Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Characterization of graphene quantum dot hybrid structures[1]
TING-FUNG CHUNG, JIUNING HU, LUIS A. JAUREGUI, LIANGLIANG CHEN, QING ZHAO, XIULIN RUAN, YONG P. CHEN, Purdue University — We report electrical transport, photo-electric response and Raman spectroscopy measurements in macroscopic samples of graphene decorated with inorganic quantum dots (CdSe QDs). QDs are deposited on chemical vapor deposition (CVD) graphene by spin-coating. Raman measurements of graphene decorated with QDs on Si wafer show very similar spectra with clear G and 2D peaks that reveal no degradation of graphene during the QDs deposition process. Furthermore, two types of device architectures (QDs-graphene and graphene-QDs-graphene) are fabricated with graphene as a transparent electrode and QD as a light absorbent for electrical photoresponse characterization. Upon application of either a broadband light source or a 532-nm monochromatic laser source, graphene-QDs-graphene devices demonstrate photoconducting response, but not in the case of QDs-graphene devices.

[1]This work is partially supported by Day & Associate LLC.

Ting-Fung Chung
Purdue University

Date submitted: 23 Nov 2011 Electronic form version 1.4