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Sommario/riassunto

This book explores the fundamental role of grain boundaries in the plasticity of crystalline materials, providing a multi-scale approach to plasticity to facilitate understanding. It starts with the atomic description of a grain boundary, moves on to the elemental interaction processes between dislocations and grain boundaries, and finally shows how the microscopic phenomena influence the macroscopic behaviors and constitutive laws. Drawing on topics from physical, chemical, and mechanical disciplines, this work also explains properties of deformation at low and high temperature, creep, fatigu