

Table of Contents

Preface

The Paths and Strategies for Increased Magnesium Applications in Vehicles S. Schumann	1
Fundamental Magnesium Researches in Japan Y. Kojima and S. Kamado	9
The Freedom CAR and Hydrogen Fuels Initiative and Magnesium J.A. Carpenter	17
Overview of Key R&D Activities for the Development of High-Performance Magnesium Materials in Canada J. Jackman, J. Wood, E. Essadiqi, J. Lo, M. Sahoo, S. Xu, J. Thomson and W.J. Liu	21
Effects of Purification Fluxes Containing Boride on AZ91 Alloy H.T. Gao, G.H. Wu, Y. Fan, W.J. Ding and Y.P. Zhu	25
Preparation Technologies and Applications of Strontium-Magnesium Master Alloys X.G. Liu, X.D. Peng, W.D. Xie and Q.Y. Wei	31
General Situation of the Series Recovery Equipments for the Scraps of Magnesium Alloy in China X.L. Tian, Q. Luo and Q. Dong	35
Production of Magnesium Metal from Turkish Calcined Dolomite Using Vacuum Silicothermic Reduction Method O. Yucel, S. Yiğit and B. Derin	39
Recent Technological Advancement and Developmental Trend of Pidgeon Process in Smelting Magnesium in China X. Wang, J. Zang and J. He	43
Management and Recycle of Magnesium Alloy Scraps in Die Casting Factory K. Tseng, G. Sheu and S.T. Huang	49
Density Functional Theoretical Study on Dehydration Process of $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ G.S. Liu, X.F. Song and J.G. Yu	53
Preparation of Anhydrous Magnesium Chloride from Bischofite ($\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$) I. Reaction Crystallization of Magnesium Chloride Hexammoniate X.T. Wang, J.H. Zhao, X.F. Song, J. Wang and J.G. Yu	57
Preparation of Anhydrous Magnesium Chloride from $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$ Thermal Decomposition Mechanism of the Intermediate Product X.F. Song, J. Wang, X.T. Wang and J.G. Yu	61
Metal Quality - From Ingot to Finished Product P. Bakke, P.K. Andersen, J.M. Svalestuen and S.I. Strømhaug	65
A New Low GWP Protective Atmosphere Containing HFC-152a for Molten Magnesium against Ignition Y. Zeng, L.M. Peng, X.M. Mao, X.Q. Zeng and W.J. Ding	73
A Novel Technique for On-Line Generation of Mg-Shielding Gas G.Q. You, S.Y. Long and J. Zha	77
High Precision Multiple Gas Mix & Distribution System for Mg-Alloy Smelting Protection Gas X. Xie, Q. Luo and Q. Dong	81
Protective System for Magnesium Melt A. Karger, F.W. Bach and C. Pelz	85
On Specific Features of Operating Crucibleless Salt-Bath Furnaces I.V. Zabyelin, I.M. Komelin, I.A. Barannik and I.L. Sikorskaya	89
Ammoniation Technology for Dehydration of Hydrated Magnesium Chloride in China G. Long, P. Ma and M. Chu	95
The Recrystallization Behavior of AZ31 and WE43 G.W. Lorimer, L.W.F. Mackenzie, J.F. Humphreys and T. Wilks	99
Effect of Rare-Earth Elements Y and Ce on the Microstructure and Mechanical Properties of ZK60 Alloy D.Q. Yi, B. Wang, X. Fang, S.J. Yao, L.L. Zhou and W.H. Luo	103

Effects of Ca Addition on Microstructure and Mechanical Properties of Mg-RE-Zn Casting Alloy	
J.H. Jun, B.K. Park, J.M. Kim, K.T. Kim and W.J. Jung	107
Effect of LaCl₃ on the Structure and Properties of Magnesium Alloys	
G.H. Wu, H.T. Guo, X.Q. Zeng and W.J. Ding	111
Microstructures and Tensile Properties of Hot-Rolled AZ31-xCa Sheets	
D.Y. Chang, B.S. You, J.S. Lee and W.C. Kim	115
Microstructure and Mechanical Extruded Properties of Extruded AM50+xCa Magnesium Alloys	
Q.D. Wang, J. Peng, M.P. Liu, Y. Chen, W.J. Ding, M. Suéry and J.J. Blandin	119
