

1. Record Nr.	UNINA9910299588703321
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Titolo	Quaternary Capped In(Ga)As/GaAs Quantum Dot Infrared Photodetectors : From Materials to Devices / / by Sourav Adhikary, Subhananda Chakrabarti
Pubbl/distr/stampa	Singapore : , : Springer Singapore : , : Imprint : Springer, , 2018
ISBN	981-10-5290-5
Edizione	[1st ed. 2018.]
Descrizione fisica	1 online resource (XIII, 63 p. 35 illus., 16 illus. in color.)
Disciplina	621.3815
Soggetti	Electronic circuits Lasers Photonics Signal processing Image processing Speech processing systems Circuits and Systems Electronic Circuits and Devices Optics, Lasers, Photonics, Optical Devices Signal, Image and Speech Processing
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Chapter 1: Introduction -- Chapter 2: Structural and Optical Characterization of Quaternary-Capped InAs/GaAs Quantum Dots -- Chapter 3: Effect of Rapid-Thermal Annealing on Quantum Dot Properties -- Chapter 4: In(Ga)As/GaAs Quantum Dot Infrared Photodetectors (QDIPs) with Quaternary Capping -- Chapter 5: Effects of RTA on Quaternary Capped QDIP Characteristics -- Chapter 6: Summary and Future Work.
Sommario/riassunto	This book introduces some alternative methods for enhancing the performance of In(Ga)As/GaAs-based quantum dot infrared photodetectors (QDIPs). In(Ga)As/GaAs-based QDIPs and focal plane array (FPA) cameras have wide application in fields such as military and space science. The core of the study uses a combination of quaternary

In_{0.21}Al_{0.21}Ga_{0.58}As and GaAs spacer as a capping layer on In(Ga)As/GaAs quantum dots in the active region of the detector structure. For the purposes of optimization, three types of samples growths are considered with different capping thicknesses. The results presented include TEM, XRD and photoluminescence studies that compare combination barrier thickness and its effect on structural and optical properties. Compressive strain within the heterostructure, thermal stability in high temperature annealing, spectral response, shifts in PL peaks peak, and responsivity and detectivity are all considered. The results also present a narrow spectral width that was obtained by using InAs QDs which is very useful for third generation FPA camera application. The book details effect of post-growth rapid thermal annealing on device characteristics and methods to enhance responsivity and peak detectivity. The contents of this book will be useful to researchers and professionals alike.
