Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Indium diffusion and the electronic energy structure in polymer layers on indium tin oxide GVIDO BRATINA, POLONA ŠKRABA, Univeristy of Nova Gorica, Laboratory for organic matter physics, Vipavska 13, SI-5000 Nova Gorica, Slovenia, SATORU IGARASHI, HIROSI NOHIRA, Tokyo City University, 1-28-1 Tamazutsumi, Setagaya, Tokyo 158-8557, Japan, KAZUYUKI HIROSE, Institute of Space and Astronautical Science, 3-1-1 Yoshinodai, Sagamihara, Kanagawa 229-08510, Japan — Using Kelvin force microscopy (KFM), coupled to photoelectron spectroscopy we have examined the effects of indium diffusion on the electronic structure of PEDOT:PSS layer deposited on $InSb_xO_{1-x}$(ITO). KFM shows a clear difference in contact potential difference between the PEDOT:PSS deposited on ITO and PEDOT:PSS deposited on glass. We show that indium diffuses through PEDOT:PSS and introduces new electronic states near the highest occupied molecular orbital of the polymer layer. We also observe that indium diffusion continues into an overlayer of a mixed of P3HT and PCBM. Numerical lineshape analysis of In $3d_{5/2}$ core level emission rules out the presence of indium oxide or metallic indium clusters within the organic layers, and supports that indium/sulfur compounds are present within the organic layers.

Gvido Bratina
Unoversity of Minnesota

Date submitted: 30 Nov 2009 Electronic form version 1.4