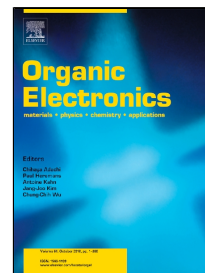


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Blue Quantum Dot Light Emitting Diodes with Polyvinylpyrrolidone-doped Electron Transport Layer

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ABSTRACT

The emerging multilayer colloidal quantum dot light emitting diodes (QLEDs) comprise excellent intrinsic properties, such as narrow emission bandwidth, wide color gamut and solution processability, all of which is consistent with the requirement of advanced panel display device and their low-cost production process. But inferior blue QLEDs performance has impeded the commercialization of QLED display panel. Herein, polyvinylpyrrolidone (PVP) was doped into the electron transport layer where PVP functions as electron blocking material and separates zinc oxide nanoparticles (ZnO NPs) from each other to reduce electron injection, achieving charge balance in blue QLED emitting layer. With this method, the device performance obtained significant improvement. The maximum brightness of the devices reached 22800 cd m⁻², and the external quantum efficiency reached 2.95%.

Key words: Blue QLED; Quantum dots; Charge balance.

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