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Optimization of high quality epitaxial graphene growth on SiC MING RUAN, MICHAEL SPRINKLE, YIKE HU, CLAIRE BERGER, WALTER DE HEER, Georgia Institute of Technology — We have developed an RF inductance furnace to grow epitaxial graphene(EG) of very high quality on SiC. EG has attracted much attention during the past years due to its potential as next generation of material for electronic devices. The formation of graphene on silicon carbide by sublimation of Si is a complicated process that is not well understood yet. We present here our latest result on the growth of epitaxial graphene in low vacuum. The research is carried out for multilayer graphene growth on 4H SiC $(000\bar{1})$ and (0001) face. Atomic force microscopy(AFM), ellipsometry, Raman spectroscopy and resistivity measurement are adopted as characterization tools. The stepped terrace structure on the SiC surface changes with the graphene layer growth conditions. Terraces larger than 20μm with flat graphene layers extended over the steps are achieved. We demonstrated a path towards mass production of high quality EG chips.

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