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Nanoscale control of the charge neutrality point of graphene[1]
QING GUO, JIANAN LI, SHIVENDRA TRIPATHI, LU CHEN, Univ of Pittsburgh, MENGCHEN HUANG, UC Santa Barbara, JEN-FENG HSU, Univ of Pittsburgh, SHONALI DHINGRA, UCLA, JUNG-WOO LEE, HYUNGWOO LEE, CHANG-BEOM EOM, University of WisconsinMadison, BRIAN DURSO, PATRICK IRVIN, JEREMY LEVY, Univ of Pittsburgh — Nano-engineered graphene devices can exhibit novel and useful electronic and optical properties, many of which depend critically on controlling the chemical potential relative to the charge-neutrality point. Complex-oxide heterostructures enable reconfigurable control of conductive nanostructuresREFs, making them an interesting platform for controlling the electronic properties of graphene at nanoscale dimensions. Here we report the fabrication of graphene/$LaAlO_3/SrTiO_3$ heterostructures with nanoscale programmable control of the charge-neutrality point. Magnetotransport measurements of superlattice structures show characteristic interference features that can be associated with the electronically patterned interface. We discuss possible new directions based on this highly versatile hybrid platform.

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