

Table of Contents

Preface, Committees and Sponsors

Session I. - Materials and Technologies

Mechanical Properties of Iron Hollow Sphere Reinforced Metal Matrix Syntactic Foams A. Bálint and A. Szlancsik	3
N-Alkyl Pyrrolidones for Plasticizing Polyurethane Elastomers A. Bánhegyi, J.T. Vilaboy and K. Marossy	9
Prototype of a Human Spinal Disc for Medical Modeling M. Bozzay, M. Reiter and Z. Major	15
Investigation of the Effect of Deformation Stored Energy on the Allotropic Transformation Temperature Z. Csepeli, P. Bereczki, B. Verő, I. Kardos and P.J. Szabó	23
Welding Properties and Fatigue Resistance of S690QL High Strength Steels Á. Dobosy and J. Lukács	29
Quality Control Methods of Al₂O₃ Based Ceramic Injection Molding Raw Materials A. Egész and L.A. Gömze	35
Deposition of Nanostructure ZnO with Variable Morphology by Electrochemical and Hydrothermal Methods onto Nonwoven Materials É. Fazakas, M. Furkó, E. Takács, K. Gonter and M.L. Varsányi	41
Low Cycle Fatigue Behavior of VVER-440 Reactor Pressure Vessel Steels at Isothermal Condition B. Fekete, P. Bereczki and P. Trampus	47
The Effect of Thermomechanical Treatment on the Microstructure and the Mechanical Behavior of a Supersaturated Cu-Ag Alloy J. Gubicza, K. Sitarama Raju, V. Subramanya Sarma, A. Kauffmann, Z. Hegedűs, M. Peterlechner, J. Freudenberger and G. Wilde	53
Development of Cellulose-Reinforced Poly(Lactic Acid) (PLA) for Engineering Applications S. Hajba, T. Czigány and T. Tábi	59
Styrene-Butadiene Rubber/Graphene Nanocomposites: Effect of Co-Milling with Cyclic Butylene-Terephthalate I. Halász and T. Bárány	65
The Examination of the Cutting Capacity of Different Aluminium Alloys with Statistical Methods, Using Different Edge Material Non-Conventional (Wiper) Edge Geometry Diamond Tools R. Horváth, G. Mátyási and Á. Drégelyi-Kiss	71
Ceramic Reinforced Metal Matrix Nano and Micro-Composite Layers Produced by Combined Laser Melt Injection Technology and Thermochemical Surface Treatment V. Janó	77
Degradation Behaviour of Zeolite Filled Polyurethanes under <i>In Vitro</i> Aging Process P. Kaali and G. Czél	83
Analysis of a NiTi Shape Memory Alloy L. Kálmán and I. Mészáros	89
Development of Ceramic Feedstock for Powder Injection Molding Z. Karácsony, A. Erős, E. Andersen and G. Bánhegyi	95
UHMWPE Modified Sodium Alginate M. Kollár, G. Zsoldos and T. Szabó	101
Surface Hardening of Austenitic Stainless Steel by Explosive Treatment T. Kovacs-Coskun and P. Pinke	107
Comparing Two Examination Methods for Measuring Metal to Artery Ratio of Coronary Stents M. Kovács, D. Károly and L. Dévényi	113

