

عنوان مقاله:

Homo- and Hetero-epitaxial Growth of InSb and Al_xIn_{1-x}Sb Layers by Molecular Beam Epitaxy

محل انتشار:

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خلاصه مقاله:

Al_xIn_{1-x}Sb and InSb layers have been grown by molecular beam epitaxy (MBE) on GaAs and InSb substrates with various orientations. Reflection high-energy electron diffraction (RHEED) was used for in-situ monitoring of crystalline quality during growth. Quality and surface morphology of the grown layers was assessed by x-ray diffractometry (XRD), field emission scanning electron microscopy (FE-SEM) and atomic force microscopy (AFM). Homoepitaxial InSb layers were grown on (111)A and (111)B InSb substrates and photodiodes were fabricated by growing thin Al_xIn_{1-x}Sb barriers between n-InSb and p-InSb layers. Heteroepitaxial InSb layers were grown on semi-insulating (001) GaAs substrates without using any buffer layer. This buffer-free growth procedure speeds up the production process and eliminates the unwanted impurities at the expense of slight degradation of crystalline quality.

کلمات کلیدی:

Molecular Beam Epitaxy (MBE), Indium Antimonide (InSb), Aluminum Indium Antimonide (Al_xIn_{1-x}Sb), Heteroepitaxy

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