Grain Boundary Diffusion and Grain Boundary Segregation

ISBN(softcover): 978-3-908450-31-3 ISBN(eBook): 978-3-0357-0675-8

Table of Contents

Grain Boundary Diffusion and Oxidation Processes
J. Philibert 1

Influence of Grain Boundary Diffusion on Thin Film Reactions
P. Gas 9

Motion of the Grain Boundary System with the Triple Junctions
L.S. Shvindlerman, G. Gottstein, U. Czubayko and V.G. Sursaeva 11

Study of Grain-Boundary Diffusion of Au in Copper within ∑5 Misorientation Range in the Context of Structure of Grain Boundaries
E. Budke, C. Herzig, S.I. Prokofjev and L.S. Shvindlerman 21

Grain Boundary Diffusion in Polycrystalline Solids with an Arbitrary Grain Size
S.V. Divinski 35

Pseudo Type-B Diffusion Regime in Cu Grain Boundaries below 250°C
D. Gupta 43

Segregation and Grain Boundary Diffusion in Metals and Elemental Semi-Conductors
J. Bernardini 49

Nonlinear Segregation Effects on Grain Boundary Heterodiffusion Extraction of Segregation Term from a Triple Product
B.S. Bokstein and A. Ostrovsky 51

Solute Diffusion and Segregation in Grain Boundaries of Silver and Copper
T. Surholt, C. Minkwitz and C. Herzig 59

Grain Boundary Diffusion and Stability of the Triple Junctions
A.N. Aleshin, W. Gust, E. Rabkin and L.S. Shvindlerman 75

A New Method for Grain Boundary Diffusion Coefficient Measurement
R. Le Gall, G. Saindrenan and D. Roptin 85

Complex Atomic-Scale Dynamics in Grain Boundaries in Silicon
S.T. Pantelides, A. Maiti, M.F. Chisholm and S.J. Pennycook 95

Relation Between Segregation at Interfaces, Structure and Diffusion in Germanium
A. Charaï, A. Rolland and F. Cabané 97

Microscopic Investigation of Surface Segregation in Random Alloys
A.Y. Lozovoi, P.A. Korzhavyi and Y.K. Vekilov 107

Segregation, Phase Separation and Grain Boundary Diffusion in Thin Films
C. Cserháti, D.L. Beke and I.A. Szabó 121

AES Study of the Mass Transport of Nickel Near Ni / Cu (111) Interface
Z. Tôkei, D.L. Beke, J. Bernardini and A. Rolland 129

Grain Boundary Segregation in the Cu-Bi System
L.S. Chang, E. Rabkin, B.B. Straumal, S. Hofmann, B. Baretzky and W. Gust 135

Grain Boundary Electromigration in Thin Films: Interface Reaction and Segregation Effects
E.E. Glickman 147

Grain Boundary Diffusion, Electromigration and Segregation in Cu and Cu-2wt% Sn Alloy
D. Gupta 161

The Effect of Pressure on Grain Boundary Wetting, Segregation and Diffusion
W. Łojkowski, E. Rabkin, B.B. Straumal, L.S. Shvindlerman and W. Gust 163

Strain Induced Grain Boundary Premelting due to Heavy Pile-Up of Screw Dislocations in Deformed Copper Bicrystals
F. Inoko, T. Okada and T. Yoshikawa 175

Copper Diffusion in Nickel Thin Film under Stresses in the Kinetic Regime 'B'
N. Balandina, B.S. Bokstein and A. Ostrovsky 181

Influence of Precipitates on the Grain Boundary Diffusion: A Perturbative Approach
N.S. Khader, D.E. Mekki and R.J. Tarento 191

The Manifestations of the Diffusion-Coefficient Distribution Functions of the Grain Boundaries in W and Au Polycrystals
M.I. Kurkin, S.M. Klotsman, A.N. Timofeyev and V.V. Dyakin 199

The Study of the Diffusion of ^{57}Co in Polycrystalline Gold at the Upper Boundary of Temperature Interval Ordinarily Used in Intercrystallite Diffusion Investigations
N.I. Timofeev, S.M. Klotsman, M.I. Kurkin, V.V. Dyakin and V.K. Rudenko 205

Low-Temperature Interdiffusion in Binary and Multilayer Thin Film System
S.I. Sidorenko, S.M. Voloshko and M.A. Vasiliev 215

Exact Solution of Triple Junction Diffusion Problem
V.A. Ivanov, A.S. Ostrovsky, A. Petelin and S. Peteline 223

Relaxation Processes in Ultrafine-Grained Copper Processed by Severe Plastic Deformation
N.M. Amirkhanov and R.K. Islamgaliev 229

Growth and Healing of Voids at Grain Boundary during High Temperature Creep
V.S. Gostomelskii 235

Mechanisms of Grain Boundary Diffusion in Intermetallic Compounds
S.V. Divinski and L.N. Larikov 243

Grain Boundary Diffusion in Thin Films under Stress Field in Kinetic Regime 'C'
A. Ostrovsky 249

Round Table Discussion I: Diffusion in Intermetallics 255

Round Table Discussion II: Grain Boundary Wetting and Liquid Grooving 265