

Table of Contents

Preface

Chapter 1: Nanomaterials and Nanostructures

Ultrasonic-Assisted Synthesis of Germanane and Siloxane Nanostructures A. Kouloumpis, G. Potsi, T. Giousis, N. Chalmpes, D. Gournis and P. Rudolf	3
Influence of Laser Energies on the Generation of Cobalt Oxide Nanoparticles via Laser Ablation in Liquid M. Alheshibri	9
Comparison between One-Dimensional and Three-Dimensional Optical Modelling of Ordered Black Silicon Nanostructures Using Effective Medium Approach J.Y.H. Chai, B.T. Wong and S. Juodkazis	15
Nitrogen-Doped Carbon Dots in Zeolitic Imidazolate Framework Core-Shell Nanocrystals: Synthesis and Characterization E.S. Elmorsy, A. Mahrous, W.A. Amer and M.M. Ayad	21
A Novel Formulation of Mesoporous Silica Nanoparticles Functionalized with Polyaniline Brush Polymer: Synthesis and Characterization E.A. Abdelsalam, I.A. Khalil, A. Osman Egiza and M.M. Ayad	29
Industrial Scale Engineering of Photocatalytic Nanomaterials by Flame Spray Pyrolysis (F.S.P.) A. Zindrou, A. Mantzani and Y. Deligiannakis	35
Effect of Ni Doping on the Optical Properties of ZnO Thin Films Prepared by Sol-Gel Spin Coating and Investigation of ZnO Powder Nanostructures S. Oudjertli, A. Mohammedi and M. Ibrir	43

Chapter 2: Materials Chemistry and Chemical Technologies

Photocatalytic Performance Test of Sn₃O₄/TiO₂/SiO₂ Particles with Adjusted Sn₃O₄ Deposition under Indoor Environment A. Yamazumi, D.T. Nguyen and K. Taguchi	51
Rice Husk Ash Extraction Applied for Biosilica Reinforced Tire Tread Filler Compound L. Anggraini, N. Sutisna and R. Hernawan	57
CO₂ Hydrate Thermodynamic and Crystallographic Characterization below the Freezing Point under Low Subcooling Y. Li, A.M. Gambelli and F. Rossi	63
Fracture Surface Analysis, Physical, Optical and Dielectric Properties of Bismuth-Based Glass Doped with Potassium Chromate C. Boonruang, K. Won-In and P. Dararutana	69
Doping Organic Thin Film Transistor by Valinomycin for Detecting Ion of Potassium A.A. Baroot	75

Chapter 3: Composites and Polymers

Sintering of TiB₂-TiC-SiC Composite Materials by Combined SPS/SHS Method L. Rurua, L. Khundadze and L. Nadaraia	83
Influence of Bending-Twisting Coupling Deformation on Pure Bending Strength and Fracture Morphology of CFRP Angle-Ply Laminate K. Terasaki, K. Okubo and K. Obunai	91
Development of a Test Bench for the Investigation of Thermoplastic-Thermoset Material Combinations in Additive Manufacturing D. Schreil, G. Zhilev, A. Matschinski and K. Drechsler	99
Effect of NaOH Concentration on Tensile Strength of Bamboo Hand Sheet J. Kaima, I. Preechawuttipong, R. Peyroux, P. Jongchansitto, C. Sillard, J. Viguie and E. Mauret	105

Chapter 4: Properties and Processing Technologies of Steel and Alloys

Transient Numerical Simulation the Friction Stir Welding Process of Aa 2017 Alloys, Contact Parameter Effects on Thermal History and Material Flow M. Boukraa and T. Chekifi	113
Multi-Criteria Decision-Making when Surface Grinding 9XC Steel with a Segmented Grinding Wheel D.D. Trung, D.V. Duc and H.X. Thinh	121
Reduction of Life Time Expectation of Standard Duplex Stainless Steel Exposed to Hydrogen under Corrosion Fatigue Conditions M. Wolf and A. Pfennig	129

Chapter 5: Sustainable Building Materials

Strength Properties and Toughness Indices of Hybrid Polymeric Fibre Reinforced Renewable Oil Palm Shell Concrete M.K. Yew, M.C. Yew, B.C. Ang, J.H. Beh and F.W. Lee	137
Research on Sustainable Bituminous Mixture for Permeable Wearing Layers in Road Pavements M. Skaf, V. Ortega-López, A.B. Espinosa, V. Revilla-Cuesta and J.M. Manso	143
Impact of Glass on Concrete Properties as Substitution of Aggregate S.H. Jassam, O.A. Qasim and B.H. Maula	149
The Durability of Ultra High Strength Fibre Reinforced Cementitious Material C. Paglia and S. Antonetti	161
Opportunity Utilization Tailings Waste as Fine Aggregate Material in Asphalt Mixture Performance to Support Sustainable Development Goals (SDGs): A Preliminary Study F.E.P. Lapian and M. Tumpu	167
Experimental Study on Steel Industry Waste as Aggregate in Concrete for a Sustainable Development K.D. Verma, B. Kondraivendhan, S. Verma and M. Gupta	175
Study of Clayey Soils Stabilized with Ladle Furnace Slag as Alternative Binder for Use in Road Works A.B. Espinosa, V. Revilla-Cuesta, V. López-Ausín, R. Serrano-López and F. Fiol	181
Mechanical Properties of Blast Furnace Slag and Rice Husk Ash with Coconut Shell as Partial Replacement of Aggregates G. Vasudevan and M.S. Sheng	187