

SPIN SWITCHING IN Co/GRAPHENE/Ni**D. Kim^a, J. Yang^a, J. Hong^{a*}
C. Hwang^b, R. Q. Wu^c**^aDepartment of Physics, Pukyong National University
Busan 608-737, Korea^bCenter for nano-imaging technology, Korea Research Institute of Standards and Science
Daejeon 305-340, Korea^cDepartment of Physics, University of California
Irvine, CA 92697 USA^{a*} Corresponding author: J. Hong

Using the full potential linearized augmented plane wave (FLAPW) method, we have investigated the magnetic properties of Co/Graphene/Ni system. Here, the main issues to explore whether the magnetic exchange interaction between two magnetic layers can be manipulated by external carriers in Co/Graphene/Ni. It is found that the Co/Graphene/Ni shows an antiferromagnetic ground state when there is no external carriers. Very interestingly, we have obtained that the magnetic exchange interaction between Ni and Co layers can be manipulated to display from antiferromagnetic to ferromagnetic state by injecting external electrons. Besides, the calculated DOS feature indicates that the Co/Gr/Ni system may manifest quite different transport property by applying small bias voltage. For instance, the current parallel to the film surface can be completely spin polarized from minority spin electrons. In contrast, the current perpendicular to the film surface will be positively spin polarized from majority spin electrons.