Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Visible Aligned Carbon Nanotube-MoS2 Hybrids RUI WANG, Department of Physics Astronomy, Vanderbilt University, Nashville, TN 37235, USA, TU HONG, TIANJIAO WANG, Department of Electrical Engineering Computer Science, Vanderbilt University, Nashville, TN 37235, USA, AHMAD IFFAT ALI, Department of Chemical Bimolecular Engineering, Vanderbilt University, Nashville, TN 37235, USA, DEVPAUL SINGH CHANI, Pope John Paul II High School, Hendersonville, TN 37075, USA, YAQIONG XU[1], Department of Physics Astronomy, Vanderbilt University, Nashville, TN 37235, USA — Single-walled carbon nanotubes (SWNTs) have gained great interest due to their excellent electrical, mechanical and thermal properties. Recent progress in two-dimensional (2D) materials has opened up new horizons in the realm of physics and engineering that could lead to the revolution of future electronics and optoelectronics. Various hybrid structures have been developed for different applications. Here we report a facile method to synthesize ultrathin 2D hybrids between horizontally-aligned SWNT and monolayer molybdenum sulfide (MoS2) through chemical vapor deposition (CVD). These hybrid structures can be imaged under an optical microscope; and their Raman mapping indicates that MoS2 flakes are partially grown on top of SWNTs. Moreover, strong photocurrent signals have been observed in SWNT-MoS2 hybrids through scanning photocurrent measurements. These fundamental studies may provide a new way to fabricate 2D hybrids for future electronics and optoelectronics.

[1]Department of Electrical Engineering Computer Science, Vanderbilt University, Nashville, TN 37235, USA

Rui Wang
Vanderbilt University

Date submitted: 06 Nov 2015 Electronic form version 1.4