

Table of Contents

Preface, Committees and Sponsors

Features of Deformation of Partly Crystallization Blooms at their Two-Stage Soft Reduction Y. Smirnov and V. Sklyar	1
Al₂O₃-TiC/Fe Functionally Gradient Material Prepared by SHS Casting W.H. Zang, C.L. Yuan and Y. Li	6
Derivation and Application for Calculation of Carbon Content in Austenitizing of Cast Iron W.B. Gong, L. Luo, G.D. Chen and G.Y. Xiang	11
Field Synergy Analysis for Inclusion Removal in the Continuous Casting Tundish M.J. Zhang, X.L. Lin, H.Z. Gu, H.X. Zhu, C.J. Deng and Z.W. Xin	16
Study on the Microstructures and Wear Resistance of ZG30Cr Steel Surface Layer S.L. Wang, A.Q. Wang and J.P. Xie	23
Numerical Simulation Analysis on Shrinkage and Porosity of ZL101A Alloy Mechanism Box Y.J. Zhou, K.X. Song, Y.M. Zhang and X.H. Guo	28
The St Venant Zone Extent of the Self-Balancing Longitudinal Elastic Stress I. Mazur and S.M. Bel'skii	33
Casting Process Optimization for Large Bearing Bush of Zinc-Base Alloy C.Z. Gao, D.X. Yang, J.P. Xie, A.Q. Wang and W.Y. Wang	40
Study on Formability of Tailor Welded Blanks Based on Numerical Simulation W. Liu, S.S. Xie, J.Q. Li and X. Ding	45
Numerical Simulation of Flow Field and Temperature Field on Aluminium Alloy Engine Cylinder in Casting Process H. Wu, H.M. Shi, H.F. Liu and Z.J. Xia	50
Simulation of the Temperature, Stress, Strain Field in Aluminum Thin-Gauge High-Speed Casting X.B. Liu and D.S. Wu	58
Modelling of Microstructure Evolution during Thermal Processes – A Hybrid Deterministic-Probabilistic Approach I. Hadi, M.A. Jabbareh, R. Nikbakht and H. Assadi	63
Solidification Simulation of Melt-Cast Explosive under Pressurization D.L. Wang, Z.Y. Xie, W.X. Sun and Y. Huang	71
LY12 Flange Squeeze Casting and the Die Design C. Li, J.X. Wang, H.Q. Miao and H.M. Xiong	76
The Defects Analysis and Numerical Simulation of Automobile Brake Hydro Cylinder in Permanent Casting L. Rao, L.B. Zhu, X.L. Li and Q.Y. Hu	82
The Computer Solidification Simulation and Process Optimization of Gear Ring A.Q. Wang, J.P. Xie, W.Y. Wang and J.W. Li	88
Research on Preparation of Transparent Hydrophilic Antifogging Acrylate Resin Hu Jing, S.L. Wu and B.Y. Lou	92
Numerical Simulation and Experiment Research on Thick Plate Multi-Point Forming Process with Elastic Cushion L.Y. Wang and L. Li	102
Simulation of Shape Distortions during Flat Bottom Raising Process with Titanium Alloy Sheet Based on ADINA L.Y. Zhang, Z.R. Han and C.B. Zhao	109
A Numerical Simulation of Microstructure Evolution of GH4169 Alloy Blade during Finish Forging G.X. Qi, R.B. Mei, F. Wang and L. Bao	113
Research on New Thermal Hole Flanging Process of Connection Tube Forming in Heavy Nuclear Power Thick-Wall Head H.P. An and J.S. Liu	119
Study on Thermal Deformation Behavior of Cu-P Weathering Steel X. Zhang and Y. Xiong	124

Study on Formability of Micro-Feature in the Coining Process W. Zheng, G.C. Wang, T. Wu and L.B. Song	129
High Temperature Deformation Behavior and Microstructure Preparation of Cu-Ni-Si-P Alloy Y. Zhang, B.H. Tian and P. Liu	135
Study on High Temperature Deformation Characteristics of BTi-62421S H.F. Zhang, Z.M. Zhang, X. Zhang, B.C. Li and H.H. Ma	141
Comparison of Warm Deformation Behavior between Quenched and Annealed ASTM 1045 Steel X. Zhao, X.L. Yang and T.F. Jing	147
Numerical Simulation of Al Ball Forming Process in Skew Rolling X.M. Shi and B.J. Wang	151
Numerical Simulation of Seamless Tube's Stretch Reducing Process J.H. Li and H. Yu	155
Mathematical and Physical Modeling of Soft Cobbing Process of Hot Rolling Steels I. Mazur and T.I. Cherkashina	160
A One-Point Quadrature Element Used in Simulation of Cold Ring Rolling Process X.B. Zhang, X. Zhao, Y.M. Zhang and Z.G. Li	165
Research and Analysis of Material Flow Regularity in the Process of Cross Wedge Rolling for Wrought Aluminum Alloy P.F. Zhao, C.C. Han, Y.M. Zhang and K.X. Song	172
The Numerical Simulation of Conductive Body Forming Process and Mould Design J.X. Gao, P.F. Zhao, K.X. Song and Q. Wang	177
Application of Optimization Algorithms in Injection Molding Process Parameters Optimization Z.H. Hu, W. Wei, J. Liu and K. Liu	183
