



Heteroepitaxy of Semiconductors: Theory, Growth, and Characterization

By John E. Ayers



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By John E. Ayers

Heteroepitaxy has evolved rapidly in recent years. With each new wave of material/substrate combinations, our understanding of how to control crystal growth becomes more refined. Most books on the subject focus on a specific material or material family, narrowly explaining the processes and techniques appropriate for each. Surveying the principles common to all types of semiconductor materials, **Heteroepitaxy of Semiconductors: Theory, Growth, and Characterization** is the first comprehensive, fundamental introduction to the field.

This book reflects our current understanding of nucleation, growth modes, relaxation of strained layers, and dislocation dynamics without emphasizing any particular material. Following an overview of the properties of semiconductors, the author introduces the important heteroepitaxial growth methods and provides a survey of semiconductor crystal surfaces, their structures, and nucleation. With this foundation, the book provides in-depth descriptions of mismatched heteroepitaxy and lattice strain relaxation, various characterization tools used to monitor and evaluate the growth process, and finally, defect engineering approaches. Numerous examples highlight the concepts while extensive micrographs, schematics of experimental setups, and graphs illustrate the discussion.

Serving as a solid starting point for this rapidly evolving area, **Heteroepitaxy of Semiconductors: Theory, Growth, and Characterization** makes the principles of heteroepitaxy easily accessible to anyone preparing to enter the field.



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About the Author

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Amy Gutierrez:

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