

### Enhanced Electron Transport through CdSe Tetrapod Nanocrystal Thin Films

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Colloidal semiconductor nanocrystals have been regarded as solution-processible electronic materials for high performance flexible electronic devices. Due to poor electronic coupling between nanocrystals, however, the carrier transport through arrays of nanocrystals and thus their applications in optoelectronic devices are limited. In the present study, we utilized well-defined tetrapod-shaped CdSe nanocrystals (CdSe TPs) with different arm lengths to improve electrical transport through nanocrystal assemblies. In the framework of ionic gel-gate thin film transistors (TFTs), CdSe TP networks treated with sodium hydroxide showed n-type conduction with electron mobility up to  $5 \text{ cm}^2\text{V}^{-1}\text{s}^{-1}$ , which is about 5-fold improvement compared with the values obtained from the assemblies of spherical CdSe nanocrystals. This significant enhancement relative to the spherical nanocrystal system is attributed to the extended delocalization of charge within a tetrapod nanocrystal and the reduced number of carrier hopping necessary within CdSe TP networks.