Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Growth of the Graphene Nanoribbons on the Vicinal 6H-SiC(0001) Surface[1] ILYOU KIM, E. CHO, Chonnam National University, C. HWANG, W. KIM[2], KRISS — Graphene nanoribbons (GNR) are currently considered as one of the most promising materials for future nanoelectronic devices due to its exceptional physical properties. We investigated the possibility of the growth of GNR on the vicinal 6H-SiC(0001) surface using Scanning Tunneling Microscopy. We observed the formation of the ribbon-like single-layer graphene with sharp edge structures at the initial stage of thermal graphitization process of the SiC(0001) surface. However, the overall long-range ordering of the steps of the bare vicinal surface was found out to be lost during graphitization process, and only the local short range ordering of the steps with graphene layer patches existed on the entire surface. From the atom-resolved STM images, we clearly identified the armchair edge structure of graphene for several ribbon-like graphene nanostructures. Scanning tunneling spectroscopy experiment was also carried out over the ribbon-like graphene patches to examine the local electronic states at the edge structures.

[1]This work is supported by GRL programm of KICOS in Republic of Korea.
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KRISS

Date submitted: 29 Dec 2008 Electronic form version 1.4