

Table of Contents

Preface

Chapter 1: Cast Iron, Steel and Alloys, Casting and Processing Technologies

Study on the Modification Effect of Al-Sr Master Alloy on A356 Aluminum Alloy G.Q. Chen, G.S. Fu, K.H. Yang and C.S. Lin	3
Microstructure and Mechanical Properties Investigation of New $\text{Al}_{10}\text{Cr}_{12}\text{Mn}_{28}\text{Fe}_{(50-x)}\text{Ni}_{(x)}$ High Entropy Alloys A.W. Abdel-Ghany, S. Elkatatny and M.A.H. Gepreel	9
Effect of Grain Structure on the Mechanical and Corrosion Behavior of Advanced Medium Mn Stainless TWIP Steel M.H.A. Gadelhaq, A.S. Hamada, I.M. Ghayad, A. Järvenpää, M. Jaskari and M. Hossam	15
Microstructure Evolution of the as Tempered P92 Steel at High Temperature Exposure Y. Xu, T. Lei, X.S. Yang, C. Chang, L.F. Qian and Q. Gong	21
Abrasion Wear Resistance of Ni - Mo Alloyed High-Chromium Cast Iron M. Pokusova, Z. Gabrisova, A. Brusilova, A. Pribulová and P. Futaš	30
Possibilities Reducing of Energy Consumption by Cast Iron Production in Foundry P. Futaš, A. Pribulová and M. Pokusova	36
Influence of Charge Composition on EN-GJS-500-7 Ductile Iron Properties in Foundry Operating Conditions A. Pribulová, P. Futaš and M. Pokusova	42
Influence of Ni Content on Erosive Wear and Destabilization Heat Treatment Conditions Behavior of Multi Component White Cast Iron K. Kusumoto and K. Shimizu	48
Multi-Objective Optimization of Electrical Discharge Machining Parameters for 2024 Aluminum Alloy Using Grey-Taguchi Method J. Phimoolchat and A. Muttamara	55
Multi-Criteria Optimization of Dressing Parameters for Surface Grinding 90CrSi Tool Steel Using Taguchi Method and Grey Relational Analysis T.T. Hong, N.V. Cuong, L.H. Ky, Q.T. Nguyen, B.T. Long, L.A. Tung, T.T. Nguyen and V.N. Pi	61

Chapter 2: Materials and Technologies of Environmental Engineering and Waste Processing

Enhancement of Photocatalytic Performance of Anatase by Silver Deposition through Chemical Reduction Process at Room Temperature T. Narkbuakaew and P. Sujaridworakul	71
Effect of Anatase/Rutile Phase Ratio on the Photodegradation of Methylene Blue under UV Irradiation Y.Y. Zaw, D.A.D. Channei, T. Threrujirapong, W. Khanitchaidecha and A. Nakaruk	78
Influence of Preparation Methods of TiO_2 Nano-Particle on Photodegradation of Methylene Blue J. Sirichokthanasarp, D.T.T. Trinh, D.A.D. Channei, K. Chansaenpak, W. Khanitchaidecha and A. Nakaruk	84
Changing of Particle Size and Pore Structures of Calcium Oxide during Calcinations of Industrial Eggshell Waste A. Putkham, S. Ladhan and A.I. Putkham	90
Effect of Thermal Treatment on Thermal Properties, Surface Chemistry, Crystalline Structure and Methylene Blue Removal of Polyvinyl Alcohol/TiO_2 Nanocomposite Films S. Ratchawong, S. Wacharawichanant and S. Tanodekaew	96
Characterization of Low-Pressure Nitrogen Plasma Discharge and Pre-Oxidation on the Surface Characteristics of Activated Carbons R.G. Abdon, T.A. Dela Peña, C. Punongbayan and J.A. Ricafrente	102

Effect of Silver Addition on the Adsorption Properties of Y Zeolite V.L. Temerev, A.A. Vedyagin, K.N. Iost, S.V. Cherepanova and M.V. Trenikhin	108
Pyrolysis Kinetics of Polypropylene and High Density Polyethylene Wastes Using Kaolin Catalyst E. Erawati, Hamid and R.A. Febriansyar	114

Chapter 3: Materials and Technologies of Chemical Production

<i>In Situ</i> ATR Infrared Study of Cobalt-Borate Water Oxidation Catalysts L.F. Xi, C. Schwanke, K.M. Lange and M. Risch	123
Continuous Methyl Ester Production Process from Refined Palm Oil Using 3D-Printed Static Mixers K. Pongraktham and K. Somnuk	134
Continuous Hydrosonic Reactor for Methyl Esters Production Process from Low Free Fatty Acid Oil Using 3D-Printed Rotor Y.M. Oo and K. Somnuk	140
Process Intensification of Liquid-Liquid Extraction in Rotating Packed Bed S. Karmakar, A. Bhowal and P. Das	146
Partial Miscibility of Metals as a Key for Improved Properties A.A. Vedyagin, P.E. Plyusnin, R.M. Kenzhin, V.O. Stoyanovskii, A.V. Zadesenets and Y.V. Shubin	151
Fabrication of the Functionalized Carbon Nanomaterials via Catalytic Pyrolysis of Heteroatom-Containing Compounds A.A. Vedyagin, I.V. Mishakov, Y.I. Bauman and R.M. Kenzhin	157
Fabrication and Characterization of Biocomposite Membranes from Polycaprolactone and Native Arrowroot (<i>Maranta arundinacea</i> L.) Extracted Starch K.B.B.T. Damian, K.A.C. Bermundo, Y.B.L. Macatol, G.P.C. Marino and R.R. Aquino	163
Dispersion Stability of Nanocellulose in Nonpolar Solvent: Chloroform E. Indarti, Marwan and W. Wan Daud	170

