

Table of Contents

Preface and Organization

Chapter 1: Aggregate

| | |
|---|----|
| Effects of Lightweight Aggregate Size and Grading on the Residual Strength of Lightweight Geopolymer Concrete Exposed to Elevated Temperature O.A. Abdulkareem, M.M. Al Bakri Abdullah, K. Hussin and K.N. Ismail | 3 |
| Properties of Lightweight Bubbles Aggregate (LBA) for the Replacement of Coarse Aggregates in Concrete N.M. Ibrahim, L.Q. Wen, R. Che Amat, T. Abdul Majid, N.L. Rahim and S. Shamsuddin | 11 |
| Utilization of Recycled Glass Waste as Partial Replacement of Fine Aggregate in Concrete Production N.L. Rahim, R. Che Amat, N.M. Ibrahim, S. Salehuddin, S.A. Mohammed and M. Abdul Rahim | 16 |
| Compressive Strength of Concrete with Recycled Glass as Partial Aggregate Replacement R. Hamid and M.A. Zubir | 21 |

Chapter 2: Geopolymer Technology

| | |
|--|-----|
| Production of Fiber Glass Reinforced Geopolymer Composite Pipe M.F. Abu Hashim, M.M. Al Bakri Abdullah, C.M.R. Ghazali, H. Kamarudin and M.F. Mohd Tahir | 29 |
| Review on Development of Clay Based Geopolymer Ceramic Composites R. Ahmad, A.M.M. Al Bakri and J. Nur Ain | 37 |
| Effect of Particle Size on Properties of Sidoarjo Mud-Based Geopolymer Antoni, D. Wiyono, A. Vianthi, P. Putra, G. Kartadinata and D. Hardjito | 44 |
| Mechanical Properties of MIRHA-Fly Ash Geopolymer Concrete R. Bayuaji, M.F. Nuruddin, S. Francis, J.J. Ekaputri, Triwulan, S. Junaedi and H. Fansuri | 49 |
| Epoxy Layered-Silicates Filled with Fly Ash Based Geopolymer: Compressive Properties D. Yusrina Mat, H. Kamarudin, C.M. Ruzaidi, A.F. Osman and M. Al-Bakri | 58 |
| Light Weight Geopolymer Paste Made with Sidoarjo Mud (Lusi) J.J. Ekaputri, Triwulan, S. Junaedi, H. Fansuri and R.B. Aji | 63 |
| Kinetics of Geopolymer Solidification Study Using Texture Analyzer N.H. Zamri, L. Ismail, R.H. Abdul Rahim, A.A. Siyal, Z. Man and K.A. Azizli | 75 |
| Reviews on Clay Geopolymer Ceramic Using Powder Metallurgy Method N.A. Jaya, M.M. Al Bakri Abdullah and R. Ahmad | 81 |
| Effect of Alkaline Activators Concentration to the Strength and Morphological Properties of Wastepaper-Based Geopolymer Mortars A.R.M. Ridzuan, A.A. Khairulniza, M.A. Fadzil and J. Nurliza | 88 |
| Hybridization Effect of Kaolin and Calcium Carbonate on Tensile and Thermal Properties of Compatibilized Polypropylene Composites M.T.M. Faheem, M.M. Safwan and A.M.M. Al Bakri | 93 |
| Properties of Self-Compacting Geopolymer Concrete M.F. Nuruddin and F.A. Memon | 99 |
| Properties of Geopolymer Concrete from Local Fly Ash (FA) and Palm Oil Fuel Ash (POFA) M. Olivia, A. Kamaldi, I.R. Sitompul, I. Diyanto and E. Saputra | 110 |
| Investigation on the Degree of Reaction and Strength Performance of Fly Ash Based Geopolymer Binder with Alternative Chemical Reagents N. Rahman and A. Kusbiantoro | 115 |
| Effect of Solid/Liquid Ratio during Curing Time Fly Ash Based Geopolymer on Mechanical Property T. Rahmiati, K.A. Azizli, Z. Man, L. Ismail and M.F. Nuruddin | 120 |

