Matter Physics, Nano Optics, Nanotechnology, Biophysics

Specializations

- *Instrumentation and Building Time Resolved Single Molecule Spectroscopy Set-up*
- *Single Molecule Imaging of Core/Shell Semiconductor Quantum Dots (QDs), Single Walled Carbon Nanotubes and Single Graphene Oxide Flakes*
- *Atomic/Electrostatic Force Microscopy (AFM/EFM) and Kelvin Probe Force Microscopy (KPFM) on inorganic and organic as well as biological samples*
- *Near-Field Nano-Imaging*
- *Building Femtosecond Photon Scanning Tunneling Microscopy (fsPSTM)*
- *Heterodyne Near-Field Scanning Optical Microscopy (hNSOM)*
- *Tracking 50 fs Surface Plasmon Pulse Propagation in Plasmonic Structures*
- *Ultrafast Pump-Probe Spectroscopy*

Education

Ph.D in Physics: University of Massachusetts, Amherst **2006-2010**

Thesis: *Characterization and Interactions of Ultrafast Surface Plasmon Pulses*

Advisor: *Marc Achermann, Assistant Professor of Physics*

M.S. in Physics: Bogazici University, Istanbul, Turkey **2002-2006**

Thesis: *Behavior of Earthquakes and Their Aftershocks in Northern Turkey*

Advisor: *Levent Kurnaz, Professor of Physics*

B.S. in Astronomy and Space Sciences: University of Istanbul, Turkey **1998-2002**

Recipient of the highest honors from the University

Gold medal recipient in the Science Faculty

Research Experience

***Post-Doctoral Research Associate in Center for Integrated Nanotechnologies (CINT): 2012-present
Los Alamos National Laboratory (LANL)***

1st Project title: Building Single Molecule Time-Resolved Photoluminescence Set-up for Single Molecule Imaging of Single Walled Carbon Nanotubes

2nd Project title: Photoluminescence Imaging of Oxygen Doped Individual Single-Walled Carbon Nanotubes

Advisor: Dr. Stephen K. Doorn, MPA-CINT Staff Scientist, LANL

3rd Project title: Studying Charge Injection and Migration on Single Partially Reduced Graphene Oxide Flakes using EFM

4th Project title: Observing Photo Induced Fluorescence Enhancement on Single Layer Graphene Oxide

5th Project title: Mapping of the Surface Potential of Reduced Graphene Oxide based Devices at the Nanometer Scale using KPFM

Advisor: Dr. Aditya Mohite, MPA-11 Staff Scientist, LANL

Post-Doctoral Research Associate in Physics & Chemistry: 2010-2012

Energy Frontier Research Center (EFRC)

University of Massachusetts, Amherst

Project title: Single Molecule Studies and Charge-Force Imaging (EFM, KPFM) of Charged Semiconductor Quantum Dots

Advisor: Michael D. Barnes, Professor of Chemistry, Adjunct Professor of Physics

Doctoral Research, 2006-2010

Physics Dept, University of Massachusetts, Amherst

1st Project title: Characterizing Femtosecond Surface Plasmon Pulses That Are Excited Through Conventional Kretschmann Prism Coupling Technique on Thin Extended Metal Films, **2006-2008**

2nd Project title: Visualizing Ultrafast Surface Plasmon Pulse Propagation in Photonic Devices Based on Metal Nanostructures, **2008-2010**

