

Advanced Book Information

Point defects in group IV semiconductors

common structural and physico-chemical aspects

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Handbook

Aim of this book is to focus on the properties of defects in semiconductors of the fourth group under a physico-chemical approach, capable to demonstrate whether the full acknowledgement of their chemical nature could account for several problems encountered in practice or would suggest further experimental or theoretical accomplishments.

Keyword: Point Defects in Silicon, Point Defects in Germanium, Point Defects in Diamond, Point Defects in Silicon Carbides, Point Defect-Impurity Complexes, Defect Modeling, Self-Diffusion, Impurity Diffusion

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Summary:

A self-consistent, microscopic model of individual- and -reacted point defects requires a reliable connection with the experimentally deduced structural, spectroscopic and thermodynamic properties of the defect centres, to allow their unambiguous identification.

Aim of this book is to focus on the properties of defects in semiconductors of the fourth group under a physico-chemical approach, capable to demonstrate whether the full acknowledgement of their chemical nature could account for several problems encountered in practice or would suggest further experimental or theoretical accomplishments.

It will be shown how difficult the fulfilment of self-consistency conditions can be, even today, after more than four decades of dedicated research work, especially in the case of compound semiconductors (SiC in this book), but also in the apparently simplest cases of silicon and germanium also because microscopic models do not account, jet, for defect interactions in real solids.

