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Absorption and Photoluminescence Analysis of InAs/GaSb Superlattices Exhibiting Lateral Composition Modulation JULIA WICKETT, University of Houston, JIANHUA LI, Rigaku Americas Corp., DONNA STOKES, University of Houston — The effects of lateral composition modulation (LCM) in $(InAs)_{13}/(GaSb)_{13}$ superlattices on the structure and optical response of the material have been investigated by double crystal x-ray diffraction (XRD), infrared absorption and photoluminescence (PL). Superlattices (SL) were grown by molecular beam epitaxy (MBE) on GaSb (001) substrates with InSb interfacial bonds. Various buffer/substrate combinations were employed to determine if strain manipulation could be used to improve the optical response of the system. Modeling of XRD data has been used to determine the strain state of the SL layers with respect to the growth template. Absorption and PL measurements indicate that strain significantly affects the optical responses of the samples and manipulation and control over the strain state of the system will be key in employing LCM superlattices for optical applications.

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