

WHITE LIGHT EMISSION OF CARBON DOTS  
BY CREATING DIFFERENT EMISSIVE  
TRAPS

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## **Abstract**

Here we report a facile and rapid synthetic strategy for white light emitting carbon dots (CDs) by creating inhomogeneity in the surface-moieties by carbonizing ethylene diamine tetra acetic acid (EDTA) and ethylene glycol (EG) which are having different functional groups. The aqueous solution of the as-synthesized nanoparticles exhibits broad-band emission at several excitation wavelengths, with CIE parameters in the white gamut. Furthermore, white light emission is demonstrated through remote-phosphor technology, by capping 365 nm UV chip with PMMA, after dispersing the polymer with CDs. The resulting emission from the white-LED reported colour parameters such as CIE (0.34, 0.38), CRI of 84 and CCT of 5078 K.

## **1 Introduction**

The materials having broad-emission which cover a significant region of visible spectra will appear as white light for human eye. White light emitting (WLE) materials are interesting in solid-state lighting because of their use in flat panel displays and light emitting diodes [1-5]. A variety of WLE materials based on organic, polymer, rare-earth based inorganic and semiconductor quantum-dot based materials have been reported [6-8]. Typically white light emission is based on photoluminescence (optical excitation), electroluminescence (stimulated by electric field), magnetic-induced luminescence (stimulated by magnetic field) or mechanoluminescence (induced due to mechanical deformations) [9-13]. A typical route to generate white light emitting materials is by mixing different components that emit primary

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