Microstructure and Mechanical Properties of a Mg-Zn-Y-Zr Alloy Processed by Thermo-Mechanical Treatment	
Y. Zhang, X.Q. Zeng, C. Lu, W.J. Ding and Y.P. Zhu	123
High Mechanical Properties of Cast Quasicrystal-Reinforced Mg-Alloys	
G.Y. Yuan, W.J. Ding, K. Amiya, H. Kato and A. Inoue	127
Materials Design for High-Strength Mg-Based Alloys by Understanding from Ab Initio Calculation	
T. Uesugi and K. Higashi	131
Investigations in the Magnesium-Tin System	
A.L. Bowles, H. Dieringa, C. Blawert, N. Hort and K.U. Kainer	135
The Effect of Manganese on the Grain Size of Commercial AZ31 Alloy	
P. Cao, D.H. StJohn and M. Qian	139
Microstructure Refinement of Magnesium Based Alloy	
F. Xue, W. Du and Y.S. Sun	143
Microstructure and Properties of Mg-Al Based Casting Alloys Modified with Minor Alloying Elements	
J.M. Kim, B.K. Park, J.H. Jun, K.T. Kim and W.J. Jung	147
Effect of Heat Treatment on Microstructure and Mechanical Properties of MA2-1 Alloy Sheet	
W. Zheng, X.L. Sun, P. Li, D. Zeng and L.B. Ber	151
Effects of Zr on Microstructures and Properties of a β Matrix Mg-13Li-3Al-0.7Zr Alloy	
B. Chen, L.P. Feng, T.T. Zhou, P.Y. Liu and H.X. Li	155
Effects of Nd on the Microstructure and Mechanical Property of ZA52 Alloy	
H. Zou, X.Q. Zeng, C.Q. Zhai and W.J. Ding	161
The Effect of Mould Constraints on the 0.2% Proof Stress of As-Cast Mg-Al Alloys	
M. Wessen and H.P. Cao	165
First-Principles Investigation of Laves Phases in Mg-Al-Ca System	
Y. Zhong, A.A. Luo, J.O. Sofo and Z.K. Liu	169
Improving the Strength and Ductility of Magnesium Alloys by Grain Refinement and Texture Modification	
T. Liu, Y.D. Wang, S.D. Wu, S.X. Li, R.L. Peng and Y.B. Xu	177
Investigation on the Alloy Phases in As-Aged ZK60 Magnesium Alloy	
F.S. Pan, W.M. Wang, Y.L. Ma, R.L. Zuo, A. Tang and J. Zhang	181
Texture, Microstructure and Strain Sensibility in Compressed Magnesium Alloys	
P. Yang, Z. Zhao, L. Meng, X. Ren and S.D. Huang	185
Investigation on Microstructures of Heat Treated Mg-Zr and Mg-Mn Alloys	
J.P. Li, G.W. Lorimer, J.D. Robson and B. Davis	189
Orientation Dependence of Ductility of Mg Single Crystals at Elevated Temperature	
H. Miura, T. Sakai, H. Nogawa, X.Y. Yang, Y. Watanabe and S. Miura	193
Effects of Silicon and AlP on Microstructure and Properties of Mg-8Zn-4Al-0.3Mn Alloy	
C.X. Zhang, S. Guan and H.L. Zhao	197
The Influence of Electric Current Pulses on the Microstructure of Magnesium Alloy AZ91D	
Y.S. Yang, Q. Zhou and Z.Q. Hu	201
Effects of Al/Zn Ratio on the Microstructure and Strengthening of Mg-Al-Zn Alloys	
C.P. Luo, J.W. Liu and H.W. Liu	205
Fabrication of Bulk Amorphous Mg₆₅Cu₂₅Gd₁₀ Alloy of 12mm Rod by Water Quenching	
W.Y. Liu, H. Zhang, Z.Q. Hu, H. Wang and X.D. Yao	211

Dynamic Recrystallization and Microstructure Evolution in AZ31 Magnesium Alloy during Thermomechanical Processing	
G.J. Huang, L.Y. Wang, G.S. Huang and F.S. Pan	215
Effect of Antimony and Ce-Rich Mischmetal Additions on As-Cast Microstructure and Mechanical Properties of AZ91 Alloy	
Z. Yang, J.P. Li, G.H. Li and J. Yang	219
Effect of Initial Grain Size on Deformation Behavior and Dynamic Recrystallization of Magnesium Alloy AZ31	
X.Y. Yang, M. Sanada, H. Miura and T. Sakai	223
Diffusion Bonding in Superplastic ZK60 Magnesium Alloy	
Y.D. Yu and Q. Li	227
Effects of Variable La/Ce Ratio on Microstructure and Mechanical Properties of Mg-5Al-0.3Mn-1RE Alloys	
