

Table of Contents

Preface, Committees & Conference Organization

Chapter 1: Advanced Materials and Characterizations

Effect of Incubation Temperature on Growth of <i>Acetobacter xylinum</i> 0416 and Bacterial Cellulose Production	
K.A. Zahan, K. Nordin, M. Mustapha and M.N. Mohd Zairi	3
Thermal Properties of Low Density Polyethylene/Jackfruit Seed Flour Blends-Effect of Hexanedioic Acid	
P. Santhiya, S.S. Ting, H. Kamarudin, S. Ragunathan, N.Z. Noriman and A.M.M. Al-Bakri	9
Crystallinity and Influence of Citric Acid as a Compatibilizer in Low Density Polyethylene/Jackfruit Seed Flour Blends	
P. Santhiya, S.S. Ting, H. Kamarudin, S. Ragunathan, N.Z. Noriman and A.M.M. Al-Bakri	14
Properties of Ethylene Propylene Diene Monomer/Recycled Acrylonitrile – Butadiene Rubber Blends (EPDM/rNBR): Effect of the Addition of Bamboo Fillers	
Z. Norhafizah, N.Z. Noriman, H. Kamarudin, S.S. Ting, H. Ismail, M.F. OMAR, C.M. Ruzaidi and A.A. Afiratul	19
The Effects on the Cure Characteristics and Physical Properties of Bamboo Activated Carbon Filled Styrene Butadiene Rubber (SBR) Compounds	
N.R. Munirah, N.Z. Noriman, M.S. Zakaria, H. Kamarudin, M.H. Fatin, S.S. Ting and A.M. Mustafa Al Bakri	24
Performance of Concrete by Using Palm Oil Fuel Ash (POFA) as a Cement Replacement Material	
L.A. Sofri, M.Z.A. Mohd Zahid, N.F. Isa, M. Azizi Azizan, M.M. Ahmad, M.B.H. Ab Manaf, M. Abdul Rahim, Z. Md Ghazaly, J. Abu Bakar and M.S.A. Ahmran	29
Mechanical and Thermal Properties of Polylactic Acid Filled Rice Straw	
N. Hani Md Zubir, S.S. Ting, H. Kamarudin, S. Ragunathan, N.Z. Noriman, M.M.A.B. Abdullah and W. Jing	34
The Addition of <i>Imperata cylindrica</i> as Natural Filler in Epoxidized Natural Rubber Filled Recycled Nitrile Glove: Cure Characteristics and Physical Properties	
A.A. Afiratul, N.Z. Noriman, K. Husin, S.S. Ting, H. Ismail, A.M. Mustafa Al Bakri, M.F. OMAR and Z. Norhafizah	39
Cure Characteristics and Physical Properties of <i>Imperata cylindrica</i> Activated Carbon Filled SMR L Compounding	
M.H. Fatin, N.Z. Noriman, K. Husin, M.Z. Salihin, N.R. Munirah, H. Ismail, A.M. Mustafa Al Bakri and S.S. Ting	44
Behaviour of Axially Loaded Composite Wall Panel by Using Finite Element Analysis	
N.F. Isa, M.Z.A. Mohd Zahid, L.A. Sofri, N.Z. Zainol, M. Azizi Azizan, M.M. Ahmad, M.B.H. Ab Manaf, M.F. Mohammad Zaki, M. Abdul Rahim and Z. Md Ghazaly	49
Effect of Recycled Nitrile Glove (rNBRg) Particle Sizes on Curing Characteristics and Physical Properties of Natural Rubber/Styrene Butadiene Rubber/Recycled Nitrile Glove (NR/SBR/rNBRg) Blends	
N.Z. Nik Yahya, N.N. Zulkepli, H. Kamarudin, H. Ismail, S.S. Ting, M.R. Jamalul Nasir, M.M.A.B. Abdullah and R. Hamzah	54
The Effects of Trans-Polyoctylene Rubber (TOR) on the Properties of Acrylonitrile Butadiene Rubber/Recycled Natural Latex Gloves (NBR/NRL-G) Compounds	
O.S. Dahham, N.Z. Noriman, K. Husin, S.S. Ting, M.F. Omar, A.M.M. Al Bakri and H. Rosniza	59
Physical and Mechanical Behaviors of SnCu-Based Lead-Free Solder Alloys with an Addition of Aluminium	
N. Adli, N.R. Abdul Razak and N. Saud	64
The Properties of Linear Low Density Polyethylene/Cyperus Odoratus (LLDPE/CY) Blends: Effect of Sodium Hydroxide	
N.A.F. Nik Abdullah, N.N. Zulkepli, S.S. Ting, M.M.A.B. Abdullah, K. Hussin and R. Hamzah	69
Compression Characterization of Polyurethane Foams with Different Formulations of Polyol and MDI	
S.A. Adnan, F. Zainuddin, H.M. Akil and S. Hj Ahmad	74

