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Nota di contenuto	Chapter 1. Introduction to the Advanced Materials for Future Terahertz Devices, Circuits and Systems -- Chapter 2. Gallium Nitride Based Solid-State Devices for Terahertz Applications -- Chapter 3. Noncontact Characterization Techniques of GaN-Based Terahertz Devices -- Chapter 4. A Brief Review on Terahertz Avalanche Transit Time Sources -- Chapter 5. Terahertz IMPATT Sources Based on Silicon Carbide -- Chapter 6. Terahertz Quantum Dot Intersublevel Photodetector -- Chapter 7. Graphene – A Promising Material for Realizing Active and Passive Terahertz Radiators -- Chapter 8. First-principle Molecular Dynamics Simulation of Terahertz Absorptive Hydrogenated TiO <sub>2</sub> Nanoparticles -- Chapter 9. Doping Effects on Optical Properties of Titania Composite in Terahertz Range -- Chapter 10. Silicon Nanowires as a Potential Material for Terahertz Applications -- Chapter 11. Analysis of Optical Performance of Dual-order RAMAN Amplifier beyond 100 THz Spectrum -- Chapter 12. A Novel Approach Dual Material Double Gate Germanium based TFET -- Chapter 13. Sources and Security Issues in Terahertz Technologies -- Chapter 14. Interferometric Switch Based on Terahertz Optical Asymmetric Demultiplexer -- Chapter 15. Material Systems for Realizing Heterojunction IMPATT sources for Generating Terahertz Waves.
Sommario/riassunto	This book highlights the properties of advanced materials suitable for realizing THz devices, circuits and systems, and processing and

fabrication technologies associated with those. It also discusses some measurement techniques exclusively effective for THz regime, newly explored materials and recently developed solid-state devices for efficient generation and detection of THz waves, potentiality of metamaterials for implementing THz passive circuits and bio-sensors, and finally the future of silicon as the base material of THz devices. The book especially focuses on the recent advancements and several research issues related to THz materials and devices; it also discusses theoretical, experimental, established, and validated empirical works on these topics.

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