Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Photoconductivity of Hybrid Organic/Inorganic Quantum Dot Composite[1] XIAOMEI JIANG, WILLAM M. SAMPSON, SERGEY LEE, KANZAN INOUE, ANVAR ZAKHIDOV — We report the study of photoconductivity of hybrid organic/inorganic quantum dot composite in sandwich geometry. The uniform films of hybrid composite have been fabricated using conjugated polymers: either regio-regular poly (3-hexyl thiophene) or MEH-PPV and infrared PbSe quantum dots (QD) from Evident Technology Inc. We have observed the significant photoluminescence quenching (more than 30 times when excited by 400nm light) in MEH-PPV/QD composite with increasing concentration of quantum dots, photoluminescence spectrum profile shows obvious change with variation of excitation energy, with enhanced UV part luminescence as excitation moves to the blue side. Comparing with pure MEH-PPV, the main photoluminescence peak shows red-shift (up to 15nm). The enhanced photoresponse of sandwich device in comparison with pure polymer has been observed in broad spectral range from UV to NIR. The results demonstrate the efficient photoinduced charge transfer between polymer and QD and lead to possibilities of application of the polymer/IR QD in hybrid solar cells and photodetectors.

[1]The authors want to thank Ross Ulbricht for his excellent supporting work.

Xiaomei Jiang

Date submitted: 22 Dec 2004 Electronic form version 1.4