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: Power Semiconductor Devices and Integrated Circuits	
A Novel Shield Gate 4H-SiC MOSFET with Reduced Reverse Recovery Losses D.S. Peng and Q.Y. Feng	33
Investigation of 4H-SiC UMOSFET Architectures for High Voltage and High Speed Power	
Switching Applications C.L. Hung, Y.K. Hsiao, C.C. Tu and H.C. Kuo	41
Chapter 3: Geochemistry, Materials and Technologies for Environmental Engineering and Waste Recycling	
Correlation between Particle-Size Composition and Morphology of Stone Dust and Air Quality	
A.Y. Aleksandrova and S.S. Timofeeva	53
Study of the Possibility of Using Na- and Ca-Differences of Zeolite for the Drinking Water Purification S.E. Efimov and A.R. Aleksandrov	61
Ceramic Materials Using Oil Contaminated Soil	01
T.M. Supeliuk and L.L. Maslennikova	67
Accumulation of Microelements and Mineral Formation in Microbial Mats of Thermal Springs of Kamchatka (Far East, Russia)	7 2
E.G. Lebedeva, N.A. Kharitonova and I.V. Bragin Thermodynamic Foundations for the Use of Gypsum and Magnesia Stone for the	73
Neutralization of Heavy Metal Ions A.B. Bobrovnik, M.Y. Slesarev and M.V. Shershneva	79
Selection of the Optimal Reagent for Low-Turbidity Water Treatment at High Permanganate Oxidability P.G. Bykova, I.P. Dudanova and E.D. Palagin	89
Vibratory Shear Enhanced Process Membrane Filtering Technology to Overcome the Negative Effects of Concentration Polarization	09
A.R. Strelkov, O.V. Tsabilev and M.A. Gridneva	95
Adsorption of Nickel(II) Ions by Natural Zeolites Type E.G. Filatova and O.I. Pomazkina	103
Preparation of Silica Nanoparticles from Waste Product of Zirconium Carbide Facility F. Abadian-Naeini, M. Mohsennia and M. Bagherzadeh	111

Chapter 4: Materials and Technologies in Construction

The Efficiency of Non-Destructive Testing to Estimate the Damage Level of Fiber-	
Reinforced Concrete Exposed to High Temperatures A.M. Nefoussi, M. Ezziane, H. Siad, R. Chihaoui, M. Mouli, M. Lachemi and K. Ayed	125
Evaluation of Modulus of Rupture of the Concrete with Addition of PET Fibers and	
Polypropylene	
J.F.M. Sánchez, E.M.A. Guzmán, W.M. Molina, H.L.C. Garcia, J.A.P. Segovia, J.A.B. Perez, M.A. Sanchez, M.A.N. Seras and F.A.H. Ferreyra	143
Fatigue Behaviour of Offshore T-Weld Connections Repaired by Grinding and Wet	
Welding	
G. Terán-Mendez, R.C. Melendez, L. Medina-Almazán and A.A. Hernández	151