

Table of Contents

Preface, Committes, Conference Secretariat and Sponsors

Examination of the Microstructure of Findings from Bronze Age K. Pflischl, P. Barkóczy, Á. Kovács and Á. Czibik	1
Examination of the Microstructure of the Findings from Cannon Foundry Sárospatak I. Ringer, P. Barkóczy, Á. Kovács and L. Pásztor	7
Nitrocarburising of Low Alloyed Case Hardening Steels Applying Three Different Temperatures A.S. Biró and M. Tisza	13
The Relation between the Surface Tension and the Bulk Properties of Diluted Silver Based Melts Z. Weltsch and A. Lovas	19
Bone Formation with Nano-Hydroxyapatite from Eggshell C. Balázs, G. Gergely, K. Balázs, C.H. Chae, H.Y. Sim, J.Y. Choi and S.G. Kim	25
Structural and Mechanical Properties of Milled Si₃N₄/CNTs Composites by Spark Plasma Sintering Method C. Balázs, O. Tapasztó, Z. Károly, P. Kun, K. Balázs and J. Szépvölgyi	31
Calculation of Elastic Energy Contributions in Single Crystalline Cu-11.5wt%Al-5.0wt%Ni Shape Memory Alloy T.Y. Elrasasi, L. Daróczy and D.L. Beke	37
Advanced Hetero-Modulus and Hetero-Viscous Complex Materials L.A. Gömze and L.N. Gömze	43
Effect of Processing Conditions on Microstructure and Mechanical Behaviour of Metals Sintered from Nanopowders J. Gubicza, G. Dirras and S. Ramtani	49
Abrasive Wear Testing of Si₃N₄ Ceramic Composites Z. Konesik, M.B. Maros and L. Kuzsella	55
Production and Examination of Colour-Galvanized Steel Test Sheets by Modern Analytical Methods G. Lévai, M. Godzsák, A. Ender, R. Márkus and T.I. Török	61
Infiltration Characteristics and Compressive Behaviour of Metal Matrix Syntactic Foams I.N. Orbulov, J. Ginsztler and P. Kun	68
Hydrogen Storage, Microstructure and Mechanical Properties of Strained Mg₆₅Ni₂₀Cu₅Y₁₀ Metallic Glass A. Revesz, Á. Kis-Tóth, P. Szommer and T. Spassov	74
Development of Thermally Conductive Polymer Materials and their Investigation A. Suplicz and J.G. Kovács	80
Incremental Forming: An Innovative Process for Small Batch Production M. Tisza, P.Z. Kovács and Z. Lukács	85
Examination of Aluminium Based Automotive Casting M. Godzsák and Z. Gácsi	91
A Method for Complete Characterization of the Macroscopic Geometry of Grain Boundaries Á.K. Kiss and J.L. Lábár	97
Integrity Assessment of Power-Plant Structural Elements Using Fracture Mechanics J. Lukács	103
Thermal Induced Phase Transformations in Duplex Stainless Steel I. Mészáros	109
A Simplified Determination of Creep Properties of Steels by Measuring their Crack Opening Displacements (COD) at Elevated Temperatures B. Palotás	114
The Experiences with a Travelling Magnetic Field (TMF) Stirrer A. Rónaföldi, J. Kovács and A. Roósz	120
Development of a Novel Pvt Measuring Technique F. Szabó and J.G. Kovács	126

