

Table of Contents

Preface

Chapter 1: Polymers, Composites and Ceramics

Effects of Hydrolysis Ratio on the Structure and Adsorption Properties of Porous Starch X.D. Jiang and J.K. Wang	3
Properties and Mechanism of Al₂O₃- Al Composite Powder Prepared by Hydrothermal Method Y.Z. Wang, Z.Q. Shen, J.G. Song, G.Y. Yang, M.L. Qin, C. Wang and Y.X. Liu	11
Frictional Performance of Polyphenyl Ester Modified Polytetrafluoroethylene K. Fang	17
Manufacture and Performance of the Al₂O₃/Al Compound Powder and Cermet with the Powder Metallurgy Y.N. Qin, Y.Z. Wang, H.B. Wen, M.L. Qin, D.L. Zhang, F. Wang and J.G. Song	25
Phase Composition, Crystal Structure and Microwave Dielectric Properties of Nb-Doped Yttrium Aluminum Garnet Ceramics M.K. Zhou, S.R. Zhang and B. Tang	33

Chapter 2: Materials for Energy Storage

Reinforced Hydrophobic Molecular Layer Promoting Waterproof Lithium for High-Performance Lithium-Metal Batteries Y.H. Ma	43
Regulating Li⁺ Transfer and Solvation Structure via Metal-Organic Framework for Stable Li Anode Y.Y. Li, Y. Hu and C.T. Yang	49
A Multi-Functional Artificial Interphase for Dendrite-Free Lithium Deposition A.J. Hu and Y.N. Li	55
Surface Coating Modification of Lithium-Rich Manganese-Based Oxide as Cathode Material for Lithium-Ion Batteries S.Z. Bu, Y.X. Long, L.B. Zhang, M.Y. Lu, Y.M. Li, D. Wei, Y.P. Xia, Y.M. Luo, S.J. Qiu, F. Xu, L.X. Sun and H.L. Chu	61

Chapter 3: Structural Metals Processing

Microstructure and Properties of High Frequency Pulse MAG Butt Welded Joints of S355 Steel with Different Diameters X.Y. Wu, Z.Y. Zhang, R.Y. Tian, N.Z. Liu, H.C. Tian and C.G. Ding	71
---	----

Chapter 4: Building Materials

Synthesis of PAN Fibre-Supported Visible Light-Activated Carbon-Doped TiO₂ for Toluene Degradation of Interior Wall Paints Q.P. Tian, M. Xu, Z.Y. Tian, R.H. Yuan and Q.X. Liu	81
Study on the Mechanical Performance of Soft Sandy Soil Solidified by Epoxy Composites S. Liu, G.Z. Wang, M. Fan, S.C. Cui, X.T. Yan and Y.L. Li	87
Study on the Technology of Preparing Ceramsite from Coal Gangue D.L. Zhang, Y. Liu, J.G. Song, H.B. Wen, R. Huang, Z.K. Li and X.Y. Hu	99