Chapter 4: Functional and Special Materials

A Comparison between $\Sigma 3$ Asymmetrical Tilt Grain Boundary Energies in Niobium Obtained Analytically and through Molecular Dynamics Based Simulations D. Singh and A. Parashar	179
Synthesis and Electrical Resistance Property of Vanadium Oxide Thin Films by DC Magnetron Sputtering L. Chotirat, S. Niyomwas, S. Supothina, W. Wongpisan and K. Waree	185
The Use of Silane-Aniline as Coupling Agent between Titanium (IV) Oxide Core and Polyaniline Emeraldine Salt Shell M.M.P. Parel, I.R. Colambo and M.U. Herrera	191
Temperature Dependent Up-Conversion Luminescence Properties of Er^{3+} Doped KNN Ultrafine Powders Prepared by Pulsed Laser Ablation in Liquid Z. Liu and D.H. Chen	197
Design of Tapered Periodic Meta-Surfaces for Suppressing Edge Electromagnetic Scattering H.Y. Chen, G.Y. Li, L.J. Lu, D.F. Liang, X.L. Weng, H.Y. Xie and L.J. Deng	203
Novel Proton-Conducting Oxygen-Deficient Complex Oxides: Synthesis, Hydration Processes, Transport Properties N. Tarasova, I. Animitsa and A. Galisheva	209
XRD and SEM Analyses of Bulk Ga-Doped $\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$ Li- Ion Conducting Solid Electrolyte Prepared via Hot-Pressing Method A.L.M. Blaquera, C.M. Macalisang, J.C. Palomares, R.M. Garcia and R.B.M. Cervera	215
New Efficient Technique for Finite Element Modeling of Macro Fiber Composite Piezoelectric Materials D. Emad, M.A. Fanni and A.M. Mohamed	221

The Effect of Sn(II) Precursor on Morphology and Surface Area of as Synthesis SnO₂ Nanotube	
P. Choopool, K. Kooptarnond, M. Khangkhamano and V. Rachpech	227
Carboxylate-Functionalized Imidazolium-Based Binary Ionic Liquids as Electrolytes for Symmetric Carbon-Based Supercapacitors	
J. Patricio, S.J.L.P. Perez and S. Arco	233
Machine Learning Approach to Predict Dielectric Permittivity of PE/TiO₂ Nanocomposites	
B. Zazoum	239
Novelty and Applications of MMCs with Aluminium Metal Base Using Stir Casting Technique - A Review	
K.K. Mohan Reddy, C.K. Reddy, P. Karthik and M.G. Krishna	246

Chapter 5: Biomaterials

Synthesis and Characterization of Polycaprolactone(PCL)/Organo-Montmorillonite(O-MMT) Blend via Solvent Casting	
R.M.A. Ramos, R.R. Aquino, M.S. Tolentino, E.G. Eleazar and B.A. Basilia	255
Anthocyanin and Flavonoid Extracted from Watermelon Rind (<i>Citrullus lanatus</i>) with Two Different Colors of Watermelon Flesh: Yellow and Red	
V.A.S. Augustia, I.I. Oktaviani and W. Setyati	261
Pectin Based Edible Film for Cinnamaldehyde Delivery System: Effect of Calcium Chloride Content on the Physical Characteristics of the Films	
V.A.S. Augustia, Y. Kusumastuti and S.K. Wirawan	266
Microwave-Assisted Synthesis of PGS/PCL Nanocomposite Films: Effect of Organo-Modified Montmorillonite	
J.P.M. Jandayan, R.R. Aquino, M.S. Tolentino and C.M.E. Tan	271
Preparation and Optimization of Capsaicin-Loaded Chitosan Nanoparticles as Delivery Systems Using Box-Behnken Design	
N. Kulpreechanan and F.N. Sorasitthyanukarn	277
Simulation Study of Structural and Dynamic Properties of Bi-Disperse Colloidal Suspensions	
D. Irfachsyad and H. Meidia	283

Chapter 6: Building Materials

The Influence of the Waste Foundry Sand on the Microstructure and the Physico-Mechanical Properties of Autoclaved Aerated Concrete	
J. Melichar, V. Černý and R. Drochytka	293
Effect of Aggregate Packing on Strength of Reactive Powder Concrete: Modeling and Experimental Evaluation	
U. Bektimirova, I. Mukhammedrakhym, C.S. Shon, D.C. Zhang and J.R. Kim	299
Influence of Type of Secondary Raw Material on Consistency of Fresh Mixture for AAC Production	
V. Černý, M. Lédl, J. Melichar and R. Drochytka	305
Correlation of UCS and CBR on Lightweight Geocomposite of Soil-EPS Stabilized by Waste of Buton Asphalt	
I. Rauf, L. Samang, T. Harianto and a. arsyad	311
Influence of Sodium Hydroxide Grade on the Strength of Fly Ash-Based Geopolymer Cement	
T. Suwan, B. Paphawasit, P. Jitsangiam and P. Chindaprasirt	317
Correlation of Unconfined Compressive Strength and California Bearing Ratio in Laterite Soil Stabilization Using Varied Zeolite Content Activated by Waterglass	
A.B. Muhiddin and M.M. Tangkeallo	323
The Effect of Heat Induction on Shear Strength of Soft Soil in Radial Zone	
M. Panjaitan, L. Samang, A.B. Muhiddin and T. Harianto	329
Study of Soil Layer Stratigraphy Based on Georesistivity and Geological Techniques	
Antarissubhi, L. Samang, T. Harianto and Indrabayu	335