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*Electronic Structure of Dilute Bismide Alloys*

Abstract: The dilute bismide semiconductor  $\text{GaAs}_{1-x}\text{Bi}_x$  represents an interesting counterpart of the dilute nitride alloy  $\text{GaAs}_{1-x}\text{N}_x$ . Both exhibit giant bandgap bowing phenomena but with oppositely directed effects on the valence and conduction bands respectively. The optical properties of the dilute bismide alloy will be contrasted with those of the dilute nitride and the similarities and distinctions between these two alloy systems will be highlighted. The transport properties of these two alloy systems will also be contrasted and discussed with reference to both electron and hole transport. Finally, a cohesive picture that emerges from the optical, transport, and electronic structure models for these alloys will be presented.