Effect of Heat Treatment on Hardness Behavior of AZ91 and AZ91 Reinforced Carbon Nanotube	79
N.H.A. Zaidi, S.B. Jamaludin, K.R. Ahmad, N.A. Halif and S.A. Adnan	
Properties of Cement-Based Material Consisting Shredded Rubber as Drainage Material	84
M.M. Ahmad, F. Ahmad, M. Azmi, M.Z.A. Mohd Zahid, M.B.H. Ab Manaf, N.F. Isa, N.Z. Zainol, M. Azizi Azizan, K. Muhammad and L.A. Sofri	
Study of Covalent/Ionic Cross-Linked Modification on Physical and Mechanical Properties of Chitosan Film as Potential Material in Medical Application	89
S.F. Hisham, S.H. Kasim, A. Mastor, S.N. Mohd Sabri, S. Abu Bakar, W. Shualdi, M.N. Nordin, A.H. Abdul Rashid and K. Noorsal	
The Effects of Composition on Solid State Sintering of Tungsten-Brass Composites	94
B. Gowon, K.S. Mohammed, S.B. Jamaludin, H. Zuhailawati, A.D. Aminu, Y.A. Lawal and P. Evarastics	
Effect of Poly(Methyl Methacrylate) (PMMA) on Tensile Properties and Spectroscopy Infrared (FTIR) Characteristics of LDPE/WHF Composites	101
S.J. Tan, A.G. Supri, K.L. Foo, A.M.M. Al Bakri, Y.M. Liew and C.Y. Heah	
Effect of Alkali Treatment Using Calcium Hydroxide and the Fiber Length on the Strength of Sugarcane Bagasse Fibers-Polypropylene Composites	106
J. Anggono, S. Sugondo, S. Henrico and H. Purwaningsih	
Mechanical Properties of Short Fiber and Non-Woven Kenaf Reinforced Polypropylene Composites: Effects of Oil Palm Shell Powder Addition	111
M.A. Abd Latif, M.E. Abd Manaf, L. Maslamany, M.S.M. Hussain and N. Mohamad	
Superhydrophobicity of Textured Ceramic Coating for Corrosion Protection in Marine Applications – A Brief Review	116
J.A. Wahab, M.J. Ghazali, W.M.W. Yusoff, Z. Sajuri and S.R. Shamsudin	
Study on the Effect of Porous Silicon Sizes for Potential Visible Photodetector	121
A.F. Abd Rahim, N.M. Sah, I.H. Hamzah, S.N. Sulaiman and M.M. Zahidi	
X-Ray Diffraction and Dielectric Constant of Lanthanum Doped Barium Titanate Ceramics	131
N.F. Abdul Hamid, R.A.M. Osman and M.S. Idris	
Multi-Layer Microstructure of Sol-Gel Barium Titanate Thin Films for Optical Waveguide Applications	136
S.H. Najamudin, H.M. Yusof, A.A. Saif, R.A. Osman and P. Poopalan	
High Throughput Graphene Oxide in Modified Hummers Method and Annealing Effect on Different Deposition Method	141
M.R. Muda, K.N. Hanim, S.S. Mat Isa, M.M. Ramli and M.F. Jamlos	
A Study of Fire Retardant Effect in Natural Fiber Composite Panels with Magnesium Hydroxide and Zinc Borate as Additives	148
T.N. Tengku Izhar, C.C. Jiat and N.A. Lutpi	
Rapid Indicators in Detecting Variation of Fly Ash for Making HVFA Concrete	153
Antoni, R. Gunawan and D. Hardjito	
A Preliminary Study on Cracking Tendency of Cement Paste Incorporating High Calcium Fly Ash	158
V. Goenawan, Antoni and D. Hardjito	
Review on the Effect of Bottom Ash in Performance of Portland Cement Mortar	164
N.H. Jun, A.M.M. Al Bakri, K. Husin, S.J. Tan and M.F. OMAR	
Flood Mud as Geopolymer Precursor Materials: Effect of Flood Mud/Alkaline Activator and Na₂SiO₃/NaOH Ratios on Compressive Strength	170
M.M. Al Bakri Abdullah, Y.M. Liew, M.F. Mohd Tahir, C.M.R. Ghazali, K. Hussin and A. Abdullah	
Flood Mud as Geopolymer Precursor Materials: Effect of Curing Regime on Compressive Strength	177
A.M.M. Al Bakri, M.M. Mohtar, Y.M. Liew, M.F. Mohd Tahir, K. Husin and J.J. Ekaputri	
Thermally Stable Encapsulation Material Based on Green and Red Lanthanide Phosphor for White Light Emitting Diodes	182
W. Shualdi, N. Mohd Azmi, N.H. Yusoff, N.A. Muhammad and K.M. Isha	
Study on Dielectric and Magnetic Properties of MWCNTs/Polyester Composites	188
Y.S. Lee, F. Malek, E.M. Cheng, W.W. Liu, K.Y. You, F.H. Wee, L. Zahid, M.A. Jusoh, A.D.T. Hussain and G.N. Shasidharan	