Flow Behavior of Ultra-High Strength Boron Steel at Elevated Temperature J. Bao, H.S. Liu, Z.W. Xing, B.Y. Song and Y.Y. Yang	191
Effect of the Die and Tool Structure on Continuous Extrusion Expansion Forming of Copper X.B. Yun, X. Chen, Y. Zhao, Z.X. Fan and B.Y. Song	196
Finite Element Simulation of Biting Process of Cold Rolling Strip for 6-High Mill X. Ma, J.Y. Ma, Z.L. Feng, H.L. Cui, Y. Yang, Y.T. Li, J. Zhang, Y.H. Ding and J.P. Li	203
Hot Deformation Behavior and Processing Maps of Cr-Ni-Mn-N Austenitic Stainless Steel E. Bao, M.J. Wang, Z.X. Wang and H. He	210
Application of an Improved Trust-Region Method to Rigid-Plastic Finite Element Analysis in Strip Rolling S.N. Song, J.Y. Liu and J. Qian	216
Flow Stress Behavior of Al-Fe-V-Si Heat-Resistant Aluminum Alloy Prepared by Spray Forming under Hot-Compression Deformation R.H. Zhang, Y.A. Zhang and B.H. Zhu	223
Research on Quartz Flat Mirror's Thermal Deformation under the Condition of Non Uniform Heating S. Dai, S.L. Chang, Y. Lan, J.F. Luo and F. Wang	229
Brass H62 Hot Extrusion of Micro Gear X.R. Liu and X.D. Zhou	236
Forming Mechanism of Folding Defect within Closed Die Forming Car Steering Knuckle D.Y. Zhao, L.D. Zhang and L.N. Sun	240
Study on Load Control and Optimization of Rotary Forging Method for Heavy and Thick-Walled Container Head by FEM M.H. Wang, D. Xiang and Y.F. Li	245
Experimental Study of Hot Forming Process by Direct Resistance Heating Z.X. Men, J. Zhou and Z.M. Xu	252
Research on Boronizing of the Whetstone Forming Die J. Chen, S.X. Hao and X. Fan	261
Simulated Research on Hot Forming Mechanism of Sour Service Drill Pipe Steel M.J. Hu, P. Wang, L.H. Han and X.L. Han	266

Calculation Model of Punch Force during Tube Extrusion Z.T. Wang, G.X. Qi, F. Wang and S.H. Zhang	273
Tribological Characteristics on the Helical Gear in Cold Forging Mold W.S. Choi, J.H. Son, I. Lee, E.Y. Jin, J.R. Kwon, Y.M. Lee and N. Umehara	277
Numerical Simulation on the Casting Process of Gray Iron Brake Pad C.Y. Liang, H.P. Li, L.H. Wang, H.S. Wang and X.J. Zhao	284
Investigation on Slurry Filling Sequence during Semi-Solid Forming of Complex Aluminum Part K.K. Wang, F.Y. Wang and Y.N. Wang	290
The Simulated Calculation and Optimizing Experimental Research of the Residual Stress of the Heavy Rail Straightening L. Chen, J.G. Wang and G. Li	296
Die Forging Process Simulation of a Connecting Rod L. Xu, G.Z. Dai, X.M. Huang, J. Han and J.W. Zhao	302
Agriculture Auto Workpiece Injection Mold Design Based on CAE J. Zhou, L.J. Li, Y.L. Yan, Z.W. Wang and D.C. Zhou	308
Analysis on Contact Forms of Interface in Wafer CMP Based on Lubricating Behavior S.F. Zhang, J.X. Su, J.X. Du and R.K. Kang	313
Analysis of the Surface Residual Stress in Grinding Aermet100 Y.Q. Xu, T. Zhang and Y.M. Bai	318
The Effect of Heat Treatment on Mechanical and Corrosion Performances of Zr-Nb Alloy X.L. Yang, D.W. Deng, Y. Wang and Y.L. Ge	325
TD-GC-MS Analysis on Volatile Organic Compounds of Chinese Fir Biomass in Simulated Hot Drying Environment C.P. Xie, K.F. Li, W.X. Peng, Q.M. Liu and D.W. Gao	337
Experimental Analysis of Seed Effect on the Directional Solidification of Sn-Pb Alloy L.S. Chao, Y.R. Chen and F.C. Wang	343
The New Technology of Softening Control for Copper Weld Joint Using Pretension Method G.T. Zhou, W.D. Hou, Z. Wang and Z.M. Xue	348
Application of Digital Simulation Software ANSYS in Rolling Concrete Dams Construction Technology G.X. Zeng	352
Rigid Plastic FEM Model of Fast Solution to Strip Rolling R.B. Mei, C.S. Li, X. Liu and L. Bao	358
Effect of α_k on Aluminium Trihydroxide Crystallization from Sodium Aluminate Soluntion under Ultrasound Y.S. Wu, Y.P. Qu, L.N. Zhang and M. Liu	364
Numerical Calculations on the Grating-Assisted Phase Matching Condition of High Harmonic Generation in Photonic Crystal Fiber H.Z. Ren, M. Zhang, P. Guo and L.F. Yang	370
Study on Temperature Change Rule of Sprayed Composite Powders in Flight H.W. Liu, J.J. Wang, X.F. Sun and J. Qiu	375
High Concentration of Viscous Material Pipeline Characteristics of the Discussion Z.F. Yu, X.L. Tian and Y. Pan	382
Valence Electron Theoretical Analysis of Mechanical Properties in Low-Alloy Steel C. Sun, Y.K. Li and L. Jiang	389
