

## Fabrication of Colloidal Structures Interstitially Packed with Semiconductor Nanocrystals

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Recently nanometer-sized structures with at least one dimension smaller than the critical size for a given property of a material have attracted considerable attention, mainly due to their size-dependent electronic and optical properties and flexible processing chemistry. Especially semiconductor nanocrystals show different emission colors and electron transportation properties depending on their size. Based on these special characteristics called quantum confinement effect, their application is recently enlarged as LEDs, lasers, and bio-sensors.

Our group have previously presented the fabrication of binary colloidal clusters with various materials using emulsion templates. We can predict that these complex structures give us the full band gap like diamond structure or new electrical structures. In here we fabricate electrical structures as transistor devices by using CdSe semiconductor nanocrystals as interstitial materials of complex colloidal structures.