

## Trions in Semiconductor Quantum Dot System

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**Abstract :** In this work, we study the Trion state in a spherical quantum dot of a direct band gap semiconductor with a shell of organic material. The electronic structure of the Trion due to degenerate valence band will be considered. The coupling between the wannier exciton inside the dot and the Frenkel exciton in the shell will make the Trion state become hybrid. The competition between “semiconductor” and “organic” phases of the Trion and the transitions between them depend on Parameters of the system such as the materials, the size of the dot and the thickness of the shell, etc... and could be manipulated using those parameters.

**Keywords :** trion, exciton, quantum dot, heterostructure

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