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Sommario/riassunto	In this volume, Prof. Zhang reviews the systematic theoretical studies in his group on the growth mechanisms and properties of silicon quantum dots, nanotubes and nanowires, including: mechanisms of oxide-assisted growth of silicon nanowires, energetic stability of pristine silicon nanowires and nanotubes, thermal stability of hydrogen terminated silicon nanostructures, size-dependent oxidation of hydrogen terminated silicon nanostructures, excited-state relaxation of hydrogen terminated silicon nanodots, and direct-indirect energy band transitions of silicon nanowires and sheets by surface engineering and straining. He also discusses the potential applications of these findings. This book will mainly benefit those members of the scientific and research community working in nanoscience, surface science, nanomaterials and related fields.