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Measuring spin diffusion length using spin Seebeck effect HARSHA KANNAN, XIN FAN, JOHN XIAO, Univ of Delaware — Ever since its discovery, spin Seebeck effect (SSE) has attracted plenty of attention. The conversion from thermal gradient to spin current has shown great potential in thermal energy harvesting. SSE can also be utilized as a source to generate pure spin current to unveil new physics. Here we show that it is possible to measure spin diffusion length of a heavy metal Pt by studying the SSE as a function of Pt layer thickness. The SSE signal first increases, peaks, and then decreases with increasing Pt layer thickness. By fitting with a drift-diffusion model, we obtain the spin diffusion length of Pt to be about 2nm, close to that obtained from other techniques. Moreover, we can insert a thin layer of Cu in order to remove the possible proximity effect. Similar spin-diffusion length is obtained from this measurement.

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