

Table of Contents

Preface, Conference Organization and Reviewer List

Chapter 1: Advanced Characterization

Application of InN Based Quantum Dot in Reducing Short Circuit Current Variation of Solar Cell above Room Temperature M.A. Rashid, F. Malek, A.N. Al-Khateeb, F.A. Rosli, M.A. Humayun and N.H. Ramly	3
Influence of Dolomite on the Mechanical Properties of Boiler Ash Geopolymer Paste Y. Zarina, H. Kamarudin, A.M.M. Al Bakri, K.N. Ismail and R. Abd Razak	8
Effect of Varying Mixed Refrigerant Composition on Main Cryogenic Heat Exchanger Performance M.Z. Zainal Abidin, U.M. Nour and K.Z. Ku Shaari	13
Ionic Liquid Polymeric Membrane: Synthesis, Characterization & Performance Evaluation D.F. Mohshim, H. Mukhtar and Z. Man	18
Investigation on Impact Resistance Foamed Concrete Reinforced by Polypropylene Fibre A.Z. Ahmad Mujahid, J. Hadipramana, A.A.A. Samad and N. Mohamad	24
Characterization of Different Additives of Sintered Cobalt F-75 Alloy in Biomaterial Applications R.A. Malek and Y.C. Hang	29
The Behaviours of Steel Fiber as Main Reinforcement in High Performance Slurry Infiltrated Fiber Reinforced Concrete M. Abdul Rahim, Z.M. Ghazaly, S. Ragunathan and S. Shahidan	34
Physical Characteristic of Zn Doped Soft Ferrites $M_xZn_{1-x}Fe_2O_4$ A. Chik, N.A. Aini and H.F.A. Amir	39
Preparation and Characterization of Activated Carbon Made from Oil Palm Empty Fruit Bunch N.H. Abdul Rani, N.F. Mohamad, S. Matali and S.A.S.A. Kadir	44
The Effect of Hydrochloric Acid on the Surface Area, Morphology and Physico-Chemical Properties of Sayong Kaolinite Clay N.A. Edama, A. Sulaiman, K.H. Ku Hamid, M.N. Mohd Rodhi, M. Mohibah and S.N. Abd Rahim	49
Effect of Filler Size on Flexural Properties of Calcium Carbonate Derived from Clam Shell Filled with Unsaturated Polyester Composites M. Yusof and M.A. Amalina	57
Effect of Catalyst Calcination Temperature on the Synthesis of MWCNTs-Talc Hybrid Compound Using CVD Method S.S. Mohd Saleh, H.M. Akil, R. Md. Nasir, M.R. Zakaria and M.H. Abdul Kudus	63
The Effect of Lemongrass as Lost Circulation Material (LCM) to the Filtrate and Filter Cake Formation N.A. Ghazali, T.A.T. Mohd, N.H. Alias, A. Azizi and A.A. Harun	68
Synthesis and Characterization of Hematite Nanoparticles as Active Photocatalyst for Water Splitting Application S.M. Chin, S. Sufian and J. Abd Razak	73
Compressive Strength of Fly Ash Based Geopolymer/Glass Fiber Composite via Filament Winding C.M.R. Ghazali, A. Abdullah, A.M.M. Al Bakri, H. Kamarudin and A.N. Ismail	78
Microstructure Study on Volcano Ash Geopolymer Aggregate at Different Sintering Temperature R. Abd Razak, A.M.M. Al Bakri, H. Kamarudin, I. Khairul Nizar, D. Hardjito, W.H.W. Badaruzzaman and Y. Zarina	83
The Need to Intensify Research Efforts in the Alternative to Lead Shot B. Gowon, K.S. Mohammed, S.B. Jamaludin and A. Abdullah	88
Contribution of RHA Granules as Filler to Improve the Impact Resistance of Foamed Concrete J. Hadipramana, A.A.A. Samad, A.Z. Ahmad Mujahid, N. Mohamad and F.V. Riza	93

The Effect of Inoculation on Properties of Modified Ductile Ni-Resist Alloy M.M. Rashidi, M.H. Idris and Z. Shayfull	98
Effect of Annealing Atmosphere on the Morphology of Copper Oxide Thin Films Deposited on TiO₂ Substrates Prepared by Sol-Gel Process D.S.C. Halin, I.A. Talib, A.R. Daud and M.A.A. Hamid	113
Synthesis and Characterization of Iron Produced from Iron Mill Scale R.M. Zaki, D. Murizam and K.R. Ahmad	118
A Study of Liberation and Separation Process of Metals from Printed Circuit Boards (PCBs) Scraps A.N. Hashim, K.M. Zaheruddin and H. Kamarudin	123
Effect of Pyrolysis Temperature on the Synthesis of Carbon Fiber from Natural Organic Waste S. Saad, F.C. Pa, M.M. Al Bakri Abdullah, R.M. Zaki and D. Murizam	128
On the Fatigue of Shape Memory Alloys D.C. Achitei, M.M.A.B. Abdullah, A.V. Sandhu, P. Vizureanu and A. Abdullah	133
On the Structure of Shape Memory Alloys D.C. Acitei, A.V. Sandhu, M.M.A.B. Abdullah, P. Vizureanu and A. Abdullah	140
Effect of Fly Ash/Alkaline Activator Ratio and Sodium Silicate/NaOH Ratio on Fly Ash Geopolymer Coating Strength J. Liyana, A.M.M. Al Bakri, K. Hussin, C.M. Ruzaidi and A.R. Azura	146
Compressive Strength and Morphology of Fly Ash Based Geopolymer as Artificial Aggregate with Different Curing Temperature A. Abdullah, A.M.M. Al Bakri, H. Kamarudin, C.M. Ruzaidi, Y. Zarina, M.A.A. Mohd Salleh, N. Zakaria and M.T. Muhammad Faheem	151
Design and Development of Remote Communication System for Mines Detector Robot A.Z.A. Firdaus, K. Faydi and N.H.A. Zaidi	156
Carbon Dioxide Separation Using Amine Modified Zeolite in Pressure Swing Adsorption System N.H. Alias, K.S.N. Kamarudi, N.A. Ghazali, T.A.T. Mohd, A. Sauki and M.R. Jaafar	160
Eco-Friendly Synthesis of Nanozeolite NaA from Rice Husk Ash and its Efficiency in Removing Ammonium Ions M.A. Nawog, M.N.M. Muhid, N.A.N.N. Malek and H. Hamdan	168
On the Bioremediation Potential of Inhabitant Microbes of Dredged Marine Soils: A Theoretical Framework N.M. Anuar, A.S. Mohd Kassim and C.M. Chan	173
Physicochemical Properties of Pyrolytic Carbon Black from Waste Tyres M.A. Umi Fazara, I. Jainoo, K.N. Ismail, K. Hussin and M.R. Fahmi	178
Effect of Thickness for Sound Absorption of High Density Biopolymer Foams N.A. Latif, A.Z.M. Rus and M.K.Z.A. Ghani	183

