

Table of Contents

Preface and Conference Photo

Methods of Electron Crystallography as Tools for Materials Analysis

W. Neumann, H. Kirmse, I. Häusler, C. Grosse, P. Moeck, S. Rouvimov, M. Beekman, R. Atkins, D.C. Johnson and K. Volz 1

Characterization of Grain Boundary Geometry in the TEM, Exemplified in Si Thin Films

J.L. Lábár, Á.K. Kiss, S. Christiansen and F. Falk 7

Orientation and Phase Mapping in TEM Microscopy (EBSD-TEM Like): Applications to Materials Science

E.F. Rauch, M. Véron, S. Nicolopoulos and D. Bultreys 13

The Art and Application of Large Angle Convergent Beam Electron Diffraction

E. Jezierska 16

Cathodoluminescence and Electroluminescence of Semiconductor Structures in SEM

M. Pluska, A. Czerwiński, J. Ratajczak, A. Szerling and J. Kątki 20

Secondary Electron Detector with the Unipotential Lens Structure for Variable Pressure/Environmental SEM

W. Słótko and M. Krysztof 24

A Quantitative Analytical Method for the Identification and Characterization of Mineralized Nanoparticles in Food Supplements

S. Richter, K. Riediger and A. Nester 28

Physical and Chemical Studies of Bacterial Bioaerosols at Wastewater Treatment Plant Using Scanning Electron Microscopy and X-Ray Photoelectron Spectroscopy

J. Płoszaj, E. Talik, Z. Piotrowska-Seget and J.S. Pastuszka 32

3D Imaging and Metrology of Yttria Dispersoids in INCOLOY MA956 by Electron Tomography

A. Kruk, B. Dubiel and A. Czyrska-Filemonowicz 37

3D Imaging of Strengthening Particles in Cr-V-Mo (13HMF) Steel Using FIB/SEM Tomography

W. Osuch, A. Kruk, G. Michta and A. Czyrska-Filemonowicz 41

Three-Dimensional Visualization and Metrology of Nanoparticles in Inconel 718 by Electron Tomography

K. Kulawik, A. Kruk, B. Dubiel and A. Czyrska-Filemonowicz 45

Martensitic Transformation in $\text{Ti}_{50}\text{Ni}_{25}\text{Cu}_{25}$ Shape Memory Alloy Studied by EBSD

T. Goryczka and J. Lelątko 49

Investigations of Fine Grained Metallic Materials by Means of Orientation Maps in Transmission Electron Microscope

M. Bieda 53

Phase Identification in Nickel-Based Superalloys Using EBSD/SEM and Electron Diffraction in STEM

B. Chmiela, M. Sozańska and K. Rodak 58

High Resolution EBSD/SEM Analysis of PLZT Ferroelectric Crystals in Low Vacuum Conditions - A few Practical Remarks

K. Berent and M. Faryna 62

Study of Silicon Nanoparticles Formation in Silicon Nitride

J. Ratajczak, K. Hejduk, M. Lipiński, T. Piotrowski, M. Pluska, A. Łaszcz and A. Czerwiński 66

Structural and Chemical Characterization of Al(Ga)N/GaN Quantum Well Structures Grown by Plasma Assisted Molecular Beam Epitaxy

J. Borysiuk, P. Dłużewski, Z. Zytkeiwicz, M. Sobańska, K. Kłosek and B. Łucznik 70

Wurtzite-to Amorphous-to Cubic Phase Transition of $\text{GaN}_{1-x}\text{As}_x$ Alloys with Increasing as Content

