

Abstract Submitted  
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**Infrared Absorption Measurements of GaAs, GaSb, and InAs at Elevated Temperatures** THOMAS HARRIS, Air Force Institute of Technology, SHEKHAR GUHA, Air Force Research Laboratory, YUNG YEO, Air Force Institute of Technology, LEO GONZALEZ, Air Force Research Laboratory, AMELIA CARPENTER, General Dynamics Information Technology, ROBERT HENGELHOLD, Air Force Institute of Technology — Investigation of the optical and electrical behavior of Si, Ge, GaAs, GaSb, InAs, and InP at very high temperatures has not been studied much, at least not experimentally. The importance of such research becomes obvious because elevated temperatures can cause significant changes in the optical properties of the material which can degrade the performance of the device. Therefore, infrared absorption spectra of Si, Ge, GaAs, GaSb, InAs, and InP were measured from 0.6 to 25  $\mu\text{m}$  at temperatures ranging from 295 up to 900 K. A Fourier Transform InfraRed (FTIR) spectrometer was used in combination with a custom-designed heater assembly. The temperature dependence of the band gaps were estimated from the transmission spectra, and they showed good agreement with the values found in the literature. For GaSb and InAs, data was taken at higher temperatures than what was seen in the literature, extending current knowledge to a higher range of temperatures. In addition to the band gap change as a function of temperature, free-carrier absorption was also observed.

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