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Moderate Positive Spin Hall Angle in Uranium[1] MARTA ANGUERA, SIMRAN SINGH, ENRIQUE DEL BARCO, University of Central Florida, ROSS SPRINGELL, University of Bristol, CASEY W. MILLER, Rochester Institute of Technology — We will present results on FMR and voltage measurements of magnetic damping and the inverse spin Hall effect, respectively, in $Ni_{80}Fe_{20}$/Uranium bilayers. A pure spin current is injected into an Uranium film from the ferromagnetic resonance dynamics of the magnetization of an adjacent $Ni_{80}Fe_{20}$ (permalloy) film. The spin current generated is then converted into an electric field by the inverse spin Hall effect. Our results suggest a spin mixing conductance of order $2x10^{19}$ m^{-2} and a positive spin Hall angle of 0.004, which are both unexpected based on trends in d-electron systems. These results support the idea that materials with unfilled f-electron orbitals may require additional exploration for spin physics.

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