

# Optical properties of the $\text{CaSi}_2/\text{Si}(111)$ and $\text{Si}(111)/\text{CaSi}_2/\text{Si}(111)$ heterostructures

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**Abstract:** Optical properties of a  $\text{CaSi}_2$  film and a  $\text{CaSi}_2$  layer embedded in silicon matrix have been studied by experimental and theoretical methods. According to the experimental data  $\text{CaSi}_2$  layer displays degenerate semiconductor properties with strong absorbance at photon energies higher 2.3 eV. First principal calculations predict  $\text{CaSi}_2$  to be a semimetal independent of stressed  $\text{CaSi}_2$  lattice parameters.

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