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Study of spin-polarized transport in layers of graphene[1] W.-H. WANG, Department of Physics and Astronomy, UC Riverside, K. PI, H. CHOI, P. WEI, J. SHI, R. KAWAKAMI, DEPARTMENT OF PHYSICS AND ASTRONOMY, UC RIVERSIDE COLLABORATION — Electron transport in graphene layers has drawn great attention recently due to the observation of 2D behavior and relativistic dispersion in these systems. Our attention is focused on spin-polarized transport in ferromagnet(FM)/graphene/FM devices in which the FM electrodes act as spin injectors and spin detectors. Specifically, the spin-polarized transport across graphene should be manifested as a dependence of resistance on the relative alignment of the FM electrode magnetizations (i.e. spin valve effect). Few-layer graphene (FLG) are extracted from kish graphite by sonication. FLGs are then dispersed and dried onto SiO2/Si substrate with pre-patterned electrodes. Atomic force microscopy, scanning electron microscopy and optical microscopy are used to characterize topographic properties and surface quality of FLG. FM electrodes are fabricated onto selected FLG using a combination of electron beam lithography and molecular beam epitaxy deposition in ultrahigh vacuum to ensure high quality magnetic materials and interfaces. We have performed initial electrical measurements and results from our studies will be discussed.

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