

Flow-induced orientation of nanorods-polymer blend film for highly efficient light-emitting devices

신도중, 이도창[†]
한국과학기술원
(dclee@kaist.edu[†])

The semiconductor nanorods have a transition dipole moment along the longitudinal direction of anisotropic crystals. The uniaxial orientation of nanorods immediately induces not only enhancing the optical extraction efficiency of the device but reducing the light loss through the linear polarizing filter. The semiconductor nanorods aligned within conductive polymer in the way of that their morphological anisotropy response to external shear stress in the film-forming solution process. We report EL polarization with uniaxial alignment of CdSe/CdS core/shell dot-in-rods (DIRs) film blending with poly(9-vinylcarbazole) (PVK). The EL polarization results enhanced transmittance of the linear polarizer, consequently contributes to overcome the intrinsic optical extraction of an EL device with a linear polarizer.