Lattice model for kinetics and grain-size distribution in crystallization

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Abstract-

We propose a simple, versatile, and fast computational model to understand the deviations from the well-known Kolmogorov-Johnson-Mehl-Avrami kinetic theory found in metal recrystallization and amorphous semiconductor crystallization. Our model describes in detail the kinetics of the transformation and the grain size distribution of the product material, and is in good agreement with the available experimental data. Other morphological and kinetic features amenable of experimental observation are outlined, suggesting directions for further validation of the model.

Index Terms- avrami kinetics, growth, nucleation, recrystallization, silicon, films

Citation:
Castro, M.; Sánchez, A.; Dominguez-Adame, F. "Lattice model for kinetics and grain-size distribution in crystallization", Lattice model for kinetics and grain-size distribution in crystallization, vol.61, no.10, pp.6579-6586, March, 2000.