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	Nota di contenuto	Chapter 1. Synthesis and characterization of nanocrystals and

nanoparticles / Yang Liu -- Chapter 2. Size- and shape-controlled ZnO nanostructures for multifunctional devices / S.K. Ray, N. Gogurla, and T. Rakshit -- Chapter 3. From basic physical properties of InAs/InP quantum dots to state-of-the-art lasers for 1.55 μm optical communications : an overview / Jacky Even, Cheng Wang, and Frederic Grillot -- Chapter 4. Optical, photoluminescence, and vibrational spectroscopy of metal nanoparticles / P. Gangopadhyay -- Chapter 5. Silicon nanocrystals : properties and potential applications / Spiros Gardelis -- Chapter 6. Electronic and optical properties of Si and Ge nanocrystals / Tupei Chen -- Chapter 7. Light emission properties of Si Nanocrystals embedded in a dielectric matrix / Tupei Chen -- Chapter 8. Optical properties of semiconductor nanoparticles in photoelectrochemical cells / M.H. Buraidah, S.N.F. Yusuf, I.M. Noor, and A.K. Arof -- Chapter 9. Second-order nonlinear susceptibility in quantum dot structures / M. Abdullah, Farah T. Mohammed Noori, and Amin H. Al-Khursan -- Chapter 10. Metallic nanopastes for power electronic packaging / Denzel Bridges and 8 others -- Chapter 11. Applications of metal nanoparticles and nanostructures fabricated using ultrafast laser ablation in liquids / S. Venugopal Rao, S. Hamad, and G. Krishna Podagatlapalli -- Chapter 12. Exploring the LaAlO₃/SrTiO₃ two-dimensional electron gas : from fundamental to technical applications / Ngai Yui Chan, Fan Zhang, Kit Au, Wing Chong Lo, Helen La Wa Chan, and Jiyan Dai -- Chapter 13. Novel nanoelectronic device applications of nanocrystals and nanoparticles / Z. Liu.

Sommario/riassunto

This book examines in detail the physical properties and device applications of semiconductor nanocrystals and metal nanoparticles. It begins with a review of the synthesis and characterization of various semiconductor nanocrystals and metal nanoparticles and goes on to discuss in detail their optical, light emission, and electrical properties. It then illustrates some exciting applications of nanoelectronic devices (memristors and single-electron devices) and optoelectronic devices (UV detectors, quantum dot lasers, and solar cells), as well as other applications (gas sensors and metallic nanopastes for power electronics packaging).
