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Piezo force microscopy studies of ferroelectric copolymer P (VDF-TrFE) on epitaxial graphene/SiC(0001) MIRAJ UDDIN, LIAN LI, Department of Physics, University of Wisconsin, Milwaukee, WI 53211 — Graphene, a sheet of sp^2-bonded carbon atoms densely packed in a honeycomb lattice, has a linear band dispersion near the Dirac points that allows the direct control of carrier density and type via electric field. The integration of graphene with a ferroelectric material that exhibits non-volatile field effects and where the polarization domains can be reconfigured can further enhance its applications in multifunctional devices. In this work, we studied morphology and piezo response of thin films of a ferroelectric polymer polyvinylidene fluoride with trifluoroethylene, P(VDF-TrFE), deposited on epitaxial graphene on SiC(0001) by spin coating, using atomic force microscopy (AFM) and piezo force microscopy. We have demonstrated that polarization domains of the ferroelectric polymer films can be switched by the electric field produced by a biased conducting AFM tip. We also found that the polarization domains of the P(VDF-TrFE) films show good stability, facilitating its potential use as a nonvolatile gate to control the conductivity of graphene.

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