A Study on Magnetic Separation Washability Mathematical Model of Pulverized Coal H.G. Jiao, S. Li and L.Y. Pan	395
Molecular-Dynamics Studies of the Diffusion of H₂ in All-Silica ZSM-5 X.M. Du, Y. Huang and E.D. Wu	401
Detonating Gas Simulation Experiment System Based on the Dynamic ESD Model on Human Body X.J. Dong, X. Chen, J.C. Zhang and L. Zhang	407
Numerical Simulation and Experiment Research on Temperature Field of Steel Slab in Walking Beam Furnace C. Chen, C.J. Ding, D.G. Ouyang, Z.Z. Liu, Z.H. Song, S. Chen and C. Yang	412
Effect of Red Extractives of Plantation Leaves on Bamboo Biomass Mildewing F.J. Wu, W.X. Peng, D.C. Qin and F. Lu	419

Predicted Model of Section Stress Distribution and Bending Strength of Fiberboard Based on Vertical Density Profile	
Y. Zhang and Z.M. Yu	424
Application of CAD/CAM Systems for Computer Simulation of Metal Forming Processes	
K.N. Solomonov	434
Numerical Simulation and PIV Test on Flow-Field Character of Zinc-Silica Composite Electrolyte	
Y.Y. Fan, J.X. Xu, Y.H. Jiang and W.Q. Wang	440
The Significant Difference with the Relationships of T2 and Moisture Distribution between Untreated and Esterified Poplar	
X.J. Wang, M.H. Zhang and X.M. Wang	446
Numerical Simulation of the Airliner Door under Explosion Impact Loading and Reinforcement Technique	
Y. Liu, D.W. Zuo, Y.H. Wang, X.H. Chen, J.X. He and H.C. Yan	450
Modeling Cation Distributions of $\text{PbZr}_{0.5}\text{Ti}_{0.5}\text{O}_3$	
Q. Hui, M. Tucker and Z.Q. Chen	455
A Study on Heat Transfer Model in Wood Particle during the Pyrolysis	
L.J. Jing, R. Li and Y.Y. Li	462
Vacuum Paddle Fast Pyrolysis Reactor Design and Internal Heat Transfer Investigation	
R. Li, X.S. Deng, J.S. Gou and Z.L. Lv	468
Phase Relationships in the Y-Fe-V Ternary System at 773 K	
S.K. Pan, R. Yan, H.Y. Zhou, L.C. Cheng, Q.R. Yao and Y. Zhong	475
Research on Tensile Stress Relaxation Characteristics of <i>Pinus sylvestris</i>	
X.Q. Li, X.M. Wang and J.F. Yu	480
Ultrasonic Treatment of Activated Carbon Used in Adsorption of Basic Fuchsin	
Y.N. Hao, X.M. Wang, L.J. Ding and D.Y. Ma	486
First-Principle Calculations of the Electronic Structure and Elastic Constants of Arsenic Doped β-SiC	
Z.G. Wang, Q. Hui, N.P. Cheng and C.L. Wang	492
Research of $\text{Ti}_2\text{AlC}/\text{TiAl}$ (Nb, B) Composites Based on Multi-Fractal Spectrum	
M. Wen, Y.L. Yue, H.T. Zhang and Y. Li	498
Influence of Hot Deformation on Microstructure of Non-Quenching and Non-Tempering Pipe 36Mn2V Used in Oil Well	
J. Fang, Y.H. Li, K.Y. Xie, X.Y. Zou, M.X. Zhou and Z.X. Yuan	504
Finite Element Analysis and Optimization for the High Voltage Disconnecter Self-Elastic Contact Base on ANSYS Workbench	
W.F. Liu, Y.M. Zhang, K.X. Song, P.F. Zhao and L. Zhang	510
Preparation of Activated Carbon of Lignin from Straw Pulping by Chemical Activation Using Potassium Carbonate	
X.J. Jin, Z.M. Yu, G.J. Yan and W. Yu	517
Numerical Modeling of Heat and Moisture Transfer during Microwave Drying of Wood above FSP (Part I: The Model)	
J.F. Yu, X.M. Wang and Y.N. Hao	523
Solidification Cracking Susceptibility of Alloy 52 Weld Overlay on 316L Stainless Steel	
W.C. Chung, L.W. Tsay and C. Chen	529
Unsteady Conjugate Numerical Simulation of the Solar Chimney Power Plant System with Vertical Heat Collector	
Y. Zhou, X.H. Liu and Q.L. Li	535
The Research on Relationship between Heat Generation and Crosslinking Density of Vulcanized Rubber	
Q.H. Fang, S.L. Zhou, N. Wang, X.B. Zhang and Z. Wang	541
The Effect of Y on Aging Response and Mechanical Properties of Mg-Ho-Zr Alloys	
B.Z. Liu, J.J. Liu, J.L. Wang, B.Q. Zhang and Z. Zhang	546
Quantitative Separation of NMR Signal Amplitude of Water in Wood on the Basis of T_2	
D.Y. Ma, X.M. Wang, M.H. Zhang and X.Q. Li	552
Water Inrush Monitoring of Zhangmatun Mine Grout Curtain and Seepage-Stress-Damage Research	
S.K. Chen, T.H. Yang, H.L. Liu and W.C. Zhu	558

Solidification and Boride Characteristics of Boron-Containing Austenitic Stainless Steel M.J. Wang, E. Bao, Z.X. Wang, S.Y. Zhang, C. Chen, Y.M. Li and H.Y. Wei	563