Chapter 2: Biomaterials

Halal Based Sourced EM for Turbidity Reducing in Wastewater Treatment Z. Zarina, N. Diyana Yaacob, A.M.M. Al Bakri and C.M. Ruzaidi	191
Growth Kinetic of Fresh and Freeze-Dried <i>Pleurotus sajor-caju</i> (Oyster Mushroom) Mycelium for Preservation Study Z. Zakaria, S.F. Chong, A.R. Zahari, N.A. Fauzi and S.A. Mohd Shayuti	196
Effect of Beta Tricalcium Phosphate (β-TCP) on Properties of Mg-Zn Composites S.A. Buyong, S.B. Jamaludin and R.A. Malek	203
Potential of Five-Leaved Chaste Tree (<i>Vitex negundo</i> L.) Leaves as Source of Natural Dye from Supercritical Carbon Dioxide (SC-CO₂) Extraction T.A.T. Mohd, N.H. Alias, N.A. Ghazali, A. Azizi, I.S. Adeib and A. Sauki	207
Surface Engineered Poly(lactic acid) (PLA) Microspheres by Chemical Treatment for Drug Delivery System C.Y. Tham, Z.A.A. Hamid, Z.A. Ahmad and H. Ismail	214
Non-Linear Kinetic and Isotherm Modeling on the Adsorption of Lead (II) Ions from Aqueous Solution onto Monosodium Glutamate Functionalised Rubber Leaf Powder F. Fadzil, M.A.K.M. Hanafiah and S. Ibrahim	219

Performance Evaluation of Okra (<i>Abelmoschus esculentus</i>) as Coagulant for Turbidity Removal in Water Treatment	
M.R. Fahmi, N. Hamidin, C.Z.A. Abidin, M.A. Umi Fazara and M.D.I. Hatim	226
Potential Use of Biofibers for Functional Immobilization of <i>Lactobacillus rhamnosus</i> NRRL 442	
S. Shaharuddin, I.I. Muhamad, K.F. Seng, K.A. Zahan and N. Khairuddin	231
Effect of Oil Palm Empty Fruit Bunch-Grafted-Poly(Acrylic Acid-co-Acrylamide) Hydrogel Preparations on Plant Growth Performance	
N.E. Rabat, S. Hashim and R.A. Majid	236
Novel Low-Cost Activated Carbon from Coconut Shell and its Adsorptive Characteristics for Carbon Dioxide	
N.A. Rashidi, S. Yusup and A. Borhan	240
The Effect of Copigmentation on the Stability of Butterfly Pea Anthocyanins	
N.D. Hassan, I.I. Muhamad and M.R. Sarmidi	245
Preparation and Characterization of Co-HA Powder Using Modified Electroless Method	
K.M. Zaheruddin, S.A.M. Amin, A.B. Rahmat, S.B. Jamaludin and K.R. Ahmad	250
Sintering Effects on Mechanical Properties of Co-Ha Composite Prepared by Modified Electroless Deposition	
K.M. Zaheruddin, S.A.M. Amin, A.B. Rahmat, S.B. Jamaludin and K.R. Ahmad	255
Preparation of Biodegradable Poly(lactic Acid) Electrospun Membrane with Decreased Pore Size by Post Heat Treatment	
L. Li, R. Hashaiekh and H.A. Arafat	260
Adsorption Behavior of Methylene Blue on Ethylenediaminetetraacetic Dianhydride Modified Neem (<i>Azadirachta indica</i>) Leaf Powder	
M.A.K.M. Hanafiah, M. Ismail, W.S.W. Ngah, W.K.A. Wan Mat Khalir and H. Zakaria	270
Anodic Oxidation of Titanium in Mixture of β-Glycerophosphate (β-GP) and Calcium Acetate (CA)	
H.Z. Abdullah, P. Koshy and C.C. Sorrell	275
Ultrafiltration Formulation of Cellulose Acetate / Polysulfone Blended Membrane	
N.M. Abdullah, A.M. Mazira, M.T. Ramlah and A. Sharifah	281
Extraction of Phenol and Acetic Acid from Synthetic Bio-Oil by Ammonium Sulfate Solution	
N.A.M. Salleh, B. Abdullah and R.N.M. Kamil	286
Sound Absorption of Laminated Biopolymer Foam and Epoxy Foam	
N.Q.A. Adnan and A.Z.M. Rus	291
The Potential of Garlic Extract as Bio-Inhibitor in Urea Fertilizer	
S.J. Samsudin, N. Binti Mansor, S. Sufian and Z.B. Man	296
Solubility of <i>Phoenix dactylifera</i> Seed Oil in Supercritical Carbon Dioxide (Sc-CO₂) Using Empirical Model	
N.A. Aris, I. Norhuda and I.S. Adeib	301
Development of Dense Hydroxyapatite-Ni by Modified Electroless Deposition Technique	
S.A.M. Amin, K.M. Zaheruddin, A. Rahmat, S.B. Jamaludin and K.R. Ahmad	306
Effect of Different Nickel Content on the Mechanical Properties of Hydroxyapatite-Ni Composites from Coated Powders	
S.A.M. Amin, K.M. Zaheruddin, R. Azmi, S.B. Jamaludin and K.R. Ahmad	311

