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Spin injection and transport in single layer graphene spin valves[1]
WEI HAN, WEI-HUA WANG, KEYU PI, KATHY MCCREARY, WENZHONG BAO, YAN LI, CHUN NING LAU, ROLAND KAWAKAMI, University of California, Riverside, ROLAND KAWAKAMI TEAM, CHUN NING LAU COLLABORATION — Graphene is an attractive material for spintronics due to its tunable carrier concentration and polarity, weak spin-orbit coupling, and the prediction of novel spin-dependent behavior. We investigate the spin injection and transport in single layer graphene (SLG) spin valves at room temperature. Raman spectroscopy is used to identify SLG. SLG spin valve devices are fabricated by growing cobalt electrodes, defined by electron beam lithography, on top of SLG. Nonlocal resistance measurements are performed on these SLG spin valve devices in order to study the spin injection and transport properties. Our results show that the nonlocal magnetoresistance (MR) is dependent on the gate voltage. Also, the nonlocal MR shows some variation as a function of DC bias current.

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