Research and Application of Pre-Bent Automatic Control Models of 100 Meters Rail X.R. Bao, Y.Y. Liu, G. Li, L. Chen, J.G. Wang, Z.Z. Wu and Z.L. Tian	569
Study on Health Function of <i>Cunninghamia lanceolata</i> Biomass by TD-GC-MS Q.Z. Ma, D.Q. Ma, L.Y. Xiao and Q.M. Liu	577
Effect of Annealing on Microstructure and Properties for Semi-Solid Magnesium Strips Y. Zhang, J.H. Xu, S.S. Xie, M.P. Geng, H.M. Guo and H.B. Zhao	581
The Heat Treatment Parameters and Microconstituent Content Prediction of ADI Based on Fuzzy Subtractive Clustering Method X.H. Guo, C. Liu and Q. Zhang	586
Analysis on Pyrolysis Products of <i>Phyllostachys heterocycla</i> in Heat Charring Z.F. Zhang, X.Y. Zhou and Q.Z. Ma	592
Study on the Coupled Structural-Acoustic Systems for Transport Aircraft Q. Chen	596
Effect of Additive on Microwave Absorption Properties of Hollow Ceramic Microspheres Prepared by Self-Propagating High-Temperature Synthesis (SHS) Flame Quenching Technology H.F. Lou, J.J. Wang, H.J. Huang, W.B. Hu and X.J. Huo	603
Investigating the Influence of the Power Supply Type upon the Weld Joints Properties and Health Characteristics of the Manual Arc Welding D.P. Ilyaschenko and D.A. Chinakhov	608
Optimization of Structure Parameters for Hydraulic Energy Accumulated Torpedo Launching Device B. Tian	612
Thermal Transfer Boundary Condition and Thermal Load of Piston for Torpedo Cam Engines Q.C. Xu, S.Z. Wang and Y.Q. Lian	619
Consolidation of High-Level Radioactive Wastes into Strontium Titanate by CS Method R.Z. Zhang, J. Yang, D.K. Yan, Z.M. Guo and W.S. Su	625
Forces on a Circular Hole Located in Functionally Graded Material X.F. Wang, F. Xing and N. Hasebe	631
Total Fatigue Life Prediction under Constant Amplitude Loading Y.T. He, W.J. Shu, R.H. Cui, L.M. Wu and J.Q. Du	636
Numerical Simulation of Fracture Saturation in Multilayer Materials in Symmetric Case F.S. Han	641
Influence of Three-Step Aging Heat Treatment on Properties of 7A04 Aluminum Alloy Q.Z. Li, L. Xu, J.X. Song, J. Han, X.M. Huang and G.Z. Dai	645
Internet Based Shared Control of Vehicle Steering when Driver Is under Situation of Tendency to Accidents M.E. Zhong, P.D. Wu and J.Q. Peng	650
Study on Simulation and Experiment of Drilling for Titanium Alloys H.B. Wu, Z.X. Jia, X.C. Zhang and G. Liu	657
Effects of External Loads on the Reliability of A131 Welded Pipe with Circumferential Crack B.L. He, Y.X. Yu, L.X. Huo and Y.F. Zhang	664
Numerical Simulation of MIG Welding Arc with Longitudinal Magnetic Field Q.W. Wang, S. Zhu, F.L. Yin, Y.Y. Liang and X.M. Wang	668
Effect of Marangoni Convection on Welding Pool of Plasma Direct Metal Forming Finite Element Model D. Xia, B.S. Xu, Y.H. Lv, Y. Jiang and C.L. Liu	674
Numerical Simulation of Molten Metal Droplet Impinging in Uniform Droplet Spray Rapid Prototyping F.L. Yin, S. Zhu, J. Liu and Y.Y. Liang	680
The Morphology and Evolution of Cu₆Sn₅ at the Interface of Sn-2.5Ag-0.7Cu-0.1RE/Cu Solder Joint during the Isothermal Aging Y.L. Wang, K.K. Zhang, C.Y. Li and L.J. Han	685
Coarsening of Particles in Coarse Grain Heat-Affected Zone for Ti Microalloyed Steels Y.Q. Zhang, H.Q. Zhang and Z.Y. Li	690

Study of Carbonitride Precipitates in the Fe-Cr-Mn-N Hardfacing Alloy K. Yang, X. Xie, R. Zhou, Y.F. Bao and Y.F. Jiang	695
Study on the Failure Mechanism of Enamel Coatings in HAZ H. Tao, W. Yong and W. Liu	700
Microstructure and Fracture Behaviors of Welded Joint of Particle Reinforced SiCp/ZC71 Magnesium Matrix Composites X.M. Dong, W.Y. WANG, J.P. Xie, J. Xu and A.Q. Wang	706
The Coupled Thermal Mechanical Modeling of the Inertia Friction Welding Process for Inconel718 W.D. Bu and J.H. Liu	710
FEM Modelling and Press Signature Evolution of a Typical Car Stamping T. Sekeres, C. Fernandes, J.C. Santos, E. Nunes and R.L. Plaut	717
Numerical Simulation of Weld Metal by Ultra-Narrow Gap Arc Welding L. Zhao, K.J. Dai and F.J. Zhang	728
A Study of Numerical Modelling of Liquid Filler Flow within Braze Gap on Vacuum Brazing P.Y. Li and Z.S. Yu	733
Finite Element Analysis of Transient Welding Stress and Strain during Ti-6Al-4V Thin Plate Welding with Impact Rotation Y. Zhang, J.G. Yang, X.S. Liu and H.Y. Fang	739