Chapter 3: Biotechnology and Life Sciences

Monitoring Initial Glucose Concentration for Optimum pH Control during Fermentation of Microbial Cellulose in Rotary Discs Reactor	
K.A. Zahan, N. Pa'e, K.F. Seng and I.I. Muhamad	319
Review on Malaysian and Thailand's Perspective towards Renewable Energy	
H.N. Gomesh, M. Irwanto, Y.M. Irwan, M. Fitra, U. Hashim and N. Mariun	325
Extraction of Silica from Palm Ash Using Organic Acid Leaching Treatment	
F.C. Pa, A. Chik, M.F. Bari and H.J. Noorina	329
Materials Research in Appropriate Technology: In the Midst of Science, Engineering, and Technology	
C.P.M. Sianipar, G. Yudoko and K. Dowaki	334

Design and Optimization of a Monomer Processing Reactor A.Z.M. Rus, M.S.M. Isa, S.S. Yaanuur and E.S. Masli	339
Landfill Leachate Treatment Using SSF-FWS Constructed Wetland Planted with <i>Limnocharis flava</i> and <i>Eihhornia crassipes</i> under Different Hydraulic Loading Rate A.N. Kamarudzaman, A.D.A. Gana, M.F.A. Jalil and R.A. Aziz	344
Methylene Blue Dye Adsorption to Durian Shell Activated Carbon E.H.A. Latib, M.S. Mustfha, S. Sufian and K.Z. Ku Shaari	350
Oil Blends as Biolubricant: Screening of Effect Factors Influence to Basestock R. Abdullah, F.H. Kasim, S.N.A.S.M. Zuki and N.H.A. Shamsuddin	356
High Yield Synthesis of Kojic Ester Using Dual Enzymes System and their Antibacterial Activity S. Mat Radzi, N.J. Abd Rahman, H. Mohd Noor and M. Basri	362
Protein Produced by <i>Bacillus subtilis</i> ATCC21332 in the Presence of <i>Cymbopogon flexuosus</i> Essential Oil H. Mohd Noor, H.S. Muhamad, I.N.A. Ismail, S. Mat Radzi, M.M. Rehan, A.J.A. Kader and R. Mohamad	370
Fabrication and Characterization of Multiwalled Carbon Nanotubes-Alumina Hybrid Compound: Comparison of Various Supported Catalyst N. Norlin and H.M. Akil	378

Chapter 4: Building Materials

The Effect of Cement Replacement Materials to the Hydration of Petroleum Sludge in OPC A.M. Zain, S. Md Ghazaly and M. Hilmi	385
Load versus Displacement Validation between Ruaumoko Hysteresis Program and Experimental Work on CFRP Retrofitted Precast Beam-Column Exterior Joint K.D. Abd Ghani, N.H. Hamid and M.S. Jaafar	390
Potential of RHA in Foamed Concrete Subjected to Dynamic Impact Loading A.Z. Ahmad Mujahid, J. Hadipramana, A.A.A. Samad, N. Mohamad and F.V. Riza	395
Feasibility Study on Composition and Mechanical Properties of Marine Clay Based Geopolymer Brick S.M. Tamizi, A.M.M. Al Bakri, H. Kamarudin, C.M. Ruzaidi, J. Liyana and A.K. Aeslina	401
New Processing Method of Kaolin-Based Geopolymer Brick by Using Geopolymer Brick Machine M.T. Muhammad Faheem, A.M.M. Al Bakri, C.M.R. Ghazali, H. Kamarudin, A.M. Izzat and A. Abdullah	406
Effect of Parawood Ash on Drying Shrinkage, Compressive Strength and Microstructural Characterization of Metakaolin-Based Geopolymer Mortar D. Tonnayopas, A. Hawa, W. Prachasaree and P. Taneerananon	411
Experimental Investigation of Flax FRP Tube Confined Coconut Fibre Reinforced Concrete L.B. Yan, N. Chouw and K. Jayaraman	416
Experimental Evaluation of Profiled Steel Sheet Dry Board Wall Panel System M.A. Majid and W.H. Wan Badaruzzaman	421
Fire Resistance Evaluation of Lightweight Geopolymer Concrete System Exposed to Elevated Temperatures of 100-800 °C O.A. Abdulkareem, A.M.M. Al Bakri, H. Kamarudin and I.K. Nizar	427
A Review on Ductile Self-Compacting Concrete M.F. Nuruddin, K.Y. Chang, N.M. Azmee and N. Shafiq	433
Experimental Analysis of Interlocking Load Bearing Wall Brickool System S.A. Osman, Z.S. Mohamed, A.R. Sulaiman and M.F. Ismail	439
Influence of Casting Direction on Fracture Energy of Fiber-Reinforced Cement Composites J. Fornůsek and M. Tvarog	444
Structural System of Safe House against Tornado and Earthquakes M.R. Pakizeh, A.K. Marsono and M.M. Tap	449
The Utilization of Aluminum Waste as Sand Replacement in Concrete N.L. Rahim, N.M. Ibrahim, S. Salehuddin, R. Che Amat, S.A. Mohammed and C.R. Hibadullah	455
Green Lightweight Concrete Made from Natural Para Rubber Product D. Raksritong, D. Tonnayopas, W. Taweepreda and M. Masniyom	460

