

# Grain effect in the carrier mobility of BaSi<sub>2</sub> nanofilms

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**Abstract:** According to the experimental data the electron mobility of BaSi<sub>2</sub> nanofilms has rather high values, as compared with other semiconducting silicides, reaching 1230 cm<sup>2</sup>/Vs at 218 K and 816 cm<sup>2</sup>/Vs at 300 K. We demonstrate that the temperature dependence of the mobility cannot be adequately reproduced by the use of standard carrier scattering mechanisms. The modified approach which accounts for the grained nature of the films was proposed for the correct description of the mobility behavior.

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