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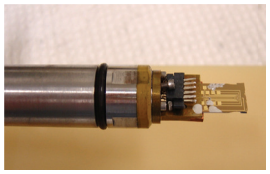
# POSTDOC POSITION AT THE *UNIVERSITY OF PENNSYLVANIA*
## Department of Materials Science and Engineering



Seeking a postdoctoral fellow in the area of;

**Nanowire Phase Change Memory-*in situ TEM studies of the phase change process*.**

The project would involve studying nanoscale phase transitions in confined geometries via in situ electron microscopy studies to observe the critical processes that lead to field-induced phase change phenomena. Using chemical composition and size-controlled nanowires, structural phase transitions will be studied. The scope of this project involves nanowire growth, characterization, device fabrication, electrical measurements, in situ electron mmicroscopy and theory/simulations. Candidates with PhD in any area of science and engineering can apply. However, people with a strong background in phase change memory devices and other device related areas will be preferred.

Please contact via email (**riteshag@seas.upenn.edu**) with a copy of your resume.

**Key References:**

Y. Jung, S.W. Nam, and R. Agarwal, "High Resolution Transmission Electron Microscopy Study of Electrically-Driven Phase Change Phenomena in $Ge_2Sb_2Te_5$ Nanowires", *Nano Letters,* 11, 1364 (2011).

M. Mitra, Y. Jung, and R. Agarwal, "Extremely Low Drift of Resistance and Threshold Voltage in Amorphous Phase Change Nanowire Devices", *Applied Physics Letters*, 96, 222111 (2010)

Y. Jung, C.-Y. Yang, S.-H. Lee and R. Agarwal, "Phase-Change Ge-Sb Nanowires: Synthesis, Memory Switching, and Phase-Instability", *Nano Letters*, 9, 2013 (2009).

Y. Jung, S.-H. Lee, D.-K. Ko, and R. Agarwal*, "Size-dependent surface-induced heterogeneous nucleation driven phase-change in Ge2Sb2Te5 nanowires", *Nano Letters*, 8, 3303 (2008).

Y. Jung, S.-H. Lee, A. T. Jennings, and R. Agarwal*, "Core-Shell Heterostructured Phase Change Nanowire Multi-state Memory", *Nano Letters*, 8, 2056 (2008)

S.-H. Lee, Y. Jung and R. Agarwal, "Highly-scalable nonvolatile and ultra-low power phase-change nanowire memory", *Nature Nanotechnology*, 2, 626 (2007).