An Overview of Fly Ash and Bottom Ash Replacement in Self-Compaction Concrete A. binti Abdul Kadir and M.I.H. Hassan	465
Effect of Coconut Fibers Addition to early Age Unfired Soil Lime Bricks Strength P. Heru, D. Priadi, G. Ausias, T. Lecompte, H.R. Lumingkewas and A. Perrot	471
The Application of Brick Wall and Bamboo Reinforced Concrete Frame for Redevelopment of Traditional Houses in Pengotan Village I.N. Sutarja	477
Properties of Lightweight Concrete Composites with Mixture of Fly Ash and Concrete Sludge Aggregate N.M. Ibrahim, R. Che Amat, S. Salehuddin, N.L. Rahim, A.R. Abdul Razak and W.H. Ooi	482
Potential Use of Cameron Highlands Reservoir Sediment in Compressed Bricks H.Q. Chua, L.W. Ean, B.S. Mohammed, M.A. Malek, L.S. Wong, C.W. Tang, Z.K. Lee, A.F. Lim, Y.Y. See, J.L. Ooi, M. Hashim, U. Yong, N.A. Abbas, H. Yusop and R.S. Muda	487
Performance of Simplified Damage Assessment Tools for Reinforced Concrete Panels under Blast Loading Z.I. Syed, M.S. Liew and P. Mendis	492
Structural Lightweight Aggregate Concrete Containing High Volume Waste Materials M. Hilmi, P. Shafigh and M.Z. Jumaat	498
New Lightweight Construction Material: Cellular Mat Using Recycled Plastic T.I.T. Noor Hasanah, D.C. Wijeyesekera, I. bin Bakar and W. Saidin	503
Challenges of Gathering User Requirement in eXtreme Programming Project: A Case Study of Highway Construction Monitoring System I.A. Bahrudin, M.E. Abdullah, R. Mohd Hanifa, N. Kassim and R. Roslan	511
Immediate Deflection of Pretensioned Inverted T-Beam with Circular Web Openings Strengthened with GFRP Using Response Surface Methodology B.S. Mohammed and C. Hock Tian	516
Strength - Ultrasonic Pulse Velocity Relationship of Thermally Activated Alum Sludge Multiple Blended High Performance Concretes H.M. Owaid, R. Hamid and M.R. Taha	521
Compressive Strength and Density of Cementless Unfired Lightweight Brick Utilizing Coal Ash from Coal-Fired Thermal Power Plant M.E.H. Mohd Pahraraji, H.M. Saman, M.N. Rahmat, K. Kamaruddin and A.F.A. Rashid	527

Chapter 5: Coatings and Surface Engineering

Investigation of Workpiece Positioning Methods for Machining Oil-Pocket on Hip-Implant Spherical Surface N. Kartiko, A. Yahya, S.H. Nor Liyana, M.D. Razak, N.H. Haji Khamis, K. Khalil, M.A.A. Rahim and A. Baharom	535
Study on Properties and Morphology of Kaolin Based Geopolymer Coating on Clay Substrates C.M. Ruzaidi, A.M.M. Al Bakri, M. Binhussain, M.S.S. Salwa, A. Alida, M.T. Muhammad Faheem, S.S. Azlin and M.T. Muhammad Faheem	540
Effect of Surface Roughness of Pure Aluminium A1100 on the Cold Work Extrusion by Using Different Angles of Taper Die M.J.M. Ridzuan, M.B.S. Hafis, K. Azduwin, A.R. Mohamed, S.N. Fitriah and S.M. Shahril	546
Chemical Composition Analysis of TiAlBN Nanocomposite Coating Deposited via RF Magnetron Sputtering Z.M. Rosli, Z. Mahamud, W.L. Kwan, J.M. Juoi and K.T. Lau	551
Modeling of TiN Coating Thickness Using RSM Approach A.S.M. Jaya, S.Z.M. Hashim, H. Haron, M.R. Muhamad, A.S.H. Basari and M.N. Abd Rahman	556
Different Concentration of $\text{Al}(\text{NO}_3)_3$ in $\text{ZrO}_2/\text{Al}_2\text{O}_3$ Double Layer Coating Steel Prepared by Electrolytic Method S.H. Salleh, M.N.B. Derman, M.Z. Omar and R.A. Malek	561
Dynamic Contact Angle of Modified Biopolymer Droplet on Urea Surface: Temperature Effects Y.N. Samsudin, K.Z. Ku Shaari, Z. Man and S. Sufian	566

Characteristic and Corrosion Studies of Rare Earth (REE) Based Anodizing on AZ91D Magnesium Alloy	
M.A.K. Azadi, M.Z.M. Zamzuri, S.N.M. Badari and M.N.B. Derman	571
Effect on Strength and Hardness of Clay Ceramic Substrate after Treatment Using Koalin Based Geopolymer Glaze	
A.M.M. Al Bakri, J. Liyana, M.T. Muhammad Faheem, H. Kamarudin, R. Abd Razak, Y. Zarina and A. Alida	575
Protective CuO Coating Synthesis via Electrodeposition of Copper on AISI 430 Ferritic Steel for SOFC Interconnect Applications	
A.R. Setiawan, A. Ramelan and A. Antonius	581
Surface Morphology and Corrosion Behavior of Electrolytic Coatings in Different Aqueous Solutions	
S.H. Salleh, M.N.B. Derman, M.Z. Omar and R.A. Malek	585

