

MBE 를 이용한 격자 부정합을 가지는 $\text{In}_x\text{Ga}_{1-x}\text{As}/\text{GaAs}$
이종 접합 구조의 성장과 특성 평가

Growth and characterization of $\text{In}_x\text{Ga}_{1-x}\text{As}/\text{GaAs}$ lattice mismatched
heterostructure by Molecular beam epitaxy

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The study of high indium content InGaAs layer is necessary for high electronic properties, but misfit dislocation is generated between epilayer and substrate because of lattice mismatch. Therefore in order to reduce the formation of dislocation, the strain relaxation has been growing interest in heterostructure. We have investigated the effects of strain relaxation in $\text{In}_x\text{Ga}_{1-x}\text{As}$ films on GaAs(001) substrate grown by molecular beam epitaxy. The surface is shown whether strain is generated or not. The thicker InGaAs thickness, the more rough surface. With high indium content of InGaAs, the surface roughness becomes increased. That is why growth uniformity is poor in the epilayer surface because of growing different local rate after strain relaxation. Strain relaxation is dependent on the thickness and high indium content. Surface morphology is measured using atomic force microscopy (AFM).