

Table of Contents

Preface

Reduced-Order Representations of Crystallographic Texture for Application to Surrogate Models of Material Behaviour

M.J. Peel, H. Dorward, S. Safari and M. Mosafavi 1

Simple Flow Rules for Three-Phase Viscoplastic Materials

F. Montheillet and D. Piot 7

Modelling Combined Hardening Mechanisms in Alloys through the Analysis of Dislocation Percolation

R. Schouwenaars 13

Redesign of Low-Activation Vanadium Alloys Based on Impurity Control for Fusion Reactor Applications

T. Nagasaka, T. Sugawara, S. Sakurai, K.I. Fukumoto, Y. Yamauchi, K. Katayama, H. Watanabe and V. Tsisar 21

CALPHAD-Based Modelling of Microstructural Evolution during D.C. Casting and Homogenization of AA3003 Aluminium Alloy

F. Tsiolis and S. Papaefthymiou 35

Atomistic Investigation of Stability and Segregation of Alphagenic and Betagenic Solute in Hexagonal Titanium

A. Amitouche, D. Iabbaden, Y.D. Zhang, J.S. Lecomte and J.M. Raulot 43

Simulation-Driven Insights into Heat Transfer during Copper Mold Casting of Magnesium-Based Bulk Metallic Glasses

R.K. Rajendran, A. Vishwanath and R. Shabadi 51

Verification of a Novel Mathematical Model for Determination of the Biomass Specific Growth Rate in Bioprocesses Using Relative Change in Biomass Measurements

M. Kraus, A. Böhme and G.V. Rinati 57

Numerical Investigation of the Influence of Residual Stresses after Additive Manufacturing on the Fatigue Crack Propagation in 5xxx Aluminum Alloys

D. Pörtl, A. Odermatt, N. Kashaev and B. Klusemann 63

Application of Artificial Neural Networks for Microstructure Models ALFLOW and ALSOFT

D.A. Premiger, K. Marthinsen and T. Mánik 71

Sintering Process Analysis of Aluminum Matrix Composites Using Machine Learning

K. Sugio, Y. Shinohara, Y. Hayashi and G. Sasaki 77

Testing Theories and Simulations on Phase Coarsening by Experiments

K.G. Wang 83