Chapter 6: Composites and Polymer Materials

Warpage Analysis with Straight Drilled and Conformal Cooling Channels on Front Panel Housing by Using Taguchi Method	
Z. Shayfull, S. Sharif, A.M. Zain, R.M. Saad and M.A. Fairuz	593
Investigation on the Effect of TiO₂ Nanofiller to the Structural and Conductivity Characteristics of Poly(vinylidene fluoride-co-hexafluoropropylene)/Poly(ethyl methacrylate) Based Polymer Electrolytes System	
S. Rudhziah and N.S. Mohamed	604
Structural and Electrical Characterization of Hexanoyl Chitosan-LiClO₄-TiO₂-DMC Polymer Electrolytes	
F.H. Muhammad, R.H.Y. Subban and T. Winie	608
Effects of Trans-Polyoctylene Rubber in Polypropylene/Recycled Acrylonitrile Butadiene/Rice Husk Powder Composites	
S. Ragunathan, S.T. Sam, A.G. Azlinda, H. Kamaruddin, I. Hanafi, A.R. Mustaqqim and M.G. Zuhayr	613
Effect of Empty Fruit Bunch (EFB) Fiber on Mechanical Properties of HDPE/EVA/MMT/EFB Nanohybrid Biocomposite	
S.N. Che Kamarludin, M.S. Jainal, S. Akhbar and A.R.M. Faizal	618
General Lifetime Damage Model for Glass Fibre Reinforced Epoxy (GRE) Composite Pipes under Multiaxial Loading	
M.S.A. Majid, M. Afendi, R. Daud, N.A.M. Amin, A. Mohamad, E.M. Cheng, A.G. Gibson and M. Hekman	624
Properties of Fresh and Hardened Glass Fiber Reinforced Fly Ash Based Geopolymer Concrete	
B. Nematollahi, J. Sanjayan, J.X.H. Chai and T.M. Lu	629
Natural Rubber/Styrene Butadiene Rubber/Recycled Nitrile Glove (NR/SBR/rNBRg) Ternary Blend: Curing Characteristics and Swelling Test	
N.Z. Nik Yahya, N.Z. Noimam, I. Hanafi, M.A.A. Mohd Salleh and S. Ragunathan	634
Modification of Pin on Disc Test to Measure Railway Brake Block Friction Coefficient	
A. Triono, W.P. Ign and S.S. Brodjonegoro	639
Kenaf Bast-Unsaturated Polyester Composite: The Effect of Different Alkaline Treatment Condition on Tensile Properties	
A.R. Rozyanty, M.Y. Nur Firdaus and L. Musa	644
The Effect of Chloride Environment on Mechanical Properties Geopolymer Binder with Fly Ash	
M.S. Darmawan, R. Bayuaji, B. Wibowo, N.A. Husin and S. Subekti	648
Hexanoyl Chitosan-Polystyrene Blend Based Composite Polymer Electrolyte with Surface Treated TiO₂ Fillers	
T. Winie, A. Jamal, N.S.M. Hanif and N.S.M. Shahril	656
Effects of Drilling Generated Heat on Damage Factor in GFRP	
T.K. Woo, F. Ahmad, S. Sharif and M.A. Maoinsar	661
Low and High Temperature Isothermal Aging Effect on Morphology and Diffusion Kinetics of Intermetallic Compound (IMC) for Sn-Cu-Si₃N₄ Composite Solder	
N. Saud, S.I. Najib and M.A.A. Mohd Salleh	666

