World Academy of Science, Engineering and Technology
International Journal of Chemical and Molecular Engineering
Vol:11, No:08, 2017

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
Conference Title : ICAOC 2017 : International Conference on Analytical and Organic Chemistry
Conference Location : Bangkok, Thailand
Conference Dates : August 30-31, 2017