Study on Fast-Convert Ultrasonic Frequency Pulse TIG Welding Arc Characteristic B.J. Qi, M.X. Yang, B.Q. Cong and W. Li	745
Microstructure and Performance of Fe-Based Composite Clad Layer Fabricated by Submerged-Arc Welding Added Alloy Powder L.M. Wang, J.B. Liu and C. Yuan	752
Study on the Ball Joint Sealing of Aluminium Control Arms H.B. Tian, X.H. Liu and Z.T. Yu	758
Virtual Optimization of Regulating and Controlling on Welding Residual Stress of Francis Turbine Runner S.D. Ji, X.S. Liu, J.G. Yang and Z.L. Liu	762
The Effect of Hybrid Ultrasonic Pulse Current Parameters on VPTIG Arc Pressure and Weld Formation B.J. Qi, W. Li, B.Q. Cong and M.X. Yang	770
Predication of Wettability of Sn Droplet on Copper Plate by MEAM Method J.G. Yang, H.T. Cheng and H.Y. Fang	775
Low-Cycle Fatigue Behavior of Large-Size Dissimilar Steel Welded Tube-Plate Structure G. Xue, R.F. Wang, W.P. Deng, H.Y. Fang and J.G. Yang	780
Investigation on the Welding Temperature Field Measurement in Gas Tungsten Arc Welding G.T. Zhou, Z.Y. Zhao, G.L. Liang and W.H. Chen	786
The Synthesis of CNTs over Hydroxyapatite by CVD and the Preparation of CNTs/HA <i>in Situ</i> Composite H.P. Li, L.H. Wang, C.Y. Liang and H.S. Wang	790
Numerical Study on Bubble-Melt Two-Phase Flows in the Production Process of Aluminum Foams H. Liu, M.Z. Xie, J.R. Shi and H.S. Liu	796
Study on Fracture Micro-Mechanics Mechanism and Dynamic Energy Absorption Property of Closed-Cell Foam Metals X.F. Lv, Y.S. Pan and X.C. Xiao	804
Research on Thermal Mechanical Properties of Rubber Like Materials Based on Numerical Simulation J.B. Sang, W.Y. Yu, B. Liu, X.L. Li and T.F. Liu	811
Effect of Materials Characteristics on Average Crack Spacing of Reinforced Concrete Specimen J.X. Zhang, X.Z. Guo, Z.Z. Liang and Y.F. Zhang	817
Elements Diffusion Asymmetry in Transient Liquid Phase Diffusion Bonding of Dissimilar Metals Z. Gao, S.J. Chen and Q. Xu	823

Microstructures and Mechanical Properties of TiAl-Based Alloys Prepared by High-Energy Ball Milling and Hot-Pressing Sintering T.G. Wang, Q. Qin, Q.Y. Shi and W.J. Zhang	828
Investigation and Numerical Modeling of the Process of Cold Rolling HSLA Steels I. Mazur, A.P. Dolmatov and S.S. Borisov	832
Effect of Microstructure on Transmission Properties of Polycrystalline Transparent Ceramics Q. Li, G.P. Zhang, Y. Liu, H. Wang and L.W. Lei	842
Characteristics of Embrittlement in Weather Resistant Steel in Austenite and γ-Ferrite Temperature Range X.J. Gao, D.F. Chen, L.W. Song, H. Hu, X.L. Yang, G. Wang and Z.Y. Zhou	847
Corrosion Resistance of Ceramics and High-Temperature Phase Change of Powders on Cubic Silicon Nitride H. Yao, G.L. Zhu and M. Du	853
Effect of Ultrasonic Vibration Grinding for Mechanical Properties of $\text{Al}_2\text{O}_3/\text{ZrO}_2$ Ceramics Y.M. Zhu	858
Effects of High Magnetic Field Heat Treatment on the Microstructure of Fe-0.76%C Alloy M.L. Gong, X. Zhao, C.S. He, J.Y. Song and L. Zuo	863
Effect of Thermocycling on the Thermal Degradation Kinetics of Goatskin Collagen Matrices X.J. Zheng, J. Liu, K. Wang and K.Y. Tang	870
High-Speed Dry Tribological Behaviors of CrNiMo Steel in Nitrogen and Oxygen Atmospheres S.M. Du, Y.Z. Zhang and B. Shangguan	877
A Study on High Temperature Mechanical Properties of HRB335C Steel B. Wang, C.X. Wu and J.C. Ma	886
Influence of Hot Extrusion on Microstructure and Mechanical Properties of As-Cast AZ91 Magnesium Alloy B.H. Zhang and Z.M. Zhang	892
Oxygen Physisorption Characteristics of Coal X.X. Zhong, D.M. Wang, W. Lu and H.H. Xin	897
Microstructure Evolution of Undercooled Austenite during Deformation for Medium-Carbon Si-Mn Steel Y.L. Feng, S.Q. Yuan and M. Song	903
Grain Boundary Character Distribution and its Effect on Corrosion Resistance of Copper and Brass H. Guo, Z.W. Chen, Y. Jiang and Z.X. Cai	907
The Synthesis and Feature Research on the Thermosensitive Hydrogels (NIPA-co-AAm) X.F. Zhu, M. Yang, H.X. Zhang and Y.J. Nie	913
Temperature and Strain-Rate Effect to Mechanical Behavior of Mo-Cr Alloy Cast Iron J.K. Ruan and M.M. Hu	918
Effect of Process Factors Pillaring Agent Prepared on Properties of Pillared-Montmorillonite X.L. Lv	923
Flow Behavior of Fe-3%Si Steel at High Temperatures and Strain Rates F.H. An, Y.H. Sha and L. Zuo	928
