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Characterization and Patterning of Ultrathin Epitaxial Graphene Grown on 4H-SiC XUEBIN LI, ZHIMIN SONG, MICHAEL SPRINKLE, XIAOSONG WU, CLAIRE BERGER, WALTER DE HEER, Georgia Institute of Technology — Ultrathin graphite films are grown on the C face (000-1) of insulating single crystal 4H-SiC substrates by high temperature thermal decomposition of SiC. The films are characterized extensively. Atomic force microscopy images show extended atomically flat micron size terraces. Magneto-transport measurements indicate that transport of the films is dominated by the interface graphene layer which is electron-doped due to the built-in electric field at the interface. The films can be patterned with conventional lithography techniques and ribbons with widths less than 10nm can be produced. We present experimental results on several patterned gated structures.

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