

Table of Contents

Preface and Organizing Committee

Chapter 1: Ceramics and Composites

Effect of Surface Modification on Rice Husk (RH)/Linear Low Density Polyethylene (LLDPE) Composites under Various Loading Rates	3
N.S. Abdul Wahab, M.F. OMAR, H. Md Akil, Z.A. Ahmad and N.Z. Noimam	
Effect of Sintering Temperature on CuO Doped Barium Zinc Tantalate (BZT) Dielectric Properties	8
J. Hidayani, Z.A. Ahmad and M.F. Ain	
Titania (TiO_2) as Antibacterial Material in Ceramic Tiles: Effect of Composition	14
H. Mohamad, F.H. Shian and A.K.F. Mokhtar	
Improvement of Porous Porcelain through Glaze Coating	19
A.R. Jamaludin, S.R. Kasim, M.Z. Abdullah and Z.A. Ahmad	
The Effect of Boron Oxide on Phosphate Ion Released from Borosilicate Glass in Seawater	24
N.F. Yusof, K.H. Ku Bulat, N.A. Badarulzaman and M.A.A. Muhamad Nor	
Effect of Fe_2O_3 Contents on the Ions Release from Phosphate-Based Glass	29
M.A.A. Muhamad Nor and S.H. Mohamad	
Effect of Cr_2O_3-TiO_2 Addition on the Physical Properties of Zirconia Toughened Alumina	34
H. Manshor, A.W. Ramli, A.Z.A. Azhar, E.C. Abdullah and Z.A. Ahmad	
The Hardness Properties of Porcelain with Substitution of Quartz by Rice Husk Ash at Different Soaking Time	39
M.Z. Noh, H.U. Jamo and Z.A. Ahmad	
Synthesis and Characterization of Colorant Glass and Glass Ceramic from Non Stoichiometric Cordierite Composition with the Addition of Colorant Material at Different Temperature	44
N. Abdullah, B. Johar and Z.A. Ahmad	
Synthesis and Structural Characterization of $La_{0.8}Sr_{0.2}MO_3$ (M=Mn, Fe, Co and Cr) Solid Ionic Material for Catalyst Application	48
M.N. Azri Aziz, B. Johar, S.F. Khor and Z.A. Ahmad	
Effect of Glass Addition on the Properties of $CaCu_3Ti_4O_{12}$ Ceramics	52
J.J. Mohamed, M.F. Ab Rahman, M.F. Ain and Z.A. Ahmad	
Role of $Ce_2Zr_3O_{10}$ Phase on the Microstructure and Fracture Toughness of ZTA Composites	57
N.A. Rejab, Z.D.I. Sktani, A. Mohd Ali and Z.A. Ahmad	
Effect of Sintering Temperatures on Sr-Doped NiO Ceramics	61
N.N. Mohd Salim, J.J. Mohamed and Z.A. Ahmad	
Synthesis and Characterization of PZT Doped Lanthanum, Neodymium and Yttrium Using Sol Gel Method	66
A.A. Jamil, B. Johar, S.F. Khor and Z.A. Ahmad	
Preparation and Characterization of Porous Cordierite for Catalyst Support Application	71
E.K. Kok, B. Johar, S.F. Khor and Z.A. Ahmad	
Preparation and Characterization of Hydrophobic Ceramic Foam	77
N.S. Suparman, K. Ahmad Alwi and M.A.A. Muhamad Nor	
Effect of Titania and Magnesia on the Physical Properties of Zirconia Toughened Alumina	82
H. Manshor, W.M.I. Wan Sabri, A.W. Ramli, A.Z.A. Azhar, E.C. Abdullah and Z.A. Ahmad	
Synthesize CCTO Using Different Mixing Media	87
R.A. Zaman, M.J. bin Abu, S. Abdul Karim, J.J. Mohamed, M.F. Ain and Z.A. Ahmad	
Mechanical and Morphological Properties of Meranti Wood Flour Filled Polypropylene Composites	91
M.B. Abu Bakar, M.N. Masri, M.H. Mohamad Amini, M. Mohamed, M.A. Sulaiman, N.A.A. Nik Yusuf, M.Z.A. Thirmizir and Z.A. Mohd Ishak	

