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Sommario/riassunto

This book provides a detailed review of the scaled-up production of nanoparticles. A recent estimation suggests that the global nanotechnology is a trillion-dollar business with the exponential rise of nanotechnology-based industries worldwide. In such scenario, nanoparticle production plays a vital role. This book describes the fundamentals, practical aspects, and pros and cons of nanoparticle production techniques such as nanocrystallization, sonochemical methods, supercritical fluid technologies, emulsion techniques, nanolithographic techniques, high-pressure homogenization techniques, spray drying techniques, extrusion, mechanical milling, plasma techniques, sol-gel and solvothermal methods, vapor-phase production, microreactors, microbial factories, and laser technology. In addition, quality assurance in nanoparticle production and lifecycle assessment in nanomaterials production will be discussed. The content of this text will give insight to practitioners and researchers during the selection of nanoparticle production technologies in industrial-scale nanoparticle manufacturing for various applications. In addition, this book will be a practical guide for scaled-up production of nanoparticles for undergraduate and graduate-level students and also useful for Ph. D. students.