

**Ian J. Gelfand, Ph.D.**  
**Associate**

**Professional Profile**

Dr. Ian Gelfand is an Associate in Exponent's Electrical Engineering and Computer Science practice. Dr. Gelfand has expertise in the area of electrical and mechanical properties of materials, materials selection, metallurgy, and materials characterization.

Dr. Gelfand received a Ph.D., and an S.M. in Applied Physics from Harvard University, where his thesis research focused on the fabrication and testing of strained semiconductors and III-V semiconductor technology. He has extensive experience with photolithography and electron-beam lithography, thin film deposition, optoelectronic devices, and micro electromechanical systems (MEMS). Dr. Gelfand has extensive experience with characterization tools such as Scanning Electron Microscopy (SEM), Transmission Electron Microscopy (TEM), and Atomic Force Microscopy (AFM), in addition to vacuum systems and measurements with cryogenic systems.

Dr. Gelfand took and taught courses on MEMS at the Massachusetts Institute of Technology and took a year long course on science-based businesses at Harvard Business School, which concluded with an entry into the Harvard Business School Business Plan Competition.

Prior to graduate school, Dr. Gelfand was a Fulbright Scholar in Tuebingen, Germany, where he worked on nano-electromechanical systems (NEMS) based on carbon nanotubes. As an undergraduate at the University of Pennsylvania, he received numerous awards from the National Science Foundation, including two consecutive "Research Experience for Undergraduates (REU)" grants.

**Academic Credentials and Professional Honors**

Ph.D., Applied Physics, Harvard University, 2009

S.M., Applied Physics, Harvard University, 2003

B.S.E., Materials Science and Engineering, University of Pennsylvania (*cum laude*), 2001

Fulbright Scholar, Tuebingen, Germany, 2001–2002

## Languages

German – Conversational

## Publications

Gelfand IJ, Amasha S, Zumbuehl DM, Kastner MA, Kahow C, Gossard AC. Surface-gated quantum Hall effect in an InAs heterostructure. *Appl Phys Lett* 2006; 88:252105.

Amasha S, Gelfand IJ, Kastner MA, Kogan A. Kondo temperature dependence of the Kondo splitting in a single-electron transistor. *Phys Rev B* 2005; 72:045308.

Iannuzzi D, Gelfand I, Lisanti M, Capasso F. New challenges and directions in Casimir force experiments. 6<sup>th</sup> Workshop on Quantum Field Theory under the Influence of External Conditions (QFEXT03), Norman, OK, September 15–19, 2003.

Gelfand IJ, Hone JC, Radosajlevic M, Johnson AT. Flat contacts for carbon nanotube circuits. SUNFEST Technical Report to National Science Foundation, 1999.

## Presentations

Gelfand IJ, Liu J, Xie Y-H, Kastner MA. Electron transport in SiGe single electron transistors. American Physical Society, March 2007.

Gelfand IJ, Amasha S, Zumbuhl D, Kastner MA, Kahow C, Gossard AC. Surface-gated quantum Hall effect in an InAs Heterostructure. American Physical Society, March 2006.

Amasha S, Gelfand IJ, Kastner MA. Kondo-temperature dependence of the magnetic-field splitting of a Kondo peak in a single-electron transistor. American Physical Society, March 2005.

Granger G, Amasha S, Gelfand IJ, Zumbuehl D, Kogan A, Kastner MA, Marcus C. Nonequilibrium Kondo phenomena in single-electron transistors. *Frontiers in Nanoscale Science and Engineering (FNST)* Harvard University, Cambridge MA, October 25–26, 2004.

Gelfand IJ, Fischer JE, Hone J, Johnson AT. Molecular device engineering—Fabrication of a Nano-Electromechanical System. Presentation W4.3, Materials Research Society, April 2001.

Winnacker S, Gelfand IJ, Lefebvre J, Radosajlvec M, Hone J, Johnson AT. Controlled Molecular Device Engineering, F36.030 American Physical Society, 2000.

## **Prior Experience**

Research Assistant, Nanoscale Science and Engineering Center (NSEC), Harvard University, 2003–2009

Summer Intern, Ferro SI Inc, 2004

Research Assistant, Departments of Physics and Materials Science, University of Pennsylvania, 1999–2001

## **Professional Affiliations**

- Institute of Electronics and Electrical Engineers—IEEE
- Materials Research Society—MRS