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**Spin-Seebeck effect in amorphous ferromagnetic alloys**[1] HYUNGYU JIN, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH, ZIHAO YANG, ROBERTO MYERS, Department of Electrical and Computer Engineering, The Ohio State University, Columbus, OH, JOSEPH HEREMANS, Department of Mechanical and Aerospace Engineering, The Ohio State University, Columbus, OH — Since its first discovery in 2008 [1], continuous research on spin-Seebeck effect (SSE) has established a theory for the driving mechanisms of SSE: in the presence of a thermal gradient, the spin waves (magnons) present in ferromagnets are brought out of thermal equilibrium. It is suspected that their return to thermal equilibrium is what launches a spin flux, which then is converted into a voltage in a separate material by strong spin-orbit interactions. While it is proven that substrate phonons affect the spin-Seebeck signals [2], another possible mechanism that can drive magnons out of equilibrium can be magnon thermal conductivity. Here, to isolate the magnon and phonon contributions, we investigate the relation between SSE and magnon thermal conductivity in amorphous ferromagnetic alloys (Metglas). Because Metglas has high Curie temperature, yet mostly localized phonon modes, the magnon contribution to SSE is expected to be larger than in crystalline ferromagnets. Experimental SSE data as well as magneto-thermal conductivity data will be presented.

[1] K. Uchida et al., Nature 455, 778 (2008).
[2] C.M. Jaworski et al., PRL 106, 186601 (2011).

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