Strain-Rate Relationship of Aluminum Matrix Composites Predicted by Johnson-Cook Model D.Z. Zhu, W.P. Chen and Y.Y. Li	935
Preparation of Al Foam Sandwiches and Analyzing on the Interface Solidification Microstructure L.C. Wang, X.H. You, F. Wang and J.G. Wu	941
Numerical Simulation of the Effects of Different Coatings on Graphite Susceptor for the Induction Process of Polycrystalline Silicon K.L. Lian, S.S. Lian and S. Tsao	948
Effective Way to Improve the Magnetoresistance Effect in Perovskite at Room Temperature B.X. Huang, J. Li, J.H. Wang, K.Z. Chen, Y.H. Liu and L.M. Mei	954
The Indentation Behavior of Closed-Cell Al Foam under the Flat-End Cylindrical Indenter X.Z. Wang and G.T. Zhou	960

Interfacial Friction of Ceramics at High Temperature Ring-Compression Test H.G. Wang, Y.P. Song, F. Wang and K.F. Zhang	967
Numerical Simulation of Interfacial Debonding Crack in Particle Reinforced Composites X.Z. Guo, J.X. Zhang, Z.Z. Liang and Y.F. Zhang	973
Digital Image-Based Model for Concrete Fracturing Process Analysis Q.L. Yu, T.H. Yang, W.C. Zhu and C. Zheng	980
Transmission Electron Microscopy Observations on the Precipitates in Al-Zn-Mg Based Sacrificial Anode Alloy J.L. Ma, J.B. Wen, Q.A. Li and J.F. Li	989
Simulation Study of Hydraulic Fracturing Mechanism with Heterogeneous Material T.H. Yang, H.L. Liu, Q.L. Yu and S.K. Chen	993
Effect of the Rotating Speed of Centrifugal Machine on Microstructures and Properties of Recycled WC_p/Fe-C Composites Y.P. Song, Y.K. Li and H.G. Wang	1000
Effects of Cr-Mo Infiltration Source Cathode Different Mixing Proportion on the Thickness of Alloy Layer J.C. Zhang, J.Y. Xu, Y.Y. Deng, Y.J. Liu and C. Gao	1006
The Resistance of SiC/Al Layered Composite to Ballistic Impacting D. Huang and W. Zhao	1011
Analysis on Unwinding Effect of FRP-OFBG Cables M.L. Ma, J. Guo, H. Li and W.L. Chen	1017
An Investigation of High Temperature Oxidation Dynamics of U71Mn Steel Z.W. Zhao, Y.Z. Li, B.W. Li and W.F. Wu	1024
Study on Preparation and Impact Performance of the Aluminium Foam Reinforced by ZrO₂ Spheres J.G. Wu and L.C. Wang	1029
Study of the Impact Properties of Steel 25Mn D.Y. You	1035
Arbitrary-Order Spherical Harmonics Method for Coupled Heat Transfer in Semitransparent Materials Y.M. Wang, D.M. Wang, X.X. Zhong and G.Q. Shi	1041
Welding Sequence Optimization of TA15 Airplane Wall Panels Z.B. Dong, Y.H. Wei, W.J. Zheng, G.X. Hu and R. Ma	1045
Influence of Steel Slag on Compressive Strength and Durability of Concrete J.P. Zhu, Q.L. Guo, X. Gao and D.X. Li	1051
Multirange Fractal Analysis of Discontinuous Microstructure Change of In-40wt.%Sn Melt Y.Z. Zhou, H.R. Geng, M. Li, C.J. Sun and Z.M. Wang	1055
Preparation of Activated Carbons for Electrochemical Capacitors by Microwave Heating B.L. Xing, L.J. Chen, C.X. Zhang and H. Guo	1061
Metallic Tribological Compatibility of Mo_{ss}-Toughened Mo₂Ni₃Si Metal Silicide Alloys Y.L. Gui, X.J. Qi and C.Y. Song	1068
Numerical Study on Magnetic Field Characteristics of Typical Permanent Magnet C.L. Shi, Y.S. Zhang and H.G. Jiao	1073
Effect of Modification on Mechanical Behavior of ZA303 under High Temperature D.Q. Ma, J.P. Xie and W.Y. WANG	1079
Optimization Design on the Mechanical Properties of Ceramic Tool and Die Material with Immune Algorithm H.F. Zhang, C.H. Xu, J.J. Zhang and X.H. Wang	1083
Research of Inclination Angle Effect on Joint Rock Macromechanical Parameters Y.F. Feng, T.H. Yang, H. Wei, H.G. Gao and Z. Zhang	1089
Effect of AlN on Microstructure and Mechanical Properties of Mg-Al-Zn Alloy P. Liu, H.R. Geng, Z.Q. Wang, J.R. Zhu, F.S. Pan and X.B. Dong	1095
Study on Viscosity of Zr-Cu Alloys Based on Viscosity Measurement and Hirai Model J.S. Wang, S.Y. Huang, L.J. Cao, H.Y. Sun, J.H. Wang and Q.G. Xue	1100
Geometric Parameters Optimization Design for Aluminum Alloy Welding Joint Based on Increasing Fatigue Strength X.S. Liu, P. Wang, Z.J. Yan, Q. Wang and H.Y. Fang	1106

Microstructure of Aluminum Bronze Coating Sprayed by Cold Gas Dynamic Spraying (CGDS)	
Y.L. Liu, T.Y. Xiong and J. Wu	1112
Simulation of the Young's Modulus Anisotropy in CVD Diamond Film	