The Effects of Heat Treatment and Deformation on the Martensitic Transformation of FeMn (Cr) Steels F. Tranta and A. Weiss	132
On the Role of Phenomenology and Dislocations in Modelling of Portevin - Le Chatelier Effect P.B. Béda	138
Estimation of Thermal Boundary Conditions by Gradient Based and Genetic Algorithms I. Felde	144
Scaling Cellular Automaton Simulations of Short-Range Diffusion Processes S. Gyöngyösi and P. Barkóczy	150
Development of Complex Analytical Model for Optimizing Software of Wire Drawing Technology S. Kovács, V. Mertinger and M. Voith	156
Loading Simulations of Carbon Nanotube Junctions T. Pataki and I. Zsoldos	162
Validation of New Mathematical Model of Flank Wear by Different Methods Z. Pálmai, M. Takács and B.Z. Farkas	169
Effect of Supporting Roll Setting on the Inner Structure of Cc Slabs M. Réger, B. Verő, Z. Csepeli, Z. Szabo, R. Jozsa and T. Kelemen	175
<i>In Situ</i> Synthesis of a Wear Resistant Layer on the Surface of Low Carbon Steel Produced by Laser Melt Injection Technology V. Mertinger, G. Buza and B. Major	181
Effect of Different Parameters on the Stability of Femur Neck Fixing I. Bagi	187
Dependence of the Surface Roughness and Localization Factor Parameters on the Background Correction of AFM Images: A Thin Film Characterization Study A. Bonyár, L.M. Molnár and G. Harsányi	193
X-Ray Diffraction Measurements of Residual Stress Induced by Surface Compressing Methods D. Cseh and V. Mertinger	199
Preparation of Microcapsules for Self-Healing Polymers A. Czeller and T. Czigány	205
On the Fabrication Parameters of Buried Microchannels Integrated in In-Plane Silicon Microprobes Z. Fekete, A. Pongrácz, G. Márton and P. Fürjes	210
Development of PA6/HDPE Nanocomposite Blends H. Hargitai, T. Ibriksz, J. Stifter and E. Andersen	216
The Influence of Impurity Content on Thermal Stability of Low Stacking Fault Energy Silver Processed by Severe Plastic Deformation Z. Hegedűs, J. Gubicza, M. Kawasaki, N.Q. Chinh, Z. Fogarassy and T. Langdon	222
Microstructure and Thermal Stability of Copper - Carbon Nanotube Composites Consolidated by High Pressure Torsion P. Jenei, E.Y. Yoon, J. Gubicza, H.S. Kim, J.L. Lábár and T. Ungár	228
Single, Binary and Ternary Ion Exchanged Zeolite as an Effective Bioactive Filler for Biomedical Polymer Composites P. Kaali and G. Czél	234
Development of Nitinol Stents: Etching Experiments B. Katona, P. Nagy, E. Bognár and K. Hirschberg	240
Analysis of Applicability of the Hollow Carbon Fibres for Self-Repairing Composites S. Kling and T. Czigány	246
Preparation and Characterization of Multilayer Graphene by Mechanical Milling and Related Applications for Ceramic Composites P. Kun, O. Tapasztó, Z. Czigány and C. Balázs	252
Development of Carbon Nanotube Reinforced Conductive Polymer Composites for PEM Fuel Cells M. Olah and F. Ronkay	260
Microstructure and Phase Analysis by TEM in Cu-Hf-Ti Alloys V. Rontó, J. Sólyom, Á. Kovács, P. Pekker and I. Dódon	266

Nanostructure Layer Formation on Cu-Zr-Al Alloy during Laser Remelting M. Svéda, D. Janovszky, K. Tomolya, J. Sólyom, G. Buza and A. Roósz	272
Standardized Investigation Methods of Self Compacting Concrete and Effect of Sand Content on Properties in Fresh State V. Sugár and M. Takács	278
Investigation of Mechanical Properties and Crack Propagation Behaviour of Hybrid Composites with Epoxy Resin Matrix P. Tamás and T. Czigány	284
Modelling Possibilities of the Medieval Bloomery Process under Laboratory Conditions A. Thiele and L. Dévényi	290
Mechanical Behavior of Bioactive TiC Nanocomposite Thin Films K. Balázsi, M. Vandrovcová, L. Bačáková, C. Balázsi, I. Bertóti, F. Davin and G.Z. Radnóczy	296
Analysis of the Creep Behavior of Polypropylene and Glass Fiber Reinforced Polypropylene Composites P. Bakonyi and L.M. Vas	302
Studying of Microstructural Effects of Surface Rolling in Materials of Railway-Car Wheel Axles by EBSD and Non-Destructive Magnetic Evaluation T. Berecz and I. Mészáros	308
On the Relation between Stress Relaxation and Constant Strain Rate Tensile Behavior for Linear Viscoelastic Materials; An Engineering Approach G. Bódai and T. Goda	314
The Role of the Displacement Reaction in the Production of Surface Composite Layer V. Janó and G. Buza	320
Impedance Analysis of Silicone Rubber Filled by Electrically Conductive Nanoparticles A. Bojtos and A. Huba	326
Investigation of Mixing Processes of Polymer Composites G. Dogossy, E. Sági and F. Ronkay	332
Application of Risk-Informed Inspection Strategy to Improve the Lifetime and Efficiency of Cleaning Pigs R. Fótos, Z. Kóncsik and J. Lukács	338
Influence of Composition and Grain Size Distribution on the Properties of Limestone and Dolomite Asphalt Fillers R. Géber, I. Kocserha and L.A. Gömze	344
New Advanced SiC Ceramics Based on Natural Biomaterials L.A. Gömze, D. Lipusz and L.N. Gömze	350
Effects of the Cooling Rate on the Acoustic Properties of Pb-10Sn Solder E. Harkai, T. Hurtony and P. Gordon	356
Surface Modification of PDMS Based Microfluidic Systems by Tensides E. Holczer, Z. Fekete and P. Fürjes	361
Microstructure Comparison of Soldered Joints Using Electrochemical Selective Etching T. Hurtony, A. Bonyár and P. Gordon	367
Glass Forming Ability of Bulk Amorphous Materials in Cu-Zr-Ag Ternary Alloy Systems D. Janovszky, F. Tranta, J. Sólyom and A. Roósz	373
Development of Ferritic-Pearlitic, Pearlitic and Spheroidite Initial Structures for Simulating the Austenitization in Unalloyed Steels G. Karacs and A. Roósz	379
Quantitative Metallography of Microstructure of Austenitic and Transformed States in Microalloyed Steels I. Kardos, B. Verő and P. Bereczki	385
Stent Fracture Analysis A. Kertész, E. Bognár, T. Micsik and L. Dévényi	391
Development of Electrically Conductive Polymers A. Király and F. Ronkay	397
Effect of Organic Additives on Friction Properties of Clay Based Compounds I. Kocserha, L.A. Gömze, F. Kristály, R. Géber and B. Györffy	403
Correlation between Milling Parameters, Structural and Mechanical Properties of Nanostructured Austenitic Y₂O₃ Strengthened Steels P. Koncz, Á. Horváth, K. Balázsi, F.Ç. Şahin, G. Göller, Y. Onüralp and C. Balázsi	409