Preparation of Nickel Oxide-Samarium-Doped Ceria Carbonate Composite Anode Powders by Using High-Energy Ball Milling for Low-Temperature Solid Oxide Fuel Cells	97
N.K. Hoa, H.A. Rahman and M. Rao Somalu	
Effect of Alkaline Treatment on Sawdust Reinforced High Density Polyethylene Composite under Wide Strain Rate	103
H. Jaya, M.F. OMAR, H. Md Akil, Z.A. Ahmad and N.N. Zulkepli	
Effect of Urea Formaldehyde Addition to the Dimensional Stability of Particle Board Made Using Glutardialdehyde Modified Corn Starch as Binder with FT-IR Analysis	108
M.H. Mohamad Amini, R. Hashim, N.S. Sulaiman, S. Hiziroglu, O. Sulaiman, M. Mohamed, S.N. Sarmin, M.N. Masri, M.A. Sulaiman and M.B. Abu Bakar	
Study on the Potential of Kaolinitic Clay from Perak State, Malaysia for Aluminosilicate Ceramic Ball	112
H. Yahya, M.R. Othman and Z.A. Ahmad	
Optical Properties Changes of Ternary Glasses: Gamma Irradiation Effect	118
A. Amat, H. Mohamed Kamari, C.A. Che Abdullah, M. Ishak, I.S. Mustafa and S. Abdul Aziz	
Preliminary Identification of Silantek Clay as Potential Refractory	124
H. Selvi, J. Bujang and Z.A. Ahmad	
Crystallite Size Measurement of Doped CaCu_{2.8}Co_{0.2}Ti₄O₁₂ Ceramic Samples Using Various Method	131
B. Johar and Z.A. Ahmad	

Chapter 2: Materials for Biomedical Engineering, Biotechnologies

Effect of Current Density on Anodised Titanium in Sulphuric Acid for Biomedical Application	141
M.A. Selimin, M.I. Idris and H.Z. Abdullah	
Effects of Pre-Treatment Durations on Properties of Black Tilapia (<i>Oreochromis mossambicus</i>) Skin Gelatin	146
K. SOCKALINGAM, H. Nelson, M.I. Idris and H.Z. Abdullah	
Influence of Calcination Temperature on the Microstructure and Crystallographic Properties of Hydroxyapatite from Black Tilapia Fish Scale	151
A.N.K. Ahmad Fara and H.Z. Abdullah	
Effect of Stirring and Aging Time on the Formation of β-Tricalcium Phosphate (β-TCP) Powder	156
S.R. Kasim, S.N.F. Mohd Noor and Z.A. Ahmad	
Effect of Ultrasonic Amplitude on Surface Properties of Anodised Titanium for Biomedical Application	160
T.C. Lee, M.H.H. Mazlan, M.I. Abbas, H.Z. Abdullah and M.I. Idris	
Effects of Hydrochloric Acid Concentration on the Properties of Black Tilapia Fish Skin Gelatin	165
N. Ismail and H.Z. Abdullah	
Characterisation and Wettability Properties of Anodised Titanium in Sulphuric Acid for Biomedical Application	170
M.A. Selimin, M.I. Idris and H.Z. Abdullah	
Effect of Bath Temperature on Surface Properties of Anodised Titanium for Biomedical Application	175
T.C. Lee, M.H.H. Mazlan, M.I. Abbas, H.Z. Abdullah and M.I. Idris	
Why a Comprehensive Physical Characterization Effort of Microdialysis Membranes is Imperative for Computational Mass Transfer Studies?	180
N.S. Abdullah, K.C. Min, Z.A. Ahmad and E.A.R. Siti Kartini	
On Using Factorial Fractional Design to Fabricate Porous Alumina Scaffolds for Bone Tissue Engineering (BTE)	185
N.S. Shahabudin, Z.A. Ahmad and N.S. Abdullah	
Modification of Rubber Particles and Ceramic Fillers on PMMA Denture Base Materials	191
A.O. Alhareb, H. Md Akil and Z.A. Ahmad	
The Formation of Cobalt Chromium Molybdenum (CoCrMo) Foams Fabricated by Slurry Method	197
S. Ahmad, M. Rosli, N.S. Abdul Manaf, M.F. Muhammad Rafter and F. Mat Noor	