H.X. Zhu, C. Gu, Y.D. Xue and F.Z. Ren	1117
Effect of Bell-Type Annealing Process on Properties of SPCC Cold-Rolled Steel Sheet	
Z.H. Wang, Y.P. Zhao, Y.T. Li, J. Wang and J. Zhang	1123
Thermal Simulation Study of 900MPa Grade High-Strength Low Alloy Steel in Welding Procedures	
D.X. Yang and Y.F. Sun	1128
Surface Finishing for Al₂O₃ Ceramics	
H. Wang	1133
Modeling of Carburization and Thermal Stress Analysis for Ethylene Cracking Furnace Tube	
L.Y. Geng, J.M. Gong, X.Y. Qin and L.M. Shen	1136
Analysis of Unit and Binary Diffusion in Glow Plasma Surface Alloying Process	
X.N. Chen, Y. Gao, B. Li and X.F. Huang	1141
Research on W-Mo-Y Multi-Elements Co-Diffusion Treatment and Plasma Nitriding	
Y. Gao, C.L. Wang, B. Li and X.N. Chen	1146
Research on Corrosion Resistance of Titanizing and Nitriding on Carbon Steel in H₂SO₄ Solution	
G.T. Bu, Y. Gao and C.L. Wang	1152
Hot Rolling of FeSi Steels – Effects by Hot Rolling in the Two Phase Region	
J. Schneider, W. Jungnickel, W. Müller, H. Hermann and R. Kawalla	1161
Numerical Simulation of Rotational Tool Shoulder Shape's Effect on Transfer Behavior of Welding Plastic Metal in Friction Stir Welding	
S.D. Ji, L.G. Zhang, Y.Y. Jin and G.H. Luan	1167
Study on Blanking Force of Fine-Blanking with Negative Clearance and Common Blanking for AISI-1045 through Simulation and Experiment Methods	
W.F. Fan and F. Li	1175
Numerical Simulation and Experiment Study on the Blanking Force for AISI-1020 and AISI-1045 Fine-Blanking with Negative Clearance	
J.H. Li and Z.M. Zhang	1180
Effects of Shielding Gas and Magnetic Field on Characteristics of AZ31 Magnesium Alloy by TIG Welding	
Y. Chen, F.F. Sui, K.L. Cong, X.Q. Yan, G.Y. Zhang and S. Guan	1186
Flux Jet Technique for Purification of Molten Aluminum	
J.M. Zeng, H.Q. Liang and C.G. Hao	1197
Effect of Hydrogen Content on Impact Property of A357 Alloy	
Y. Li, Z.B. Xu and J.M. Zeng	1201
A Novel Technology of Hydrogen Measurement Based on Directional Solidification in Molten Aluminum Alloy	
J.M. Zeng, Y.B. Wang and H.F. Cheng	1205
Antiwear Behavior of Micro-Arc Oxidated Coating Rubbing on Abrasive Paper	
Y. Tang, J.Y. Xu, F.Y. Ye, C. Gao, J.C. Zhang and Y.J. Liu	1210
Influence of Laser Parameters on Magnesium Alloy Surface Modification	
K. Sun, S. Yang and F.X. Liu	1216
Investigation of Precipitated Hardening Layer Performance on Machined NAK80 Steel Surface	
X.C. Yang and H.J. Wang	1219
Parameter Forecast and Parameter Optimization of High Inner-Pressure Hydro-Forming Tees Based on Genetic Algorithms and Back Propagation Algorithms	
J. Zhang, T. Li, X. Chen, L. Gu, Z.H. Wang and H.X. Cui	1223
Microstructure Analysis of Surface Film on 8407 Die Steel Obtained by Aluminization and Oxidation	
J. Sun, X.M. Wang and Z.S. Zou	1231
Wear Resistance of Fe-Cr-C-TiFe Fe-Based Composite Coating Prepared by Precursor Carbonization-Composition Process and Plasma Cladding	
J.B. Liu and L.M. Wang	1237

Fabrication and Properties of APS- and RTS-Sprayed TiB₂/Mo₂FeB₂ Multiphase Ceramic Coating on Q235 Steel	
X.L. Guo, W. Wang and S.J. Li	1244
Tribological Behaviors of Ti6Al4V with Surface Plasma Molybdenized	
N.J. Ben, W.P. Liang, B.L. Ren, Q. Miao and P.Z. Zhang	1253
Plasma Jet Acquisition and Image Processing Technology	
Z.Y. Zhao, G.T. Zhou, B.B. Xia and S.Z. Zhang	1259
Study on Diffusion Processes of Water and Proton in PEM Using Molecular Dynamics Simulation	
L. Chen and W.Q. Tao	1266
Variable Parameter Processes of Micro-Arc Oxidation for Aluminium Alloy	
C. Gao, J.Y. Xu, X.Y. Shi, Y.J. Liu, J.C. Zhang and G.R. Zhang	1273
Physic Simulation of Slurry Preparation by Ultrasonic Vibration in Semisolid Metal Processing	
J.W. Zhao, S.S. Wu, G.Z. Dai, J. Han and X.M. Huang	1279
A Generalized Model for Residual Stress Caused by Thermal Mismatch in Multilayer Structures	
Y.M. Bai, Y.Q. Xu and T. Zhang	1284
Finite Element Simulation of Limit Load of Components at High Temperature	
J. Peng, C.Y. Zhou, J.L. Xue, X.H. He and Q. Dai	1291
A Method of Establishing Temperature Schedule during ASP Hot Strip Rolling	
Y.F. Zhao, D.H. Zhang, Y.B. Xu, X.Y. Hou and G.D. Wang	1298
Creep Stress Analyses Affected by Load Properties on P91 Pipe with Local Wall Thinning under High Temperature	
