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Interface structure for growth of epitaxial graphene on SiC(0001)[1] S.H. RHIM, G. SUN, L. LI, M. WEINERT, U. Wisconsin-Milwaukee — In spite of the enormous effort devoted to the study of the epitaxial growth of graphene on SiC, there is not yet a consensus regarding the structure of the interface between graphene and the substrate. There have been a long standing discrepancy between low energy electron diffraction (LEED) and STM patterns regarding the periodicity of graphene on SiC(0001); the theoretical studies of the of $6\sqrt{3} \times 6\sqrt{3}$ [2] or $\sqrt{3} \times \sqrt{3}$ [3] periodicity, while describing some aspects, disagree in important details with scanning tunneling microscopy (STM) images. We present a combined theoretical and experimental study, employing density functional calculations and STM, to investigate this issue. We propose the formation of a defected graphene layer at the interface, and then subsequent growth of graphene. The calculated bias-dependent STM images are in good agreement with our STM images, and provide insight into the details of the interface structure.

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