

## **Effects of step-potential on confinement strength of strain-induced type-I core-shell quantum dots**

### **ABSTRACT**

In this paper, the transition energy between lowest unoccupied molecular orbital (LUMO) of conduction band and highest occupied molecular orbital (HOMO) of valence band for band structures of type-I core-shell quantum dots (CSQDs) within a strong and weak confinements of charge carriers are estimated using the effective mass approximation together with single-band model. The effect of potential step at the conduction and valence bands on the confinement strength is then properly discussed. Our numerical results show that for a same size of CSQDs, the one with bigger potential steps will have stronger carriers' confinement with more localized excitons.

**Keyword:** Quantum dots; Colloidal quantum dots; Transition energy; Bessel spherical functions