Table of Contents

Preface, Committee

Chapter 1: Composites and Polymers

Desorption Behavior of Epoxy/Amine-Coated Polyester Triangular Bar Composites Pre- Exposed to Acid Environment	
B. Pajarito, D. Dang-Awan, M.A. Felipe and K. Handa	3
Study on the Mechanism of Pores Deformation in Aluminium Composites under Hot and Cold Upsetting Processes A. Rajeshkannan	8
Preliminary Study on the Acoustical, Dielectric and Mechanical Properties of Sugarcane Bagasse Reinforced Unsaturated Polyester Composites E. Jayamani and M.K. bin Bakri	12
Tensile Properties of Unidirectional Kenaf Polypropylene Composite at Various Temperatures and Orientations D. THOLIBON, A.B. Sulong, N. Muhamad, I. Tharazi, N.F. Ismail and D.A. Tholibon	16
Tensile Properties of Woven Carbon/Kevlar Reinforced Epoxy Hybrid Composite N. HASHIM, D.L. Abdul Majid, R. Zahari and N. Yidris	20
Effect of Replacing Carbon Black with Surfactant-Modified Natural Feldspar on Mechanical Properties of Natural Rubber Composites N.J.P. Pinton and B. Pajarito	24
Effect of Type of Amine Salt and Surfactant on the Water Sorption and Flexural Properties of Modified Zeolite/Polyester Composites G.L.D. Leuterio, B. Pajarito, K.R.P. Mejia, L.M.G. Mendoza and E.J.S. Oquendo	28
Development, Manufacturing and Characterization of a New Composite Prepared from Cyperus corymbosus Rotth and Poly(Vinyl Chloride) D. Bootkul, T. Bootkul and S. Intarasiri	32
Fire Retardation Mechanism of PVC Composite Filled with White Rice Husk Ash for Ceiling Board Applications D. Bootkul and S. Intarasiri	36
Study on Utilization of Palm Frond for Wood Plastic Composite Bahruddin, Z. Helwani and R. Martani	40
Improving Interfacial Adhesion of Sub-Micro PA6 Composites with De-Sized Carbon Fiber M.H. Gabr and K. Uzawa	44
Morphological and Spectral Analysis of Polystyrene-Block-Polyisoprene-Poly(Butyl Acrylate) Triblock Copolymer N. Mukhsin, H. Abu Hassan Shaari, M.A.M. Ishak and A.M. Noor Aishatun	50
Modeling the Hardness and Mechanical Properties of Moulded Natural Rubber Pad B. Pajarito, M.A.E. Quizon, R.A.L. Marquez and P.B.C. Bermio	54
Effect of Replacing Carbon Black with Organo-Modified Bentonite and Acid-Activated Zeolite on Vulcanization Characteristics of Natural Rubber Tire Tread B. Pajarito, K.A. Gines, A.S. Baluyut, J.A.A. de Leon and R.P. Villa	59
Epoxidation of Waste Rubber/Zeolite Powder as Potential Filler for Epoxy Resin K. Ondoy and B. Pajarito	64
Metal Organic Frameworks-Templated Hollow Mn ₂ NiO ₄ Flower for Enhanced Supercapacitor Electrodes Z.R. Zhang, Y.Z. Huang and S.X. Bai	68
Reinforcement of Stereolithography Resin with Silica-Based Fillers A.C. Tilendo and B. Pajarito	74
RAFT Polymerization of Dual Responsive Hyperbranched-Star Copolymers of Methacrylic Acid and Poly(Ethylene Glycol) E.C. Atayde Jr., M.M. Berenguel and S.D. Arco	78
2.0.1.1	, 0