Evaluation of Thermal Properties of the Fe₈₀Cr₂₀ Nanostructure for Interconnect Application in High Temperature	193
A.M. Leman, D. Feriyanto, M.N.M. Salleh and I. Baba	
Electromagnetic Wave Attenuation in Lossy Dielectric	198
A.A. Afrizal, N. Khadiko, F.G. Sulistyaa, V.N. Septyanib and H.A. Lubis	
The Effect of Different Remazol Dye Concentrations and Soaking Times in Dye-Sensitized Solar Cell	203
S.S. Mat Isa, N.A.M. Anhar, N.M. Selamat, N.S.C. Adib, M.R. Muda, M.M. Ramli and N.A.M. Ahmad Hambali	
Aligned Carbon Nanofibres (CNFs) at the Graphene/Nickel Thin Film Edge	212
M.S.H. Shamsuri, S.N. Sabki, A.H. Norzilah, M.N. Najwa, A.N. Edzatty and H. Alhummiany	
The Effect of Different Reduction Methods on Conductivity of Reduced-Graphene Oxide (r-GO)	216
M.M. Ramli, K.N. Hanim, M.R. Muda, S.S. Mat Isa and M.F. Jamlos	
Correlation of Impact Energy from Instrumented Charpy Impact	221
M.B. Ali, K.A. Zakaria, S. Abdullah and M.R. Alkhari	

