

1. Record Nr.	UNISA996418169303316
Autore	Pohl Udo W
Titolo	Epitaxy of Semiconductors [[electronic resource]] : Physics and Fabrication of Heterostructures / / by Udo W. Pohl
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2020
ISBN	3-030-43869-4
Edizione	[2nd ed. 2020.]
Descrizione fisica	1 online resource (XX, 535 p. 322 illus., 145 illus. in color.)
Collana	Graduate Texts in Physics, , 1868-4513
Disciplina	548.5
Soggetti	Semiconductors Optical materials Electronic materials Physical chemistry Crystallography Nanotechnology Microwaves Optical engineering Optical and Electronic Materials Physical Chemistry Crystallography and Scattering Methods Nanotechnology and Microengineering Microwaves, RF and Optical Engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Introduction -- Structural Properties of Heterostructures -- Electronic Properties of Heterostructures -- Thermodynamics of Epitaxial Layer-Growth -- Atomistic Aspects of Epitaxial Layer-Growth -- In situ Growth Monitoring -- Application of Surfactants -- Doping, Diffusion, and Contacts -- Methods of Epitaxy -- Special Growth Techniques.
Sommario/riassunto	The extended and revised edition of this textbook provides essential information for a comprehensive upper-level graduate course on the crystalline growth of semiconductor heterostructures. Heteroepitaxy is the basis of today's advanced electronic and optoelectronic devices,

and it is considered one of the most important fields in materials research and nanotechnology. The book discusses the structural and electronic properties of strained epitaxial layers, the thermodynamics and kinetics of layer growth, and it describes the major growth techniques: metalorganic vapor-phase epitaxy, molecular-beam epitaxy, and liquid-phase epitaxy. It also examines in detail cubic and hexagonal semiconductors, strain relaxation by misfit dislocations, strain and confinement effects on electronic states, surface structures, and processes during nucleation and growth. Requiring only minimal knowledge of solid-state physics, it provides natural sciences, materials science and electrical engineering students and their lecturers elementary introductions to the theory and practice of epitaxial growth, supported by references and over 300 detailed illustrations.
