

Table of Contents

Preface

Chapter 1: Composite Materials

Hybrid Carbon Fiber Reinforced Laminates with Interlaminar Nanofibers	
L. Iorio, F. Quadrini, D. Bellisario, A. Proietti, N. Gallo and L. Santo	3
Additive Layer Manufacturing of Carbon Fiber/PEKK Composites for Aeronautic Application	
F. Quadrini, D. Bellisario, L. Iorio, A. Proietti and L. Santo	9
Graphite- and Graphene-Based Polymer Nanocomposites for Flexible Sensors and Actuators in Health Care and Soft Robotics Applications	
S. Schintke, B. Mujovi, D. Loiko and S. del Rossi	15
Preparation, Microstructure, and Mechanical Properties of Aluminum Matrix Composite by Accumulating Roll Bonding Method	
G. Sasaki, W.C. Liu and K. Sugio	21
Relation between Process Parameters and Pressure during Friction Stir Forming in the Development of a Superplastic Composite Steel Sheets	
H.M. Tabatabaei, T. Ohashi and T. Nishihara	27
Influence of Green Plantain Peel Ash and Alumina Reinforcement on the Physio-Mechanical Properties of Aluminium Matrix Hybrid Composites	
F. Ben, F.R. Amodu and P.A. Olubambi	33

Chapter 2: Powder Metallurgy

A Unique Hall-Petch Relation of Harmonic Structure Designed Pure Ni	
D. Matsuzaka, K. Nagano, T. Kambara, M. Kawabata, T. Kuno, H. Fujiwara and K. Ameyama	49
High Temperature Deformation Behavior and Microstructure Evolution of Harmonic Structure Composites with WC-Co and High Speed Steel	
A. Koiso, T. Kuno, M. Kawabata, K. Ameyama and H. Fujiwara	55
Misorientation of Grains in Fatigue of Harmonic Structured Steel Observed by Diffraction Contrast Tomography Using Ultrabright Synchrotron Radiation	
Y. Nakai, D. Shiozawa, S. Kikuchi, I. Mishima, M. Kawabata and K. Ameyama	61
High Temperature Deformation of Harmonic Structure Designed CrMnFeCoNi High Entropy Alloy	
S. Hosogi, S. Onoue, T. Kuno, M. Kawabata, H. Fujiwara, K. Isonishi and K. Ameyama	67
Microstructure Evolution and Unique Deformation Behavior of a CrMnFeCoNi Harmonic Structure High Entropy Alloy at Elevated Temperatures	
S. Onoue, S. Hosogi, T. Kuno, M. Kawabata, H. Fujiwara, K. Isonishi and K. Ameyama	73
Effect of Hot-Pressing Pressure on the Microstructure and Thermal Conductivity of Copper/Ti-Coated Diamond Composites	
J.N. Ma, R. Torrens, L. Bolzoni and F. Yang	79

Chapter 3: Functional Materials

Sr Substitution Effect on Ca Site for 32522-Type $\text{Ca}_3\text{Al}_2\text{O}_5\text{-yFe}_2\text{As}_2$ Superconductor	
H. Kitô and H. Ogino	87
Effect of CeO_2 Doped Zirconium Titanate with Various Temperatures by Solid-State Reaction Method	
M. Naga Sravanthi, S. Jothi and A. Selva Kumar	93
Development of Functionally Graded Metal-Ceramic Systems by Directed Energy Deposition: A Review	
D.C. Ratnala, J. Andersson and S. Joshi	105

Magnetic Semiconductors from Ferromagnetic Amorphous Alloys	
Y.Z. Jiao, X.C. Wang, T. Zhang, K.F. Yao, Z.J. Zhang and N. Chen	111
Effects of Thermomechanical Treatments on Tensile Properties of Pure Titanium	
Y. Harada, K. Ogawa and T. Aoki	117
Study of the Phase Transition from TbCu₇ Structure to ThMn₁₂ Structure in Newly Developed ThMn₁₂ Type Magnets Using a Numerical Analysis Method for X-Ray Diffraction Patterns	
T. Kuno, K. Kobayashi and H. Fujiwara	123
Development of Soft Magnetics Fe-B-C-Si Amorphous Alloys with High Magnetization and Sufficient Amorphous-Forming Ability	
T. Bitoh and S. Gohda	129
Development of Giant Magnetostrictive Materials for an Active Noise Control System in an Ultracompact Electric Vehicle	
T. Kato, H. Okazaki, I. Kobayashi, J. Kuroda, D. Uchino, K. Ogawa, K. Ikeda, A. Endo, H. Kato, T. Narita and M. Furui	135
Robust and Reconfigurable Waveguide Design in Valley-Topological Phononic Crystals	
M.S. Ali, Y. Hata, M. Kataoka, M. Misawa and K. Tsuruta	141