Polyolefin Layered Silicates Nanocomposites – A Review D. Yusrina Mat, H. Kamarudin, C.M. Ruzaidi and A.F. Osman	671
Warpage Analysis between Straight and Conformal Cooling Channels on Thin Shallow Shell N.A. Shuaib, M. Fathullah, Z. Shayfull, S.M. Nasir and M.F.M.A. Hamzas	676
Effect of Carbon Nanotubes on the Compression Test and Energy Absorption of Aluminium/Polyurethane-Carbon Nanotubes Foam Sandwich S.A. Adnan, S.N. Samsudin, F. Zainuddin, M.A. Nur Azni, H.M. Akil and A. Sahrim	686
Effect of Chemical Treatment on the Mechanical Properties of Pultruded Kenaf Fibre Reinforced Polyester Composites M.R. Osman, A.A.M. Mazuki, H.M. Akil, Z.A.M. Ishak and A.A. Bakar	691
Ionic Conductivity, Morphology and Transference Number of Sodium Ion in PMMA Based Gel Polymer Electrolytes L. Othman, K.B.M. Isa, W.G. Chong, N.H. Zainol, S.M. Samin, Z. Osman and R. Yahya	696
The Outcome of Sintering Parameters Study toward the Thermal Properties of CuSiC Composite M.Z. Bukhari, M.S.J. Hashmi and D. Brabazon	702
Axial Crushes on Composite Laminated Square Tubes under Compressive Loading A.A. Arifin and A. Othman	707
Crush Force Efficiency of Composite Square Profile under Off-Axis Loading A.A. Arifin and A. Othman	711
Tensile and Morphological Properties of Low Density Polyethylene/Spear Grass Composites S.S. Ting, P. Santhiya, S. Ragunathan, N.Z. Noriman and H. Ismail	715
Effect of Alkali Treatment on Crystalline Structure of Cellulose Fiber from Mendong (<i>Fimbristylis globulosa</i>) Straw H. Suryanto, E. Marsyahyo, Y.S. Irawan and R. Soenoko	720
Properties of Natural Rubber/Ethylene Propylene Diene Monomer/Recycled Latex Catheter (NR/EPDM/rLC) Ternary Blends: Cure Characteristics and Hardness L.H. Ibrahim, N.Z. Noriman, S.T. Sam, L. Musa and R. Hamzah	725
Structure and Properties of SiC Coated R6M5 High-Speed Steel M. Skakov, B. Rakhadilov and G. Karipbayeva	730
The Influence of Cure Characteristics and Crosslink Density of Virgin Acrylonitrile Butadiene Rubber/Recycled Acrylonitrile Butadiene Rubber (vNBR/rNBR) Blends M.R.J. Nasir, N.Z. Noimam, I. Hanafi, M.M.A.B. Abdullah and R. Hamzah	735
Production of Silicon Carbide via Grinding and Heat Treatment Process H.J. Noorina, W.H. Xian, W.M. Arif, F.C. Pa and R.M. Zaki	740
Rubber Toughened Polyamide 6/High Density Polyethylene/HDPE-g-MAH Nanocomposites with Ethylene Vinyl Acetate F. Hamid, S. Akhbar and K.H. Ku Hamid	745
Influence of Multilayer Textile Biopolymer Foam Doped with Titanium Dioxide for Sound Absorption Materials A.Z.M. Rus, N.M.H. Normunira and R.A. Rahim	750
Influence of High Doping of TiO₂ of Polymeric Foam for Acoustic Study A.Z.M. Rus, M.A. Bainun Akmal and N.N. Mat Hassan	755
Utilization of Treated Red Meranti Wood Dust as Polymer Foam Composite for Acoustic Study S. Sa'adon and A.Z.M. Rus	760
Mixing Optimization of Sn-Cu-Si₃N₄ via Powder Metallurgy Route for Composite Solder Fabrication M.H. Zan Hazizi, M.A.A. Mohd Salleh and Z.A. Ahmad	765
Effect Maleic Anhydride Polypropylene on Properties of Calcium Carbonate Filled Polypropylene/Ethylene Propylene Diene Terpolymer Composites H. Salmah, A.S. Rohana and H. Kamarudin	770
Tensile and Morphology Properties of Polylactic Acid/Treated <i>Typha latifolia</i> Composites M. Binti Ibrahim, J. Abd Jalil, S.N.S. Mahamud, D. Yusrina Mat, S. Husseinayah and M. Rafi' Yahya	775
Effect of Organic Space Holder in Fabrication of Closed-Cell Aluminium Foam M.I. Idris, I.I.M. Ehsan and S.H. Mohamed	780

Studies on Sodium Ion Conducting Gel Polymer Electrolytes K.B.M. Isa, L. Othman, N.H. Zainol, S.M. Samin, W.G. Chong, Z. Osman and A.K.M. Arof	786
Removal of Nickel Ions from Aqueous Solution by Polypyrrole Conducting Polymer H.N.M.E. Mahmud, S. Hosseini and R.B. Yahya	793
Lignin Loading Effect on Biodegradability and Nitrogen Release Properties of Urea Modified Tapioca Starch in Wet Soil Z. Majeed, N.K. Ramli, N. Binti Mansor and Z. Man	798
The Effects of Dynamic Vulcanization in Virgin Polyethylene (vPE)/Recycled Polyethylene (rPE)/Ethylene Propylene Diene Terpolymer (EPDM) Blends: Tensile Properties and Morphology I. Hanafi, N.Z. Noimam, W.H. Wei and N.Z. Nik Yahya	803
The Influence of CB, Silica and CaCO₃ on Tensile and Morphological Properties of vPE/rPE/EPDM Blends I. Hanafi, N.Z. Noimam, W.H. Wei and M.R.J. Nasir	808
Strain Distribution on Reinforcement of Concrete Beams Reinforced with Glass Fiber Reinforced Polymer (GFRP) Bars A.A.H. Noor, T. Rendy, I. Azmi and H.A. Hamid	812
Conductivity and Dielectric Studies of Methylcellulose/Chitosan-NH₄CF₃SO₃ Polymer Electrolyte K.Z. Hamdan and A.S.A. Khair	818
The Effect of Methylene Diphenyl Diisocyanate on the Nonisothermal Properties of Polylactic Acid/<i>Elaeis guineensis</i> Fibres Biocomposites L.H. Ahmad Subri, S.M. Alauddin and S. Rosman	823
Effect of Different Tex Number and Surfacing Veil Application on the Pultruded Kenaf Reinforced Composites (PKRC) under Natural Weathering Exposure M.H. Zamri, H.M. Akil and Z.A.M. Ishak	828
Comparison Study in Consolidation of Yttria Reinforced Iron-Chromium Composites Using Conventional and Microwave Sintering Technique M. Marina, M.Z.M. Zamzuri, M.N.B. Derman, M.A. Selamat and Z. Nooraizedfiza	832
Properties of Recycled High Density Polyethylene/Recycled Polypropylene Blends: Effect of Maleic Anhydride Polypropylene A.A.S.M. Atiqah, H. Salmah, Z. Firuz and D.N. Uy Lan	837
Comparison between Single and Multi Gates for Minimization of Warpage Using Taguchi Method in Injection Molding Process for ABS Material S.M. Nasir, K.A. Ismail, Z. Shayfull and N.A. Shuaib	842
Cu-SiC_p Composites as Advanced Electronic Packaging Materials K. Azmi, M.N. Derman, A.M.M. Al Bakri and A.V. Sandu	852
Thermal Expansion Behavior of the Electroless Copper Coated Cu-SiC_p Composites Fabricated via the Conventional Powder Metallurgical Technique K. Azmi, M.N. Derman, A.M.M. Al Bakri and A.V. Sandu	857
Physical and Morphological Properties of Styrene Butadiene Rubber/Recycled Chloroprene Rubber (SBR/CRr) Blends - The Effects of TOR as a Compatibilizer A.A. Azrem, N.Z. Noriman, M.N. Razif and S.T. Sam	862
The Effects of Carbon Black and Calcium Carbonate as a Filler on Cure Characteristic and Physical Properties of SBR/CRr Blends A.A. Azrem, N.Z. Noriman and M.N. Razif	867
High Sensitivity Humidity Sensor Based on ZnSnO₃ Composite Nanocube N.D. Md Sin, M.Z. Musa, M.H. Mamat, S. Ahmad, A.A. Aziz and M. Rusop	872
Preparation of Polyethersulfone Ultrafiltration Membrane Surface Coated with TiO₂ Nanoparticles and Irradiated under UV Light S.H. Mohamad, M.I. Idris and H.Z. Abdullah	877
Effect of Volume Plasticizers on the Thermal Performance of <i>Tacca leontopetaloides</i> Starch Biopolymer N.S. Mohd Makhtar, A.M.M. Amin, N.F.A. Ghafar, N.S.A. Aziz, M.N. Muhd Rodhi, M. Mohibah and K.H.K. Hamid	882

