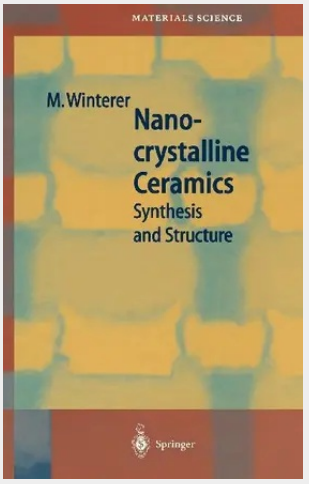
Winterer

Nanocrystalline Ceramics

Synthesis and Structure

Nanocrystalline materials is the name given to three-dimensional ultrafine, polycrystalline microstructures. These microstructures give rise to chemical and physical size effects which are of increasing scientific and technological interest. This book describes the development of a chemical vapor synthesis method for the production of nanocrystalline ceramic powders. The development of the microstructure during sintering is studied and the influence of the synthesis parameters on the structure and properties of the nanocrystalline ceramics from the atomic to the microstructural level is investigated. The emerging unified view, from powder synthesis and ceramic processing to structural characterization and determination of properties, provides a detailed understanding of nanocrystalline materials and enables a precise control of the quality of the final products.

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