Abstract Submitted
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Bias-independent spin signals in a tunnel-junction-based non-local spin valve[1] XIAOJUN WANG, HAN ZOU, L.E. OCOLA, R. DIVAN, YI JI[2] — A pure spin current can be generated in the non-magnetic component of a non-local spin valve (NLSV). It has been demonstrated recently that the pure spin current can be used for spin transfer torque and spin-Hall effects. A high spin current density is desirable for realizing these effects, and therefore a large d.c. bias current will be applied. It is essential to maintain high degree of spin polarization at a high bias current. It has been previously reported that the spin polarization decreases drastically in a tunnel-junction-based CoFe/Al/NiFe NLSV. The goal of this study is to investigate the dependence of spin signals upon a d.c. bias current in tunnel-junction-based Co/Cu/Co NLSV's. Submicron Co/Cu/Co NLSV's are fabricated by e-beam lithography combined with angle deposition. A layer of 2 nm Al_2O_3 is deposited at the Co/Cu interface to form a tunnel barrier. A spin signal $>$ 1mΩ is observed at room temperature (RT). A d.c. current up to 1.0mA is applied at both 4.2 K and RT. No change of spin signal is observed for an injection current density $> 10^6$ A/cm^2.

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