Chapter 7: Computational Materials Science

Filling Missing Data Using Interpolation Methods: Study on the Effect of Fitting Distribution	
M.N. Noor, A.S. Yahaya, N.A. Ramli and A.M.M. Al Bakri	889
Evaluation Grain Homogeneity of Aluminium after ECAP Process by ECAP Geometry Analysis Using Taguchi Method	
A. Aminnudin, Pratiko, A. Purnowidodo, Y.S. Irawan, S. Haruyama and K. Kaminishi	896
Mean Imputation Techniques for Filling the Missing Observations in Air Pollution Dataset	
M.N. Noor, A.S. Yahaya, N.A. Ramli and A.M.M. Al Bakri	902
Compressive Behavior of AA6061 at Room Temperature and Validation of the FE Model Based on Optical 3D Measurement Technique	
A.B. Abdullah and Z. Samad	909
Photovoltaic Powered Uninterruptible Power Supply Using Microcontroller PIC16F628-I/P	
M. Irwanto, M. Farreq, S.P. Hadi, N. Gomesh and M.I. Yusoff	914
Design and Development of Tracking System for Mines Detector Robot	
A.Z.A. Firdaus, N.S. Liang, M.B.S. Hafis, M.J.M. Ridzuan and N.H.A. Zaidi	919
Design and Development of Sensing System for Mines Detector Robot	
A.Z.A. Firdaus, Y.W. Cherng, H.A. Munir and N.H. Ahmad Zaidi	924
Numerical Stress Analysis of Epoxy Adhesively Bonded Dissimilar Joint	
N. Athirah, A.R. Abdullah, M. Afendi, M.S.A. Majid, R. Daud and H. Idrus	930
Experimental Validation on Time Base Analysis of Various Aircraft CFRP Panel Conditions for Structural Health Monitoring	
K.D. Mohd Aris, F. Mustapha, S.M. Sapuan and D.L. Majid	935

Chapter 8: New Functional Materials

Estimation of Bioethanol Production from <i>Jatropha curcas</i> Using Neural Network	
N. Abd. Rahman, N.T. Kofli, Z. Yaakob and S. Gauri	943
Carbon Powder as Additive in Near-Net-Shaping of Mechanical Components through Warm Forming Route	
M.M. Rahman and N.A.A.A. Kadir	948
Thermophysical Properties of Ionic Liquid with Thiocyanate and Dicynamide Anions	
G. Gonfa, M.A. Bustam, T. Murugesan, Z. Man and M.I. Abdul Mutalib	953
The Fabrication of Codoped ZnO Thin Films by DC Magnetron Sputtering	
H.A. Hamid, H.M. Yee and M.N.A. Hadi	958
Two-Step Sintering of Fine Barium Cerate-Zirconate Ceramics Electrolyte	
S.S. Che Abdullah, A. Rohaya and O. Nafisah	962
Newly Developed Starch-Based Hydroxyethyl Cellulose Film with Wide Spectrum of pH-Colour Indicator	
N. Khairuddin, I.I. Muhamad, K. Thongbua, S. Shaharuddin and S.N.H. Mohamad	967
A Robust Approach for Detecting QRS Complexes of Electrocardiogram Signal with Different Morphologies	
S.K. Salih, S.A. Aljunid, O. Maskon, S.M. Aljunid and A. Yahya	972
Influence of Additive on the Performance of Energy Conversion Solar Cell	
N.M. Abdullah, A.Z.M. Rus and M.F.L. Abdullah	980
Study on Physical and Chemical Properties of Fly Ash from Different Area in Malaysia	
I. Khairul Nizar, A.M.M. Al Bakri, R. Abd Razak, H. Kamarudin, A. Abdullah and Y. Zarina	985
Feasibility Study of Waste Motor Recycling through Manual Dismantling and Hydrometallurgical Process	
N.H. Muhd Nor, T. Nathan, S. Jaibee, M.H. Burhan, F. Mohamad, A.E. Ismail, S.C. Kiong, Z. Ahmad and Y. Seiji	990
Short Term and Long Term Aging Effects of Asphalt Binder Modified with Montmorillonite	
M.E. Abdullah, K.A. Zamhari, R. Buhari, M.N. Nayan and M.R. Hainin	996
Sol-Gel Synthesis of Novel Silica Hybrid Xerogels: Porous Studies	
S.N.F. Adam, S. Roslinda, R. Shahidan and Z. Firuz	1003
Sol-Gel Synthesis and Preliminary Characterizations of Novel Silica Hybrid Xerogels	
S.N.F. Adam, S. Roslinda and Z. Firuz	1009