S.M. He, L.M. Peng, X.Q. Zeng, L.P. Liu, Q.D. Wang, W.J. Ding and Y.P. Zhu	231
Preparation of Magnesium-Rare Earth Master Alloy Using Electrowinning Method with Subsidence Cathode	
D.P. Zhang, D.Q. Fang, J. Wang, D.X. Tang, H.Y. Lu, L.S. Zhao and J. Meng	235
The Microstructures and Their Stability of β Base Mg-13Li-X Alloys	
L.P. Feng, B. Chen, P.Y. Liu, T.T. Zhou and H.X. Li	239
Effect of Yttrium on Morphologies of Precipitation Phases along Grain Boundaries of As-Cast ZK60 Magnesium Alloy	
Y.L. Ma, R.L. Zuo, A. Tang, W.M. Wang, J. Zhang and F.S. Pan	245
Microstructure and Mechanical Properties of Rapidly Solidified AZ91HP Alloy	
J. Cai, L. Lin, Z. Liu, H. Zhang and Z.Q. Hu	249
Ab Initio Study of Phase Stability for $(\text{Mg}_{1-x}\text{Al}_x)_2\text{Sn}$ Alloys	
K. Bai and P. Wu	253
Effects of Heat Treatment on Microstructure and Mechanical Properties of Rolled AM50+xCa Magnesium Alloys	
J. Peng, Q.D. Wang, M.P. Liu, Y. Chen, W.J. Ding, M. Suéry and J.J. Blandin	257
Particle-Stimulated Nucleation of Dynamic Recrystallization in AZ31 Alloy at Elevated Temperatures	
L. Jiang, G.J. Huang, S. Godet, J.J. Jonas and A.A. Luo	261
Development of a High Strength and High Ductility Magnesium Alloy	
Y.Q. Ma, R. Chen and E.H. Han	265
Microstructure Evolution of Mg-Y-Nd-Zr Alloy during High Temperature Deformation	
W.N. Tang, R. Chen and E.H. Han	269
Microstructure and Mechanical Properties of Extruded Mg-Al-Ca Based Alloys	
R. Chen, J.J. Blandin, M. Suéry and E.H. Han	275
Development of High Temperature Creep Resistant Magnesium Alloys for Die Casting	
H.F. Liu, G. Tong and J. Hou	279
On some Characteristics of Microstructure and Defects in Die-Cast Magnesium Components	
H.P. Cao	283
Newly Developed Heat Resistant Magnesium Alloy by Thixomolding®	
T. Tsukeda, K. Saito, M. Suzuki, J. Koike and K. Maruyama	287
Rapidly Solidified AZ31 Magnesium Alloy Ribbons Used in Rechargeable Batteries	
H.L. Zhao, S. Guan, C.X. Zhang, F.Y. Zheng, L.G. Wang and Q.K. Li	291
Effects of Cooling Rate on Solidification Microstructure of ZK60 Magnesium Alloy	
C.M. Yang, D.F. Zhang, P.D. Ding, J. Peng and X.H. Chen	295
Theoretical and Practical Considerations of Grain Refinement of Mg-Al Alloys	
L. Lu, A.K. Dahle, J.A. Taylor and D.H. StJohn	299
Thixotropic Mg Alloys through Liquidus and Sub-Liquidus Casting	
Q.C. Le, J. Cui and K. Xia	303
Semi-Solid Processing Technologies of Magnesium Alloys	
X.G. Li, S.S. Xie, Y.X. Jiang and L. Li	307
Microstructure Evolution of Deformed Magnesium Alloy in Semi-Solid State	
S. Yuan, W.X. Wang and B.L. Jiang	313

Effects of Technological Factors on the Mold Filling Velocity of Magnesium Alloys in the Expendable Pattern Casting (EPC) Process M.B. Yang, F.S. Pan and S. Tang	317
Variations of Solute Concentration in the Crucible during Hot Chamber Die-Casting Process M.C. Kang, D.H. Ye, K.H. Kim and K.Y. Sohn	321
The Latest Technology Trends on Thixomolding® of Magnesium Alloys T. Tsukeda, K. Saito, K. Takeya and K. Kitamura	325
The Microstructures of As-Cast Mg-Zr and Mg-Mn Alloys J.P. Li, G.W. Lorimer, J.D. Robson and B. Davis	329
A Rheological Model of Semisolid Magnesium Alloy Slurries L. Li, X.W. Zhou and J.Y. Chen	333
Characterization of Magnesium Plates Produced by Wheel-Band Casting and Horizontal Continuous Casting D.Y. Chang, B.S. You, B.S. Kam and W.W. Park	337
Research on the Homogenization of ZK60 Magnesium Alloy Ingot D.F. Zhang, J. Peng, B. Jiang, C.M. Yang and P.D. Ding	341