3rd Project title: Block-Copolymer-Based Plasmonic Nanostructures, **2009**

Advisor: Marc Achermann, Professor of Physics

Journal Publications

- **Sibel Ebru Yalcin**, Charudatta Galande, Hisato Yamaguchi, Pulickel M. Ajayan, Andrew Dattelbaum, Stephen K. Doorn and Aditya Mohite, “Probing the Charge Migration in Progressively Reduced Graphene Oxide Flakes”, Manuscript to be submitted to **ACS Nano** (2013)
- Nikhil S. Malvankar, **Sibel Ebru Yalcin**, Mark T. Tuominen and Derek R. Lovley, “Direct Visualization of Charge Propagation Along Native Bacterial Protein Nanofilaments”, Manuscript to under review, **Nature Nanotechnology** (2013)
- **Sibel Ebru Yalcin**, Boqian Yang, Joelle A. Labastide and Michael D. Barnes, “Electrostatic Force Microscopy and Spectral Studies of Electron Attachment to Single Quantum Dots on Indium Tin Oxide Substrates”, **The Journal of Physical Chemistry C** 116 (29), pp 15847-15853, (2012)
- **Sibel Ebru Yalcin**, Joelle A. Labastide, Danielle L. Sowle and Michael D. Barnes, “Spectral Properties of Multiply Charged Semiconductor Quantum Dots”, **Nano Letters** 11 (10), pp 4425-4430, (2011)
Listed by Nano Letters in the top 20 most read, most downloaded articles
- Peter. A. Mistark, Soojin Park, **Sibel Ebru Yalcin**, Dong H. Lee, Ozgur Yavuzcetin, Mark T. Tuominen, Thomas P. Russell and Marc Achermann, “Block-Copolymer-Based Plasmonic Nanostructures”, **ACS Nano** 3 (12), pp 3987-3992 (2009)
- **S. E. Yalcin**, Y. Wang, M. Achermann, “Spectral bandwidth and phase effects of resonantly excited ultrafast surface plasmon pulses”, **Applied Physics Letters** 93, 101103 (2008)
Selected for Virtual Journal of Ultrafast Science, 7 (10)

Conference Proceedings

- **Sibel Ebru Yalcin**, Yanzen Wang, David Oullette, and Marc Achermann, “Ultrafast Surface Plasmon Pulses and Their Limitations Using Prism Coupling Excitation”, **Lasers and Electro-Optics/Quantum Electronics Laser Science Conference (CLEO/OELS) and Photonic Applications Systems Technologies, OSA**, (2008)
- **Sibel Ebru Yalcin** and Levent Kurnaz, “The Application of the Modified Form of Bath’s Law to North Anatolian Fault Zone (NAFZ)”, **Statistical Physics Conference, Istanbul Kultur University, Istanbul, Turkey**, (2006)

Technical Presentations

- “Photoluminescence Imaging of Oxygen Doped Individual Single-Walled Carbon Nanotubes”, **American Physical Society Meeting, 2014**, Denver, CO, March 2014
- “Photo Induced Fluorescence Enhancement and Correlated FTIR of Single Layer Graphene Oxide”, **American Physical Society Meeting, 2014**, Denver, CO, March 2014
- “Observing Charge Migration in Progressively Reduced Graphene Oxide Devices” **The 2013 Workshop on Nanotube Optics and Nanospectroscopy (WONTON 2013)**, **Sante Fe, NM**, June 2013
- “Direct Observation of Charge Migration in Progressively Reduced Graphene Oxide using Electrostatic Force Microscopy (EFM)”, **Material Research Society Meeting**, San Francisco, CA, April 2013
- “Probing the Charge Migration in Progressively Reduced Graphene Oxide Using Electrostatic Force Microscopy”, **American Physical Society Meeting, 2013**, Baltimore, MD, March 2013
- “Single Molecule Studies and Charge-Force Imaging of Charged Semiconductor Quantum Dots”, **Energy Frontier Research Center (EFRC)**, University of Massachusetts Amherst, February 2012
- “Charging of Quantum Dots and Tracking of Ultrafast Surface Plasmon Pulses”, **CINT, Los Alamos National Laboratory**, February 2012
- “Visualization of Ultrafast Surface Plasmon Pulses Using a Near-Field Scanning Microscope”, poster presentation, **Gordon Research Conference, Plasmonics Session**, Colby College, Waterville, ME, June 2010
- “Characterization and Interactions of Ultrafast Surface Plasmon Pulses”, “invited talk” to **Chemistry Department, Radiation Laboratory**, University of Notre Dame, April 2010
- “Characterization and Interactions of Ultrafast Surface Plasmon Pulses”, “invited talk” to **Photonics Community, Division of Engineering**, Brown University, March 2010
- “Characterization of Resonantly Excited Ultrafast Surface Plasmon Pulses”, “invited talk” to **Center for Hierarchical Manufacturing**, University of Massachusetts, Amherst, November 2009
- “Bandwidth and Phase Effects of Ultrafast Surface Plasmon Pulses” , **Nanomanufacturing Summit**, Boston, MA, May 2009
- “Bandwidth and Phase Effects of Ultrafast Surface Plasmon Pulses”, **Material Research Society Meeting**, San Francisco, CA, April 2009
- “Ultrafast Surface Plasmon Pulses and Their Limitations Using Prism Coupling Excitation”, **CLEO/OELS Conference**, San Jose, CA, May 2008

