

Table of Contents

Preface

Chapter I

Analysis of Local and Global Segregation Occurring in Grain Boundary Diffusion I.V. Belova and G.E. Murch	3
---	---

Chapter II

Determination of Grain Boundary Diffusion Parameters Based on Specified Model of Grain Boundary Diffusion and Combined Analysis of Radiotracer and Mössbauer Spectroscopy Data V.V. Popov and A.V. Sergeev	21
--	----

Chapter III

Grain Boundary Design of Bulk Nanomaterials for Advanced Properties R.Z. Valiev	43
---	----

Chapter IV

Grain Boundary Diffusion in Severely Deformed Metals: State of the Art and Unresolved Issues S.V. Divinski	57
--	----

Chapter V

The Role of Grain Boundaries and other Defects on Phase Transformations Induced by Severe Plastic Deformation X. Sauvage and Y. Nasedkina	77
---	----

Chapter VI

Diffusion and Phase Transitions Accelerated by Severe Plastic Deformation B.B. Straumal, O.A. Kogtenkova, R.Z. Valiev, P. Zięba and B. Baretzky	95
---	----

Chapter VII

Effect of Grain Boundary State on Diffusion and Diffusion-Controlled Processes in Ultrafine-Grained Materials Processed by Severe Plastic Deformation E.V. Naydenkin, G.P. Grabovetskaya and I.P. Mishin	111
--	-----

Chapter VIII

Grain Boundary Diffusion in Nanocrystalline Materials Produced by Severe Plastic Deformation V.V. Kondratyev, A.G. Kesarev and I.L. Lomaev	129
--	-----

Chapter IX

The Role of Interfaces in Nanomaterials Behavior at Extremes

R.A. Andrievski

147

Chapter X

Thermodynamics and Kinetics of 1D Structural Elements and Stability of Nanocrystalline Materials

G. Gottstein and L.S. Shvindlerman

173

Chapter XI

Morphology and Structure of Diffusion Layers in Nb₃Sn-Based Superconductors of Different Geometry

E.N. Popova and I.L. Deryagina

199

Chapter XII

Grain Growth in Open Systems

A. Gusak, R. Abdank-Kozubski and D. Tyshchenko

229

Chapter XIII

Motion of Grain Boundaries: Experiments on Bicrystals

D.A. Molodov

247