Topic：High efficient and blue multilayer polymer-based light-emitting diode

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Abstract

Compares to the organic light emitting diodes, polymer light emitting diodes is better. It's superiority lies in that it may use solution process. In this way, it may large reduce the cost. About the efficiency aspect, it is not as high as the organic light emitting diodes. The bottleneck should be the mutually soluble which solution process initiates. Though people show a lot of methods in the literature, there are still many shortcomings.

This research is based on the buffer layer technology which studied by my school leader. Take blue light PFO(Poly (9,9-dioctylfluorenyl-2,7-diyl) as emission layer, and introduces two kinds of materials, TFB and B. K., as hole transport layer/electron blocking layer and electron transport layer/hole blocking layer, then manufactures triple layer PLED part. By doing this may make electron and hole achieve the best balance in emission layer, and also display the highest benefit.

The result of this research, the external quantum efficiency (EQE) of blue polymer light emitting diodes may achieve 4%【1】 which approaches the theory limit ,and its current efficiency reaches 3cd/A.　It has not been able to surmount BP105 which was recorded 42%, 7cd/A in this laboratory, but comparing to the PFO, which was in single

layer structure, was only recorded 1cd/A, the result is really successful.

Keywords：conjugated polymer, PLED, multilayer, high efficiency, high luminance, blue