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Molecular Beam Epitaxy Growth of GaBi, InBi and InGaBi[1] B. KEEN, R. MAKIN, University at Buffalo, P.A. STAMPE, R.J. KENNEDY, Florida A&M University, L.F.J. PIPER, Binghamton University, B. MCCOMBE, University at Buffalo, C.F. MCCONVILLE, University of Warwick, S.M. DURBIN, Western Michigan University — Recent interest in bismuth alloys of III-V semiconductors for infrared and far-infrared device applications, specifically GaAsBi and InAsBi, has indicated that further study of the III-Bi family of binary compounds would be of great help in improving the quality of these material systems. While immiscibility issues have so far frustrated the growth of GaBi and AlBi, InBi is less problematic, and we have grown it by molecular beam epitaxy on (001) GaAs substrates. However, regions of varying composition exist across the substrate due to poor wetting of the surface. In an effort to improve film quality we have continued to refine the growth parameters by adjusting substrate temperature, beam flux ratio, and deposition rate. Characterization of these films has been performed by x-ray diffraction (XRD) and x-ray photoelectron spectroscopy (XPS). Additionally, we have explored growth of GaBi and $In_{1-x}Ga_xBi$ at low Ga mole fractions, and modeled this using molecular dynamics simulations.

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