



Epitaxy of Semiconductors: Introduction to Physical Principles (Graduate Texts in Physics)

By Udo W. Pohl

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Introduction to Epitaxy provides the essential information for a comprehensive upper-level graduate course treating the crystalline growth of semiconductor heterostructures. Heteroepitaxy represents the basis of advanced electronic and optoelectronic devices today and is considered one of the top fields in materials research. The book covers the structural and electronic properties of strained epitaxial layers, the thermodynamics and kinetics of layer growth, and the description of the major growth techniques metalorganic vapor phase epitaxy, molecular beam epitaxy and liquid phase epitaxy. Cubic semiconductors, strain relaxation by misfit dislocations, strain and confinement effects on electronic states, surface structures and processes during nucleation and growth are treated in detail. The Introduction to Epitaxy requires only little knowledge on solid-state physics. Students of natural sciences, materials science and electrical engineering as well as their lecturers benefit from elementary introductions to theory and practice of epitaxial growth, supported by pertinent references and over 200 detailed illustrations.

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Editorial Review

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About the Author

Udo W. Pohl received the B.S. degree (German pre-degree) from the Technical University of Aachen, Aachen, Germany, in 1978, and the M.S. (Diploma) and Ph.D. degrees from the Technical University of Berlin, Berlin, Germany, in 1983 and 1988, respectively, all in physics. He is currently principal investigator in the Institute of Solid State Physics, Technical University of Berlin. In 2009, he was appointed as an Adjunct Professor of Physics at Technical University of Berlin. He has authored about 200 journal articles and conference papers, ten book contributions, and two patents. His current research interests include epitaxy and physics of semiconductor nanostructures and devices.

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