Table of Contents

Preface

Chapter 1: Properties of Steel and Alloys

Quantitative Analysis of Yield Strength in V-Alloying Medium Manganese Steel under Different Processes	
L. Ma, S. Wang, T. Jia and X.H. Gao	3
An Improved Random Forest Magnesium Alloy Prediction Method Based on Particle Swarm Optimization	
Y. Zhang, S.C. Wei, B. Wang and L.W. Li	13
Effects of Solution Aging Treatment on Microstructure and Hardness of Ni30 Superalloy Z.F. Chen, X.F. Fan, L.Q. Wang, X.D. Fu and P.X. Li	19
Chemical Composition and Microstructure Characterization of High Purity CuMn Alloy	
for Integrated Circuit Y. Wang, X.Y. Wan, J.J. He, Q.X. Zhang, Y.R. Kang, N. Liu and Q.Q. Qi	25
Chapter 2: Applied Chemical Technologies	
Study on Application and Mechanism of Alkali Sulfadiazine Neodymium as PVC Heat Stabilizer	
F. Ye, K.J. Guo, S.F. Lu, X.D. Wang, G.Y. Shen, Z.C. Shang, B.B. Li and Q.F. Ye	33
Modification and Application of Materials for Strong Inhibitory Drilling Fluid J. Jun, L. Chen and W. Wei	41
Extraction Technology for Manganese Sulfate Solution Purification C.Z. Li, H.Y. Xie and H.X. Jin	47
Carbonaceous Catalyst Activated Persulfate for Degradation of Antibiotic Pollutants in Water C.K. Zhong	59
Chapter 3: Materials for Energy Storage	
Application of Strontium-Doped Bismuth Ferrate in Lithium-Sulfur Battery Cathode Y. Liu and C.T. Yang	71
Improving Structure and Electrochemical Performance of Single-Crystal Ni-Rich Cathodes	
by Aluminium Doping F. Wu, S.S. Zhang, N. Li, Y.L. Nie, L. Chen, D.Y. Cao, Y. Lu and Y.F. Su	77
Chapter 4: Coatings and Tribology	
Experimental Study on Dissolution Stability and Dispersion and their Influence on Tribological Properties for Reducing Friction and Prolonging Life of Armored Vehicle Engine Lubricating Oil Additives	0.5
B.L. Fan, A.N. Sun, Z.J. Li, Y.W. Guo, X.W. Qi and C.X. Liu	85
Preparation, Characterization and Tribological Performance of Polyurethane (PU) Coatings Filled with Graphene Oxide (GO) L.H. Kong, L. Zhang, G.X. Li, D. Liu and J.L. Niu	99
Brush Plating of Ag-Bi Coatings from a Cyanide-Free Solution B.S. Du, Z.W. Zhang, S. Suo and X.M. Li	105
Effect of Alternate Cycle Temperature on the Tribological Performance of Polyimide	
Composites Y. Wang, X.H. Gao, Z.C. Wu, X.L. Zhang, F.B. Li, G.S. Wang, Z.Q. Li, Y.Z. Yue, P. Li, Y.M.	

Chapter 5: Strength of Materials

Study on Finite Element Method for Solving Stress Concentration Problem	
Y. Zhou, Z.J. Bai, L.F. Zeng and X. Gong	119
Discussion on Fatigue Life Analysis Methods for Connecting Bolts of the Top Cover of	
Water Pump Turbines	
H.B. Li, L. Chen, C.J. Li, K. Hu, L. Qiu, X. Zhang, S.Y. Chen, D.L. Wang and M.M. Yin	125