EFFECT OF THE BOUNDARIES OF CRYSTALLINE GRAINS OF A SPECIAL GEOMETRY ON THE KINETICS OF RECRYSTALLIZATION AND GROWTH OF GRAINS

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S u m m a r y

The objective of the present work was to determine how the properties of grain boundaries (GB) of the coincidence-site-lattice (CSL) type affect the recrystallization and the grain growth kinetics. Traditionally, simple dependences of the GB energy and mobility on a scalar misorientation have been used in computer simulations; i.e. the low-angle boundaries (LABs) and the high-angle boundaries (HABs) have been assumed to exhibit low and high effective mobilities (EMs), respectively. To overcome the shortcomings associated with such an approach, the kinetics of recrystallization in the case where the EM of near-CSL boundaries deviates measurably from that of general HABs is examined using a 3D Monte-Carlo (MC) technique. A special model approach is developed to incorporate realistic starting conditions (microstructure, texture) and simulation parameters (the GB EM and a spatial distribution of stored energy).