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Blocking of spin transport between $Ni_{80}Fe_{20}$ and Cu by a graphene interlayer WILL GANNETT, MARK W. KELLER, TOM SILVA, HANS NEMBACH, ANN CHIARAMONTI DEBAY, National Institute of Standards and Technology, Boulder, CO — By chemical vapor deposition on epitaxial thin films of Cu(111), we are able to produce continuous, large-grain monolayer graphene (Gr). We then sputter deposit $Ni_{80}Fe_{20}$ (Py) in a different chamber to create large area Cu/Gr/Py samples. We are able to avoid damaging the graphene during this process by varying the Py deposition angle, and we confirm this with Raman spectroscopy. Ferromagnetic resonance measurements with a vector network analyzer show no change in damping with varying Py thickness, while Py deposited directly on Cu(111) shows the typical increase in damping associated with spin pumping between Py and Cu. We interpret these results in terms of spin pumping, interfacial conductivity, and magnetic proximity effects.

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