Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Detection of the transverse voltage associated with the spin Seebeck effect in ferromagnetic thin films AZURE D. AVERY, RUBINA SULTAN, DAIN BASSETT, University of Denver, MATTHEW R. PUFALL, National Institute of Standards and Technology, Boulder, CO, BARRY L. ZINK, University of Denver — The spin Seebeck effect, the generation of spin current in response to an applied thermal bias across a sample, is a novel effect involving spin current that is being researched in nanostructures for advances in spin caloritronics. Understanding the fundamental physics governing heat transport at the nanoscale is challenging because thermal properties of nanostructures are often difficult measurements to make. We present a novel technique for detecting the presence of a thermally generated spin current based on a micromachined thermal isolation platform. Our technique offers advantages including the ability to measure this effect in a reduced dimension sample, to reverse the thermal gradient, and to generate a large $\triangle T$ across the sample. We present results for a range of thin films and compare to previously reported similar larger scale structures. We discuss future experiments to probe the local nature of the spin Seebeck effect, additional thermal properties including the traditional Seebeck effect and thermal conductivity, and the application of our technique to an array of nanowires.

Azure Avery
University of Denver

Date submitted: 19 Nov 2010 Electronic form version 1.4