

论文摘要

中国有色金属学报

ZHONGGUO YOUSEJINSHUXUEBAO XUEBAO

第18卷 第1期 (总第106期) 2008年2月

 [PDF全文下载]

文章编号: 1004-0609(2008)01-0138-07

基于改进转变规则的晶粒长大CA模型

麻晓飞, 关小军, 刘运腾, 申孝民, 王丽君, 宋述同, 曾庆凯

((山东大学 材料科学与工程学院, 济南 250061))

摘要: 为建立一个具有更好物理基础的晶粒长大仿真模型, 采用CA法, 基于热力学和能量机制, 提出元胞取向状态转变的二次判断方式, 制定相应的转变规则, 并对不同温度和材料迁移激活能条件下晶粒长大过程进行模拟研究。模拟结果较准确地反映正常晶粒长大规律以及温度和材料迁移激活能的影响规律, 且得到实际观察和相关理论的验证。

关键字: 元胞自动机; 计算机模拟; 晶粒长大; 转变规则

Cellular automaton model for grain growth based on modified transition rule

MA Xiao-fei, GUAN Xiao-jun, LIU Yun-teng, SHEN Xiao-min, WANG Li-jun, SONG Shu-tong, ZENG Qing-kai

((School of Materials Science and Engineering, Shandong University, Ji'nan 250061, China))

Abstract: In order to set up a CA model that has a better physical significance, a new second criterion, considering the effects of the thermodynamic mechanism and the activation energy, was appended for the transition of cellular state. The grain growth processes were investigated for different temperatures and activation energies, respectively. The results are in accordance with the normal grain growth kinetics and reflect the both effects of temperature and the activation energy.

Key words: cellular automaton (CA); computer simulation; grain growth; transition rule

版权所有: 《中国有色金属学报》编辑部

地址: 湖南省长沙市岳麓山中南大学内 邮编: 410083

电话: 0731-8876765, 8877197, 8830410 传真: 0731-8877197

电子邮箱: f-ysxb@mail.csu.edu.cn

