

# Table of Contents

## Preface

### Amorphous Metals in Slovakia

J. Krempasky 1

### Thermodynamic Stability of Amorphous Alloys

B. Predel 17

### The Oxidation Behaviour of Amorphous Alloys

W. Gao and B. Cantor 39

### Surface Crystallization of Metal-Metalloid Glasses

U. Köster, B. Punge-Witteler and G. Steinbrink 53

### Surface Crystallization Induced by Selective Oxidation of Boron in Fe-B-Si Amorphous

Alloy 63

N. Morito

### Micromechanism of Crystallization of Amorphous Alloys

P. Duhaj and P. Svec 69

### Crystallization from Amorphous Fe-Nd-B Alloys and their Hard Magnetic Properties

T. Horiguchi, H. Sekizawa, M. Murata, H. Kondo, T. Kawagoe, Y. Iguchi, K. Kohn and T. Mizoguchi 87

### Crystallization and Relaxation of $Fe_{85-x}Co_xB_{15}$ Amorphous Alloys Rapidly Quenched from the Melt

S. Budurov, M. Lazarova and E. Illeková 93

### Mössbauer and Resistometric Study of Crystallization of the Fe-Co-B Amorphous Alloys

T. Zemcík and M. Kocová 101

### Kinetics of Crystallization in an $Fe_{90}Zr_{10}$ Amorphous Alloy

N. Zárubová, N. Moser and H. Kronmüller 107

### The Processes of the Volume and Surface Crystallization of Amorphous Alloys Ni-Me ( $Zr, Nb, Mo$ )-B

V.I. Fadeeva, L.M. Kubalová, D.V. Varganov and I.N. Shabanova 113

### Resistance Changes after Stress-Annealing in Co-Based Metallic Glasses

A. Siemko, J. Fink-Finowicki, L. Zaluski and M. Kuzminski 119

### Influence of the Nature of Metalloid on the Morphology and Crystallization Kinetics of Fe-Co-B-Si Alloys

S. Suriñach, M.D. Baró, J.A. Diego, M.T. Clavaguera-Mora and N. Clavaguera 125

### Crystallization of Fe-B Metallic Glasses

D. Oleszak and H. Matyja 131

### Dilatometric Study of Crystallization Kinetics of $Co_{80-x}Ni_xB_{20}$ Glasses

G. Vlasák, Z. Bezáková and P. Duhaj 137

### The Study of Crystallization Kinetics of $Fe_{85-x}Co_xB_{15}$ Metallic Glasses with Nonisothermal Dilatometry

G. Vlasák, Ž. Bezáková, P. Duhaj and M. Jergel 143

### Stability of Amorphous Iron in Fe/Si and Fe/Ge Multilayers

C. Dufour, A. Audouard, A. Bruson, B. George, G. Marchal, P. Mangin and E. Majková 147

### Structural Relaxation in Metallic Glasses

G. Riontino and M. Baricco 155

### Relaxation Processes in Metallic Glasses

K. Ludovit 165

### Variation of the Structural Relaxation Exotherm of a $Fe_{73}Co_{12}B_{15}$ Metallic Glass

E. Illeková, A. Aharoune, F. Kuhnast, C. Cunat, J.M. Fiorani and P. Duhaj 173

### Viscous Flow and Thermal Relaxation in $Pd_{82}Si_{18}$ Amorphous Alloy

K. Russew, L. Stojanova and E. Illeková 179

### Influence of Composition on the Relaxation Kinetics in Metallic Glasses Containing Cr

T. Tarnóczki, E. Zsoldos and Z. Hegedűs 185

### Structural Relaxation and Ductility of Amorphous Alloys

A.M. Glezer and O.L. Utevskaja 191

|   |     |
|---|-----|
| <b>Structural Relaxation and Physical Criterion of the Stability of Magnetic Properties of Amorphous Alloys</b>   |     |
| E.A. Dorofeeva  | 197 |
| <b>The Investigation of Processes in Amorphous Alloys Prior to Crystallization by DSC Method (Oxidation or Relaxation)</b>                                |     |
| I.A. Tomilin, S.D. Kaloshkin and P.D. Hoang   | 203 |
| <b>Mössbauer and Magnetic Studies of Relaxations in the Fe-Co-B Amorphous Alloys</b>  |     |
| T. Zemcik and Y. Jiraskova  | 209 |
| <b>Hyperfine Structure Changes in Amorphous <math>Fe_{70}Co_{10}B_{20}</math> during Relaxation at 125°C</b>  |     |
| I. Turek and T. Zemcik  | 215 |