Z. Liliental-Weber, R. dos Reis, A. Levander, K.M. Yu, W. Walukiewicz, S.V. Novikov and C.T. Foxon 74

Study of Oxides Formed in HfO_2/Si Structure for High- k Dielectric Applications

A. Łaszcz, A. Czerwiński, J. Ratajczak, A. Taube, S. Gierałtowska, A.B. Piotrowska and J. Kątki 78

Ni-Based Ohmic Contacts to Silicon Carbide Examined by Electron Microscopy

M. Wzorek, A. Czerwiński, A.V. Kuchuk, J. Ratajczak, A.B. Piotrowska and J. Kątki 82

Crystallization and Microstructure of Co_{0.75}Ni_{0.25}Si₂ Solid Solution W. Gurdziel, Z. Wokulski, G. Dercz and J. Krawczyk	86
Nanotexture Studies of NiTi Shape Memory Alloy after Severe Plastic Deformation with the Use of TEM D. Stróż, J. Palka and Z. Lekston	90
SEM EBSD and TEM Structure Studies of α-Brass after Severe Plastic Deformation Using Equal Channel Rolling Followed by Groove Pressing S. Rusz, J. Dutkiewicz, M. Faryna, W. Maziarz, L. Rogal, J. Bogucka, K. Malanik, J. Kedroń and S. Tylšar	94
Crystallographic Aspects of Deformation and Recrystallization in ECAP-Processed AA3104 Aluminium Alloy H. Paul, T. Baudin, A. Tarasek and F. Brisset	98
Microstructure of the Ni-W Solid Solution Prepared by Levitation and after High Pressure Torsion Severe Plastic Deformation T. Czeppe, A. Sypień, G.F. Korznikova and A. Korznikov	104
Near Grain Boundary Behavior of Aluminum Bicrystals Deformed in Plane Strain Conditions W. Wajda and H. Paul	108
Microstructure and Texture Evolutions in AA1200 Aluminum Alloy Deformed by Accumulative Roll Bonding Method J. Bogucka, H. Paul, M. Bieda and T. Baudin	112
Gradient Microstructure of FeCr30Co8 Hard Magnetic Alloy Subjected to Plastic Deformation by Tension Combined with Torsion at 700 and 720°C A. Korneva	116
Effect of Rapid Solidification on the Structure and Mechanical Properties of AZ91 Magnesium Alloy T. Tokarski	120
Microstructure of LaNi₅ Base Nanopowders Produced by High Energy Ball Milling J. Kusiński, K. Kowalski, S. Kac, P. Matteazzi, M. Krebs, J. Morgiel and S. Cochet	124
Microstructure of AgNi and AgSnBi Powders Consolidated by CEC M.W. Richert, J. Richert, M. Książek, A. Hotłoś, P. Pałka, M. Perek-Nowak and M. Maślanka	130
Correlation between SEM and X-Ray Diffraction Imaging of Defect Structure in Single-Crystal Ni-Based Superalloy W. Bogdanowicz, R. Albrecht, J. Sieniawski, K. Kubiak and A. Onyszko	135
TEM Analyses of Microstructure Evolution in Ex-Service Single Crystal CMSX-4 Gas Turbine Blade B. Dubiel and A. Czyrska-Filemonowicz	139
Degradation of Microstructure after Service in ZhS6k Superalloy with Diffusive Aluminide Coating M. Sozańska, B. Chmiela, M. Kianicova and J. Cwajna	143
High Temperature Deformation of Superalloy Inconel 718 A. Nowotnik	147
Structural Perfection of a Single Crystal Nickel-Based CMSX-4 Superalloy A. Onyszko, W. Bogdanowicz and J. Sieniawski	151
Structure-Property Relationship in a Haynes[®] 242TM Alloy Subjected to Long-Term Exposure at 650°C E. Stepniowska and S. Dymek	156
Structure and Morphology of Thin Films Deposited by Pulsed Laser Deposition Technique A. Radziszewska	160
Microstructure Investigation in Thin Films WO₃ Produced by Pulsed Laser Deposition A. Kopia	164
Microstructural Investigations of Ca and La Doped CoO Thin Films Prepared by Pulsed Laser Deposition Technique Ł. Cieniek and J. Kusiński	168
THEED Study of CrTe Thin Films Obtained by Pulsed Laser Deposition P. Sagan and M. Kuzma	172
Tem and CL Investigations of Pd Nanograins Included in Carbonaceous Film K. Sobczak, P. Dłużewski, B.S. Witkowski, J. Dabrowski, M. Kozłowski, E. Kowalska and E. Czerwosz	177

