

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Near Surface Structure of Organic Semiconductor Tetracene Single Crystal YUSUKE WAKABAYASHI, HAZUKI MORISAKI, TSUYOSHI KIMURA, KAZUMOTO MIWA, Osaka Univ., TAKASHI KORETSUNE, Tokyo Institute of Technology, JUN TAKEYA, Univ. Tokyo — Electric conduction in organic crystals is highly anisotropic because of the anisotropic molecular orbitals. Crystal structure governs the transfer through the overlap integral among the highest occupied (or lowest unoccupied) molecular orbitals. In case of organic devices, the place where electrons conduct is the interface. Therefore, the surface structure of organic single crystals is relevant. Surface relaxation of the structure of rubrene single crystal was firstly observed by means of surface x-ray diffraction a few years ago [1]. This time we performed similar measurement on tetracene single crystal, whose molecular shape has large similarity with rubrene while the crystal structure is very different. Tetracene single crystal was grown by the physical vapor transport method, and the surface x-ray diffraction experiments were performed at BL-3A and 4C of the Photon Factory, KEK, Japan. Obtained electron density profile shows a large structural deformation at the surface layer of tetracene.

[1] Y.Wakabayashi, J.Takeya and T.Kimura, Phys. Rev. Lett. 104, 066103 (2010).

Yusuke Wakabayashi
Osaka Univ.

Date submitted: 13 Nov 2013

Electronic form version 1.4