

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Polarization dependent photo-induced bias stress effect in organic transistors.¹ VITALY PODZOROV, Rutgers University, NJ, USA; NITU MISiS, Moscow, Russia, HYUN HO CHOI, Rutgers University, NJ, USA; POSTECH, Pohang, S. Korea, HIKMET NAJAFOV, Rutgers University, NJ, USA, DANILA SARANIN, NIKOLAI A. KHARLAMOV, DENIS V. KUZNETZOV, SERGEI I. DIDENKO, NITU "MISiS", Moscow, Russia, KILWON CHO, POSTECH, Pohang, S. Korea, ALEJANDRO L. BRISENO, University of Massachusetts, Amherst, MA, USA, RUTGERS-MISIS COLLABORATION, RU-P COLLABORATION, RU-UM COLLABORATION, UM-P COLLABORATION — Photo-induced charge transfer between a semiconductor and a gate insulator that occurs in organic transistors operating under illumination leads to a shift of the onset gate voltage in these devices. Here we report an observation of a polarization dependent photo-induced bias-stress effect in two prototypical single-crystal organic field-effect transistors, based on rubrene and TPBIQ. We find that the rate of the effect is a periodic function of polarization angle of a linearly polarized photoexcitation, with a periodicity of π . The observed phenomenon provides an effective tool for addressing the relationship between molecular packing and parameter drift in organic transistors under illumination.

¹The work was carried out with financial support from the Ministry of Education and Science of the Russian Federation in the framework of Increase Competitiveness Program of NUST MISiS (No. K3-2016-004), by gov. decree 16/03/2013, N 211.

Vitaly Podzorov
Rutgers University, NJ, USA; NITU MISiS, Moscow, Russia

Date submitted: 01 Dec 2016

Electronic form version 1.4