Temperature Dependence of Degradation of Colored Oxo-Biodegradable Low-Density Polyethylene Films under Accelerated Thermal Aging	
R.D. Maalihan and B. Pajarito	82
Chapter 2: Nanomaterials and Nanotechnology	
Conductivity Improvement of Silver Nanowire Transparent Electrodes by Surface Plasma Treatment	
N. De Guzman, J. Lopez, M. Vasquez Jr. and M.D. Balela	89
Thermodynamics of Formaldehyde Removal by Adsorption onto Nanosilver Loaded Bamboo-Based Activated Carbon W.D.P. Rengga, S. Wahyuni and A. Feinnudin	93
An Experimental Evaluation of Solid Lubricant Based Nanofluids in Small Quantity Cooling and Lubrication during Grinding S. Paul and A. Ghosh	98
Effect of Acid/Fiber Ratio on Physical Properties of Cellulose Nanofibers Extracted from Cassava Pulp	
T.C. Nguyen, R. Chaiwat and Y. Ruksakulpiwat	103
Effects of Nano Copper Additive on Thermal Conductivity of Magnetorheological Fluid at Different Environment Temperature M.S. Abdul Rahim, I. Ismail and S.N. Aqida	108
Photocatalytic Decomposition of Glycerol Solution on TiO ₂ Nanotube Arrays (TNTA) Doped with C and N to Produce Hydrogen	112
R. RATNAWATI, J. Gunlazuardi and Slamet Molecular Oxygen Adsorbed on Gallium Doped Graphene: A First-Principles Study	112
S.S. Varghese, S. Swaminathan, K.K. Singh and V. Mittal	117
The Physical and Photocatalytic Properties of N-Doped TiO ₂ Polycrystalline Synthesized by a Single Step Sonochemical Method at Room Temperature H. Sutanto, E. Hidayanto, Mukholit, S. Wibowo, I. Nurhasanah and Hadiyanto	121
Laterally Inhomogeneous Barrier Height Analysis for Thermally Annealed CuNiTi/p-InP	121
Contacts B. Abay	127
Chapter 3: Biotechnologies, Biomaterials and Technologies in Environmental Engineering	
Modified Synthetic Fibers a Treatment for Heavy Metal Removal in Aqueous P. Racho, P. Phalathip and W. Dejtanon	133
Effect of Degrading Transparent Oxo-Biodegradable Polyethylene Plastic Bags to Water	
Quality B. Requejo and B. Pajarito	137
Effects of Various Pretreatment Variables on Hydrolysis of Lignocellulose to Produce Sugar in Bioethanol Production A. Mulyaningtyas, F.N. Kayati, S. Syamsiah, Sarto and W.B. Sediawan	141
Heat Effects from Far-Infrared Source towards Antioxidant Activity in Aquilaria subintegra	141
Leaves H. Alwi, N.A. Md Zaki, N. Che Radzi, M.N. Mohd Rodhi, M.A. Ami and K.H. Ku Hamid	146
Copper-Treated Philippine Natural Zeolites for Escherichia coli Inactivation E. Olegario-Sanchez, M. Tan, H. Mendoza and M.D. Balela	150
Microwave-Irradiation Induced Fast Simultaneous Extraction of Methoxylated and Hydroxylated Phenolic Compounds from <i>Orthosiphon stamineus</i> Leaves S.F. Pang, M.Z. Lau, M.M. Yusoff and J. Gimbun	155
Hardness Removal from Water by Modified Starch	
P. Racho and K. Namseethan	159
Enzymatic Activity of Immobilized Carbonic Anhydrase onto Amberlite XAD7 F. Hamzah, S.N. Abdullah and S.N.H. Mohd Rafidi	163

