Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Electronic structure of two-dimensional boron sheets BAOJIE FENG, IWAO MATSUDA, Institute for Solid State Physics, The University of Tokyo, LASOR TEAM — Boron is the fifth element in the periodic table and hosts rich physical and chemical properties. Inspired by the fruitful results of graphene, the possibility for the existence of two-dimensional boron sheets have been extensively explored in the recent years. Here, we synthesized two types of monolayer boron sheets on Ag(111) substrate. Angle-resolved photoemission spectroscopy measurements reveal the existence of metallic bands from these boron sheets, distinct from the semiconducting behavior of other boron allotropes. Combined with first-principles calculations, we demonstrate that the interaction between the boron layer and the substrate is relatively weak and the band structure of free-standing boron sheets remain largely intact after being adsorbed on Ag(111). References: 1. B. Feng, et al., Experimental realization of two-dimensional boron sheets. Nat. Chem. 8, 563(2016). 2. B. Feng, et al., Direct evidence of metallic bands in a monolayer boron sheet. Phys. Rev. B 94, 041408(R)(2016).

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Date submitted: 25 Oct 2016 Electronic form version 1.4