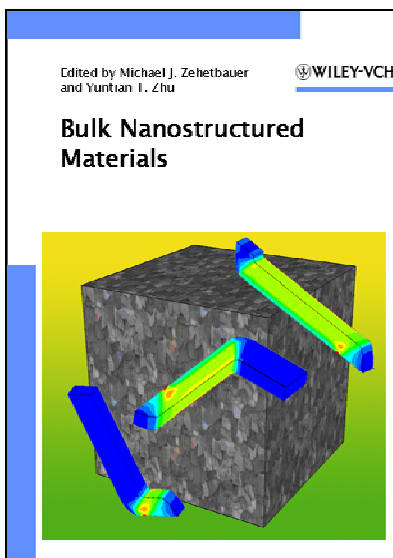


Zehetbauer, Michael J. / Zhu, Yuntian T. (eds.)

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## Bulk Nanostructured Materials



2007.  
Approx 400 pages with approx 250 figures and approx 20 tables.  
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The processing and mechanical behaviour of bulk nanostructured materials are one of the most interesting new fields of research on advanced metallic systems. Many nanocrystalline materials possess near theoretical strength with still good ductility, and exhibit high values for fatigue resistance and fracture toughness. There continues to be interest in these nanomaterials for use in biomedical, structural, and

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## Introduction and Overviews

- Preface
- Nanostructured Materials: an Overview
- Metallic BNM from SPD: Techniques, Properties, Applications (SPD ind. phase transformations, chiseling, upscaling, SPD impact properties)
- Non-metallic nanomaterials

## Fundamentals of BNM

- Deformation Mechanisms of BNM
- Modelling of Strength and Strengthening of BNM
- FEM Modelling of SPD methods
- MD Simulation of Deformation Mechanisms of Nanoscaled Materials

## Processing of BNM

- ECAP: Processing Fundamentals and Recent Progresses
- HPT: Features & applications
- ARB: Features & applications
- BNM from FSP: Features & Properties
- BNM from ball milling and consolidation
- BNM from amorphous materials
- Continuous SPD techniques, and post-SPD processing

## Characterization of BNM

- TEM Characterization of BNM Structures
- X-Ray Diffraction Analysis of BNM Microstructures
- SPD Textures and Modelling

## Properties of BNM

- Mechanical Properties of Nanostructured Metals
- Superplasticity of BNM
- Fracture & Crack growth in BNM
- Fatigue properties of BNM
- Diffusion in BNM and SPD-BNM
- Creep of BNM
- Properties of bulk nanostructured ceramics

## Applications of BNM

- BNM from Multi-phase ferrous and non-ferrous Alloys
- Magnetic BNM
- Novel features of BNM: H storage, IC forcefills and others
- SPD Nanostructured Surfaces
- Commercialisation of BNM

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