

TABLE OF CONTENTS

FOREWORD BY THE CHAIRMAN	ii
FOREWORD BY THE DIRECTOR	iii
FOREWORD BY THE EDITOR-IN-CHIEF	vi
EDITORIAL BOARD	v
ORGANIZING COMMITTEE	vi
TABLE OF CONTENTS	vii

Theme 1: Advanced Materials Processing

01. Preliminary study of KNN thin films doped by rare-earths for sensor applications. <i>M.H. Maziati Akmal, A.U. Al-Amani, A.R. Mohd Warikh, A. Nurul Azuwa</i>	1
02. Effect of pineapple leaf fiber loading on the properties of pineapple leaf fiber-polypropylene composite. <i>A.N. Kasim, M.Z. Selamat, N. Aznan, S.N. Sahadan, M.A.M. Daud, S. Salleh, R. Jumaidin</i>	3
03. Investigation of the stress conditions of U-bend 316L stainless steel after performing cold mechanical process. <i>W.M.F.W. Mohamad, M.Z. Selamat, B. Bunjali, H.M. Dom</i>	5
04. Comparison of thermal conductivity for HHT-24 CNF-based nanofluid using deionized water and ethylene glycol as based fluid. <i>N.S. Zaini, S.N. Syed Idrus, N. Abdullah, M.H.M. Husin, I.S. Mohamad</i>	7
05. The effect of nanocarbon characteristics on enhancing thermal properties of nanofluids. <i>S. Zainal Abidin, I.S. Mohamad, N. Abdullah, A.Y. Bani Hashim</i>	9
06. Thermal properties and heat transfer study of dispersed fluid with functionalized multi-walled carbon nanotube (MWCNT) particles. <i>N. Zahari, M.R.H. Noor Salim, I.S. Mohamad, N. Abdullah, S. Thiru</i>	11
07. Effect of process variables on the tensile shear strength of spot welds in 6061-T6 aluminum alloy. <i>S.Thiru, Siti Hajar Ahmad Razin, S. Hema, I.S. Mohamad</i>	13
08. Charpy impact response of oil palm empty fruit brunch fiber reinforced metal laminate system. <i>Fadzila Hussain, D. Sivakumar, S. Kathiravan, Mohd Ahadlin Mohd Daud</i>	15
09. Thermal performance of carbon-based microencapsulated phase change materials. <i>A.Z.I. Abdullah, M.F.B. Abdollah, B.T. Tee, H. Amiruddin, A.K. Mat Yamin, N. Tamaldin</i>	17

Theme 2: Automotive Engineering

10.	Fabrication and testing of energy regenerative suspension. <i>M.A. Abdullah, J.F. Jamil, N.S. Muhammad</i>	19
11.	Experimental validation of single cylinder diesel engine using engine simulation tools. <i>M.H. Ahmad, N. Tamaldin, A.K. Mat Yamin, S.C. Lee</i>	21
12.	Formula varsity race car - Roll dynamic analysis. <i>M.A. Abdullah, J. F. Jamil, N. Ismail, M.Z. Mohammad Nasir, M.Z. Hassan</i>	23
13.	Driving assistance system – Automatic parking maneuver using Lego Mindstorms. <i>M.A. Abdullah, M.A. Romeli, F.R. Ramli, M.K. Mohamed Nor</i>	25
14.	Autonomous vehicle convoy using Lego Mindstorms. <i>M.A. Abdullah, M.A. Azan, F.R. Ramli, M.K. Mohamed Nor</i>	27
15.	The effect of different thickness material stacking for four layer spot welding. <i>Mohd Harris Fadhilah, Nur Fatihah Madi</i>	29
16.	Pneumatic gear shifter analysis. <i>M.A. Abdullah, M.A. Mohd Ahyak, M.A.I. Abd Hamid, F.R. Ramli, S.A. Shamsudin</i>	31

