

[SP-12]

Photoemission Spectroscopy of LiF/Alq3 Interface in Organic LED Using Synchrotron Soft X-ray

Tai-Hee Kang, K. Ihm, K.-J. Kim, C.-C. Hwang, Y.-J. Park, B. Kim, K.-B. Lee*, C.-H. Jeon**,
C.-Y. Park**, K. Kim*** and Y.-H. Tak***

PAL, POSTECH, *Department of Physics, POSTECH, **Department of Physics, SKKU, ***OLED
Div., LG EIT.

Organic light emitting diodes(OLEDs) have attracted much intense research because of their potential applications in the flat panel display⁽¹⁾. Tris-(8-hydroxyquinoline) aluminum(Alq3) is the most preferred material for the emitting layer owing to its good transport properties and stability. The insertion of LiF for an ineterlayer material between the Al cathode and tris-(8-hydroxyquinoline) aluminum(Alq3) in OLED brings an improved device performance. The HOMO level lowering in the Alq3 layer induced by a low coverage LiF deposition results in the reduction of electron injection barrier height. We investigated the electronic structure of the interface between the ultra thin LiF and the Alq3 layer, using synchrotron x-ray photoelectron emission spectroscopy. Experiments were conducted at the 4B1 photoemission electron microscopy(PEEM) beamline in Pohang accelerator laboratory⁽²⁾. The sample was characterized by measuring the valence band spectra, the core level spectra, and the workfunction shift.

[Reference]

[1] C. W. Tang, S. A. Vanslyke, and C. H. Chen, J. Appl. Phys. 65, 3610 (1989)

[2] Tai-Hee Kang, Ki-jeong. Kim, C. C. Hwang, S. Rah, C. Y. Park, Bongsoo Kim, Nucl. Inst. and Meth. Phys. Res. A, 467-468, 581 (2001)