Effect of Silicon Additions in CrSi (10, 20, 30, 40 at. % Si) Magnetron Targets on Microstructure of Reactively Deposited (Cr,Si)N Coatings J. Grzonka, R. Mania, J.L. Lábár and J. Morgiel	182
TEM Investigations of Damage Caused by Indentation of Multilayer TiN/Ti/a-C-H Coatings L. Major	188
Electron Microscope Investigation of PVD Coated Aluminium Alloy Surface Layer T. Tański and K. Labisz	192
TEM Studies of Structure of Ag Base Nanocomposite Strengthened with Amorphous NiNbTiZr Alloy Intended for Electric Contact Materials J. Dutkiewicz, L. Lityńska-Dobrzyńska, K. Berent, M. Woch and M. Osadnik	198
TEM Investigation of Metal/Ceramic Interfaces in AA7475/AlN or Al₂O₃ Nano-Composites M. Gajewska, J. Dutkiewicz, L. Lityńska-Dobrzyńska and J. Morgiel	202
Optimization of Structure and Magnetic Properties of NdFeBTi Nanocomposite Magnets D. Derewnicka, P. Dłużewski, M. Spyra and H. Krztoń	206
Characterization of Al_{65.0}Cu_{32.9}Co_{2.1} Alloy Containing Nanofibres J. Krawczyk, W. Bogdanowicz, G. Dercz and W. Gurdziel	212
Formation and Properties of Amorphous/Crystalline Ductile Composites in Ni-Ag-P Immiscible Alloys K. Ziewiec, P. Malczewski, G. Boczkal and K. Prusik	216
SEM and TEM Characterization of NiAl₂O₄ Spinel Phase in Al₂O₃ Matrix Ni Composite K. Konopka, L. Lityńska-Dobrzyńska and J. Dutkiewicz	222
Characterization of Composite Based on Al–Cu–Co Alloy W. Bogdanowicz, J. Krawczyk and R. Albrecht	226
Microstructure and Mechanical Properties of PVD Nanocrystalline Layers K. Lukaszewicz and J. Konieczny	230
Microstructure and Deposition Relations in Alumina Particle Strengthened Ni-W Matrix Composites P. Indyka, E. Beltowska-Lehman, M. Bieda, J. Morgiel and L. Tarkowski	234
Microstructure, Chemistry and Mechanical Properties of the Ni/AgBiCuSn/Ni Interconnections A. Sypień, L. Lityńska-Dobrzyńska, A. Wierzbicka-Miernik and P. Zieba	239
Morphology and Chemical Composition of Ag/In/Ag Interconnections P. Skrzyniarz, L. Lityńska-Dobrzyńska and P. Zieba	243
Microstructure and Properties of Hot Compacted Al-12 wt% Zn-3 wt% Mg-1.5 wt% Cu Melt Spun Ribbons L. Lityńska-Dobrzyńska, J. Dutkiewicz, W. Maziarz, M. Faryna, K. Stan and A. Kanciruk	247
SEM and TEM Studies of Magnetic Shape Memory NiCoMnIn Melt Spun Ribbons W. Maziarz	251
TEM Study of Quasicrystals in Al-Mn-Fe Melt-Spun Ribbon K. Stan, L. Lityńska-Dobrzyńska, J. Dutkiewicz, L. Rogal and A.M. Janus	255
Structure of Nitride and Nitride/Oxide Layers Formed on NiTi Alloy J. Lelątko, M. Freitag, J. Rak, T. Wierzchoń and T. Goryczka	259
Positive Hydrogen Effect in Structure Surface Layers on Ti Alloy M. Sozańska and H. Garbacz	263
Electron Microscopy Investigation of Ageing Behavior in a Cu–Ni–Si Alloy S. Dymek, P. Kwaśniewski, M. Blicharski and T. Knych	267
TEM Study of Ni-Mn-Co-In Ferromagnetic Shape Memory Alloys K. Prusik, K. Baldys and D. Stróż	271
Tin Pest and Tin Oxidation on Tin-Rich Lead-Free Alloys Investigated by Electron Microscopy Methods A. Czerwiński, A. Skwarek, M. Płuska, J. Ratajczak and K. Witek	275
Structural and Mechanical Features of Rapidly Solidified Al-2Fe-2Ni-5Mg Alloy A. Kula, L. Blaz and M. Sugamata	279
VM12 Steel for Advanced Power Generation Plants – Metrology of the Precipitates by Electron Microscopy A. Zielińska-Lipiec, A. Czyrska-Filemonowicz and T. Kozieł	283
Microstructural Investigation of the Ferritic GX12CrMoVNbN9-1 (GP91) Cast Steel G. Golański and P. Wiecek	287

Alloying the near Surface Layer of Stainless Steel with Rare Earth Elements (REE) Using High Intensity Pulsed Plasma Beams (HIPPB) B. Sartowska, J. Piekoszewski, L. Waliś, M. Barlak, I. Calliari, K. Brunelli, J. Senatorski and W. Starosta	292
Characterization of Precipitation Process in T24 Steel after Long–Term Ageing G. Golański, J. Kepa, P. Wieczorek and K. Prusik	296
Identification of Phases in Alloy Steels after Quenching and after Isothermal Quenching J. Smalc-Koziorowska, E. Jezierska and W. Świątnicki	301
Microstructural Changes Induced during Hydrogen Charging Process in Stainless Steels with and without Nitrided Layers B. Gołębiowski and W. Świątnicki	305
Transmission Electron Microscopy Studies of X210CrW12 and 100CR6 Thixo-Cast Steels L. Rogal and J. Dutkiewicz	311
The Degradation of Microstructure of AlCu4Ni2Mg Aluminium Alloy after Prolonged Annealing at Elevated Temperature M. Wierzbińska and J. Sieniawski	315
Transformation of Intermetallic Phases in 6066 Aluminium Alloy during its Homogenization G. Mrowka-Nowotnik	319
SEM and TEM Microstructure Characterization of a Commercial Purity Aluminum after Laser Treatment M. Rozmus-Górnikowska, Ł. Major and J. Morgiel	323
TEM Investigation of Interfaces Formed between SaffilTM Fibers and AA6061 and En Ac 44200 Aluminium Alloys M. Pomorska, J. Kaczmar, J. Morgiel and K. Naplocha	327
TEM Characterization of a 7042 Aluminum FSW Joint M. Kopyściański, S. Dymek and C. Hamilton	331