

Table of Contents

Preface

Chapter 1: Materials for Energy Storage

Optimized Lithium-Indium Chloride Solid Electrolyte for High Energy All-Solid-State Batteries

G.F. Xu 3

MXenes Composites as the Protective Layer for Li Metal Electrodes

X. Qi, S.J. Yan, C.J. Wang, X. Chen, S.K. Peng and X.H. Li 9

Chapter 2: Composite Materials

Synthesis of Titanium-Based Composites by Pulsed Methods

A.S. Kaygorodov and S.V. Zayats 17

The Co-Poly(Urethane-Imide) Heat Resistant Thermoplastic Elastomers

A. Didenko, D. Kuznetsov, V. Smirnova, G. Vaganov, A. Ivanov, V. Yudin and V. Kudryavtsev 23

Microstructure Evolution at High Temperatures for Co-MOF-74 as High-Efficiency Electromagnetic Absorbers

Y. Zhang, T. Li, S.Y. Tang, X.Y. Xie, R.Z. Liang and X.X. Chu 29

Bond Behaviour of Treated Natural Fibre in Concrete

E.O. Momoh, A.I. Osofero and O. Menshykov 37

Chapter 3: Multifunctional Materials

Fabrication of Fluorite and Perovskite Functional Films by Solution Spray Pyrolysis

N.E. Kiratzis, A. Barbatsis, N. Kosmarikos, A. Bisbas, C. Matsouka and L. Nalbandian 47

Controllable Modification and Synthesis of Intelligent Nanomaterials: A Brief Review

C.X. Yang, Y.F. Zhang, Q.Y. Wu and W.J. Le 53

Preparation and Cavitation Erosion Resistance of High Strength Nanocoating Cylinder Liner

Y.L. Jiang, J.J. Guo and H. Zhao 61

Chapter 4: Computational Materials Science

Bandgap Modulation of the C₂N-h2D Nanomaterials under Elastic Strains

J. Zhao, Q.Q. Song, Q. Wei, J. Chen, J. Xiao, J.L. Ma and S.Q. Ma 71

1-xGe_x, Si1-xSn_x and Ge1-xSn_x

S.L. Sun, L.X. Zhang, W.Q. Huang, Z.Y. Chen, H. Wang and C.Q. Zhang 77

The Investigation of Lattice Properties for Group-IV Sigesn Ternary Alloy: By Using Machine Learning Method

L.X. Zhang, S.L. Sun, W.Q. Huang, Z.Y. Chen, H. Wang and C.Q. Zhang 83