

Influence of temperature and pressure on fractal dimension of crystalline defects

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Abstract

The thermodynamic regularities of behavior of the geometry of crystalline defects on the example of the ensemble of dislocation loops are described. The chemical thermodynamics estimates density of defects of the different shape and dependence of the geometry of defects on their size. It is shown that multifractality is a thermodynamic function. It depends on thermodynamic conditions and physical properties of the material. It is shown that average fractal dimension of defects is decreased with the increase of temperature. The increase of pressure causes only slight increase of the fractal dimensions of dislocation loops.