

Pressure Induced Phase Transition of Semiconducting Alloy $Tl_xGa_{1-x}As$

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Abstract : We have investigated the structural phase transition from Zinc-Blende (ZB) to Rock-Salt (RS) structure of $Tl_xGa_{1-x}As$ by using Interaction Potential Model (IPM). The IPM consists of Coulomb interaction, Three-Body Interaction (TBI), Van Der Wall (vdW) interaction and overlap repulsive short range interaction. The structural phase transition has been computed by using the Vegard's law. The volume collapse is also computed for this alloy. We have also investigated the second order elastic constants with composition for the alloy $Tl_xGa_{1-x}As$.

Keywords : III-V alloy, elastic moduli, phase transition, semiconductors

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