Theme 3: Computational Modeling and Analysis & CAD / CAE

17.	Taguchi modeling of process parameters in VDG-MOSFET device for higher I_{ON}/I_{OFF} ratio. <i>K.E. Kaharudin, A.H. Hamidon, F. Salehuddin</i>	33
18.	Inline pin fin heat sink model and thermal performance analysis for central processing unit. <i>Khalil Azha Mohd Annuar, Fatimah Sham Ismail, Mohamad Haniff Harun, Mohamad Firdaus Mohd Ab Halim</i>	35
19.	Stress level on sustainable vibration isolator using numerical method. <i>M.A. Salim, S. N. Jamaluddin, A. Putra, M.A. Abdullah</i>	37
20.	The effect of diffuser angle on modified generic side view mirror. <i>Nur Rashid bin Mat Nuri, Abdul Rahman bin Mohd Nasir, Mohd Suffian bin Ab Razak</i>	39
21.	Design from nature: Development of a database to support product development. <i>S.F. Wong, S. Maidin</i>	41
22.	Study of electrical characteristic for 50nm and 10nm SOI body thickness in MOSFET device. <i>M.N.I.A. Aziz, F. Salehuddin, A.S.M. Zain, K.E. Kaharuddin</i>	43
23.	Redesign of automotive brake pedal based on castability analysis. <i>M.N. Sudin, F.R. Ramli, S.A. Shamsuddin, M.M. Tahir, M.M. Mustafa, M.A. Affan</i>	45

Theme 4: Energy Management & Fuels and Lubricants

24.	Energy audit for lighting in an academic building – Case study in UTeM. <i>Younus Fahad Breesam, B.T. Tee, Z.M. Zulfattah</i>	47
25.	Energy analysis on ACMV system for an academic building – Case study in UTeM. <i>Ahmad Zubair Yahaya, B.T. Tee, Yusmady Mohamed Arifin</i>	49
26.	Preliminary study on tribological properties of banana peel broth as additive in paraffin oil. <i>M.M.B. Mustafa, N.A.B. Masripan, M.F.B. Abdollah, J. Basiron</i>	51
27.	Investigation on oxidation of jatropha oil. <i>A.M.H.S. Lubis, B. Ariwahjoedi, M.B. Sudin</i>	53
28.	Stability of nano-oil by pH control in stationary conditions. <i>H. Amiruddin, M.F.B. Abdollah, A.M. Idris, M.I.H.C. Abdullah, N. Tamaldin</i>	55

Theme 5: Hydraulics and Pneumatics & Mechanical Control

29.	Modeling for assessing the dynamic performance of pneumatic valve. <i>N.S. Osman, A.Y. Bani Hashim</i>	57
30.	Precision control performances of a vertical motion electrostatic actuator stage with locking function. <i>M.M. Ghazaly, Y.P. Chin, K. Sato</i>	59
31.	Force tracking control of MR damper and controller parameter optimization using sensitivity analysis method. <i>M.F. Md Isa, M.H. Harun, M.A. Abdullah, N.S. Muhammad</i>	61

Theme 6: Mechanical Design and Optimization

32.	Comparative study for material removal rate, surface finish and electrode wear rate on die sinking EDM. <i>H.H. El Grour, S. Maidin</i>	63
33.	Kinematic synthesis of planar, shape-changing rigid body mechanisms for slat design profile. <i>M.H. Ismail, S.A. Shamsudin, M.N. Sudin</i>	65
34.	Optimizing PID controller for an electro-hydraulic servo system via gradient descent technique. <i>C.C. Soon, R. Ghazali, H.I. Jaafar, S.Y.S. Hussien</i>	67
35.	Body to ground improvement at trim and form machine in end-of-line process. <i>M.H. Mohtar, S. Maidin</i>	69
36.	Performance on tensile properties of GFRP stacking sequence using Taguchi method. <i>M.A. Md Ali, A.K. Khamis, N.I.S. Hussein, R.I. Raja Abdullah, M.S. Kasim, M.H. Abu Bakar, E. Mohamad, M.A. Sulaiman</i>	71

37.	Design of slanted glass injection mould for flow visualization of molten plastic. <i>M.A. Md Ali, M.F. Khalik, S. Subramonian, Z. Abdullah, R. Jaafar, P.J. Liew, M.S. Abdul Aziz</i>	73
38.	Design of semi-auto line for <i>gula Melaka</i> processing. <i>K.A. Azlan, T. Manoharan, H. Zainuddin, J. Basiron, M.K.M. Nor, F.R. Ramli</i>	75
39.	Integrated recycle system concept for low cost 3D-printer sustainability. <i>F.R. Ramli, M.I. Jailani, H.Unjar, M.R. Alkahari, M.A. Abdullah</i>	77

