Optical properties of the CaSi\textsubscript{2}/Si(111) and Si(111)/CaSi\textsubscript{2}/Si(111) heterostructures

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**Abstract:** Optical properties of a CaSi\textsubscript{2} film and a CaSi\textsubscript{2} layer embedded in silicon matrix have been studied by experimental and theoretical methods. According to the experimental data CaSi\textsubscript{2} layer displays degenerate semiconductor properties with strong absorbance at photon energies higher 2.3 eV. First principal calculations predict CaSi\textsubscript{2} to be a semimetal independent of stressed CaSi\textsubscript{2} lattice parameters.

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