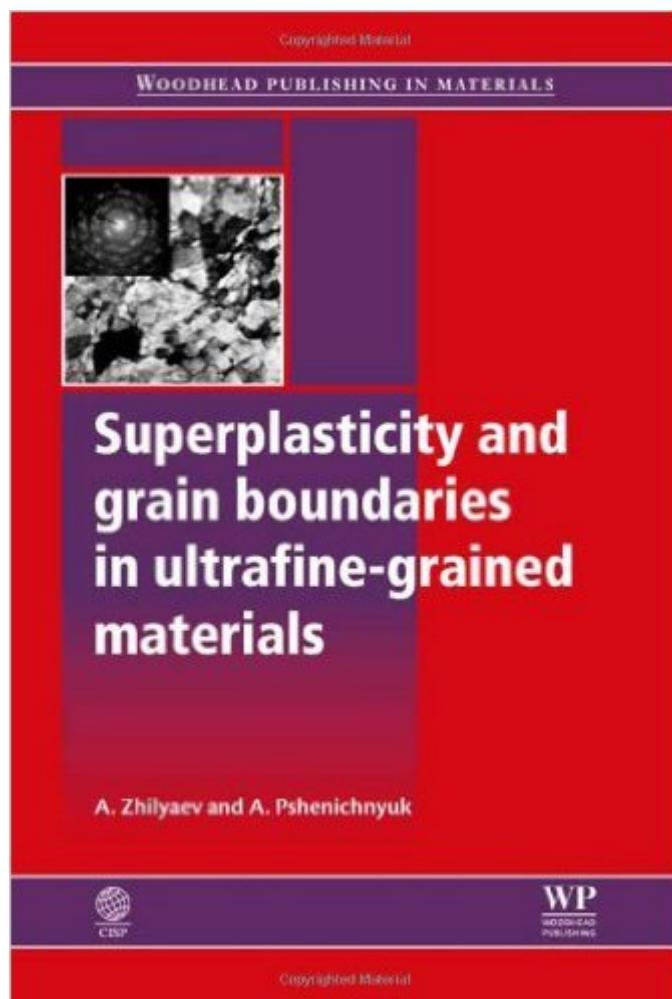


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Superplasticity And Grain Boundaries In Ultrafine-Grained Materials (Woodhead Publishing Series In Metals And Surface Engineering)



Synopsis

Superplasticity is a state in which solid crystalline materials, such as some fine-grained metals, are deformed well beyond their usual breaking point. The phenomenon is of importance in processes such as superplastic forming which allows the manufacture of complex, high-quality components in such areas as aerospace and biomedical engineering. Superplasticity and grain boundaries in ultrafine-grained materials discusses a number of problems associated with grain boundaries in metallic polycrystalline materials. The role of grain boundaries in processes such as grain boundary diffusion, relaxation and grain growth is investigated. The authors explore the formation and evolution of the microstructure, texture and ensembles of grain boundaries in materials produced by severe plastic deformation. Written by two leading experts in the field, Superplasticity and grain boundaries in ultrafine-grained materials significantly advances our understanding of this important phenomenon and will be an important reference work for metallurgists and those involved in superplastic forming processes. Discusses significant problems associated with grain boundaries in polycrystals incorporating structural superplasticity and grain boundary sliding. Assesses the role of grain boundaries in processes such as grain boundary diffusion, relaxation and grain growth. Explores the formation and evolution of the microstructure, texture and ensembles of grain boundaries in materials produced by severe plastic deformation.

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