| <b>Relaxation Changes in the Structure of the <math>Cu_{53.5}Zr_{44.3}Nb_{2.2}</math> Amorphous Alloy</b>   |     |
| M. Jergel, G. Vlasak, J. Spisiak and P. Duhaj   | 221 |
| <b>Relaxation of the <math>Cu_{54}Zr_{44}Nb_2</math> Amorphous Alloy</b>  |     |
| J. Spisiak, L. Kubičár, M. Jergel and P. Duhaj  | 229 |
| <b>Interpretation of the Partial Structure Functions of Amorphous Binary Alloys by a Semi-Empirical Fitting and Simulating Procedure</b>                  |     |
| F. Hajdu and E. Svab  | 237 |
| <b>Investigation of the Short Range Order of the Amorphous <math>Pd_{33.3}Zr_{66.7}</math> Alloy with Anomalous X-Ray Scattering</b>                      |     |
| F. Paul, C. Biehl, R. Frahm and P. Rabe   | 245 |
| <b>An EXAFS Study of Amorphous <math>Fe_{75}TM_5B_{20}</math> (<math>TM=Ti,V,Cr,Mn,Fe,Co,Ni</math>)</b>   |     |
| G. Cocco, E.P.M.V. Angelini, S. Enzo and G. Riontino  | 251 |
| <b>Investigation of the Atomic Structure and Thermal Stability of <math>(Fe,Cr)_{85}B_{15}</math> Amorphous Alloys Subjected to Gamma-Pre-Irradiation</b> |     |
| D.J. Paderno, G.M. Zielinska, A.P. Brovko, V.V. Maslov and A.G. Iljinskij   | 259 |
| <b>The Temperature and Radiation Effects on a Local Order of Amorphous Alloys</b>   |     |
| A.M. Shalaev, V.V. Kotov, V.V. Polotnjuk and I.N. Makeeva   | 267 |
| <b>Post Irradiation Activity of FeNiB Metallic Glasses</b>  |     |
| J. Sitek, M. Miglierini and S. Baluch   | 275 |
| <b>Neutron Irradiation of Metallic Glasses and Mössbauer Spectroscopy</b>   |     |
| M. Miglierini and J. Sitek  | 281 |
| <b>FMR Measurements of Ion Implanted Amorphous FeCrSiB Ribbons</b>  |     |
| G. Serfözö, L.F. Kiss, C. Darózzi, J. Gyulai and E. Kisdi-Koszó   | 287 |
| <b>The Influence of Structure Changes on Charge and Spin Densities in Amorphous <math>Fe_{80}B_{20}</math> Clusters</b>                                   |     |
| I. Turek  | 293 |
| <b>Packing of Hard Circles</b>  |     |
| P. Mrafko   | 299 |
| <b>Structure of Microcrystalline Liquid-Quenched Fe-Alloys</b>  |     |
| V.V. Sosnin   | 305 |
| <b>Modulation of Hydrogen in Amorphous Materials</b>  |     |
| M. Vergnat, S. Houssaini, A. Bruson, B. George, G. Marchal, P. Mangin and J.P. Stoquert   | 311 |
| <b>Glass Forming Ability, Structure and Properties of Ti and Zr-Intermetallic Compound Based Alloys</b>   |     |
| V.V. Molokanov and V.N. Chebotnikov   | 319 |
| <b>The Influence of Short-Range Atomic Order on Mechanical Properties of Metallic Glasses <math>Fe_{80-X}Ni_XB_{20}</math></b>                            |     |
| V.Z. Bengus, E.B. Korolkova, P. Duhaj, V. Ocelik, P. Diko and E.D. Tabachnikova   | 333 |
| <b>Low Temperature Strength and Fracture of the Amorphous Metal Alloy <math>Co_{60}Fe_5Ni_{10}Si_{10}B_{15}</math></b>                                    |     |
| E.D. Tabachnikova, E.B. Korolkova, P. Diko, J. Miskuf and K. Csach  | 339 |
| <b>Heat Treatment, Thickness and Magnetomechanical Coupling Coefficient of the <math>Fe_{79}Si_{12}B_9</math> Metallic Glasses</b>                        |     |
| Z. Kaczkowski   | 345 |
| <b>Some Physical and Chemical Properties of Amorphous <math>Co_{80}B_{20}</math>-Based Alloys</b>   |     |
| V.V. Nemoschkalenko, A.P. Shpak, S.I. Latypov, N.S. Kobsenko, D.J. Paderno, A.G. Dmitriev, P. Duhaj and G. Vlasak   | 351 |
| <b>Influence of the Annealing History on the Magnetostriction Sensitivity Characteristics of the <math>Fe_{79}Si_{12}B_9</math> Metallic Glasses</b>      |     |
| Z. Kaczkowski and G. Vlasak   | 357 |