Chapter 2: Design and Research of Sustainable Manufacturing Systems

Radiation Enhancement Using Circular Split Ring Meta-Surface Mirror for a Small Patch Resonator	229
A.A.M. Ezanuddin, A.H. Ismail and E.I. Azmi	
Keystroke Dynamics for Construction Industry: A Review on Biometric Systems	234
S.Z. Syed Idrus, A.A. Al Hadi, P.L.A. Eh Kan, S. Sudin and H. Kamarudin	
3D Stress Analysis of ITER Tokamak Assembly	238
M. Hafiz and M. Afendi	
Circular Split Ring Meta-Surfaces Variation Study as Surface Wave Suppressor	243
A.A.M. Ezanuddin, A.H. Ismail and E.I. Azmi	
Overview of Artificial Fish Swarm Algorithm and its Applications in Industrial Problems	253
N. Zainal, A.M. Zain and S. Sharif	
The Development and Implementation Lean Manufacturing in Indonesian Furniture Industry	258
B. Suhardi, A. Sahadewo and P.W. Laksono	
Overview of Fuzzy Logic Technique for Modeling Machining Process	264
A. Mohamad, A.M. Zain and N. bin Mohd Yusof	
Optimization of Surface Roughness in Turning Operation Using Firefly Algorithm	268
N.F. Johari, A.M. Zain, N.H. Mustaffa and A. Udin	
Green Aircraft Technology Imperatives for Environmental Sustainability	273
H. Djojodihardjo	
Pressure Generated from Head Garment with Padding Insert Used for Hypertrophic Scar Treatment	282
A.F. Aiman, M.N. Salleh and K.A. Ismail	
Buffer Allocation Using 6 Steps Oba Method: A Case Study	287
M.S. Ismail, N. Muhammad, M.I. Hussain, Z. Mohd Zain and R. Ahmad	
Simulation and Experimental Studies on Optimum Barrel Length for High Impact Penetrator	293
A.H. Hilmi, A. Ismail and M. Firdaus	
Design Specification Determination with Collaborative Approach for Indonesian Short Wheelbase Recumbent Bicycle	298
B. Suhardi, I. Priadythama and C.W. Fitriyani	
The Satisfaction Preferences Measurement of Profile Design	304
H. Sihombing, R. Jaafar and M.Y. Yuhazri	
Mathematical Modelling of Surface Roughness on Tropical Wood Machining Using Response Surface Methodology	313
A.S. Mohruni, M. Yanis, E. Sundari, A.Y. Budiman and E.S. Martomi	
Designing a Low Cost Endoskeletal below Knee Prostheses with the Implementation of Appropriate Technology	318
L. Herdiman, N. Adiputra, K. Tirtayasa and I.B.A. Manuaba	