Optimization of Ultrasonic-Assisted Extraction of Polyphenolic and Flavonoids from Labisia pumila	
J. Sandanasamy, M.M. Yusoff and J. Gimbun	167
Swelling and Crosslinked Formaldehyde Chitosan as Adsorbent for Metal Ion Cu (II) B. Hastuti and Y. Santrinitas	171
A Comparative Performance of New Materials for Carbon Dioxide Removal in Absorption Process	
K. Maneeintr and T. Charinpanitkul	176
Addition of Mo Zn Fe and Ag into HZSM-5 and NaZSM-5 Catalysts P. Pintavirooj, P. Jitto and N. Chaimoon	180
Effects of Alkali and Thermal Treatment on the Ti6Al4V towards Apatite Deposition in Dulbecco's Phosphate Buffered Saline (DPBS) Solution F. Hamzah, R.M.S. Liansim and N.H. Hanib	184
Mechanical and Thermal Properties of Thermoplastic Film from <i>Tacca leontopetaloides</i> Starch Reinforced with Rice Husk Biochar A.M.M. Amin, S. Mohd Sauid, M.S. So'aib, M. Musa and K.H. Ku Hamid	188
Preparation and Dye Removal Properties of Hyperbranched Polymeric Ionic Liquid/Poly(Vinylidene Fluoride) Composite Films	
W.Q. Song, Y.Y. Liu, Y. Hou and Y. Wang Properties of Composite Films from Sugarcane Bagasse, Coconut Coir, and Water Hyacinth	192
Fibers/Poly(Vinyl Chloride) P. Thitiwongsawet, S. Saetan and P. Siangsanoh	196
Effect of Coating Adhesion on Turmeric Essential Oil Incorporated into Chitosan-Based	
Edible Coating M.H. Ahmad, N.M. Yusof, J. Jai and F. Hamzah	204
Effect of Sintering Temperature on Zinc Substituted Calcium Phosphate Ceramics C.M. Mardziah, M.F. Abdul Wahid, K.M. Hyie, N.R.N. Masdek and Z. Salleh	209
Microscopic Methods for Characterization of Selected Surface Properties of Biodegradable,	
Nanofibrous Tissue Engineering Scaffolds A. Chlanda, E. Kijeńska and W. Święszkowski	213
Chapter 4: Materials and Technologies of Chemical Engineering	
Development of Brominated Flame Retardants (BFRs) Analysis with Liquid Chromatography-Tandem Mass Spectrometry (LC/MS/MS) in Sewage Sludge Matrix S. Hadi and M. Bahadir	219
Photon-Induced L-Shell X-Ray Production Cross Sections for Lanthanides at 59.54 keV R. Durak, F. Akman and A. KARABULUT	223
Hydrogen Bonds-Enhanced Organoclay-Free Oil Based Drilling Fluid System X.B. Huang and G.C. Jiang	227
Interfacial Tension Measurement of Light Oil from Thailand to Enhance Oil Recovery for Surfactant Flooding Application C. Chuaicham and K. Maneeintr	235
Study on the Preparation and Properties of Hybrid Lubricant for Invert Emulsion Drilling Fluids	233
S.L. Peng, G.C. Jiang, L.L. Yang and X.L. Li	239
The Study of Photocatalytic Oxidation of Benzyl Alcohol with g-C ₃ N ₄ under Visible Light: Effect of pH and Salt J. Payormhorm, X.B. Li, T. Maschmeyer, N. Laosiripojana and S. Chuangchote	248
Molecular Dynamics Simulation Study of Lecithin Inhibiting Hydrate-Dissociation	240
L. Wang, G.C. Jiang, X. Lin, X.M. Zhang and Q.H. Jiang	252
Chapter 5: Design and Development of Fuel Cells and Batteries	
Experimental Study on the Bundle Lithium-Ion Batteries Fire M.Y. Chen, R. Yuen and J. Wang	263

