Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Intrinsic Defects, Fluctuations of the Local Shape, and the Photo-Oxidation of Black Phosphorus KAINEN UTT, SALVADOR BARRAZA-LOPEZ, Univ of Arkansas-Fayetteville, ALEJANDRO PACHECO SANJUAN, Universidad del Norte, PABLO RIVERO, MERSHAD MEHBOUDI, EDMUND HARRISS, Univ of Arkansas-Fayetteville, MARIO BORUNDA, Oklahoma State University — The rapid degradation of black phosphorus (BP) under ambient condition is a well-known, but poorly understood phenomenon that represents a significant challenge to the feasibility of BP-based devices. Nearly 60 years after its discovery, BP has experienced a resurgence in popularity among the condensed matter community due to its recently demonstrated promise as a tunable two-dimensional semi-conductor. Despite this resurgence in popularity, the oxidation pathways have yet to be explored in great detail. A full characterization of the material's shape and of its electronic properties at the early stages of the oxidation process is presented and provides fundamental insights into the degradation dynamics of this novel layered material. Reference: K. L. Utt, P. Rivero, M. Mehboudi, E. O. Harriss, M. F. Borunda, A. A. Pacheco SanJuan, and S. Barraza-Lopez, ACS Cent. Sci. 1, 320 (2015)

Kainen Utt
Univ of Arkansas-Fayetteville

Date submitted: 06 Nov 2015 Electronic form version 1.4