J.L. Xue, C.Y. Zhou and J. Peng	1304
<i>In Situ</i> Study of Fracture Process for B-Class Shipbuilding Steel	
H.B. Wu, G.L. Liang, Y.H. Wen and C.C. Yang	1310
Study on FEM Numerical Simulation Method for the Welding Distortion	
Y.H. Lu, X.W. Wu, J. Zeng and P.B. Wu	1316
Analysis of the Asymmetric Roll Bonding Process by Means of the Slab Method	
R. Schouwenaars, V.H. Jacobo and A. Ortiz	1322
Atomic-Scale Computer Simulation for early Precipitation Process of Ni₇₅Al_xV_{25-x} Alloy with Middle Al Composition	
Y.H. Zhao, H. Hou and Y.H. Zhao	1328
Simulation for the Fluctuation Effect on the Dendrites Growth with Phase Field Method	
H. Hou and Y.H. Zhao	1338
Optimal Riser Design by STL Arbitrarily Slitting Method and Genetic Algorithm	
X. Shen, L.L. Chen, J.X. Zhou, X. Shao, D.M. Liao, X.D. Gong and T. Chen	1349
Investigation on Nozzle Layout at Secondary Cooling Zone of Round Billet Continuous Casting	
Y.Y. Bi, D.F. Chen, J. Zhang and S.G. Wang	1356
Design and Optimization of Loading Trajectory for S-Skin Stretch Forming Process by Simulation	
Y.M. Zhang, X.Q. Li and K.X. Song	1363
Simulation of Residual Stress in Hot Rolled Large Size H-Beams	
G.M. Zhu, Y.L. Kang and G.T. Ma	1370
2.5D FEM Study and Optimization of Roll Pass Design in Roughing Mill Group	
S.A. Aksenov, I.V. Logashina, E.N. Chumachenko and M. Kotas	1379
Analysis on the Critical Buckling Stress in the TC4 Thin Plate Weldment	
X.L. Qi and Y. Zhang	1387
Mismatch Simulation of Motion Detection Pointing Device	
B. Mo, Q. Zheng, S.H. Chen and S.K. Kim	1393
Investigation on Joining Mechanism of SiC Particle Reinforced Aluminum Matrix Composite (Al/SiCp-MMC) by Resistance Spot Welding	
X.R. Li, W.B. Tang and J.T. Niu	1399
Study on Manufacturing Process and Applying of Galvalume	
M. Song, Y.L. Feng and J.B. Yang	1406

Numerical Simulation of Spinodal Deposition in Cu–6at.%Ni–3at.%Si Ternary Alloy Using of Phase Field Method	1410
Y.Q. Long, P. Liu, Y. Liu, S.G. Jiao and B.H. Tian	
Study on the Section Inhomogeneity of VN Microalloyed Heavy Plate during Controlled Rolling	1416
N. Li	
Study on Organization and Properties of the New Wear-Resistant Steel	1423
N.B. Li, J.P. Xie and W.Y. WANG	
A Study on Mathematical Model of Deformation Force for Tube Nosing with Conical Die	1429
L. Chu, Q.W. Wang, Y. Bi and D.S. Bi	
Coupling Analysis on Hydraulic Press and Forming Moulds of the Containment of Nuclear Power Reactor	1437
D.S. Bi, Y.D. Zhou and L. Chu	
Finite Element Simulation of the Nosing Process of Metal Tubes with a Conical Die	1444
L. Chu, L.J. Shi, Y. Bi and D.S. Bi	
Numerical Simulation and Analysis on Bending Forming of Hull Plate	1451
L.L. Luo, D.S. Bi, Y. Bi, L. Chu, X. Ma, J.P. Li and H.S. Di	
Numerical Simulation on Spinning Forming Process of Automotive Wheel Rim	1458
D.S. Bi, G. Yang, L. Chu, J. Zhang and Z.H. Wang	
The Microstructure and Formability Study on DP Steel of Lightweight Automobile	1465
J. Wu, D.S. Bi, L. Chu, J. Zhang and Y.T. Li	
Numerical Simulation of the Stamping Forming Process of Alloy Automobile Panel	1473
J. Zhang, Y.L. Ning, B.D. Peng, Z.H. Wang and D.S. Bi	
Research on Air Quantitative Prediction Based on Mold Filling Simulation of High Pressure Die-Casting	1480
J.X. Zhou, X. Liu, L.L. Chen, Y. Chen, F. Zou, D.M. Liao and R.X. Liu	
FEM Dynamic Analysis of Continuous Rolling Pass of Seamless Tubes	1487
Z.L. Feng, X. Ma, J.Y. Ma, X.Y. Zhou, H.Q. Liu, Y.H. Ding and J.P. Li	
Numerical Simulation of Eccentric Extrusion Form Bending Pipe Parts	1492
J.S. Song, Y.T. Li, D.H. Du, X. Ma and K. Yin	
The Effect of Bell-Type Annealing Temperature on the Mechanical Properties of SPCC Cold-Rolled Steel Sheet	1498
Z.H. Wang, Y.P. Zhao, Y.T. Li and X. Liu	
Formability of Tailor-Welded Blanks for Steel with Different Thickness and Materials	1504
Y.T. Li, J. Ye, J.S. Song, J. Zhang and G.D. Liu	
Study on Welding of TIG Tailor Welded Galvanized Sheets and Formability of Stretch Forming	1512
Y.T. Li, W.J. Zhang, X. Ma, G.D. Liu and L.J. Yang	
The Experimental Research of Tension and Performance of Press for 6061 Aluminum Alloy	1519
T.M. Xiao, J. Zhang, Z.H. Wang and D.S. Bi	