Table of Contents

Preface and Committees

Chapter 1: Structure and Properties of Materials

Nano-Yttrium Aluminium Garnet Interfacial Tension and Viscosity for Enhanced Oil Recovery	
K.C. Lee, N. Yahya, S.N. Che Yaccob and B.H. Guan	3
A Study of LiMn _(2-X) Fe _x O ₄ Cathodic Nano Material for Lithium-Ion Batteries A.F.M. Fadzil and F.H. Muhammad	7
Effect of Cell Material on the Performance of PV System A. Nahar, M. Hasanuzzaman, N.A. Rahim and M. Hosenuzzaman	12
The Influence of Carbon Addition on Microstructure and Mechanical Properties of Fe-	
22.0Al-5.0Ti Alloy R. Kant, A. Selokar, V. Agarwala and U. Prakash	17
Zinc Oxide Nanostructures Formed by Wet Oxidation of Zn Foil C.M. Pelicano, Z. Lockman and M.D. Balela	22
Effect of CNT Arrays on Electrical and Thermal Conductivity of Epoxy Resins L.K. Wu and J. Ying	27
Investigation on Microstructure and Mechanical Properties of Squeeze Cast Al-Si Alloys by Numerical Simulation	•
M. Kiaee, S. Sulaiman, S.H. Tang and M.A. Mohammadi	31
FTIR and Electrical Studies of Hexanoyl Chitosan-Based Nanocomposite Polymer Electrolytes	
F.H. Muhammad, A.F.M. Fadzil and T. Winie	36
In ₂ O ₃ -Based Thin Films Deposited by Spray Pyrolysis as Promising Thermoelectric Material G. Korotcenkov, V. Brinzari, L. Trakhtenberg and B.K. Cho	40
Solid Particle Erosion Behaviour of Martensitic and Nitrogen Alloyed Austenitic Stainless	
Steel A. Selokar, R. Kant, D.B. Goel and U. Prakash	45
Porous GaN for Gas Sensing Application N.H. Mohd Noor, Z. Hassan and F.K. Yam	50
Diode Parameters of Heterojunctions Comprising p-Type Si Substrate and n-Type β-FeSi ₂	
Thin Films N. Promros, S. Funasaki, M. Takahara, M. Shaban and T. Yoshitake	57
Chapter 2: Research and Development of Technologies of Synthesis and Processing of Materials	
Optimization of Multi-Pass Pocket Milling Parameter Using Ant Colony Optimization M.F.F. Ab Rashid, W.S.W. Harun, S.A.C. Ghani, N.M.Z. Nik Mohamed and A.N. Mohd Rose	65
Investigation of Carbon Nanofiber Supported Iron Catalyst Preparation by Deposition	
Precipitation N. van Thien Duc, S. Sufian, N. Mansor and N. Yahya	71
Hydrophobic-Synthesis of Bio-Based Epoxy Substrate Using Methyl Ester and its Dust	
Deposition and Decontamination Effects N.S. Nasri, M.M. Ahmed, A.N. Shamsu Kamar, T.Y. Sing, U.D. Hamza, J. Mohammed and H. Mohd Zain	76
Synthesis and Characterization of Octaethoxycalix[4]Arene for Heavy Metal Cations	
Adsorbent B.I.M. Gusti Ngurah, Jumina, C. Anwar and Mustofa	81
Recycling of Pre-Fabricated Carbon-Fiber Waste as Filler for Sandwich Glass-Fiber Auto	
Parts P. Yamkamon, K. Sritrakulchai and S. Rajsiri	85

