

Table of Contents

Preface

Chapter 1: Using of Geopolymers and Pozzolanic Materials

An Application of Rice Husk Ash (RHA) and Calcium Carbonate (CaCO_3) as Material for Self-Healing Cement

J.J. Ekaputri, F.F. Alrizal, I. Husein, Triwulan and M.M. Al Bakri Abdullah 3

Treated Oil Palm Ash as Precursor in the Zeolite Synthesis

F.C. Pa, A. Chik and M.F. Bari 13

Strength, Density and Water Absorption of Palm Oil Boiler Ash (POBA) Geopolymer Brick/IBS Brick

Y. Zarina, K. Husin, M.M. Al Bakri Abdullah, K.N. Ismail and R. Abd Razak 21

Performances of Artificial Lightweight Geopolymer Aggregate (ALGA) in OPC Concrete

R. Abd Razak, A.M.M. Al Bakri, K. Hussin, K.N. Ismail, D. Hardjito and Y. Zarina 29

Effect of Silica Fume and Glass Powder on High-Strength Paste

H. Limantono, J.J. Ekaputri and T.E. Susanto 37

Adhesiveness of Kaolin Based Coating Material on Lumber Wood

S. Ramasamy, K. Hussin, A.M.M. Al Bakri, C.M.R. Ghazali, A.V. Sandu, M. Binussain and N.F. Shahedan 47

Effect of Mixing Technique on Epoxy Resin Nanocomposites Filled Fly Ash Based Geopolymer to Compressive Properties

Y. Mat Daud, K. Hussin, C.M.R. Ghazali, A.F. Osman, A.M.M. Al Bakri and M. bin Hussain 55

Flexural and Crack Analysis of Oil Palm Clinker in Lightweight Reinforced Concrete Beams

R. Kamaruddin, M.M.A.B. Abdullah and M.F. Mohd Tahir 65

Experimental Test and Non-Linear Finite Element Modeling Prediction on Profiled Steel Sheet Dry Board (PSSDB) with Geopolymer Concrete Infill

M.I. Jaffar, W.H. Wan Badaruzzaman, A.M.M. Al Bakri and S. Baharom 75

Effect of PVA Fiber in Increasing Mechanical Strength on Paste Containing Glass Powder

J.J. Ekaputri, H. Limantono, Triwulan, T.E. Susanto and M.M. Al Bakri Abdullah 83

The Usage of Glass Waste as Cement Replacement

A.A. Kadir, M.R. Ismail, A.M.M. Al Bakri, N.A. Sarani and M.I.H. Hassan 95

Chapter 2: Polymers and Composites

Optimization of Holding Time on Microwave Irradiation of the Composite Iron-Chromium Reinforced with Alumina Particle

W. Rahman, J.B. Shamsul and M. Mohd Noor 107

Mechanical and Microstructure Characterization of Aluminium-Copper (Al-Cu) Reinforced with *In Situ* Titanium Diboride (TiB_2)

R. Rosmamuhamedani, S. Sulaiman, A.H. Mohamed Ariff, M.I.S. Ismail and M. Talari 117

Thermal and Mechanical Characterizations of Nanoclay/Palm Oil Polyol Based Polyurethane Composites

S.A. Zubir, S.A. Ernie and S. Ahmad 127

The Effects on Cure Characteristics, Physico-Mechanical Properties and Morphology of Bamboo Activated Carbon Filled Styrene Butadiene Rubber (SBR) Vulcanizates

N.R. Munirah, N.Z. Noriman, M.S. Zakaria, H. Kamaruddin, M.H. Fatin, S.S. Ting, A.M. Mustafa Al Bakri and H. Rosniza 131

Collapsed Mode and Specific Energy Absorption of Glass Filled Polypropylene (GPE) and Glass Filled Polyethylene (GPP) Composite Pipes under Quasi-Static Axial Loading

H.H. Ya and H. El-Sobky 141

Properties of Natural Rubber/Styrene Butadiene Rubber/Recycled Nitrile Glove

(NR/SBR/rNBRg) Blends: The Effects of Recycled Nitrile Glove (rNBRg) Particle Sizes

N.Z. Nik Yahya, N.N. Zulkepli, H. Ismail, S.S. Ting, M.M.A.B. Abdullah, H. Kamarudin and R. Hamzah 151

Synthesis of 60 (wt.)%SiO₂-40 (wt.)%CaO Sol-Gel Derived Glass-Ceramic and <i>In Vitro</i> Bioactivity Assessment in SBF Solution	161
S.A. Syed Nuzul Fadzli, S. Roslinda and F. Zainuddin	
Characterization of Linear Low Density Polyethylene/Rambutan Peels Flour Blends: Effect of Loading Content	171
A.A. Nadhirah, S.S. Ting, N.Z. Noriman, A.M.M. Al Bakri, M.F. OMAR and H. Kamarudin	

Chapter 3: Green Technologies in Chemical Engineering

Precipitated Silica Derived from Palm Oil Mill Fly Ash: Kinetics and Characterization	183
P.S. Utama, R. Yamsaengsung and C. Sangwichien	
Screening of Total Phenolic Content of Antioxidant Thin Film from Pomelo (<i>Citrus grandis</i>) Peel	193
R. Abdullah, N.S. Aina Arshad, Z. Zakaria, S.S. Ting and L.B. Beng	
Pyrolysis of Rice Straw by Using Microwave Irradiation with Quartz Glass Reactor	203
K. Azduwin, Z. Zarina, M.J.M. Ridzuan and A.A. Ahmad	
The Utilization of Coconut Fibre into Fired Clay Brick	213
A.A. Kadir, S.N. Mohd Zulkifly, A.M.M. Al Bakri and N.A. Sarani	