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Sommario/riassunto	This book covers the recent trends on the biological applications of nanomaterials, methods for their preparation, and techniques for their characterization. Further, the book examines the fundamentals of nanotoxicity, methods to assess the toxicity of engineered nanomaterials, approaches to reduce toxicity during synthesis. It also provides an overview of the state of the art in the application of Artificial intelligence-based methodologies for evaluation of toxicity of drugs and nanoparticles. The book further discusses nanocarrier design, routes of various nanoparticle administration, nano based drug delivery systems, and the toxicity challenges associated with each drug delivery method. It presents the latest advances in the interaction of nanoparticles with the cellular environment and assess nanotoxicity of these engineered nanoparticles. The book also explores the comparative and mechanistic genotoxicity assessment of the nanomaterials. This book is useful source of information for industrial practitioners, policy makers, and other professionals in the fields of toxicology, medicine, pharmacology, food, and drugs.