

Table of Contents

No.	Description of Paper	Page No.
<u>Session A1</u>		
1	Synthesis and Thermo-physical Characterization of Graphene Based Transformer Oil C. P. Y. Alicia, W. Rashmi, M. Khalid and T.C.M.S. Gupta	1
2	Production of Activated Carbons Derived from Coffee Wastes for the Adsorption of CO₂ Gas K. K. Ang and X. Y. Rebecca Lim	13
3	Investigation of the Coffee Waste-Derived Adsorbent N. C. Yong, X. Y. Rebecca Lim and T. Lee	34
4	Effect of Alkaline Pre-treatment Conditions of Mesocarp Fiber on its Derived Biochar's Properties for DCFC Application K. S. Cheong, W. Y. Wong and V. Doshi	56
5	An Investigation on the Effect of rGO Compositing with NCNT and Fe-NCNT on the Oxygen Reduction Reaction via Physical Mixing Method W. Z. Chong, W. Y. Wong and R. Walvaker	67
<u>Session A2</u>		
1	Application of Intelligent Controller on Electromagnetic Actuated Microbot Mechanism K. Asokan, Y. Sabzehmeidani, M. T. Hajibeigy and C. P. Lee	82
2	Delivering Holistic Education in an Engineering Curriculum using Personalized Learning, Pedagogy, Technology and Space P. Y. Choong, K. T. Douglas Tong and A. S. M. Al-Obaidi	98
3	Optimization Modeling Process for Commercial CAD Software X. J. Deon Lee and Alexander Chee	122
4	Analytical and Experimental Analysis of Design Parameters of Double-Pipe Heat Exchanger - Develop Empirical Models R. K. Sivam and A. S. M. Al-Obaidi	136
5	Improving Energy Efficiency of a Wind Turbine N. Y. Lee, M. H. Fouladi and S. Namasivayam	151
<u>Session A3</u>		
1	Optimization of Process Variable for a Biosorption of Heavy Metal from Wastewater using Response Surface Methodology M. E. Ramli and R. Nithyanandam	163
2	Release Dynamic Study for Controlled-Released Fertilizer by Starch-Derivative-Alginate Based Formulation S. L. Tang, S. W. Phang, T. S. Lee, T. B. Soo, T. T. Tee	181

No.	Description of Paper	Page No.
3	Optimization of Hibiscus Sabdariffa as a Natural Coagulant to Treat Wastewater M. Y. Yong and N. Ismail	193
4	The Fundamental Study of Anti-Microbial Activity of Piper Betel Extract in Toothpaste A. Ali, X. Y. Rebecca Lim and P. F. Wahida	206
<u>Session A4</u>		
1	Densification Behaviour and Properties of Iron Oxide Doped Y-TZP Ceramics. S. Siva Kumar, H. L. Teow, S. Ramesh and A. Niakan	219
2	Education of Engineers for Sustainable Development – Localising the Global Agenda J. Arvi, S. Moganakrishnan, S. Namasivayam and N. Ismail	230
3	Cryogenic Liquefaction of Air as an Energy Storage: Numerical Study of Liquefaction and Power Recovery Process H. L. Yvonne Lim, M. Al-Atabi and R. A. Williams	248
4	Influence of Manganese Dioxide Dopants on the Microstructure and Mechanical Properties of Yttria Stabilized Zirconia F. D. Chong, C. Y. Tan and S. Ramesh	260
5	Review of regenerator for Stirling Engine K. Y. Ng and C. H. Lim	270
6	A Preliminary Assessment of Malaysian Wood as Potential Material for Future Soundboards of Classical Guitars M. K. Lee, M. H. Fouladi and S. Namasivayam	281
<u>Session A5</u>		
1	Pretreatment of Rice Husk for Application as a Fuel Source in Direct Carbon Fuel Cells S. J. David Hoh, V. Doshi and W. Y. Wong	297
2	Palm Oil Methyl Ester as Phase Change Material Y. H. Lee, K. Shahbaz, R. Walvekar and M. Khalid	317
3	Enhancing the Enzymatic Reaction Rate in Synthetic Jet Mixer M. A. Bajandooh and M. Al-Atabi	337
4	The Fundamental Study on Solubility of Heavy Metal Oxides in Ammonium and Phosphonium based Deep Eutectic Solvents (DESS) S. Rajendran, K. Shahbaz and R. Walvekar	350
5	Stability and Characterization of CNT Nanofluids using Polyvinyl Alcohol Dispersant S. W. Tam, W. Rashmi, S. Rashidi, L. C. Abdullah and M. Khalid	365

