

Table of Contents

Preface

Chapter 1: Materials Processing Technologies

A Modified Vacuum Packaging Technology for the Conductive Slip-Ring Encapsulating with Epoxy Molding Compounds	
B. Hong, Z.D. Gao, J.Y. Gao, Y. Ji and S.Y. Lv	3
Experimental Study on Repairing Large Modulus Rack Cracks by Argon Arc Welding	
J.Y. Yu, D.W. Shi, Z. Li, S.Y. Yu and Y. Zhang	8
Research on Micro-Size Electrical Discharge Machining Polycrystalline Diamond	
Y.H. Jia, J.M. Guo, Y. Guo and F. Yu	14
Effect of Laser Shock Peening on Surface Residual Stress and Plastically Affected Depth of TC11 Titanium Alloy	
R. Zhu, Y.K. Zhang, G.F. Sun and P. Li	20
Improved Workability of Diameter-Enlarged Process for S35C through Quenching and Tempering Heat Treatment	
X. Zhu, K. Ogi and N. Okabe	26
Influence of Fillet Radius of Die End on Workability of Diameter-Enlarged Process	
X. Zhu, K. Ogi and N. Okabe	34
Study on Wrinkles during Rotary-Draw Bending Forming	
X. Zhu, K. Ogi and N. Okabe	43
The Pouring Process Optimization for the Conductive Slip-Ring	
K.L. Zhang, B. Hong, L.P. Zhang, Y. Ji, Z.D. Gao and J.Y. Gao	48
The Soaking Process Optimization for the Conductive Slip-Ring	
L.P. Zhang, B. Hong, K.L. Zhang, J.Y. Gao, Y. Ji and Z.D. Gao	53
Modeling and Investigation of the Process of Hot Rolling of Large-Sized Ingots from Aluminum Alloy of the Al-Mg System, Economically Alloyed by Scandium	
V. Mann, S. Sidelnikov, I. Konstantinov, V.N. Baranov, I. Dovzhenko, D. Voroshilov, E. Lopatina, O. Yakivyu and I. Belokonova	58
Evaluation of Surface Roughness and Tool Wear in High Speed Machining of Inconel 718	
M.M. Reddy and V.Y.C. Nie	66

Chapter 2: Composite Structures

Effect of Compressive and Shear Deformation of 2.5D Preform on its Stiffness of Composites	
F.B. Lin, Y. Dai, H.Y. Li, Y. Qu and W.X. Li	75
Study on Mechanical Properties of 3D4d Woven SiC_f/SiC Composites Based on Experiment and Model Prediction	
X.K. Shen, M.Y. Li, Y. Dai, X.G. Zhou and P.F. He	81
Elastic Constants Determination of Composite Plates Using Measured Strains	
C.Y. Huang and T.Y. Kam	87

Chapter 3: Development of Nanocomposites

Optical Absorption Spectroscopy of DNA-Wrapped HiPco Carbon Nanotubes	
L.J. Wang and K. Umemura	95
Influence of Graphene Nanoplatelets on Silica-Filled Natural Rubber Composites: Dispersion Mixing and Effect on Thermal Stability, Rheological and Mechanical Properties	
M. Charoenchai, S. Tangbunsuk and W. Keawwattana	100
The Compressive Strength of Coconut Fibers Reinforced Nano Concrete Composite	
R.H. Lumingkewas, A.H. Yuwono, S.P. Hadiwardoyo and D. Saparudin	105

Chapter 4: Functional Materials

Interaction of Components of Co-Sn and Co-Sn-Cu Powder Materials in Liquid Phase Sintering

E.G. Sokolov, A.V. Ozolin, L.I. Svistun and S.A. Arefieva 113

Investigation of Coating Structure and Properties

K. Bakhrunov 119

Packing Density Improvement for Improving Strength of Cement Paste

J.J. Chen, H.N. Chen and G. Li 124

Preparation and Properties of Chitosan-Tranexamic Acid Salts

Z. Hu, Y.Q. Qin, S.T. Lu, C.R. Huang and Z.K. Chen 129

Preparation of Poly-Hydrazide and Use as Pour Point Depressor for Heavy Oil

S. Peng, X.B. Tang, H. Wang, Y. Wei and G. Chen 135

Recycling Process for Spent Cathode Materials of LiFePO₄ Batteries

X.T. Jiang, P. Wang, L.H. Li, J. Yu, Y.X. Yin and F. Hou 141