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A EPITAXY TECHNOLOGY OF GROWING HIGH QULALITY IN0.3GA0.7AS MATERIAL WITH LARGE LATTICE MISMATCH DEGREE

Abstract

In order to fabricate high quality large lattice mismatch sub-cell, this paper presents a method of component step-graded combined with low-temperature buffer technologies. Grown on GaAs substrate, large mismatch degree (>2%) In0.3Ga0.7AS material have low threading dislocation density (<106cm2), high relaxation >95%, low surface roughness (RMS is 1.7nm). Based on this material, a In0.3Ga0.7As (band gap is 1.0eV) sub-cell with top and middle simulation layers is fabricated and its efficiency is greater than 6.5%. This provides a technical approach for improve multi-junction solar cells. 2%