

## Quantum Confined Stark effect and temperature dependencies of photoluminescence of InAs quantum dots coupled with AlGaAs/GaAs two dimensional electron gas \*

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In this work, Experimental study of the influence of internal electric field and the temperature on the photoluminescence of InAs self assembled quantum dots inserted in AlGaAs/GaAs modulation doped heterostructure have been investigated. The internal electric field is controlled by an appropriate design of the heterostructure. We have observed a red shift of the photoluminescence position peaks result from the quantum confined Stark effect due to the local electric field existing in the structure. Estimation values of the internal electric field have been obtained through carrier's densities values in interface of AlGaAs/GaAs hetero-junction. An anomalous dependence of the full width at half maximum with temperature has been found, which attributed to the carrier's dynamics between InAs quantum dots layer and the two dimensional electron gas.

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