

Synthesis and Characterization of Novel Carbazole-Containing Materials for use in Solution processable OLEDs

이학근^{1,2}, 이슬비¹, 이재민^{1,†}, 윤성철¹, 이창진¹, 최동훈²

¹한국화학연구원; ²고려대학교

(jminlee@kriect.re.kr[†])

Phosphorescent Organic Light-Emitting Diodes (PHOLEDs) has the high performance over fluorescent OLED because of high quantum efficiency. The reason is PHOLEDs can utilize both singlet and triplet excitons for light emission. Therefore, high triplet-energy (E_t) is required for PHOLEDs. Small molecular host materials were synthesized. There were modified from 1,3-di(9*H*-carbazol-9-yl)benzene (mCP) with another substituents. The HOMO energy levels of synthesized host material were systematically changed while maintaining the high triplet energy levels. By changing the substituents, HOMO levels of host materials are turned to approach HOMO level of PEDOT:PSS. These results affect decreasing charge injection barrier. The OLED device characteristics using them will be investigated. The properties of the materials were characterized by ¹H-NMR, ¹³C-NMR, Thermal analysis and UV-vis, Photoluminescence. Detailed characterization results will be presented in the presentation.