Investigation on Low-Frequency Electromagnetic DC Casting of AZ91 Magnesium Alloy Q. Le, J. Cui, S.J. Guo, Z. Zhao and F. Yu	345
The Grain Size Evolution of AZ31 Profiles as a Function of Different Casting Conditions F. Pravidic, H. Kilian, M. Brandecker, C. Wögerer and G. Traxler	349
Material-Specific Joining Techniques for Magnesium Body Structures O. Hahn, S. Schumann, G. Meschut and T. Fuhrmann	357
Investigation on Pore Formation during Hybrid Laser-Tungsten Inert Gas Arc Welding of Magnesium Alloy AZ31B L.M. Liu, G. Song and J.F. Wang	361
Thermally Supported Mechanical Joining of Magnesium Components O. Hahn, Y. Tan, M. Schroeder and M. Horstmann	365
Investigations on Laser-TIG Hybrid Welding of Magnesium Alloys G. Song, L.M. Liu, M. Chi and J.F. Wang	371
Influence of Process Conditions of Thixomolding® on the Microstructure of Magnesium Mobile Phone Housing X.P. Cui, Y.B. Liu, Z.Y. Cao, X.H. Yang and W. Liang	377
Mechanisms of Segregation Band Defect Formation in Pressure Die-Cast Magnesium Components H.P. Cao and M. Wessen	381
Microstructure and Mechanical Properties of Extruded Mg-Zn-Nd-Y-Zr-Ca Alloy Q. Li, Q.D. Wang, X.Q. Zeng, W.J. Ding, Q. Tang and S.D. Huang	385
Theoretical Analysis of Plastic Forming Process for Semi-Solid Material H. Yan and J. Xei	389
Numerical Study on the Low Pressure Die Casting of AZ91D Wheel Hub Y.H. Peng, D.Y. Li, Y.C. Wang, J.L. Yin and X.Q. Zeng	393
Manufacturing and Application of Continuous Cast Semi-Solid Processed Magnesium Alloys H.C. Jung, Y.S. Kim and K.S. Shin	397
Processing and Characterization of Magnesium Alloys H.C. Jung and K.S. Shin	401
Development of the Rheo-Diecasting Process for Mg-Alloys Z. Fan, S. Ji and G.J. Liu	405
Research and Development of Wrought Magnesium Alloys in China F.S. Pan, M.B. Yang, D.F. Zhang, L.Y. Wang and P.D. Ding	413
Properties of AZ31 Magnesium Alloy Sheet Produced by Twin Roll Casting Y. Nakaura and K. Ohori	419
The Microstructure and Processing in Twin Roll Casting of Magnesium Alloy Strip C.M. Yang, D.F. Zhang, P.D. Ding and F.S. Pan	427
Development of Strip Casting Process for Fabrication of Wrought Mg Alloys S.S. Park, D.H. Kang, G.T. Bae and N.J. Kim	431

Rolling of Mg Sheet Metal X.Y. Li and H. Lou	435
Thermal Flow Simulation on Twin Roll Casting Process for Thin Strip Production of Magnesium Alloy D.Y. Ju, H.Y. Zhao, X.D. Hu, K. Ohori and M. Tougo	439
Manufacturing Technique of Magnesium Alloy Sheets by Powder Rolling G.S. Huang, L.Y. Wang, Z.W. Zhang, G.J. Huang and F.S. Pan	445
Improvement of Plastic Workability of Rolled AZ31 Alloy Sheet by Surface Thermo-Mechanical Treatment Y. Yoshida, K. Arai, S. Kamado and Y. Kojima	449
Formability and Process Conditions of Magnesium Alloy Sheets S.H. Zhang, Y.C. Xu, G. Palumbo, S. Pinto, L. Tricarico, Z.T. Wang and Q.L. Zhang	453
Finite Element Analysis of Press Forging Process of AZ31 Sheet J.K. Hwang, K.Y. Sohn, D.M. Kang and Y.S. Shin	457
Improved Formability and Deep Drawing of Cross-Rolled Magnesium Alloy Sheets at Elevated Temperatures Y.C. Xu, S.H. Zhang, H.M. Liu, Z.T. Wang, W.T. Zheng, Q.L. Zhang and Y. Xu	461
Grain Refining of Magnesium Alloy AZ 31 by Equal Channel Angular Extrusion J.Y. Wang, Y.H. Chen, Y.L. Yang and S. Lee	465
Effect of Microstructures on Tensile Properties of AZ31 Mg Alloy Processed by ECAP Y. Miyahara, K. Adachi, Y. Maehara, Z. Horita and T.G. Langdon	473