- “The Application of the Modified Form of Bath’s Law to North Anatolian Fault Zone (NAFZ)”, “invited talk” to Statistical Physics Conference, Istanbul Kultur University, Turkey, April 2006

Awards

- Los Alamos National Laboratory Outstanding Achievement Award **2013**
- 1st place at Postdoc Research Day Poster Competition **2013**
Los Alamos National Laboratory
- Travel Grant (300\$) for MRS 2009 San Francisco Meeting, **2009**
Graduate School, University of Massachusetts, Amherst
- Selected to Represent Student Community at the Graduation **2002**
University of Istanbul, Turkey
- Outstanding Student Award **2002**
University of Istanbul, Turkey
- Highest GPA in the graduating class and in the Science Faculty **1999-2002**
University of Istanbul, Turkey
- Outstanding Student Fellowship, (3000\$) **1999-2002**
University of Istanbul, Turkey

Teaching Experience

Teaching Assistant, **2006-2008**

Physics Dept, University of Massachusetts, Amherst

- *Introductory and Advanced Physics Laboratories*
- *Introductory Learning Session*

Academic and Professional Activities

- *American Physical Society (APS) Membership* **2013-present**
- *Material Research Society (MRS) Membership* **2007-present**
- *Reviewer of Optics Express and Optics Letters* **2010-present**
- *Women and Minorities in Physics (WMP) Society Membership,* **2007-2011**
University of Massachusetts, Amherst
- *Reviewer for Chemistry Department Research Fest Poster Competition* **2010-2012**
University of Massachusetts, Amherst
- *Teaching Assistant, University of Massachusetts, Amherst* **2006-2007**
- *Research Assistant, University of Massachusetts, Amherst* **2007-2010**

References

1) Dr. Stephen K. Doorn

Science Partner Leader,
Center for Integrated Nanotechnologies
Science Thrust: Nanophotonics and
Optical Nanomaterials
Los Alamos National Laboratory
skdoorn@lanl.gov
(505) 667-2541

2) Dr. Aditya D. Mohite

Staff Scientist
Material Synthesis & Integration Devices,
Los Alamos National Laboratory
amohite@lanl.gov
(505) 665-2246

3) Prof. Michael D. Barnes

Professor of Chemistry
Adjunct Professor of Physics
University of Massachusetts, Amherst
mdbarnes@chem.umass.edu
(413) 577-3121

4) Prof. Marc Achermann

Assistant Professor of Physics
University of Massachusetts, Amherst
Current position:
Professor at Lucerne University
marc.achermann@hslu.ch

5) Prof. Mark T. Tuominen

Professor of Physics
Director, National Nanomanufacturing Network
Co-director, Center for Hierarchical Manufacturing and
MassNanoTech
University of Massachusetts, Amherst
tuominen@physics.umass.edu
(413) 545-1944