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Spin Seebeck effect in YIG-based systems GENE SIEGEL, MEGAN PRESTGARD, SHIANG TENG, ASHUTOSH TIWARI, University of Utah, Department of Materials Science & Engineering — Recently, the use of magnetic insulators (yttrium iron garnet, YIG) in conjunction with platinum has sparked interest in spintronics research. This is due to the existence of the spin Seebeck effect which could potentially be a source of pure spin current for spintronic devices. Furthermore, these coatings could potentially show the versatility of spintronics by acting as a spin-based thermoelectric generator, thereby providing a new method of transforming heat into power. However, there remain questions regarding the origins and legitimacy of the spin Seebeck effect. Moreover, recent publications claim that the observed effects are a manifestation of magnetic proximity effects in platinum and not a true SSE signal. Because of these concerns, we are providing supporting evidence that the voltages observed in the YIG/Pt films are truly SSE voltages. We are reaffirming claims that magnon transport theory provides an accurate basis for explaining SSE behavior. Finally, we illustrate the advantages of pulsed laser deposition, as these YIG films possess a large SSE voltage compared to those films grown using liquid phase deposition techniques.

Gene Siegel
Univ of Utah

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