Abstract Submitted
for the MAR15 Meeting of
The American Physical Society

Charging Ring Spectroscopy and Defect Identification in Graphene/Boron Nitride Through Scanning Tunneling Microscopy JUWON LEE, DILLON WONG, JAIRO VALESCO, LONG JU, SALMAN KAHN, HSINZON TSAI, CHAD GERMANY, Univ of California - Berkeley, TAKASHI TANIGUCHI, KENJI WATANABE, National Institute for Material Science, ALEX ZETTL, FENG WANG, MICHAEL CROMMIE, Univ of California - Berkeley — Tip-induced ionization of defects in semiconductors and surface adatoms is known to cause ring-like structures in scanning tunneling spectroscopy (STS). We report the observation and investigation of charging ring structures in bulk insulating hexagonal boron nitride (BN) capped by a monolayer of graphene. These rings provide quantitative information on the energy levels of the ionizable BN defects, providing insight into their chemical identities. This new technique suggests exciting possibilities for quantitative spectroscopic studies of defects in other insulating systems.

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Date submitted: 14 Nov 2014 Electronic form version 1.4