

Matthew G. Reuter

Eugene P. Wigner Fellow
Computer Science and Mathematics Division &
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Education

Northwestern University, Evanston, IL	Chemistry	Ph.D., 2011
Michigan Technological University, Houghton, MI	Chemistry, Mathematics	B.Sc., 2006

Professional Experience (ORNL = Oak Ridge National Laboratory)

2011/8 Eugene P. Wigner Fellow, Computer Science and Mathematics Division and Center for Nanophase Materials Sciences Division, ORNL

Professional and Synergistic Activities

2009–p Reviewer; Journal of Physical Chemistry, Journal of Computational Physics

Honors and Awards (ORNL = Oak Ridge National Laboratory, NU = Northwestern University)

2011 Eugene P. Wigner Fellowship, ORNL
2010 Edmund W. Gelewitz Award for Excellence in Research and Service, NU
2008 Donald E. Smith Award for Excellence in Graduate-Level Teaching, NU
2007 U.S. Department of Energy Computational Science Graduate Fellowship (DOE CSGF)

Selected Publications

1. A. J. Morris-Cohen, V. Vasilenko, V. A. Amin, M. G. Reuter, E. A. Weiss, "Model for Adsorption of Ligands to Colloidal Quantum Dots with Concentration-Dependent Surface Structure," *ACS Nano* **6**, 557-565 (2012).
2. M. G. Reuter, G. C. Solomon, T. Hansen, T. Seideman, M. A. Ratner, "Understanding and Controlling Crosstalk between Parallel Molecular Wires," *J. Phys. Chem. Lett.* **2**, 1667-1671 (2011).
3. M. G. Reuter, T. Seideman, M. A. Ratner, "Probing the Surface-to-Bulk Transition: A Closed-Form, Constant-Scaling Algorithm for Calculating Subsurface Green Functions," *Phys. Rev. B* **83**, 085412 (2011).
4. M. G. Reuter, "Closed-Form Green Functions, Surface Effects, and the Importance of Dimensionality in Tight-Binding Metals," *J. Chem. Phys.* **133**, 034703 (2010).
5. M. G. Reuter, M. Sukharev, T. Seideman, "Laser Field Alignment of Organic Molecules on Semiconductor Surfaces: Toward Ultrafast Molecular Switches," *Phys. Rev. Lett.* **101**, 208303 (2008).

Research Interests

1. *Surface Effects, Defects, & Disorder in Nanoscale Systems.*
Investigating the decay lengths of surface effects in nanoscale (low-dimensional) systems;

calculating the effects of disorder in these systems; simulating molecular interactions with low-dimensional systems; developing efficient algorithms for such studies.

2. *Electric Current through Molecular Transport Junctions.*

Comparing the current-voltage spectra for devices with metal or semiconductor electrodes; quantifying cooperative effects between molecular wires; calculating open-system boundary conditions for such systems; extracting physical/chemical information from experimental data.