| | |
|---|-----|
| The Influence of Alkali Activator Concentration to Mechanical Properties of Geopolymer Concrete with Trass as a Filler P. Risdanareni, J.J. Ekaputri and Triwulan | 125 |
| Characterization of Soils as Potential Raw Materials for Soil Stabilization Application Using Geopolymerization Method S.Z.S. Zaliha, A.M.M. Al Bakri, H. Kamarudin and A. Fauziah | 135 |
| Fundamentals of Geopolymers and Related Alkali Activated Materials J. Temuujin, A. Minjigmaa, U. Bayarzul, T. Zolzaya, B. Davaabal and J. Amgalan | 144 |
| Lightweight Geopolymer Binder Base on Sidoarjo Mud Triwulan, J.J. Ekaputri and C. Huda | 148 |
| Rheology of High Volume Sidoarjo Mud Mortar T.H. Widodo, L. Chandra, Antoni and D. Hardjito | 160 |
| The Relationship between Water Absorption and Porosity for Geopolymer Paste Z.F. Farhana, H. Kamarudin, A. Rahmat and A.M.M. Al Bakri | 166 |
| Effect of NaOH Concentration on Microstructure of Boiler Ash Based Geopolymer Y. Zarina, A.M.M. Al Bakri, H. Kamarudin, I. Khairul Nizar and R. Abd Razak | 173 |
| Comparison of Using NaOH and KOH Activated Fly Ash-Based Geopolymer on the Mechanical Properties R.H. Abdul Rahim, T. Rahmiati, K.A. Azizli, Z. Man, M.F. Nuruddin and L. Ismail | 179 |
| Effect of Sodium Silicate Types on the High Calcium Geopolymer Concrete A.R.M. Ridzuan, A.A. Khairulniza and M.F. Arshad | 185 |
| The Effect of NaOH Concentration and Curing Condition to the Strength and Shrinkage Performance of Recycled Geopolymer Concrete A.R.M. Ridzuan, M.M. Al Bakri Abdullah, M.F. Arshad, M.F. Mohd Tahir and A.A. Khairulniza | 194 |

Chapter 3: Green Materials

| | |
|--|-----|
| Physical and Mechanical Properties of Fired Clay Brick Incorporating with Mosaic Sludge Waste A.S. Abdul Rahim and A. binti Abdul Kadir | 203 |
| Study on Quenching and Artificial Ageing on Al-Si Alloy D. Achîţei, A.V. Sandhu, M.M.A.B. Abdullah, P. Vizureanu and H. Kamarudin | 209 |
| The Experimental Determination of the Friction Stress between the Semi-Product and the Active Plate at the Multiaxial Forging of Copper A. Cazac, M.M. Al Bakri Abdullah, C. Predescu, A.V. Sandhu and C. Bejinariu | 216 |
| Effect of Metakaolin on the Strength and Pore Size Distribution of Concrete Z. Hashim and R. Hamid | 222 |
| The Effect of Silicon Nitride Addition on Microstructure and Microhardness of SN100C Solder Alloy Using Powder Metallurgy M.I.I. Ramli, N. Saud, M.A.A. Mohd Salleh, M. Nazree Derman, R. Mohd Said and N. Nasir | 228 |
| Leachability of Fired Clay Brick Incorporating with Sludge Waste from Mosaic Industry A.A. Kadir, H.H. Jamil and A.S. Abdul Rahim | 233 |
| Development of Low Cost Sn-0.7Cu Base Composite Solder for High Temperature Application Z. Mahim, N. Saud and N.R.A. Razak | 239 |
| Comparison between Thermal Interface Materials Made of Nano Carbon Tube (NCT) with Gad Pad 2500 in Term of Junction Temperature by Using CFD Software, FluentTM M. Mohamed, A.M.M. Al Bakri, R. Wahab, A.K. Zulhisyam, M.R. Mohd Sukhairi, M.H.M. Amini and A. Mohammad Amizi | 243 |
| Thermal Properties of Polypropylene/Palm Kernel Shell Biocomposites: Effects of Amino Silane (APTÉS) M.S. Mohamed Omar, H.L. Ong, H.M. Akil, N.A. Nik Nur Azza, M.M. Safwan and M.K.A. Sofiah | 250 |
| Effects of Electro Osmotic Consolidation in South West of Johor: Small Laboratory Scale K.N. Mohd Yusof, F. Ahmad, M.M.A.B. Abdullah and M.F. Mohd Tahir | 255 |
| Effect of Polypropylene-Methyl Polyhedral Oligomeric Silsesquioxane Compatibilizer in Polypropylene/Silica Nanocomposites: Mechanical, Morphological and Thermal Studies M.K.A. Sofiah, H.L. Ong, H.M. Akil and Z.A.M. Ishak | 265 |

