

InAs/(GaIn)Sb Short Period Superlattices for Infrared Detection

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InAs/(GaIn)Sb short-period superlattices (SL) show a broken-gap type II band alignment. The effective band gap can be tailored ranging from the far-IR to the mid-IR wavelength region by changing the In molar fraction of the (GaIn)Sb layers and the individual layer thicknesses. Therefore, the materials system has gained high interest for IR-laser as well as for IR-detection applications.

At the IAF, we are interested to realize staring arrays with high responsivities (2 – 7 A/W) based on InAs/(GaIn)Sb short-period superlattices. Care has been taken to optimize the growth conditions in order to obtain a high yield of wafers of constant quality. First 256 x 256 FPA's for operation in the 8 to 10 μm atmospheric window have been processed. Promising electrical data from fan-out hybrids have been achieved. The present status of the materials system and the processing technology is reviewed.