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Magnetic coupling across various spacer layers probed by ferromagnetic resonance SEE-HUN YANG, IBM Almaden Research Center, MASAMITSU HAYASHI, National Institute for Materials Science, LI GAO, STUART PARKIN, IBM Almaden Research Center — Ferromagnetic resonance (FMR) is used to investigate the dynamical magnetic coupling between magnetic layers formed from an amorphous $Co_{56}Fe_{24}B_{20}$ alloy and from permalloy ($Ni_{81}Fe_{19}$) in sandwich structures. The ferromagnetic layers, each 10 nm thick, are separated by spacer layers formed from various non-magnetic metal and insulating materials including Cu, Pd, Pt, Ru, and MgO. The magnetization and magnetic anisotropy and the Gilbert damping are deduced from the ferromagnetic resonance signals by varying the applied magnetic field and the rf frequency. The magnetic layers are exchange coupled when the spacer layers are sufficiently thin. The critical thickness above which the layers are decoupled strongly depends on the spacer layer material. We show that dynamical exchange coupling due to spin pumping plays an important role.

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