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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Growth mechanism, shape and composition control of semiconductor nanocrystals -- Synthesis of semiconductor nanocrystals in organic solvents -- Aqueous synthesis of semiconductor nanocrystals -- Multishell semiconductor nanocrystals -- Self-assembly of semiconductor nanocrystals into ordered superstructures -- Semiconductor nanocrystal-polymer composites: using polymers for nanocrystal processing -- Layer-by-layer (LBL) assembly with semiconductor nanoparticles and nanowires -- Exciton-phonon interaction in semiconductor nanocrystals -- Anti-Stokes photoluminescence in semiconductor nanocrystal quantum dots -- Exciton dynamics and energy transfer processes in semiconductor nanocrystals -- Fluorescence spectroscopy of single CdSe nanocrystals -- Applications of quantum dots in biomedicine.
Sommario/riassunto	When investigations on semiconductor nanocrystal quantum dots started more than a quarter of a century ago, no one ever believed that nanoparticle research would develop into one of the major fields in modern science. The basis was laid by studies of photocatalysis and artificial water splitting driven by the former oil crisis. These euphorically started activities ebbed away more and more when on one

side oil brimmed over again and the scientists on the other did not succeed in the concomitant formation of hydrogen and oxygen. At the same time size quantisation was discovered in nanocrystals initiating a fruitful research field on scaling laws of physical and chemical properties of quantum dots. Especially optical investigations of semiconductor nanocrystals led to fascinating scientific results and to applications in optoelectronics and biolabeling. Advances in spectroscopic measurements were always correlated with advances in synthesis. The better the size, shape and surface control of the particles was developed, the more detailed and precise was the spectroscopic information - tained. Applications of nanocrystal quantum dots often require assembly processes for the formation of polymer hybrids or thin films. For this as well as for the use in biomedical applications new ligand chemistry needed to be developed during the recent past. This book gives a very competent view on all these facets of nanocrystal quantum dot research. Twelve chapters are written by experts in the fields in a way introducing the respective concepts and providing comprehensive overview on the current state of the art.