|  |     |
|--|-----|
| <b>Stability of Magnetic Field Induced Anisotropy in Amorphous Fe-B-Si Alloys with Different Additions</b>   |     |
| S. Roth  | 363 |
| <b>Propagation of Fatigue Crack in Amorphous <math>\text{Fe}_{40}\text{Ni}_{40}\text{B}_{20}</math> at High-Frequency Loading</b>  |     |
| V. Ocelík, P. Palček, P. Diko, J. Miskuf and P. Duhaj  | 369 |
| <b>The Distribution of Magnetic Hyperfine Fields in Iron-Boron Amorphous Alloys Containing Transition Elements</b>   |     |
| A.F. Prokoshin, M.A. Drozdova, A.N. Gelnov and L.V. Poperenko  | 375 |
| <b>Curie Temperature and Saturation Magnetostriction of Neutron Irradiated <math>\text{Fe}_{75}\text{Cr}_{10}\text{B}_{15}</math> and <math>\text{Fe}_{77}\text{Cr}_8\text{B}_{15}</math> Amorphous Alloys</b> |     |
| M. Hrabcák, M. Mihálik and J. Kovác  | 381 |
| <b>Influence of the Annealing in Magnetic Field at Temperature of 300°C on the Moduli of Elasticity of the <math>\text{Fe}_{79}\text{Si}_{12}\text{B}_9</math> Metallic Glass</b>                              |     |
| Z. Kaczkowski and L.M. Malkinski   | 385 |
| <b>Excitation of FMR Surface Spin Waves in Amorphous FeNiB Alloys in Parallel and Normal Configuration</b>   |     |
| Z. Frait and D. Fraitová   | 391 |
| <b>Structure and Electron Transport Properties of <math>\text{Au}_x\text{Si}_{1-x}</math> Amorphous Alloys and of Au/Si Multilayers</b>  |     |
| A. Audouard and M. Gerl  | 397 |
| <b>Investigation of Kinetics of Magnetic Anisotropy Formation in Metallic Glasses Induced by Magnetic Field</b>  |     |
| S. Simik, Z. Svestka and Z. Tischer  | 411 |
| <b>Annihilation of Positrons in <math>\text{Fe}_{80-x}\text{Ni}_x\text{B}_{20}</math> Metallic Glasses</b>   |     |
| K. Kristiaková, G. Tumbev and J. Krištiak  | 415 |
| <b>Reentrant-Spin-Glass and Small Angle Neutron Scattering</b>   |     |
| P. Mangin, B. George, D. Boumazouza, J.J. Rhyne and R.W. Erwin   | 421 |
| <b>Some Piezomagnetic Properties of the <math>\text{Fe}_{64}\text{Co}_{21}\text{B}_{15}</math> Amorphous Alloy</b>   |     |
| Z. Kaczkowski and P. Duhaj   | 439 |
| <b>Diffusion of Au Atoms in Fe-Co-B Metallic Glass</b>   |     |
| V. Boháć, E. Majková, S. Luby, R. Sandrik and M. Vesely  | 445 |
| <b>Anelastic Polarization of as-Cast Metallic Glass Ribbons</b>  |     |
| P. Butvin, M. Hlášník, G. Vlasák and B. Butvinová  | 451 |
| <b>Thermoelectric Power of Some Magnetic Metallic Glasses</b>  |     |
| E. Majková and P. Duhaj  | 459 |