Radiation Shielding Characteristics of Concretes Incorporates Different Waste Materials A.B. Azeez, K.S. Mohammed, A.M.M. Al Bakri and H.I. Hasan	1015
Seismic Performance of Insulated Sandwich Wall Panel Subjected to Lateral Cyclic Loading M.F. Md Fudzee and N.H. Hamid	1020

Chapter 9: Optical and Photonic Materials

Enhance the Performance of Free Space Optical (FSO) Communication due to Atmospheric Turbulence via the Dual Diffuser Modulation (DDM) A.K. Rahman, S.A. Aljunid, M.S. Anuar and H.A. Fadhil	1027
A Tomography System Based on Optical and Electrodynamic Sensors S. Ibrahim, N.M. Ruhi, M.A.M. Yunus, B. Ghanem and M. Faramarzi	1032
Comparison of Single Mode Fiber and Multimode Fiber in Deployment of SCM-OCDMA in Local Area Network A. Mamoun Kabbour, H.A. Fadhil, A. Amphawan, S.A. Aljunid and M.K.H. Al Mustafa	1037
Increasing Capacity and Suppress the Crosstalk by Using Hybrid Optical OFDM/WDM System A.O. Aldhaibani, S.A. Aljunid, H.A. Fadhil and M.S. Anuar	1041

Chapter 10: Optoelectronics

Effective Design for Fiber-to-the-Home Access Network Using Flexible Cross Correlation (FCC) Code C.B. Mohd Rashidi, S.A. Aljunid, F. Ghani, H.A. Fadhil and M.S. Anuar	1047
Realization of Wavelength-Time Modified Double Weight Codes Optical Code Division Multiple Access System A.R. Arief, S.A. Aljunid, M.S. Anuar, R.B. Ahmad, M.N. Junita and C.B. Mohd Rashidi	1052
Channel Spacing Effect on SAC-OCDMA System Based Modified-AND Subtraction Detection Scheme M.Z. Norazimah, S.A. Aljunid, H.M.R. Al-Khafaji, H.A. Fadhil and M.S. Anuar	1059

Chapter 11: Semi-Conductor and Micro-Electronic Materials

Defects Generation in Ge/GeO₂ Structure S.K. Sahari, N. Momamad Sutan, R. Sapawi, I. Yakub, D.N.S. Awg Salleh and A. Lit	1069
Analysis of Wetting of Perylene Diimide Thin Films-on-Glass by Water V. Madhurima, K.G. Priyanka, K.S.N.D. Pavan and S. Nagarajan	1074
Data-Driven Subspace Predictive Control for a MIMO System I.W. Jamaludin, N.A. Wahab and M.S. Gaya	1078
Characterization of ProTEX[®] PSB Thin Film as a Photosensitive Layer for MEMS Capacitive Pressure Sensor Diaphragm Based on SiC-on-Si Wafer N. Marsi, Y.M. Burhanuddin, A. Azlan Hamzah and F. Mohd-Yasin	1083

Chapter 12: Testing and Evaluation of Materials

Drop Weight Impact Analysis of Laminated Polyurethane Foam/Cloisite 30B Clay Z. Firuz, H.M. Akil, A. Sahrim, R. Rasid and S.N.F. Adam	1089
Leachability of Metal Ions in TCLP Leachate of Solidified Petroleum Sludge A.M. Zain, S. Md Ghazaly and M. Hilmi	1094
Determination of Non-Linear Material Constants of RTV Silicone Applied to a Soft Actuator for Robotic Applications N. Elango, A.A. Mohd Faudzi, M.R. Muhammad Razif and I.N.A. Mohd Nordin	1099
Fatigue Crack Initiation and Growth of Aluminum Alloy with Stress Ratio Effects H. Idrus, M. Afendi and W. Chun Hoe	1105

A Study on Relationship between Porosity and Compressive Strength for Geopolymer Paste Z.F. Farhana, H. Kamarudin, A. Rahmat and A.M.M. Al Bakri	1112
Wear-Resistance of Nitrided W-Mo-High Speed Steel in Abrasive Wear Conditions M. Skakov, B. Rakhadilov and M. Rakhadilov	1117
Performance of Thermoelectric Cooling System: Effect of Aluminium Heat Sink and Heat Dissipation M.B.S. Hafis, M.J.M. Ridzuan, A.Z.A. Firdaus, S.M. Shahril, R.N. Farahana and C.K. Chong	1122
Effects of Knife Shapes and Cutting Speeds of a Mower on the Power Consumption for Pulverizing Sweet Potato Vine A.N.N. Kakahy, D. Ahmad, M.D. Akhir, S. Sulaiman and A. Ishak	1126
The Effect of Solution Temperature on Electrodeposit-ZnO Thin Film F. Mohamad, C.A. Abang, N.H. Muhd Nor and M. Izaki	1131
Effect Different Limb of Transformer Core Assemble on Performance D. Maizana, M.A. Mohd Radzi and N. Hussin	1136