

Table of Contents

Preface

Chapter 1: Properties and Processing Technologies of Steels and Alloys

Influence of some Chemical Elements on SDAS of A357 Alloy	
J.H. Pan, K.Z. He, M. Wang and J.M. Zeng	3
Study on Linear Segregation of ZL205A Alloy	
W. Hu, K. Zhu, M. Wang, W.D. Huang and J.M. Zeng	8
Numerical Analysis of Solidification Behavior during Laser Welding Nickel-Based Single-Crystal Superalloy Part I: Crystallography-Dependent Solid Aluminum Distribution	
Z.G. Gao	13
Numerical Analysis of Microstructure Development during Laser Welding Nickel-Based Single-Crystal Superalloy Part I: Stray Grain Formation	
Z.G. Gao	23
Numerical Analysis of Microstructure Development during Laser Welding Nickel-Based Single-Crystal Superalloy Part II: Multicomponent Dendrite Growth	
Z.G. Gao	32
Investigation Toiler Weld Blank of SSM 2024 Aluminum Alloys by Friction Stir Welding Joint	
Y. Dunyakul, C. Meengam and D. Maunkhaw	41
Computational Approches for Ballistic Impact Response of Stainless Steel 304	
A. Mostafa	49
Effect of Scanning Interval on Polishing Effect of S136D Die Steel	
H. Zhou, Z.Y. Zhao, H.M. Zhou, K. Li and J.C. Jin	55
Effect of Dressing Parameters on Material Removal Rate when Surface Grinding SKD11 Tool Steel	
T.H. Tran, T.D. Bui, N.A. Tuan, V.T. Tuyen, L.A. Tung, T.T. Nguyen, T.N. Giang and V.N. Pi	60
Improvement of Wheel Life by Optimization of Dressing Parameters in Surface Grinding of SKD11 Steel	
T.H. Tran, V.T. Tuyen, L.A. Tung, T.V. Do, T.Q.D. Nguyen, T.T. Nguyen, T.N. Giang and V.N. Pi	68
Influence of Dressing Conditions on Surface Roughness when Surface Grinding SKD11 Steel	
T.H. Tran, T.D. Bui, H.T. Ly, N.V. Ngo, T.T. Nguyen, T.N. Giang, V.N. Pi and L.A. Tung	75
Optimizing Dressing Conditions for Minimum Flatness Tolerance when Grinding SKD11 Tool Steel	
T.H. Tran, T.N. Giang, N.V. Ngo, T.D. Bui, T.T. Nguyen, T.Q.D. Nguyen, V.N. Pi and L.A. Tung	83

Chapter 2: Wear, Fatigue and Bearing Capacity of Materials

Experimental Study on the Influence of Second-Order Effect on Shear Bearing Capacity of Frame Columns with Cracks under Different Axial Compression Ratios	
X.K. Yan, S. Zhang, G.L. Zhao, X. Chen and B. Zhang	93
Analysis of the Influence of Different Construction Joints on the Ductility of Cast-in-Place Frame Structure	
X.K. Yan, B. Zhang, G.L. Zhao and S. Zhang	104
Friction Coefficient and Wear of PEEK-PTFE Hybrid Radial Ball Bearings under Dry Conditions	
K. Hiraki, K. Mizobe, T. Matsueda, Y. Kashima and K. Kida	114
Observation of Surface and Subsurface Crack Propagation in PPS Thrust Bearings under Rolling Contact Fatigue in Water	
S. Mizozoe, T. Matsueda, K. Kida and Y. Kashima	120

Crack Growth Evaluation of Induction Quenched JIS-S45C Steel Based on Stress Intensity Factor Simulation

T. Matsueda, A. Tamura, K. Mizobe and K. Kida 126

Contact Temperature Calibration of PPS Thrust Bearings under Dry Condition

H. Nihon'yanagi, T. Matsueda, K. Kida and Y. Kashima 131

Chapter 3: Functional Coatings

Computational Analysis of Laser Cladding of Preset MCrAlY Coating Based on ANSYS I-Temperature Field

D.S. Wang, L.Y. Yue, H. Yang and P.P. Zhang 139

Computational Analysis of Laser Cladding of Preset MCrAlY Coating Based on ANSYS II-Stress Field

D.S. Wang, K.J. Yang, H. Yang and P.P. Zhang 148

Effects of Heat Accumulation on Temperature Field during Multi-Track Laser Cladding of Preset MCrAlY Coating

D.S. Wang, H. Yang, L.Y. Yue and P.P. Zhang 157

Effect of Different Carbon Materials on the Conductivity of Epoxy Resin Conductive Coatings

G.Z. Li, L.J. Feng, Z. Zhai and F.F. Wang 164

Chapter 4: Polymers and Composites

Modelling Material Parameters of Selected Composite Structures of Tires

J. Stodola, A. Breznicka, P. Stodola and J. Furch 173

Effect of Variation of Injection Molding Parameters on Static, Dynamic and Thermo-Mechanical Material Properties of Filled Polymer Materials

V. Contos 181

Water Sorption and Solubility of Vanillin-Incorporated Self-Curing Orthodontic Polymethylmethacrylate Resin

T. Poonpiriya, P. Sawaengkit, P. Churnjitapirom and S. Thaweboon 187

Impact of Repetitive Recycling on Optical Properties of Virgin and Recycled Polypropylene Blends Based on Material Value Conservation Paradigm

D.S. Gabriel and R.H.P. Saragih 192

Optical Properties Improvement of Recycled Polypropylene with Material Value Conservation Schemes Using Virgin Plastic Blends

D.S. Gabriel and H. Nasrullah 199

A Mechanical Model for Polyhedral Oligomeric Silsesquioxane (POSS) Reinforced Amorphous Polyethylene

Y.F. Li, Y.Y. Xiong, C.Y. Fan, Z.J. Wang and Y.C. Xiao 206

Property Evaluation of FML (Glare)

S. Bhat, H. Adarsha, V. Ravinarayan and K.V. Prasad 212

Chapter 5: Technologies of Chemical Synthesis and Production

Investigation of Using Multi-Hydroxyl Ionic Liquid Polymer as Catalyst to Produce Propylene Carbonate

R.S. Horng, W.C. Hung and J.W. Kuo 219

Investigation of Optimal Esterification Conditions of Lactic Acid with Butanol by Using Response Surface Methodology

M.J. Zheng, H.C. Tseng, B.Y. Chiu, W.C. Hung and R.S. Horng 224

Study on the Effect of Different Template Agents on the Synthesis of MCM-48 Molecular Sieves

X.X. Li, M. Li, L.Y. Dong, K.M. Su, Y. He and Q. Lin 231

Antibacterial Properties of Silver Nanoparticles Synthesized Using *Piper betle* L. Leaf Extract

T.H. Vu, V.H. Bui and N.T. Nguyen 236