The Morphology Effect on the Selectivity of SPEEK/ENR Membranes for Direct Methanol Fuel Cell	
W.N.E. Wan Mohd Noral Azman, J. Jaafar, W.N.W. Salleh, A.F. Ismail, M.H.D. Othman, M.A. Rahman, F. Aziz and N. Yusof	267
Optimization of the Microstructure of Molten Carbonate Fuel Cell Anode T. Wejrzanowski, K. Cwieka, J. Milewski and K.J. Kurzydlowski	274
Effects of SPEEK/Cloisite Concentration as Electrospinning Parameter on Proton Exchange Membrane for Direct Methanol Fuel Cell Application N. Awang, J. Jaafar, A.F. Ismail, M.H.D. Othman and M.A. Rahman	278
Chapter 6: Design and Fabrication of Thin Films and Ceramics	
Nanostructures and Properties of Vanadium Oxide Thin Film Prepared by Spray Pyrolysis Method	
E. Şenarslan, B. Güzeldir and M. Sağlam	287
Physical Properties of CdS_xTe_{1-x} Thin Films Prepared by Close Spaced Sublimation Method T. Gaewdang and N. Wongcharoen	291
Influence of Annealing Temperature on the Properties of SnS Thin Films Prepared by Vacuum Thermal Evaporation N. Wongcharoen and T. Gaewdang	295
Effect of Post-Annealing Treatment on the Structure and Luminescence Properties of AIN:Tb ³⁺ Thin Films Prepared by Radio Frequency Magnetron Sputtering K.Y. Tucto Salinas, L.F. Flores Escalante, J.A. Guerra, R. Grieseler, T. Kups, J. Pezoldt, A. Osvet, M. Batentschuk and R. Weingärtner	299
Growth Mechanism of Copper Oxide Fabricaticated by Potentiostatic Electrodeposition	
Method N. binti Mohamad Arifin, F. Mohamad, C. Hui Ling, N. binti Zinal, A.S. binti Mohd Hanif, N.H. Muhd Nor and M. Izaki	303
Design of Reservoir Recognition Technique Component - Open Porosity in Non-Polarizing	
Electrodes J. Skibinski, T. Wejrzanowski and K.J. Kurzydlowski	308
Preparation and Properties of CaO-MgO-Al ₂ O ₃ -SiO ₂ Glass-Ceramics from Granite Wastes J.F. Kang, J.S. Cheng, J. Wang, Y.S. Hou and S.Y. Qian	312
Chapter 7: Properties of Metals and Alloys, Processing Technologies	
Hot Deformation Behaviour and Microstructural Evaluation of Zr-1Nb Alloy K.K. Saxena, V. Pancholi, G.P. Chaudhari, D. Srivastava, G.K. Dey, S.K. Jha and N. Saibaba	319
High Strain Rate Compressive Behaviour of Selective Laser Melted Ti-6Al-4V M. Ramezani, E. Flores-Johnson, L.M. Shen and T. Neitzert	323
Structure and Properties of CuCr0.6 Alloy after Severe Plastic Deformation K. Rodak, J. Sobota and W. Głuchowski	327
Influence of Microalloying (Including Rare-Earth Metals) on the Phase Composition and	
Properties of Aluminum Alloys T. Umarova	331
Investigation of Impact Behavior of TIG Welded Inconel 718 at Aircraft Engine Operating Temperatures Y. Uzunonat	339
Analysis of Residual Stress on FSW AA 6061 Using Hole-Drilling with ESPI for HFMI	339
Treated Condition M.A. Mohamed, Y.H.P. Manurung and M. Laakkonen	344
Improving Mechanical Properties of Co-Cr-W Alloys by Powder Metallurgy C. Sawangrat and K. Leksakul	348
Effect of Zr-Addition to Ti-14Mn Alloy M.K. Gouda, M.A.H. Gepreel, K. Nakamura and A. Chiba	352
Microstructural Investigation and Characterization of Bulk Brass Melted by Conventional and Microwave Processing Methods L.M. Shashank, M.S. Srinath and H.J. Amarendra	356

Implementing Thermomechanical Properties of 22MnB5 Steel during Hot Single-Point Incremental Forming	
A. Al-Obaidi, V. Kräusel and D. Landgrebe	362
Some Studies on the Bulging Characteristics of Cold-Upset Steel Preforms A. Rajeshkannan	367
Microstructure and Wear Properties of High-Pressure Torsion Processed Iron H. Kato and Y. Todaka	371
Packing Efficiency Characterization of SiC Abrasive Machining Particles for Photovoltaic Silicon Wafer Slicing R.A.S. Delos-Reyes	375
Laser Melting of High Thermal Conductivity Steel (HTCS) Surface N. Bariman, S.N. Aqida and F. Fauzun	380
Material Removal Model of Lap Grinding for Sapphire Substrate Based on Roughness Parameters H.S. Lee and T.Y. Lee	384
Chapter 8: Building Materials Fabrication of Eco-Green Brick by Using of Vetiver Grass as Feldspar Replacement T. Threrujirapapong, W. Khanitchaidecha, D.A.D. Channei and A. Nakaruk	391
Effect of Delaying Addition of Heat Stimulated Superplasticizer on Fresh Properties of Mortar Z. Tahery, F. Rahmanzai and S. Date	396
Investigation of Polyurethane Bonding to Steel in Sandwich Panels M. Pereira, M. Ramezani, T. Pasang and B. Withy	401
Mechanical and Durability Properties of Concrete Using Dredged Marine Sand W.C. Tang and H.Z. Cui	406
Study of Sawdust and Expanded Polystyrene as Cavity Filler Material on the Effect of Thermal Conductivity in Perforated Clay Brick M.K. Lai and A.S.B. Maged	411
Compressive Strength of Mortars Admixed with Wollastonite and Microsilica H. Naderpour and M. Mirrashid	415