Influence of Internal Leakage in Hydraulic Capsules on Dynamic Behavior of Hydraulic Gap Control System A. Kovari	119
Real-Time Test Environment for Hydraulic Gap Adjustment System in Hot Rolling Mill A. Kovari	125
<i>In Situ</i> Al₃Nb Formation in Liquid Al by Nb Particle Addition S. Kumar, S. Agarwal and K. O'Reilly	131
Effect of Equal Channel Angular Pressing on Different Face Center Cubic (FCC) Metals G. Ladányi, J. Pázmán and B. Verő	137
Influence of Sintering Time on Properties of Alumina-Based Ceramic Composite D. Lipusz, Á. Isztli and L.A. Gömze	143
Role of the Physical Simulation for the Estimation of the Weldability of High Strength Steels and Aluminum Alloys J. Lukács, L. Kuzsella, Z. Koncsik, M. Gáspár and Á. Meilinger	149
Behaviour of AlMg3 Base Material and its Friction Stir Welded Joints under Cyclic Loading Conditions J. Lukács and Á. Meilinger	155
Characteristics of Martensitic Transformations Induced by Uni-Axial Tensile Tests in a FeMnCr Steel V. Mertinger, E. Nagy, M. Benke and F. Tranta	161
Necklace Formation during Dynamic Recrystallization of 5182 Aluminium Alloy under Isothermal Compression T. Mikó	167
Optimizing Steel-Making Secondary Metallurgy Slag at ISD DUNAFERR Zrt R. Móger, M. Réger, A. Ender, R. Józsa and K. Wizner	173
Adjusting the Flexibility of Fabric Reinforced Composite Laminates Using Experimental Design T. Molnar, V. Baranyai, S. Kemény, G. Bánhegyi and J. Szabó	181
Measuring of Fiber/Matrix Adhesion in Thermoplastic Polymer Composites: A Preliminary Study B. Morlin and T. Czigány	189
Recrystallization of Boron Containing and Boron-Free Low Carbon Steels Investigated by Thermoelectric Power and Hardness Measurements A. Mucsi and L. Dévényi	195
Chemical Etching of Dental Implant Material L. Nádaí, B. Katona and E. Bognár	201
Surface Properties of Lightweight Aggregate Concrete and its Correlation with Durability R. Nemes	207
Analysing the Suitability of C16/20-X0v(H)-24-F3 Concrete for Pumping A.K. Németh and M.B. Maros	213
Characterisation of Hybrid Metal Matrix Syntactic Foams I.N. Orbulov and K. Májlínger	219
The Modelling of Crater Wear in Cutting with TiN Coated High Speed Steel Tool Z. Pálmai	227
Examination of Bone Like Materials D. Pammer and E. Bognár	233
The Effect of the Severe Plastic Deformation on the Artificial Aging of the AlMgSi1 Alloy J. Pázmán, P. Bereczki, B. Verő, I. Kardos and J. Fehér	239
Alternative, New Method for Predicting Polymer Waste Stream Contents K. Dobrovsky, V. Csergő and F. Ronkay	247
Surface Layers Produced by Modified Floe Ferritic Nitrocarburising A.S. Biro, E. Szabo and M. Tisza	253
Fabrication of Nanopatterns in a-AlO_x Thin Films by a Single Laser Pulse J. Szívós, M. Serényi, E. Gergely-Fülöp and G. Sáfrán	259
Chemical Etching of Ultrafine Grained Titanium Surfaces to Optimise Cell Attachment A. Terdik, P. Nagy, E. Bognár, Á. Joób-Fancsaly and J. Piffkó	265

Formability of High Strength Sheet Metals with Special Regard to the Effect of the Influential Factors on the Forming Limit Diagrams	
M. Tisza, P.Z. Kovács, Z. Lukács, A. Kiss and G. Gál	271

