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## Advanced Powder Metallurgy Technologies

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Powder metallurgy is a group of advanced processes used for the synthesis, processing, and shaping of various kinds of materials. Initially inspired by ceramics processing, the methodology comprising the production of a powder and its transformation to a compact solid product has attracted attention since the end of World War II. At present, many technologies are available for powder production (e.g., gas atomization of the melt, chemical reduction, milling, and mechanical alloying) and its consolidation (e.g., pressing and sintering, hot isostatic pressing, and spark plasma sintering). The most promising methods can achieve an ultra-fine or nano-grained powder structure, and preserve it during consolidation. Among these methods, mechanical alloying and spark plasma sintering play a key role. This book places special focus on advances in mechanical alloying, spark plasma sintering, and self-propagating high-temperature synthesis methods, as well as on the role of these processes in the development of new materials.



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