Development of a Moderate Temperature Bending Process for Magnesium Alloy Extrusions A.A. Luo and A.K. Sachdev	477
Evaluation of Magnesium Extrusion Production M. Zhou, J. Cao, F. Yu and X. Wei	483
Warm Lateral Extrusion of Magnesium Wrought Alloy by Using Multi-Axes Material Testing Machine K. Hatsukano, K. Matsuzaki, T. Shimizu and K. Shinozaki	487
Hydrostatic and Indirect Extrusion of AZ-Magnesium Alloys J. Swiostek, J. Bohlen, D. Letzig and K.U. Kainer	491
High Strength Mg-Zn-Y-Ce-Zr Alloy Bars Prepared by RS and Extrusion Technology X. Guo, J. Kinstler, L. Glazman and D. Shechtman	495
Forming Tubes, Extrusions and Sheet Metal from Magnesium AZ31 K. Siegert, S. Jäger, M. Vulcan and C. Wizemann	499
Large Profile Magnesium Alloys Extrusions for Automotive Applications G.I. Rosen, G. Segal and A. Lubinsky	509
Effects of Manganese Contents on Extruded Magnesium Alloys T. Murai, H. Oguri and S. Matsuoka	515
Research on Technology and Microstructure Performance in Profile Extrusion of AZ31 Mg-Alloy Q. Wang, B.C. Li and Z. Feng	519
Safety Design of a Horizontal Semi-Continuous Caster for Magnesium Alloy Q. Luo, Q. Dong and Z. Yang	523
Investigation on Deformation in ZK60 at High Strain Rate X. Zhang, B.C. Li, Z.M. Zhang and Z.W. Wang	527
Plastic Deformation Behavior of Mg-Li Alloys at Ambient and Elevated Temperatures W.N. Tang, Y.B. Xu and E.H. Han	531
The Effects of Grain Size on Ductility of AZ31 Magnesium Alloy X.L. Wang, Y.N. Yu and E. Wang	535
Strengthening Behaviours of AZ31 Mg-Alloy during Warm Forming Z.M. Zhang, Q. Wang and B.H. Zhang	539
Plastic Deformation on High Purity Magnesium Prepared by Deposition Technique A. Yamamoto, M. Jotoku and H. Tsubakino	543
Plastic Deformation Behaviors and Microstructures of a Wrought Mg-Zn-Rare Earth Alloy K. Yu, W.X. Li, R.C. Wang, Y. Xiao and Z. Ma	547
Dynamic Analysis on Thermal Deformed AZ61B Magnesium Alloy J. Peng, D.F. Zhang, P.D. Ding, F.S. Pan and X. Yu	551

Mechanisms of Plastic Deformation in Pure Mg and AZ31 Mg Alloy Polycrystals N. Ono, M. Ueda and S. Miura	555
The Effect of Thermomechanical Treatment on the Mechanical Behavior of Mg-Al-Zn Alloys K.Y. Sohn, R.S. Ha, M.C. Kang and K.H. Kim	559
Hot Compression Behavior of Liquidus Casting ZK60 Magnesium Alloy H.T. Zhou, X.Q. Zeng, L. Liu, Q.D. Wang, Y.P. Zhu and W.J. Ding	563
Superplastic Forming of AZ31 Mg Alloy Recycled by Solid-State Processing Y. Chino, M. Mabuchi, T. Hoshika, J.S. Lee, K. Shimojima, H. Hosokawa, Y. Yamada and H. Iwasaki	567
Press Forming Technology Using Superplastic Deformation for Mg Alloy Sheet H. Fujii, H. Iwasaki and J.K. Araki	571
Superplasticity of Magnesium Alloy ZK40 Processed by Equal Channel Angular Pressing L. Yang, X.M. Yang, T. Liu, S.D. Wu and L.J. Chen	575
An Investigation of Low Temperature Superplasticity of ZK40 Magnesium Alloy Subjected to Equal Channel Angular Pressing L. Lin, L.J. Chen and Z. Liu	581
Effect of Temperature on the Superplasticity of AZ81 Magnesium Alloy Processed by Hot Extrusion L. Lin, L.J. Chen and Z. Liu	585
Effect of Equal Channel Angular Extrusion on the Microstructure and Mechanical Properties of Magnesium Alloy Containing Quasicrystallines M.Y. Zheng, X.G. Qiao, S.W. Xu, K. Wu, S. Kamado and Y. Kojima	589
Effect of Microstructures and Texture Development on Tensile Properties of Wrought Magnesium Alloys Processed by ECAE Z.W. Huang, Y. Yoshida, S. Kamado and Y. Kojima	593