No.	Description of Paper	Page No.
6	The Thermal Degradation Effect on Thermoplastic Starch (TPS) / Montmorillonite Nano-Clay (MMT) / Alumina Trihydrate (ATH) Nanocomposite Film S. N. Chan, S. W. Phang, T. S. Lee, T. B. Soo and T. T. Tee	380
<u>Session A6</u>		
1	Energy Harvesting from Human Vibrations L. H. Yong, M. H. Fouladi and S. Namasivayam	396
2	Non-Contact Vibration Sensor for Rotating Machines L. S. Chong and C. H. Lim	406
3	Development of an Optimisation Methodology for Air Conditioner Copper Tube Designs J. Ramalingam, C. H. Lim and K. H. Yap	420
4	Optimisation of a Gamma Type Stirling Engine S.L. Koay and C.H. Lim	438
5	Parametric Study of a Bias Two-Wheel Tire H. M. Tan and C. K. Thein	453
<u>Session A7</u>		
1	Synchronous Monitoring Adaptive Real Time (SMART) Analysis System for Energy Efficient Building K. K. Cheng and C. V. Aravind	466
2	A New Permanent Magnet Synchronous Machine for Small Battery Operated Vehicle W. H. Chong and C. V. Aravind	476
3	Design and Simulation of Harmonics Filter for PT Gajah Tunggal Tbk O. M. O. Basharahil, R. A. Gamboa and T. Ridwan	487
4	Generalized Design of New Electrical Machines Using Integrated Numerical Tool P. H. Huang and C. V. Aravind	502
5	Optical Wireless Communication System L. Y. Joshua Chieng and I. Hassan	513
<u>Session A8</u>		
1	Design of a Passive Parallel Leg Exoskeleton for Load Carrying Augmentation K. M. Chan and M. Al-Atabi	530
2	An Empirical Model for Forced Convection Condensation on Horizontal Integral Fin Tubes - Optimisation of Empirical Constants. Z. H. Ong, S. Namasivayam, A. Briggs and S. Sivanesan	543

No.	Description of Paper	Page No.
3	Analytical modelling of fibro-granular composite materials as sustainable acoustic absorber H. Mamtaz, M. H. Hosseini, M. Al-Atabi and S. Namasivayam	568
4	Hybrid VLC using Visible Light and Radio Frequency Spectrum C. H. Tan, C. M. Florence Chong and Y. D. Lin	584
5	Edge Detection of the Scoliotic Vertebrae using X-Ray Images P. Mohankumar & W. Y. Leong	600
6	3D Modelling with CT and MRI Images of a Scoliotic Vertebrae P. Mohankumar & W. Y. Leong	610
<u>Session B1</u>		
1	Preliminary Study of Mechanical Properties in Thermoplastic Starch (TPS) / Coffee-Waste-Derived Fillers Composites Y.M. Chan, S.W. Phang, T.T. Tee, T.S. Lee and T.B. Soo	618
2	Preparation and Characterization of Plasticized Polylactic Acid/Microcrystalline Cellulose Composite. W. K. Len, M. M. Pang and K. Y. Tshai	632
3	Mechanical and Rheological Properties Investigation on Thermoplastic Starch (TPS)/Montmorillonite Nano-Clay (MMT)/Alumina Trihydrate (ATH) Nanocomposites Film J. W. Ho, S. W. Phang, T. S. Lee, T. B. Soo and T. T. Tee	644
4	Effect of Process Variables on Extraction of Orthosiphon Stamineus Leaves. G. H. Koay and R. Nithyanandum	659
<u>Session B2</u>		
1	The Effects of Microwave Sintering on the Properties of CuO doped Y-TZP Ceramic B. Shrreraj and K. L. Jeffrey Chin	672
2	Design of Intelligent Bed to Prevent Bed Sores K. M. Andy Chan, A. Ghadimi and M. Jaweed	682
3	Effect of Starch Content in Controlled-Released-Fertilizer in Starch-Derivative–Alginate Based Formulation H. S. Yong, S. W. Phang, T. S. Lee, T. B. Soo and T. T. Tee	692
4	Development of Tissue Engineering Skin Culture System N. Shaharuddin, Y. L. Chuan and W. H. Yap	707

No.	Description of Paper	Page No.
<u>Session B3</u>		
1	Application of Mean-Shift in Unsupervised Learning for the Identification of Common Household Appliance L. Ch'ng and E. Chung	724
2	Development of Image Processing Methodology to Analyze Cancer Cell Images M. L. Leong, S. M. Kesavan and W. J. Chew	741
3	Double Rotor Switched Reluctance Machine with reduced Torque Ripple M. A. Ismail and C. V. Aravind	757
4	Effect of Moisture on Electrical Response of Soil under High Impulse Voltage Applications M. S. Johari and C. L. Siow	767
5	Mastering Programmable Logic Controller: A Self-Directed Learning Approach M. S. Sarowar, I. Ali and R. Gobbi	777
6	Dynamic Bandwidth Allocation for Fiber Wireless C.Y. Liang and N. I. Hassan	787
<u>Session B4</u>		
1	The Fundamental Study on Antioxidant Activity and Stability of Bioactive Compounds in Betel Leaves (<i>Piper Betle</i>) Extract W. T. Chia, X. Y. Rebecca Lim and P. F. Wahida	806
2	Drying Characteristics and Product Quality of Medicinal Herbs S. T. Goh and C. H. Chong	818
3	Herbal Preparations and Techniques for Cosmetics W. L. Melissa Chin, M. Nassir and C. H. Chong	827
4	Immobilization of Metal Species from Water Sludge by Porous Clay Z. S. Ng, W. K. Cheah and F. Y. Yeoh	839
5	Synthesis and Characterization of Graphene Materials from Cellulose Acetate Tape G. Aqilah, H. O. Chee and F. Y. Yeoh	849