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## Inverted CdSe@ZnS Quantum Dots Light-Emitting Diode using Low-Work Function Polyethylenimine Ethoxylated (PEIE) modified ZnO

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Over the past several years, Colloidal core/shell type quantum dots lighting-emitting diodes (QDLEDs) have been developed for the future of optoelectronic applications. An inverted-type quantum-dot light-emitting-diode (QDLED), employing low work function organic material polyethylenimine ethoxylated(PEIE) (<10 nm)[1] modified ZnO nanoparticles (NPs) as electron injection and transport layer, was fabricated by all solution processing method, instead of electrode in the device. The PEIE surface modifier incorporated on the top of the ZnO NPs film, facilitates the enhancement of both electron injection into the CdSe-ZnS QD emissive layer by lowering the workfunction of ZnO from 3.58eV to 2.87eV and charge balance on the QD emitter. In this inverted QDLEDs, blend of poly (9,9-di-n-octyl-fluorene-alt-benzothiadiazolo) and poly(N,N'-bis(4-butylphenyl)-N,N'-bis(phenyl)benzidine] are used as hole transporting layer (HTL) to improve hole transporting property. At the operating voltage of 7.5 V, the QDLED device emitted spectrally orange color lights with high luminance up to 11110 cd/m<sup>2</sup>, and showed current efficiency of 2.27 cd/A.[2]

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### References

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