Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Monolayer MoS_2 on HOPG Studied by Scanning Tunneling Microscopy / Spectroscopy[1] CHUN-I LU, Department of Physics, National Taiwan University; National Synchrotron Radiation Research Center, C. BUTLER, Y.-H. CHU, H.-H. YANG, Department of Physics, National Taiwan University, C.-M. WEI, Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan, L.-J. LI, Physical Sciences and Engineering, King Abdullah University of Science and Technology, Thuwal, Saudi Arabia., M.-T. LIN, Department of Physics, National Taiwan University; Institute of Atomic and Molecular Sciences, Academia Sinica, Taipei, Taiwan, DEPARTMENT OF PHYSICS, NATIONAL TAIWAN UNIVERSITY TEAM, INSTITUTE OF ATOMIC AND MOLECULAR SCIENCES, ACADEMIA SINICA TEAM — Chemical Vapor Deposition (CVD) is a promising way to prepare 2D material such as graphene and MoS_2 for μm-scale. In this report, we deposit monolayer MoS_2 by CVD method on HOPG to create the heterojunction. We observe that, the alignment of triangle MoS_2 islands shows the tendency that they have some preferred directions from AFM morphology. From STM atomic resolution images, the moiré superstructures analysis could summarize that the MoS_2 lattice tends to have a small angle with graphite's lattice. On the other hand, we also take the tunneling spectra from the different moiré domains and the moiré hills, moiré volleys of the single moiré domain. The results reveal the extraordinary states, which appear in the band gap range of MoS_2. We consider these states are the consequence of hybridized of two layers and be detected from the interlayer space.

[1]C.-I Lu et al, Appl. Phys. Lett. 106, 181904 (2015).

Chun-I Lu
National Synchrotron Radiation Research Center

Date submitted: 02 Nov 2015 Electronic form version 1.4