Efficiency Enhancement of Blue OLED by Incorporating Ag Nanoplate Layers

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Abstract : The metal nanoplates are potentially used for electroluminescence enhancement of OLEDs owing to the localized surface plasmon resonance. In our study, enhanced electroluminescence in blue organic light-emitting diodes is demonstrated by incorporating silver nanoplates into poly(3,4-ethylene dioxythiophene):polystyrene sulfonic acid. To have surface plasmon resonance absorption peak matching with photoluminescent (PL) peak of blue, Ag nanoplates with triangular shape are used in this study. Finally, about 30 % enhancement in electroluminescence intensity and current efficiency for blue emission devices is obtained via Ag nanoplates.

Keywords : efficiency enhancement, nanoplate, OLED, surface plasmon resonance

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