Mismatch Analysis of Elementary School Desk and Chair Using Monte Carlo Simulation	323
C.N. Rosyidi, S. Susmartini, S.A. Pratama, L. Purwaningrum and S. Muraki	
A Study of Tool Motion in 2 Dimensional Ultrasonic Assisted Micro-Milling	328
M.R. Ibrahim, N.H. Rafai, E.A. Rahim, K. Cheng and H. Ding	
Mega Floats: Floating Offshore Remote Terminal (FORT) towards Sustainability Life Cycle Assessment	332
A. Abdul Malik, M.Z. Ahmad, A.A. Radzi, A.F. Ahmad Fuad and N.H.A. Azlan	
Digital All-Pass Filter Modeling Based on Desired Group Delay Using Advanced Material: A Review on the Signal Processing Part	338
F. Abu Bakar, S.A. Zainol Murad, R. Ismail and M. Isa	
Fiber Length Optimization of Ring Cavity Multi-Wavelength Brillouin Fiber Laser Utilizing Fiber Bragg Grating	338
A.Z. Malek, N.A.M. Ahmad Hambali, M.H.A. Wahid, M.A.M. Azidin, S.S. Mat Isa and M.M. Shahimin	
Comparative Characteristics between L-Band EDFA, L-Band EDFA Utilising Single FBG and Dual Stage L-Band EDFA Utilising Dual FBG Configurations	343
M.S. Zainudin, N.A.M. Ahmad Hambali, G.C. Seong, M.S.A. Hurera, N. Roshidah, M.H.A. Wahid, M.M. Shahimin and A.Z. Malek	
All-Optical XOR Logic Gates: Insights and Comparisons	348
M.A. Md Azidin, M.H.A. Wahid, N.A.M. Ahmad Hambali, M.M. Shahimin and A.Z. Malek	
Energy Saving Switched-Mode Regulator in Motorcycle Power Supply	353
M.F. Che Husin, F. Abu Bakar, A.F. Hasan, R. Ismail, T.M.A.T.M. Yusof, M.N. Hashim and M.F. Mohd Radzi	
Design and Analysis on Symmetric MEMS Inductor	359
N. Khalid, N.I.M. Nor, W.M.W. Norhaimi, Z. Sauli and V. Retnasamy	
Extrinsic and Intrinsic Modeling of InGaAs/InAlAs pHEMT for Wireless Applications	364
N. Ahmad, S.S. Jamuar, M.M. Isa, S.S. Mat Isa, M.M. Ramli, N. Khalid, N.I.M. Nor, S.R. Kasjoo, S.A. Zainol Murad and M. Missous	
Defect Segmentation of Semiconductor Wafer Image Using k-Means Clustering	369
N.H. Saad, N.M. Sabri, A.F. Hasan, A. Ali and H.M. Saleh	
Optimization of L-Band Ring Cavity Brillouin Erbium Fiber Laser	374
N.R. Yusof, N.A.M. Ahmad Hambali, R. Othman, W. Mokhzani and M.H.A. Wahid	
The Development of Novel High Speed – Low Noise pHEMT Device for Lossless Underwater Optical Communication	380
M.M. Isa, S.L. Ong, C. Charin, N. Ahmad, S.S. Mat Isa, M.M. Ramli, N. Khalid, N.I.M. Nor, S.R. Kasjoo and M. Missous	
High Speed All-Photonic Flip-Flop Operation at a Single Wavelength	384
U.K. Sahbudin, M.H.A. Wahid, M.A.M. Azidin, N.A.M. Ahmad Hambali, N.R. Yusof and M.M. Shahimin	
Nondestructive Fruit Ripeness Detection System and its Spectral Analyses	390
N.H. Hasanuddin, M.H.A. Wahid, M.A.M. Azidin, N.A.M. Ahmad Hambali, N.R. Yusof and M.M. Shahimin	
Room Access Control System Using Facial Image Recognition	394
R. Lim, F. Rotinsuluand and P. Santoso	
Leak Detection in Gas Pipeline Using Hilbert-Huang Transform	398
N.F. Adnan, M.F. Ghazali, M.M. Amin and A.M.A. Hamat	
Real-Time Self-Tuning Speed Controller: Performance Comparison between Engine Fuelled with Palm Methyl Esters and Petroleum Diesel	403
M.N. Azuwir, M.S. Saad and M.Z. Zakaria	
Overview of Harmony Search (HS) Algorithm for Green Manufacturing Industries	408
A. Mat Deris, A.M. Zain, R. Salehuddin and S. Sharif	
Gravitational Search Algorithm for Engineering: A Review	413
A.F. Kamaruzaman, A. Mohd Zain, S.M. Yusuf and N.M. Yusof	
Appraisal of Mega Float - Floating Offshore Remote Terminal (FORT) on Catenary Mooring for Deep Water	417
A. Abdul Malik, M.Z. Ahmad, A.A. Radzi, A.F. Ahmad Fuad and N.H.A. Azlan	
 	421

Chapter 3: Engineering Management of Sustainable Manufacturing Systems

Effectiveness of Safety Management in Oil and Gas Project I. Othman, M. Napiah, M.F. Nuruddin and M.M.A. Klufallah	429
Effectiveness of Human Resource Utilization in Oil and Gas Project I. Othman, M. Napiah, M.F. Nuruddin and M.M.A. Klufallah	434
Dynamic System Models Sutami Hydropower Plant Indonesia to Calculate the Economic and Environmental Aspects of Hydropower Plant Operation D. Rohi, M. Bisri, Seoemarno and A. Lomi	439
Energy and Environment Implications of Long-Term Power Development Involving Renewable Energy: A Case of Timor Island, Indonesia Y. Tanoto and D. Rohi	444