| | |
|---|-----|
| Design of Experiment (DOE) of Powder Metallurgy Technique in Fabricating SnCu/Carbon Lead-Free Composite Solder with Different Mixing Parameters S.A. Musa and N. Saud | 269 |
| Effect of TiO₂ Reinforcement on Microstructure and Microhardness of Low-Silver SAC107 Lead-Free Solder Composite Solder N.M. Nasir, N. Saud, M.N.B. Derman, A.A.M. Salleh, M.I.I. Ramli and R.M. Said | 273 |
| Comparison of Linear Interpolation Method and Mean Method to Replace the Missing Values in Environmental Data Set N.M. Noor, M.M. Al Bakri Abdullah, A.S. Yahaya and N.A. Ramli | 278 |
| Effect of Organic Modification on Dynamic Compression Properties of Polypropylene/Muscovite Layered Silicate Composites M.F. Omar, H. Jaya, H.M. Akil, Z.A. Ahmad, M.F.A. Rasyid and N.Z. Noriman | 282 |
| Properties of Concrete with Different Percentage of the Rice Husk Ash (RHA) as Partial Cement Replacement M. Abdul Rahim, N.M. Ibrahim, Z. Idris, Z.M. Ghazaly, S. Shahidan, N.L. Rahim, L.A. Sofri and N.F. Isa | 288 |
| An Innovation of the Palm Oil Based Wax as Industrial Wax for Machining Prototype Sustainable Products B. Rajamony and Z. Mohd Zain | 294 |
| Treatment Method for Dispersion of Carbon Nanotubes: A Review S.A. Adnan, M.A. Nur Azni, F. Zainuddin, M.A. Hazizan, M.S. Siti Shuhadah and H.A. Sahrim | 299 |
| Hybrid Microwave-Assisted Rapid Sintering Process for Fabrication of Sn-0.7Cu+1.0wt.%Si₃N₄ Composite Solder F. Somidin, N. Saud and M.A.A. Mohd Salleh | 305 |
| Investigation of Epoxidized Natural Rubber (ENR 50) as a Compatibilizer on Cogon Grass Filled Low Density Polyethylene/Soya Spent Flour S.S. Ting, N. Hani, H. Ismail, N. Noriman and S. Raganathan | 310 |
| Investigation of Noise Reduction Coefficient of Organic Material as Indoor Noise Reduction Panel T.N. Tengku Izhar, L.M. Deraman, W.N. Ibrahim and N.A. Lutpi | 317 |
| The Flexural Properties of Reinforced Recycled Glass Concrete Beam R. Hamid and M.A. Zubir | 325 |
| Testing on Building Material Using Waste Material in Fired Clay Brick A.A. Kadir, N.A. Sarani and A.M. Leman | 330 |
| Simulation of Nano Carbon Tube (NCT) in Thermal Interface Material for Electronic Packaging Application by Using CFD Software M. Mohamed, A.M.M. Al Bakri, R. Wahab, A.K. Zulhisyam, A.M. Iqbal, M.H.M. Amini and A.A. Mohammad | 337 |
| Effect of Surface Modification on Strain Rate Sensitivity of Polypropylene/Muscovite Layered Silicate Composites M.F. OMAR, N.S. Abd Wahab, H.M. Akil, Z.A. Ahmad, M.F.A. Rasyid and N.Z. Noriman | 343 |
| Tensile Properties of Linear Low Density Polyethylene/Rambutan Peels (<i>Nephelium chryseum</i> Blum.) Flour Blends A.A. Nadhirah, S.S. Ting, N.Z. Noriman, C.H. Voon and S.S. Samera | 348 |

Chapter 4: Coating

| | |
|---|-----|
| The Effect of Si/Al Ratio and Sodium Silicate on the Mechanical Properties of Fly Ash Based Geopolymer for Coating A. Asif, Z. Man, K.A. Mohd Azizli, M.F. Nuruddin and L. Ismail | 355 |
| Microstructure Study on Cuprous Oxide Thin Films Deposited on <i>n</i>-Si Substrate via Sol-Gel Spin Coating Technique D.S. Che Halin, N. Saud and H. Haroon | 362 |
| Geopolymer: A Review on Physical Properties of Inorganic Aluminosilicate Coating Materials N. Mazlan and M.N.M. Fariz | 367 |