

Table of Contents

Preface

Chapter 1: Fiber Reinforced Composite Materials and Laminates

The Use of Viscoelastic Layers in GFRP, a New Vision of Planning Hull P. Townsend, J.C. Suárez, N. Muñoz and J. Rodríguez	3
Stress Analysis of a Flange Stiffened FRP Composite Panel with Varying Stacking Sequence N. Teyi and S.K. Tamang	9
Determination of Interlaminar Fracture Toughness of CFRP Composite in Mode I Using Numerical Simulation with Cohesive Elements F. Sedlacek, T. Kalina and K. Raz	15
Fabrication of Fibre Metal Laminates with Multiscale Toughening Mechanisms G. Mahendrarajah, E. Kandare and A.A. Khatibi	22
The Effect of Alkalization Treatment on Fiber-Matrix Compatibility in Natural Fiber Reinforced Composite E. Yuanita, Y.A. Husnil, M.A. Mochtar, R. Lailani and M. Chalid	28
Design and Build of a Remote Control Concrete Boat M.G. Lee, Y.C. Kan, Y.F. Shih, Y.X. Wang and M.J. Lee	34
Inverse Hybrid Laminate for Lightweight Applications T. Osiecki, C. Gerstenberger, T. Timmel, M. Frankiewicz, R. Dziedzic, P. Scholz and L. Kroll	40
Effect of Ply Drop in Aerospace Composite Structures P. Jadhav	46

Chapter 2: Polymer Matrix Composite Materials

Development of Eco-Friendly Flame-Retarded High Density Polyethylene Composites Y.F. Shih, W.L. Tsai and V.K. Kotharangannagari	55
Two Experimental Approaches for Investigation of Nonlinear Elastic Properties of Polymers and Polymer-Based Composites A.V. Belashov, A.A. Zhikhoreva, I.V. Semenova and Y.M. Beltukov	61

Chapter 3: Manufacturing Technology

Compressive Strength Prediction of Quad-Diametral Lattice Structures K. Raz, Z. Chval and F. Sedlacek	69
Design of Injection Mold from Plastic Material Z. Chval, K. Raz and F. Sedlacek	75
Relaxation-Compression Resin Transfer Molding under Magnetic Field A. Ouezgan, S. Adima, A. Maziri, E.H. Mallil and J. Echaabi	81
Effect of Shear Stress on Viscosity and Crystallization Behavior of CaO-SiO₂-Al₂O₃ Based Mold Fluxes S.P. Gu, G.H. Wen, J.L. Guo and P. Tang	87

Chapter 4: Nanomaterials and Technology

Iron/Sulfur Co-Doped Titanium Dioxide Nanotubes: Optimization of the Photoelectrocatalytic Degradation of Phenol Red under Visible Light E.C.R. Lopez, N.E.B. Saputit, L.A. Loza, F.F.G. Camiguino, M.L. Mopon Jr. and J.V.D. Perez	95
Development of Copper Loaded Nanoparticles Hydrogel Made from Waste Biomass (Sugarcane Bagasse) for Special Medical Application H. Kumar, A.K. Gehlaut, H. Gupta, A. Gaur and J.W. Park	102

Effect of Surface Modification on Multi-Walled Carbon Nanotubes and their Reinforced Nylon Composites Y.F. Shih, V.K. Kotharangannagari and Y.T. Lin	108
Natural Convection in a Nano-Fluid Filled Square Enclosure B.L. Barhoi, R.C. Borah and S. Singh	114
A Study on Phonon-Mediated Thermal Transport and Lattice Thermal Conductivity Prediction Using First-Principles Calculations A.P. Maung and C.H. Hsu	120

Chapter 5: Functional and Special Materials

Fabrication of Solid Oxide Electrolysis Single Cell Using NiO-YSZ/YSZ/LSM-YSZ via Drop-Coating Method J.R. Rabo and R.B.M. Cervera	129
A Novel Full Stressed Energy Harvester with Varied Thickness G.H. Zhu and Y.B. Liu	135
Development of Rice Straw Paper Coated with Pomelo Peel Extract for Bio-Based and Antibacterial Packaging R. Chollakup, W. Kongtud, U. Sukatta, K. Piriyaatits, M. Premchookiat and A. Jarerat	141

Chapter 6: Building Materials

Biochar as a Conducting Filler to Enhance Electrical Conduction Monitoring for Concrete Structures S. Kamaluddin, D. Kurniawan, M.S. Abu Bakar and Z. Abu Samah	149
Lightweight Concrete Manufacturing Technology Based on Waste Energy Raw Materials Alkaline-Activated M. Nalewajko	155
Effects of the Usage of Wasted Diatomite and Phase Change Materials as Partial Replacement of Cement on the Mechanical Properties of Concrete Y.F. Shih, W.C. Hou, V.K. Kotharangannagari and M.G. Lee	161
Analytical Methods for the Synthesis of Composites I. Garkina and A. Danilov	167