

### Flow-induced dipole orientation of quantum nanorods-polymer blend

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Colloidal semiconductor nanocrystals, quantum dots (QDs) are promising materials for display application due to the precise color tunability and narrow emission bandwidth. The out-coupling efficiency, the power dissipation of different optical modes in a thin film structure, theoretically limits the external quantum efficiency of quantum dots based light-emitting device. It is reported that the horizontal orientation of transition dipole can increase the out-coupling factor. We investigated the dipole orientation of quantum rods (QRs)-polymer blend with different external flow-induced shear strain. The conductive polymers with flow-induced shear stress facilitate the horizontal alignment of anisotropic quantum rods. The dipole orientation using QRs-polymer blend with a different dimension suggests the expandable technique of improving the out-coupling efficiency on the way of the conventional process, e.g., ink-jet printing.