Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

**Thermoelectric Power of Silicon Nanowires** HYUK JU RYU, DEBORAH PASKIEWICZ, SHELLEY SCOTT, MAX LAGALLY, MARK ERIKSSON, UNIVERSITY OF WISCONSIN-MADISON TEAM — Thermoelectric nanomaterials have been attracting considerable interest for the cooling of hotspots and the conversion of waste thermal energy into useful electrical energy. There is special interest in silicon thermoelectrics because of potential monolithic integration on microchips as well as opportunities in nanofabrication and bandstructure engineering. We present measurements of the thermoelectric power of silicon nanowires with different doping concentrations and the gate field effect. Because silicon heterostructures can have modulation in charge density and mobility along the charge path, we have fabricated and measured silicon/silicide, silicon/silicon-germanium, and hybrid orientation silicon heterostructures in the form of nanowires. Measurements of the thermoelectric power of these structures and the effects of the internal interfaces will be presented and compared with theoretical calculations. This work is supported by DOE, AFOSR, NZ-FRST, NDSEG, NSF, and SOITECH.

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Date submitted: 21 Nov 2008 Electronic form version 1.4