Session II. - Materials Testing

<i>In Situ</i> Optical Microscopic Examination Techniques of Thermally Induced Displacive Transformations	
M. Benke and V. Mertinger	279
Effect of High Energy Ar-Ion Milling on Surface of Quenched Low-Carbon Low-Alloyed Steel	
T. Berecz, S. Kalácska, G. Varga, Z. Dankházi and K. Havancsák	285
Examination of Thermodynamic Realalignments of Metals and Metal-Alloys, by DMTA Technique	
B. Gábor, Z. Dugár, D. Kis and P. Hansággy	291
A Method for the Determination of Ferrite Grains with a Surface Normal close to the (111) Orientation in Cold Rolled Steel Samples with Color Etching and Optical Microscopy	
A. Bonyár and P.J. Szabó	297
Innovative Residual Stress Measurements by X-Ray Diffraction	
D. Cseh, V. Mertinger and M. Benke	303
EBSD Sample Preparation: High Energy Ar Ion Milling	
Z. Dankházi, S. Kalácska, A. Baris, G. Varga, Z. Radi and K. Havancsák	309
Cold Rolling Effect on Microstructure and Mechanical Properties of Low Carbon Al-Killed Steels	
E.R. Fábián and Á. Kótai	315
Residual Stress in Plain Carbon Steel Induced by Laser Hardening	
A. Filep, M. Benke, V. Mertinger and G. Buza	321
Comparative Corrosion Study on Silver Coated Metallic Implants	
M. Furko, M. Lakatos-Varsányi and C. Balázsi	327
Electrochemical Impedance Spectroscopy as a Prospective Tool for the Characterization of the Intermetallic Microstructure of Lead Free Solder	
T. Hurtony, A. Bonyár and P. Gordon	333
Examination of the Surface Phosphorus Content of Anodized Medical Grade Titanium Samples	
B. Katona, G. Dobos and G. Kiss	339
Evaluation of Quenchant's Cooling and Hardening Performance	
G. Kerekes, M. Kocsisné Baán and I. Felde	345
Testing of Power Plant Steel Deterioration by Adaptive Nonlinear Harmonics Method (ANLH)	
I. Mészáros	351
Investigation of Intermetallic Phases Formed in Lead-Free Solders	
E. Nagy, A. Gyenes, A. Molnár and Z. Gácsi	357
Determination of the Guidewire's Visibility	
L. Pelyhe and E. Bognár	363
Laboratory-Scale Simulation of Acid Pickling of Steel Sheets with an Instrument Modeling the Production Line	
L. Péter, O. Santa, O. Szabados and B. Verő	369
The Properties of Welded Joints Made by 6082-T6 Aluminium Alloy and their Behaviour under Cyclic Loading Conditions	
D. Pósalaky and J. Lukács	375
Observed Phenomena during the Development of an Adhesion Test for Coated Medical Devices	
T.L. Sélley, A. Kertész and E. Bognár	381
Investigation of Typical Bonding Faults of Plated Al Sheets Developed during Rolling	
G. Szabó and V. Mertinger	387
Investigation of the Common Modification Effect of Strontium and Antimony on the Structure in Case of Al-Si Alloy	
M. Tokár, G. Fegyverneki and V. Mertinger	393

CSI vs. Reality P. Tóth	399
Determining the Viscosity of Rarely Examined Glasses G. Zsoldos, I. Kocserha and A. Szegedi	405

Session III. - Modelling

Mechanical Modeling of Gradient Materials G. Béda and P.B. Béda	413
Estimation of Thermal Boundary Conditions by Using Hybrid Inverse Approach I. Felde	419
Practical Aspects of Micromechanics Based Simulation of Polymer Matrix Composites Z. Major, M. Reiter and M. Jerabek	425
Application of 2D-3D Surface Geometrical Features in Tribological Analysis of Ceramics and Ceramic Layers Z. Maros, C. Felhő, Z. Vass and M.B. Maros	435
Investigation of the Data-Requirement of ESTPHAD Phase Diagram Calculation Method T. Mende and A. Roósz	441
Determination of Dislocation Density in Cubic Systems P.J. Szabó and A. Csóré	447
Determination of Flow Curve by Cylindrical Upsetting Based on the Principle of Virtual Power V. Szombathelyi, G. Krallics and P. Rózsahegyí	453
On the Topological Characterization of Fullerene-Like Materials Using Zagreb Indices-Based Topological Descriptors T. Réti, I. László and A. Hamzeh	459
Simulation of Isothermal Austenitization in Banded Pearlite Steels by Cellular Automaton G. Karacs and A. Roósz	465