The Hardness Control in the Coated Surface Layer T. Kovács and E. Bitay	415
Evaluation of XRD Analysis of Amorphous Alloys G. Kőrösy, K. Tomolya, D. Janovszky and J. Sólyom	419
Observer Based Leakage Detection of Hydraulic Cylinder Applied in Rolling Mills Electro-Hydraulic Gap Adjustment System A. Kővári	424
Evaluation Methods of Antimicrobial Activity of Plastics E. Kun and K. Marossy	430
Development of Nitinol Stents: Electropolishing Experiments Á. Lengyel, P. Nagy, E. Bognár and K. Hirschberg	436
Intercrystalline Cracking of Austenitic Steel during Brazing K. Májlínger and P.J. Szabó	442
Accurate Calculation of the Non-Variant Points of Equilibrium Phase Diagrams by Using the ESTPHAD Method T. Mende and A. Roósz	448
Recrystallization of Pure Copper Investigated by Calorimetry and EBSD A. Mucsi	455
Laser Cutting of Small Diameter Nitinol Tube P. Nagy and J. Dobránszky	460
The Effect of Multiple Forging and Cold Rolling on Bending and Tensile Behavior of Al 7075 Alloy T.S.B. Naser and G. Krallics	464
Investigation of the Microstructure of Al/SiC(Ni)_p Composites J. Pázmán, V. Máдай, J. Tóth and Z. Gács	470
Kinking Resistance of Guidewires L. Pelyhe, M. Bán and E. Bognár	476
Technological Investigation of Plated Aluminium Sheets G. Szabó and V. Mertinger	482
Application of Specimen Reconstitution to Evaluate the Ageing of Nuclear Pressure Vessels R. Székely and Á. Horváth	487
Preparation and Study of Li₆Y(Bo₃)₃ and Li₆Gd (Bo₃)₃ Double Borates É. Tichy-Rács, Á. Péter, V. Horváth, K. Polgár, K. Lengyel and L. Kovács	493
Design of Trussed Steel Towers According to the Eurocodes P. Tomka, L. Katula and I. Bagi	497
On the Effects of Mechanical and Thermal Treatment Strategies Regarding the Grain Boundary Structure of Polycrystalline Copper P. Varga and P.J. Szabó	503
Complex Study of H-Induced Structural Rearrangements in FeZr Glasses B. Vehovszky, P. Kamasa, J. Kováč and Z. Fogarassy	509
Examination of Crystallization of Low Melting Point Alloys for Miniature Casting M. Vlaszák, K.T. Takács, L. Marosi, P. Barkóczy and K. Kállai	515
<i>In Vivo</i> Failure Phenomena of Ultra-High Molecular Weight Polyethylene Acetabular Cups G. Zsoldos, P. Bárczy and T.J. Szabo	521