Effect of Using Different Compositions and PU Foam Template to Produce Cobalt Chromium Molybdenum (CoCrMo) Foams N.S. Abdul Manaf, S. Ahmad and R. Ibrahim	202
Characterization of Cordierite Glass with the Addition Colorant Ceramic Glaze for FIR Therapy L. Yi Xuan, B. Johar and Z.A. Ahmad	207
Characterization of Fatty Acid Coated Polymer/Nucleotide Droplets C.R.C. Hak, S. Koga, T.Y.D. Tang and S. Mann	213
Preparation of Bioactive Titanium Film via Anodic Oxidation in Agitation Condition T.C. Lee, M.H.H. Mazlan, M.I. Abbas, H.Z. Abdullah and M.I. Idris	220
Investigation of Surface Properties of Titanium Treated with Combined Alkali and Sodium Removal Treatments K.J. Tan, M.I. Idris and H.Z. Abdullah	225
Characterization of 316L Stainless Steel Foams for Biomedical Applications Z. Abdullah, S. Ahmad and M.F. Muhammad Rafter	231
Compression Strength of Gellan Gum Hydrogel Incorporated with Organo-Montmorillonite and Cloisite 15A S. Syazwani Mohd, M.A.A. Abdullah and K.A. Mat Amin	236
Optimization and Characterization of Anatase Formed on Anodized Titanium in Phosphoric Acid S.S. Saleh and H.Z. Abdullah	240

Chapter 3: Nanomaterials and Nanotechnology, Materials for Electronics

Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}-SDC Carbonate Composite Cathode for Low-Temperature SOFCs L. Agun, M.H. Ahmad Shah, S. Ahmad and H.A. Rahman	247
Growth of Nanostructured ZnO Nanosheet on ITO/PET Substrate Prepared via Sol Gel Spin Coating and Hot Water Treatment I.L.K. Kamardin, M. Ngah, A.F. Ahmad Fuad, M.H. Harun and A. Ainun Rahmahwati	252
Morphology, Thermal and Chemical Properties of Nanocrystalline Cellulose (NCC) Hydrolyzed from Banana Stem S.N. Kasa, M.F. OMAR and I. Nizam	257
Effect of Temperature on TiO₂/ZnO Nanostructure Thin Films N.S. Zulkiflee and R. Hussin	262
Effect of Citrate Concentration on Colloidal Gold (Au) Nanoparticles Produced Using Electro-Dissolution-Reduction Method H. Haiza, I. Yaacob and A.Z.A. Azhar	267
Electrochemical Synthesis and Characterisation of BiTe-Based Nanowire Arrays as Thermoelectric Nanogenerators K.Y. Kok, I.K. Ng, T.F. Choo, N.U. Saidin and Y. Abdullah	271
Phase Evolution of Yttrium Iron Garnet (YIG) Made by Solid State Sintering: Particle Size Effect W.F.F. Wan Ali, N.S. Abdullah, M.F. Ain and Z.A. Ahmad	276
Effects of Neutron and Electron Irradiation on 4H-SiC Diodes Y. Abdullah, C.R.C. Hak, M.H.A.R. Megat Ahmad, N.F. Hasbullah, M.R. Yusof, S. Mahat and N. Ee Abdullah	281

Chapter 4: Materials and Technologies for Mechanical Engineering

Physical Properties of 316L Stainless Steel (SS316L) Foam with Different Composition by Using Compaction Method M.F. Muhammad Rafter, S. Ahmad and R. Ibrahim	289
Optimization Processing Parameter of 6061-T6 Alloy Friction Stir Welded Using Taguchi Technique M.H. Mohd Hanapi, Z. Hussain, I.P. Almanar and A. Abu Seman	294

Study on the Reduction Behavior of Molybdenum Oxide (MoO_3) in Carbon Monoxide (CO) Atmosphere

A. Samsuri, T.S. Tengku Saharuddin, F. Salleh, R. Othaman, M.W. Mohamed Hisham and M.A. Yarmo

299

Reduction Behaviour of WO_3 to W under Carbon Monoxide Atmosphere

F. Salleh, T.S. Tengku Saharuddin, A. Samsuri, R. Othaman, M.W. Mohamed Hisham and M.A. Yarmo

305

Effects of Soil Physical Properties to the Corrosion of Underground Pipelines

S.R. Ahmad Saupi, N.A.H. Abdul Haris, M.N. Masri, M.A. Sulaiman, M.B. Abu Bakar, M.H. Mohamad Amini, M. Mohamed and N.A.A. Nik Yusuf

309

The Cutting Speed Influences on Tool Wear of ZTA Ceramic Cutting Tools and Surface Roughness of Work Material Stainless Steel 316L during High Speed Machining

A. Mohd Ali, N.S. Abdullah, M. Ratnam and Z.A. Ahmad

315

Production of Stainless Steel 316L Foam with Different Solid Loading

F. Mat Noor, K.R. Jamaludin and S. Ahmad

321

Effect of NaNO_3 as Enhancer on $\text{YBa}_2\text{Cu}_4\text{O}_8$ Superconductor Phase Formation via Solid State Technique with Heating at Ordinary Oxygen Pressure