Grain Refinement in Magnesium Alloy AZ31 during Multidirectional Forging under Decreasing Temperature Conditions J. Xing, X.Y. Yang, H. Miura and T. Sakai	597
Microstructure Evolution and Mechanical Properties of AZ 31 Mg Alloy Processed by Equal Channel Angular Extrusion L. Jin, D.L. Lin, D.L. Mao, X.Q. Zeng and W.J. Ding	601
Development of Semi-Solid Processes for Hot Extrusion of Magnesium Alloys Z. Koren, H. Rosenson, G.I. Rosen and G. Segal	605
The Influence of Twinning on the Hot Working Flow Stress and Microstructural Evolution of Magnesium Alloy AZ31 A.G. Beer and M.R. Barnett	611
New Processing Technology of Twin Roll Strip Casting of AZ31B Magnesium Strip H.S. Di, Y.L. Li, Z. Ning, Z. Li, X. Liu and G.D. Wang	615
Hot Rolling of AZ31 Magnesium Alloy and Its Effects on Microstructure and Mechanical Properties B. Chen, D.L. Lin, X.Q. Zeng and C. Lu	619
Yield and Plastic Deformation of Mg-Alloy AZ31 at Elevated Temperatures G. Qan	623
Microstructure and Mechanical Properties of AM50+xTi Magnesium Alloys Extruded from As-Cast and Solution Treated Conditions Q.D. Wang, Y. Chen, J. Peng, M.P. Liu, W.J. Ding, M. Suéry and J.J. Blandin	629
An OIM Analysis on the Deformation Mechanism in Hot Compressed AZ31 Magnesium Alloy L. Meng, P. Yang, Z. Zhao and W.M. Mao	633
Forming Limit and Loading Path of Mg-Alloy Tube Bulging G. Liu, S. Jäger and K. Siegert	637
Microstructure Properties Study of Commercial Magnesium Alloy AZ31D Y.S. Zhang, Z.P. Zeng and Q.L. Jin	641
Constitutive Model Development and the Numerical Study on the Drawability of AZ31 Sheet Y.H. Peng, Y.B. Luo, D.Y. Li and J.L. Yin	645

Corrosion and Protection of Magnesium Alloys: An Overview of Research Undertaken by CAST	
G.L. Song	649
Two-Step Anodization of AZ91 Magnesium Alloy	
R.F. Zhang, D.Y. Shan and E.H. Han	653
Effects of Triethanolamine on the Performances of the Anodizing Film of AZ31B Magnesium Alloy	
Y. Ding, X.W. Guo, Y.F. Jiang, X.Q. Zeng, W.J. Ding and Y.P. Zhu	657
Application of Polymer Plating to Inhibit Corrosion of Magnesium Alloy	
Z.X. Kang, Y.Y. Li and K. Mori	661
Properties of Conversion Coating of Magnesium Alloys by a Phosphate-Permanganate Solution	
S.S. Wu, M. Zhao, J.R. Luo and Y.W. Mao	665
TiN Coating on Magnesium Alloy by Arc-Aided Glow Discharge Plasma Penetrating Technique	
C.E. Cui, Q. Miao, J.D. Pan and P.Z. Zhang	669
Synergistic Fluoropolymer Coating on Magnesium Alloys	
H.Q. Zou, J.C. Lu, J. Zhang, H.C. Wu and M. Fang	673
Preparation of Ceramic Membrane by Micro Arc Oxidation on Mg-Alloy	
Q. Dong, L.T. Xiao and Q. Luo	677
Effects of Ni Electroless Plating on Electrochemical Properties of Mg₂ Ni Hydrogen Storage Alloys	
Y. Tang, Y. Xu, Z. Lu and B.Y. Huang	681
Al Arc Spray Coating on AZ31 Mg Alloy and Its Corrosion Behavior	
Z.S. Wei, L. Liu and W.J. Ding	685
Structural Characteristics and Electrochemical Properties of Mg-Ni-Cu-Y Alloy Synthesized by Mechanical Alloying	
L.M. Wang, X.B. Zhang and Y.M. Wu	689
Microstructure and Mechanical Properties of Ceramic Coating on AM50 Magnesium Alloy by Microarc Oxidation	
H. Zhao, J. Chen and Z. Liu	693
Comparison of Corrosion Properties of Squeeze Cast and Thixocast MgZnRE Alloys	
C. Blawert, E.D. Morales, W. Dietzel and K.U. Kainer	697
Effect of Pulsed High Energy Ion Beam on Surface Modification of AZ91 Magnesium Alloy	
H. Zhao, Z. Han and Z. Liu	701
The Corrosion Behaviour of Mg Alloy AZ91D/TiCp Metal Matrix Composite	
S. Jia, S.S. Jia, G. Sun and J. Yao	705
