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Growth and characterization of the graphene and its interface on the SiC (0001) face JAMES PALMER, MING RUAN, YIKE HU, ZELEI GUO, JOHN HANKINSON, RUI DONG, JAN KUNC, Georgia Institute of Technology, CLAIRE BERGER, Georgia Institute of Technology, CNRS - Institut Neel, WALT DE HEER, Georgia Institute of Technology — The confinement controlled sublimation method [1] provides a method of producing high quality epitaxial graphene on silicon carbide by controlling the silicon evaporation rate through confinement. Here we present growth studies of the first few graphene layers on the silicon terminated face (SiC (0001)). Surface properties of the grown layers are characterized by Raman spectroscopy, AFM, EFM, ellipsometry, and LEED, along with resistivity measurements of the grown graphene. Together these characterization methods can provide information on the substrate step structure and doping of the first layers of graphene. The growth of the initial buffer layer from SiC, of graphene nanoribbons from the SiC substrate steps (e.g. sidewall growth [2, 3]), and of large-area graphene can be better understood for different growth conditions. Finally, we will present electronic transport data for these well characterized graphene layers. Ultimately, the right growth conditions provide control of the substrate steps and number of graphene layers grown, leading to quality epitaxial graphene devices. [1] PNAS 108, 16900 (2011) [2] Nature Nanotechnology 5, 727 (2010) [3] J. Phys. D: Appl. Phys. 45 154010 (2012)

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