

Table of Contents

Adolf Fick and Diffusion Equations J. Philibert	1
Einstein's Theory of Brownian Motion L.S. Shvindlerman	7
Sum-Rule Relations among Phenomenological Coefficients: Application to Segregation and Chemical Diffusion in Multicomponent Alloys and Mixed Ceramic Oxides I.V. Belova and G.E. Murch	17
Calculation of Phenomenological Coefficients by Monte Carlo Computer Simulation Methods I.V. Belova, M.J. Brown and G.E. Murch	27
Ad- and Desorption of Oxygen at Metal-Oxide Interfaces: Numerical Approach for Non-Homogeneous Oxide Distribution A. Öchsner, M. Stasiek and J. Grácio	35
Simulation of the Diffusion Features of Point Defects in bcc Metals A.S. Chirkov and A.V. Nazarov	41
Atomistic Simulation of Pipe Diffusion in AlCu Alloys E. Jannot, V. Mohles, G. Gottstein and B. Thijsse	47
Calculation of Atom Configuration and Characteristic of Vacancy in bcc Lattice of α-Fe I. Valikova, A.V. Nazarov and A.A. Mikheev	55
Some Thoughts and/or Questions about Activation Energy and Pre-Exponential Factor J. Philibert	61
Kirkendall Effect: Dramatic History of Discovery and Developments L.N. Paritskaya	73
DIGM - Entropy Balance and Free Energy Release Rate Y.A. Lyashenko and A. Gusak	81
Kinetic Features of Reactive Diffusion in Binary Systems M. Kajihara	91
Influence of Liquid-Glass Transition on Diffusion and Nucleation in Computer-Simulated Iron A.V. Evteev, A.T. Kosilov, E.V. Levchenko and O.B. Logachev	97
Mathematical Modeling of Solid-State Diffusion during Mechanical Alloying B.B. Khina and B. Formanek	105
The Magneto-Plastic Effect at Beryllium Bronze after Aging in the Constant Magnetic Field J.V. Osinskaya, A.V. Pokoev and N.S. Perov	111
Determination of Copper Self-Diffusion Coefficients on the Base of High-Temperature Creep Data D.V. Vaganov and S. Zhevnenko	115
Diffusion under Large Driving Forces D.L. Beke and Z. Erdélyi	119
Effect of a Third Element on the Stability of NiSi Thin Films on Si D. Mangelinck	127
Dopant Diffusion in $\text{Si}_{1-x}\text{Ge}_x$ Thin Films: Effect of Epitaxial Stress A. Portavoce, I. Berbezier, A. Ronda, P. Gas, J.S. Christensen, A.Y. Kuznetsov and B.G. Svensson	135
Characteristics of Hydrogen Sorption, Solubility and Diffusivity in Graphites and Carbon Nanomaterials: Relevance to the On-Board Storage Problem Y.S. Nechaev and G.A. Filippov	143
Diffusion of Cr in Nanostructured Fe and Low Carbon Steel Produced by Means of Surface Mechanical Attrition Treatment Z.B. Wang, N.R. Tao, W.P. Tong, J. Lu and K. Lu	147
Hardness of Nanostructured Al-Zn, Al-Mg and Al-Zn-Mg Alloys Obtained by High-Pressure Torsion A.A. Mazilkin, B. Baretzky, S. Enders, O.A. Kogtenkova, B.B. Straumal, E. Rabkin and R. Valiev	155

Experimental Evidence of Iron Segregation in Copper Grain Boundaries as Deduced from Type B Diffusion Measurements J. Bernardini, C. Girardeaux and A. Rolland	161
Retardation Effect of Grain Boundary Segregation on Grain Boundary Diffusion B.S. Bokstein, A. Rodin and A.N. Smirnov	167
Some Remarks on the Magnitude of the Chemical Diffusivities at Moving Grain Boundaries P. Zięba	173
Shape of Moving Grain Boundary and its Influence on Grain Boundary Motion in Zinc V.G. Sursaeva and B.B. Straumal	183
Diffusion Parameters Determination by a Non-Destructive Technique with an Assumption of Mass Exchange on the Surface O.B. Bodnar, I.M. Aristova, A.A. Mazilkin, A.N. Chaika and P.Y. Popov	189
Diffusion in the Interface Region of Ti/TiAl-Nb Bonding L.A. Kommel	193
On the Kinetic Mechanism of Ga Penetration in Al Bicrystals under Small Residual Stress E.E. Glickman	201
On the Grain Boundary Grooving in Thin Filaments L. Klinger and E. Rabkin	213
Surface Spreading and Penetration of Liquid and Solid Ga in Thin Polycrystalline Ag Films E.E. Glickman, M. Levenshtein, L. Budic and N. Eliaz	219
Role of Diffusion as a Control Stage of a Grain Boundary Liquid Grooving N. Dolgoplov, A. Petelin and S. Rakov	227
Liquid Ga Penetration along Al Grain Boundaries: Effect of External Stress and Ga Undercooling O. Kozlova and A. Rodin	231
Grain Boundary Wetting in Zn Bicrystals by a Sn-Based Melt V. Murashov, B.B. Straumal and P. Protsenko	235
Diffusion and Phase Transformations in Steels: a Tool for Experimentation and a Method for Modelling Y. Bréchet, C.R. Hutchinson, G.R. Purdy and H.S. Zurob	239
Effect of Grain Boundary/Interface Network on Cavity Growth due to Atom Migration Induced by Stress and Electric Current in Polycrystalline LSI Conductor T. Shibutani, T. Kitamura and M. Shiratori	247
Phase Transitions and Ion Conductivity in NASICON-Type Compounds $\text{Li}_{1\pm x}\text{Zr}_2\text{-}_x\text{M}_x(\text{PO}_4)_3$, $\text{M} = \text{Ta, Nb, Y, Sc, In}$ I.A. Stenina, M.N. Kislitsyn, I.Y. Pinus, S.M. Haile and A.B. Yaroslavtsev	255
Effect of Mechanoactivation on Interfacial Interaction in Metal/Oxide Systems F. Muktepavela, G. Bakradze and S. Stolyarova	263
Structure and Phase Transformations upon Carburisation of High-Speed Steel A.S. Chaus	269
Structure of Historical Brass Tongues and Shallots from Baroque Organs B. Baretzky, M. Friesel, A. Petelin, A.A. Mazilkin and B.B. Straumal	275
Consequences of Silicon Segregation on the Dielectric Properties of Sintered Alumina K. Zarbout, G. Moya, J. Bernardini, D. Moya-Siesse, A. Si Ahmed, J. Kansy and D. Gœuriot	281