

Numerical simulation of Bi layer polymer light-emitting diodes

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Abstract. A numerical model for the electrical properties for bi layer polymeric light emitting diodes (PLEDs) is presented which accounts for drift-and diffusion transport, recombination and re-emission processes. The current-voltage characteristics of single layer polymer light-emitting diodes are found to be dominated by the space-charge limited bulk hole-conductivity. The device efficiency is found to increase with bias as electron current is strongly reduced by injection barrier. The operating voltage increases with increased thickness of polymer layer. The understanding of these characteristics will facilitate the further optimization of the performance of polymer LEDs.

Keywords: PLED, SCLC, exciton, drift-diffusion.

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