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CVD-grown graphene on $LaAlO_3/SrTiO_3$: transferring, patterning and c-AFM lithography[1] MENGCHEN HUANG, GIRIRAJ JNAWALI, JEN-FENG HSU, Univ of Pittsburgh, HYUNGWOO LEE, SANGWOO RYU, Univ of Wisconsin-Madison, FENG BI, LU CHEN, Univ of Pittsburgh, FERESHTE GHAHARI, JAYAKANTH RAVICHANDRAN, PHILIP KIM, Harvard Univ, CHANG-BEOM EOM, Univ of Wisconsin-Madison, BRIAN D'URSO, PATRICK IRVIN, JEREMY LEVY, Univ of Pittsburgh — Interesting properties are anticipated when graphene is integrated with complex-oxide heterostructures. To create these structures, single-layer graphene is grown by chemical vapor deposition and transferred onto $LaAlO_3/SrTiO_3$. following a deep UV exposure method, the size and position of the graphene can be patterned to be compatible with the c-AFM lithography technique applied on $LaAlO_3/SrTiO_3$. Local control of metal-insulator transition at $LaAlO_3/SrTiO_3$ interface is reversibly achieved using the c-AFM lithography technique without observable graphene degradation. The graphene layer can also serve as a top gate to modulate the $LaAlO_3/SrTiO_3$ interface conductance.

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