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Gap and Impurity induced states on graphene layers CHANYONG HWANG, DOHYUN LEE, WONDONG KIM, Korea Research Institute of Standards and Science, JUNGHWA YANG, JISANG HONG, Department of Physics, Pukyong National University — One of the interesting phenomena in graphene is the linear Fermi level crossing at the Dirac point. For the measurement of electronic structure, few layers of graphenes are formed on top of SiC substrate by thermal treatment. As the thickness of graphene layers increases, the formation of the gap near Dirac point is somewhat controversial. Recently this gap has been demonstrated to be tunable by the electric field. We have used angle-resolved photoemission spectroscopy and STM to characterize this gap state and actual morphology of the graphene layers to clarify this controversial issue. In addition, we have shown that the adatom carbon can play an important role in gap state. First principles calculation on this carbon adatom state will be discussed.

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