

122. Title: THE REALIZATION OF TERAHERTZ BAND-GAP FROM InAs/GaSb TYPE II SUPERLATTICES

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Abstract: We demonstrate theoretically that terahertz (THz) fundamental band-gap between the electron mini-band in the InAs layer and the heavy-hole mini-band in the GaSb layer can be realized in InAs/GaSb-based type II superlattices (SLs). The THz band-gap can be tuned by varying the widths of the InAs/GaSb layers. The presence of such band-gap can result in a strong cut-off on optical absorption at THz frequencies. For typical sample structures, the THz cut-off of the optical absorption depends sensitively on temperature and a sharper cut-off can be observed at relatively high temperatures. This study is pertinent to the application of InAs/GaSb type II SLs as THz photodetectors.