Prediction of Friction Stir Processed AZ31 Magnesium Alloy Micro-Hardness Using Artificial Neural Networks	
B. Darras, I.M. Deiab and A. Naser	91
Fabrication of ZnO Nanorod for Room Temperature NO Gas Sensor S.T. Tan, M. Yahaya, C.H. Tan, C.C. Yap, A. Ali Umar and M. Mat Salleh	96
Synthesis of Co/CNTs via Strong Electrostatic Adsorption: Effect of Metal Loading O. Akbarzadeh, N.A. Mohd Zabidi, B. Abdullah and D. Subbarao	101
Water Dispersion Conductive Polypyrrole Based on Nanocrystalline Cellulose A.A. Al-Dulaimi and W.D. Wan Rosli	105
Electroless Deposition of Silver Nanoparticles and Nanowires in Ethylene Glycol N. De Guzman, A. Mechilina and M.D. Balela	109
Electroless Deposition of Copper Nanostructures in Aqueous Solution M. Tan, L. de Jesus, K.L. Amores, E. Datu and M.D. Balela	114
Finite Element Study of Deformation Behaviour of Al-6063 Alloy Developed by Equal Channel Angular Extrusion	
J. Nemati, S. Sulaiman, G.H. Majzoobi, B.T.H.T. Baharudin and M.A. Azmah Hanim	119
Electrochemical Characteristics of an Optimized Ni-P-Zn Electroless Composite Coating A. Kordijazi	124
Synthesis of C-2-Ethoxycarbonylmethoxyphenyl Calix[4]Resorcinarene Using Salicylaldehyde as Basic Material and its Application as Adsorbent of Pb(II) Metal Cation P.W. Mulya, Jumina, D. Siswanta and B.I.M. Gusti Ngurah	129
Simulating of Backward Extrusion Process of Nanostructured Al-6082 Material A.S.M.J. Agena	133
Glass Ceramization as an Alternative Production Route of Forsterite Glass-Ceramics for Possible Multipurpose Uses T. Aboud	138
Relative Effect of Sand Blasting and Acid Etching on the Surface Roughness of Pure	
Titanium and Titanium Alloy for Dental Implants Y.S. Nadar, M.G. Kutty and A.R. Abdul Aziz	145
The Breakdown of Carbide Network in a H23 Tool Steel by Hot Axisymmetric Compression M. Nurbanasari, P. Tsakiropoulos and E.J. Palmiere	149
Cementite Precipitation of a H21 Tool Steel after Hot Compression and Double Temper M. Nurbanasari, P. Tsakiropoulos and E.J. Palmiere	154
Solidification Behaviour of a H21 Tool Steel M. Nurbanasari, P. Tsakiropoulos and E.J. Palmiere	159
Experimental Investigation of Effect of Rotary Abrasive Jet Nozzle on Coating Removal Rate and Surface Finish D.S.R. Smart, D.P. Rufus and L. George	165
D.S.R. Smart, D.1 . Rufus and E. George	103
Chapter 3: Environmental Chemistry and Practice of Using the Nature Materials	
Methane Adsorption on Chemically Modified Microwave Irradiated Palm Shell Porous Carbon	
N.S. Nasri, U.D. Hamza, N.A. Saidina Amin, M.M. Ahmed, J. Mohammed and H. Mohd Zain Biopulping by <i>Ceriporiopsis subvermispora</i> towards Pineapple Leaf Fiber (PALF) Paper	175
Properties N.H. Mat Nayan, S.I. Abd Razak and W.A. Wan Abdul Rahman	180
Hydrophobicity Characterization of Bio-Wax Derived from Taro Leaf for Surface Coating Applications	104
N.S. Nasri, M.M. Ahmed, N. Mohd Noor, J. Mohammed, U.D. Hamza and H. Mohd Zain In Situ Deposition of Conducting Polymer onto Pineapple Leaf Fiber	184
S.I. Abd Razak, N.F. Ahmad Sharif, N.H. Mat Nayan and I.I. Muhamad Characteristics of Potassium Acetate - Activated Coconut Shell Carbon	189
N.S. Nasri, J. Mohammed, M.A. Ahmad Zaini, U.D. Hamza, H. Mohd. Zain and F.N. Ani Synthesis of Zeolite A from Coal Fly Ash by Alkali Fusion and Hydrothermal	193
Jumaeri, S.J. Santosa, Sutarno and E.Š. Kunarti	198

Mangrove Tannin (<i>Rhizophora apiculata</i>) Complexes with Copper (II) Ion as an Antifoulant in Antifouling Paint for Fish Net	
A. Achmad, J. Kassim, A.U. Ghafli and H. Hamdan	204
Development of Natural Bio-Plantation Waste as Pulp for Paper Making G.T. Ng and C.K. Ng	209
Sugarcane Bagasse as the Potential Agro-Waste Resource for the Immobilization of Lactobacillus rhamnosus NRRL 442 S. Shaharuddin, S.I. Abd Razak and I.I. Muhamad	214
Equilibrium and Kinetic Studies of Benzene and Toluene Adsorption onto Microwave Irradiated-Coconut Shell Activated Carbon N.S. Nasri, J. Mohammed, M.A. Ahmad Zaini, U.D. Hamza, H. Mohd. Zain and F.N. Ani	219
Kinetics of CO ₂ Adsorption on Microwave Palm Shell Activated Carbon N.S. Nasri, U.D. Hamza, N.A. Saidina Amin, J. Mohammed, M.M. Ahmed and H. Mohd Zain	224
The Structural Application of Bio-Composites: A Comparison of Mechanical Properties between Bio-Composites and Glass Reinforced Composites Z.A. Rasid	229
Chapter 4: Machinery in Area of Manufacturing and Processing of Materials, Construction Technologies and Materials	
Automatic Alarm of Tobacco Blending Accuracy Based on PLC Control System Y.Y. Cao, L.G. Cui and X.G. He	237
Embodied Carbon Potential of Conventional Construction Materials Used in Typical Malaysian Single Storey Low Cost House Using Building Information Modeling (BIM) S.S.S. Gardezi, N. Shafiq, N.A.W.A. Zawawi and S.A. Farhan	242
Comparative Study on Seismic Response of Reinforced Concrete Frames with SMA in Column and Beam Plastic Hinge Zones M. Omar	247
Assessment of Connection Arrangement of Built-Up Cold-Formed Steel Section under Axial Compression	
F. Muftah, M.S.H. Mohd Sani, M.F. Muda and S. Mohammad The Correlation between Variations of Pressure against Temperature Distribution in	252
Supersonic Subsea Compact Wet-Gas Separators M.F.A. Ahmad and F.M. Mohd Hashim	258
Experimental Study of a Piezoelectric Rain Energy Harvester V.K. Wong, J.H. Ho and E.H. Yap	263
Development of Grounding Device to Reduce Current Variation in Submerged Arc Welding Process for Pressure Vessel Fabrication S. Rajsiri, K. Penpondee and S. Tuntawiroon	268
Workability of Self-Compacting Concrete Using Blended Waste Materials B.H. Nagaratnam, M.E. Rahman, A.K. Mirasa and M.A. Mannan	273
Structural Response of Offshore Blast Walls under Accidental Explosion S.A. Rahman, Z.I. Syed, J.V. Kurian and M.S. Liew	278