C.M. Cheong, N. Ismail, N.A. Mohd Sarip, N.H. Hamzah, N.A.A. Ruzman, S.K. Chen and A.H. Shaari

326

Characterisation of WC-17Co and WC-9Ni HVOF Sprayed Cermet Coatings

N.A. Mohd Rabani and Z. Kamdi

331

Corrosion Study of SAC305 Solder in Acidic Solution

N. Mohd Zaini and M.F. Mohd Nazeri

336

Chapter 5: Materials and Technologies for Chemical Engineering

Studies on Adsorption-Desorption of CO_2 by Long Chain Fatty Amine Supported on SiO_2

M.N. Abu Tahari, A. Hakim, T.S. Marliza, W.N.R. Wan Isahak, M.W. Mohamed Hisham and M.A. Yarmo

343

Preparation of Activated Carbon from Walnut Shell Doped La and Ca Catalyst for Biodiesel Production from Waste Cooking Oil

A.G. Alsultan, A. Mijan and Y.H. Taufiq-Yap

348

Synthesis and Characterization of Silica-Alumina Supported Ca and Ni Catalyst for Deoxygenation of Vegetable Oil into Diesel

N.A. Mijan, H.V. Lee, A.G. Alsultan and Y.H. Taufiq-Yap

353

Synthesis of Aluminium Hydroxide and Alumina by Hydrothermal and Solvothermal Methods

M.Y. Meor Sulaiman, K. Mohamed Takip, N.A. Sapiee and A.K. Zahari

359

Preliminary Studies on Acid Leaching of Finely-Ground Malaysian Low Grade Manganese Ore (LGMO)

M.F.H. Mohd Rozali, N. Nasir, S. Ismail and N.S. Abdullah

364

Synthesis of Polymethylvinylsiloxane from Several Silicon Compounds Followed by FTIR and NMR Techniques

S.S. Jikan, S.I. Danlami and N.A. Badarulzaman

369

In Situ XRD Study of Zirconia Phase Transformation Produced from Chemical and Mineral Processes

M.Y. Meor Sulaiman, K. Mohamed Takip and A.K. Zahari

375

The Reduction Behaviour of Cerium Doped Iron Oxide in Hydrogen and Carbon Monoxide Atmosphere

T.S. Tengku Saharuddin, A. Samsuri, F. Salleh, R. Othaman, M. Kassim, M.W. Mohamed Hisham and M.A. Yarmo

381

Chapter 6: Waste Recycling and Environmental Engineering

Sago Pith Waste Ash as a New Alternative Raw Materials from Agricultural Waste

M.R. Mohamed Rashid, M.A. Megat Johari and Z.A. Ahmad

389

Waste Banana Peel and its Potentialization in Agricultural Applications: Morphology Overview	
N.A.A. Nik Yusuf, E.S. Rosly, M. Mohamed, M.B. Abu Bakar, M. Yusoff, M.A. Sulaiman and M.I. Ahmad	394
Chemical, Thermal and Phase Analysis of Malaysia's Electric Arc Furnace (EAF) Slag Waste	
P.T. Teo, A.S. Anasyida, P. Basu and N. Mohd Sharif	399
Immobilization and Characterizations of Imidazolium-Based Ionic Liquid on Silica for CO₂ Adsorption/Desorption Studies	
T.S.M. Tengku Azmi, M.A. Yarmo, A. Hakim, M.N. Abu Tahari and Y.H. Taufiq-Yap	404
Standardless EDXRF Analysis Methods of U and Th in Malaysian Tin Slag Waste	
M.Y. Meor Sulaiman, N.S. Kamaruzaman and A.K. Zahari	410
CTAB-Assisted Precipitation Synthesis of Ca(OH)₂ Sorbent for CO₂ Captures	
F.D. Mohd Daud, S. Sreekantan and A.R. Mohamed	416
Development of α-Fe₂O₃ as Adsorbent and its Effect on CO₂ Capture	
A. Hakim, T.S. Marliza, M.N. Abu Tahari, M.R. Yusop, M.W. Mohamed Hisham and M.A. Yarmo	421
Potential of Fabricated Light Foamed Concrete in Reducing Radon from Building Material	
S.A. Saidi, M.S. Jaafar, M.K.A.A. Razab, M.S. Mat Rasat, M.I. Ahmad, M. Mohamed, S. Mamat and H. Hussin	427
Treatment of Oily Waste Using Activated Carbon from Agriculture Waste	
W.K. Koo, M.A. Sulaiman, N.S. Subki, M. Mohamed, M.N. Masri, M.B. Abu Bakar, M.H. Mohamad Amini and N.A.A. Nik Yusuf	432