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Mathematical modeling of crystallization process from a supercooled binary melt

Eugenya Makoveeva[1], Dmitri Alexandrov[1], and Alexander Ivanov[1]

[1]Ural Federal University named after the first President of Russia B N Yeltsin

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Abstract

The article is concerned with the analytical solution to the integro-differential system of balance and kinetic equations that describe the crystal growth phenomenon in a binary system for various nucleation kinetics. The effect of impurity concentration on the evolutionary behavior of crystals is shown. The nonlinear dynamics of a supercooled binary melt is studied with allowance for the withdrawal mechanism of product crystals from a metastable liquid of the crystallizer.

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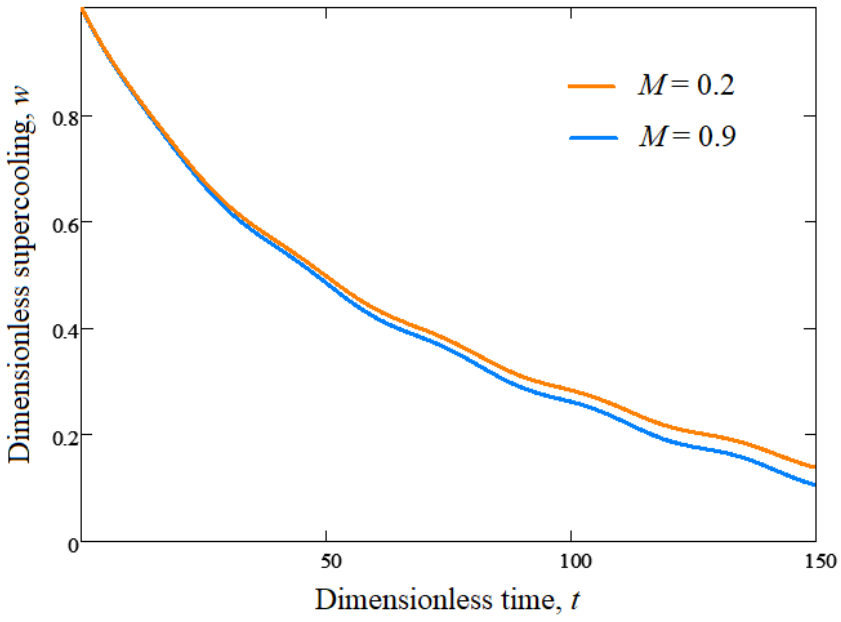

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