Effect of Aging on Yield Stress and Corrosion Resistance of Die Cast Magnesium Alloy	
G.L. Song, A.L. Bowles and D.H. StJohn	709
The Effect of Inverse Macro-Segregation on Fatigue Behavior of Die-Cast AM60 Magnesium Alloy	
S.G. Lee, G.R. Patel and A.M. Gokhale	713
Dynamic Crack Propagation Behavior of the Mg-Li Alloys under High-Speed Impact Loading	
G.Y. Sha, Y.B. Xu and E.H. Han	717
Fatigue and Corrosion Fatigue of Magnesium Alloys	
R.C. Zeng, E.H. Han and W. Ke	721
Low-Cycle Fatigue Behavior of Magnesium Alloy AZ91	
L.J. Chen, J. Shen, W. Wu, F. Li, Y. Wang and Z. Liu	725
Effect of Inoculation on the Damping Properties of Mg-8Zn-4Al-0.3Mn Alloy	
S. Guan, J.Q. Wang, J.Y. Chen, H.L. Zhao and Q.K. Li	729
Influence of Heat Treatment on Damping Capacity of Magnesium Alloy AZ91D	
J. Zhang, Y.L. Tao, F.S. Pan and D.Y. Wang	733
Effect of Deformation on the Damping Capacity of Magnesium Alloys	
X.S. Hu, K. Wu, M.Y. Zheng, S.W. Xu and Y.K. Zhang	737
Addition of B₄C to AZ91 via Diecasting and Its Effect on Wear Behaviour	
A.A. Kaya, E.S. Kayali, D. Eliezer, G. Gertsberg and N. Moscovitch	741

A Comparative Study on the Fretting Wear Resistant Properties of AZ91D and AM60B Magnesium Alloys	745
W.J. Huang, R.C. Zeng and A.H. Chen	
Microstructures and Creep of AM50-Sb-Gd Alloys	749
S.G. Tian, K.Y. Sohn, H.G. Cho and K.H. Kim	
High-Temperature Mechanical Properties of As-Extruded ZK60	753
W. Wu, C.M. Hong, L.J. Chen, Y. Wang, L. Yang, F. Li and Z. Liu	
Tensile and Creep Properties of Magnesium Alloys Incorporating Dispersoids within Matrix	759
D.H. Kang, M.S. Yoo, S.S. Park and N.J. Kim	
Mechanical Properties and Creep Behavior of Mg–Al–Ca Alloys	763
M.P. Liu, Q.D. Wang, X.Q. Zeng, G.Y. Yuan, Y.P. Zhu and W.J. Ding	
Effect of Si, Ca and Sr on the Creep-Resistance of AZ91D Alloy	767
Y. Wang, S.M. Xiong, W.H. Li and Z.W. Zou	
Mechanical Properties and Deformation Features of AZ31-Sb Alloy	771
S.G. Tian, K.Y. Sohn and K.H. Kim	
Deformation Behavior of Polycrystalline AZ31 Alloy at Room and Elevated Temperatures	775
T. Zhou, G. Itoh, Y. Iseno and Y. Motohashi	
Material Properties Test and Numerical Simulation of Impact for Die Cast Magnesium Alloy	779
X.G. Zeng, Q.W. Wu, L. Liyuan and J.H. Fan	
Compressive Deformation Behavior of the SiCw/AZ91 Composite at Elevated Temperatures	783
S.B. Li, W.M. Gan, M.Y. Zheng and K. Wu	
Protection of Mg Alloys against Galvanic and Other Forms of Corrosion	787
W.Y. Zheng, C. Derushie and J. Lo	
A Model on the Correlation between Composition and Mechanical Properties of Mg–Al–Zn Alloys by Using Artificial Neural Network	793
H.D. Liu, A. Tang, F.S. Pan, R.L. Zuo and L.Y. Wang	
Environmental Impact and Corrosion Behaviour Assessment of Magnesium Castings	797
B. DeBenedetti, E. Angelini, S. Grassini, M. Marino, F. Fracassi and F. Palumbo	
Corrosion Resistance of Surface Treated AZ91D Magnesium Alloys Outdoor Exposure after 10 Years	801
K. Nishinaka, M. Senzaki, A. Konno, H. Umehara and M. Takaya	
Optimization of Mg–Zn–Al–Ca–La Alloys for the Improvement of Casting Properties and Creep Resistance	805
A.I. Anthony, A. Suzuki, S. Kamado and Y. Kojima	
Electrochemical Behavior of Magnesium and Aluminium Ions in Alkali Chloride Melt	811
X. Zhang, S. Jiao, S. Xiao and H.M. Zhu	
Flow Stress and Microstructural Evolution of AM50 Alloy during Upsetting Forging Tests at High Temperature	815
Y.Q. Yan, L. Zhou and C.Q. Chen	
