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Scanning tunneling spectroscopy of charged impurities in graphene D. CORMODE, A. DESHPANDE, B.J. LEROY, University of Arizona, W. BAO, F. MIAO, C.N. LAU, University of California-Riverside — The electronic properties of graphene were investigated by scanning tunneling microscopy. Mono- and bilayer flakes were prepared by exfoliation on 300 nm SiO₂ substrates. The samples were measured in ultra high vacuum by scanning tunneling spectroscopy at 5 K. In these experiments, we have investigated the effect of two types of charged impurities, either random impurities from the oxide substrate or controlled doping of the graphene with potassium ions. For the potassium ions, the density is controlled by varying the dosage time of potassium ions. Initial results indicate that charged impurities act to create local puddles in the graphene film which act as electron and hole doped regions.

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