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Descrizione fisica	1 online resource (XVI, 215 p. 178 illus., 75 illus. in color.)
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Soggetti	Semiconductors Materials science Materials Particle acceleration Characterization and Evaluation of Materials Materials Engineering Particle Acceleration and Detection, Beam Physics
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Nota di contenuto	Introduction -- Fundamentals of physical vapor transport process -- Vapor transport rate (Mass Flux) measurements and heat treatments -- Crystal growth -- Residual gas measurements and morphology characterization on grown crystals.
Sommario/riassunto	The book describes developments in the crystal growth of bulk II-VI semiconductor materials. A fundamental, systematic, and in-depth study of the physical vapor transport (PVT) growth process is the key to producing high-quality single crystals of semiconductors. As such, the book offers a comprehensive overview of the extensive studies on ZnSe and related II-VI wide bandgap compound semiconductors, such as CdS, CdTe, ZnTe, ZnSeTe and ZnSeS. Further, it shows the detailed steps for the growth of bulk crystals enabling optical devices which can operate in the visible spectrum for applications such as blue light emitting diodes, lasers for optical displays and in the mid-IR wavelength range, high density recording, and military communications. The book then discusses the advantages of

crystallization from vapor compared to the conventional melt growth: lower processing temperatures, the purification process associated with PVT, and the improved surface morphology of the grown crystals, as well as the necessary drawbacks to the PVT process, such as the low and inconsistent growth rates and the low yield of single crystals. By presenting in-situ measurements of transport rate, partial pressures and interferometry, as well as visual observations, the book provides detailed insights into in the kinetics during the PVT process. This book is intended for graduate students and professionals in materials science as well as engineers preparing and developing optical devices with semiconductors.