Phosphate Conversion Coating on Diecast AZ91D and Its Corrosion Resistance	819
W.Q. Zhou, D.Y. Shan, E.H. Han and W. Ke	
Characterization of Wear and Corrosion Protective Coatings Formed on AZ91 Magnesium Alloy and SiCw/AZ91 Magnesium Matrix Composite by Microarc Oxidation	823
Y.Q. Wang, M.Y. Zheng and K. Wu	
Compressive Behavior of Extruded SiCw/AZ91 at Temperatures close to and above the Solidus of the Matrix Alloy	827
W.M. Gan, M.Y. Zheng, S.B. Li and K. Wu	
Phosphoric Conversion Coating and Chromic Conversion Coating for Die-Cast Magnesium Alloy ZM5	831
Y. Hu, N. Du, Q. Zhao, Y. Zhou and L. Meng	
A Study on the Pretreatment of Direct Electroless Nickel Plating on Magnesium Alloys AZ91D	835
Y.W. Song, D.Y. Shan and E.H. Han	
Corrosion of New Wrought Magnesium Alloys	839
Y.G. Na, D. Eliezer and K.S. Shin	

Effects of Alloying Elements on Mechanical Properties of Mg-Al Alloys Y.J. Chung, J.L. Park, N.J. Kim and K.S. Shin	845
Effect of Strong Magnetic Field on the Discontinuous and Continuous Precipitation in AZ91 Mg Alloy J. Dong, Z.F. Li, X.Q. Zeng, C. Lu and W.J. Ding	849
Dynamic Fracture Behavior of Magnesium Alloy under Biaxial Stress D.Y. Hwang and A. Shimamoto	853
Effects of Biaxial Stress Condition for Fatigue Properties of Magnesium Alloy Y. Ito and A. Shimamoto	859
Effect of Al₂O₃ Thin Film on Corrosion Resistance of Pure Mg and Its Anodic Coating D.Y. Shan, R.F. Zhang and E.H. Han	865
The Effect of RE and Ca on Corrosion Resistance of AZ91 Y. Fan, G.H. Wu, H.T. Gao and C.Q. Zhai	869
Materials Substitution for Scientific Use of Mg Castings on Motorbikes S.Y. Xu, H.X. Cao, S.Y. Long, X. Chen, Z. Liu and Z.H. Zhang	873
Specific Features of Magnesium and Its Alloy Application for Hot Metal Desulphurization I.A. Barannik, V.A. Aleksandrov, A.M. Bashmakov and A.F. Shevchenko	877
The Study of Heat Transfer and Mass Transfer for the Large Capacity Mg-3Ni-2MnO₂ Hydrogen Storage Material W.C. Zhang, X.L. Wang and E. Wang	881
Comparison of Material Properties of Mg and Al on Service Stress in Light Alloy Rood Wheels L. Wu, H.X. Cao and S.Y. Long	885
Study of Grain Refinement and SiC Nanoparticle Reinforced Magnesium Alloys Z.H. Wang, Y.L. Kang, W. Dong, H. Zhao, J.W. Liu and Y. Xu	889
Microstructure and Fracture Surfaces of Carbon Nanotubes/Magnesium Matrix Composite S. Li, S. Song, T. Yu, Y.S. Zhang and H. Chen	893
Study on Properties of Carbon Nanotube/Magnesium Matrix Composite Y.S. Zhang, Y.Y. Xue, S. Li, J. Huang and C.H. Huang	897
High Active Hydrogen Storage Alloy Mg₂NiH₄ and Mg₂Ni Synthesized at Temperatures Lower than 733 K X.F. Liu and L.Q. Li	901
Priority Programme of the German Research Foundation: 'Extending the Range of Applications for Magnesium Alloys' K.U. Kainer	905
Technical Economic Considerations for Production and Application of Mg Castings in China S.Y. Long, S.Y. Xu and H.X. Cao	909
Magnesium Motorcycle Applications J. Cao, Z.H. Zhang, D. Xiang and J. Wang	915
Research and Application of Magnesium Alloys in Special Components Q. Yu, S.D. Huang, Q. Tang, H.Q. Zhou and H. Qiu	919
An Analysis of the Development and Applications of Current and New Mg-Al Based Elevated Temperature Magnesium Alloys M.B. Yang, F.S. Pan, J. Zhang and J. Zhang	923
Research and Application of Magnesium Alloys in Special Components Q. Yu, S.D. Huang, Q. Tang, H.Q. Zhou and H. Qiu	927
Magnesium Advances and Applications in North America Automotive Industry N.Y. Li	931