Theme 7: Mechatronics Engineering

40.	Forward-chaining approach to expert system for machine maintenance. <i>S.N. Mohamad, A.Y. Bani Hashim</i>	79
41.	Decoding wrist gesture with combinational logic for the development of a practical EMG electrode sleeve. <i>Z. Fu, A.Y. Bani Hashim, Z. Jamaludin, I.S. Mohamad</i>	81
42.	Application of defect detection in gluing line using shape-based matching approach. <i>Mohamad Haniff Harun, Khalil Azha Mohd Annuar, Aminurrashid Noordin, Mohd Hanif Che Hasan, Muhammad Salihin Saealal, Mohd Firdaus Mohd Ab Halim, Muhammad Fareq Ibrahim</i>	83
43.	Investigation of sway angle characteristics in gantry crane system by PSD analysis. <i>S.Y.S. Hussien, R. Ghazali, H.I. Jaafar, C.C. Soon</i>	85
44.	Hopping peak height algorithm for a one legged robot hopping height control. <i>A.H. Azahar, S.H. Chong, A.M. Kassim</i>	87

Theme 8: Noise, Vibration and Harshness

45.	Experimental investigation on the road transmitted vibration of a mountain bicycle <i>A.Y. Ismail, M.F.A.M. Shukri, M.A.A. Johar</i>	89
46.	Investigation on reed <i>Imperata Cylindrica</i> as sound absorber. <i>F.A. Khair, A. Putra, M.J.M. Nor, N. Atiqah</i>	91
47.	Fundamental model of structure-borne vibration transmission in building using portal frame approach. <i>Y.M. Cheah, A. Putra, N. Muhammad, R. Ramlan</i>	93
48.	Preliminary study on sound absorption of natural kenaf fiber. <i>Z.Y. Lim, A. Putra, M.J.M. Nor, M.Y. Yaakob</i>	95
49.	Mobility of rectangular plate with constraint and unconstraint edges. <i>K.H. Lim, A. Putra, R. Ramlan</i>	97
50.	Oil palm empty fruit bunch fibers as sustainable acoustic material. <i>K.H. Or, A. Putra, M.Z. Selamat</i>	99

51.	Reciprocity method in small acoustic space to measure sound radiation from baffled perforated plates. <i>N. Shyafina, A. Putra, Z.Y. Lim, N. Muhammad</i>	101
52.	Double layered micro-perforated panel as acoustic absorber in mosque. <i>D. Hafizah, A. Putra, M.J.M. Noor, M.S. Py</i>	103
53.	Noise analysis in Malaysian passenger car cabin. <i>M.A. Abdullah, J.F. Jamil, N. Basrah, A. Putra, M.A. Salim</i>	105
54.	Variability of vibration input power to a beam structure. <i>N.F. Saari, A. Putra, H. Bakri, R. Md Dan</i>	107
55.	Analysis on degree of nonlinearity in hardening nonlinear system of a vibration based energy harvesting device. <i>P.S. Low, R. Ramelan, N.S. Muhammad, H.A. Ghani</i>	109

Theme 9: Non-Destructive Testing & Structural Mechanics

56.	Study on corrosion features analysis for visual inspection & monitoring system: A NDT technique. <i>Syahril Anuar Idris, Fairul Azni Jafar, Nurhidayu Abdullah</i>	111
57.	Analytical work of honeycomb based on single ring hexagonal ring subjected to quasi-static lateral loading. <i>M.R. Said, A.J. Chuli</i>	113

Theme 10: Renewable Energy

58.	Low-NOX combustion of biogas from palm oil mill effluent using flameless combustion. <i>Afiqah Hamzah, Abuelnuor Abdeen Ali Abuelnour, Mazlan Abdul Wahid</i>	115
59.	Engineering design on food waste composting bin. <i>S.N. Khalil, K.A. Zulkifli</i>	117
60.	Binary mixture of the decanter cake and fiber from the oil palm industry waste as a potential solid fuel. <i>Mohd Haizal Mohd Husin, Ting Sze Choi, Nur Haziqah Mohd Ruzmi, Imran Syakir Mohamad</i>	119
61.	Study the performance of single cylinder spark ignition engine for gasoline and compressed natural gas. <i>M.Z. Yunus, M.T. Musthafah, M.Z. Akop</i>	121
62.	Performance and emission characteristics of castor blends biodiesel in single cylinder diesel engine dynamometer. <i>Mohd Zaini Jamaludin, Safarudin Gazali Herawan, Yusmady Mohamed Arifin</i>	123
63.	Hardware design multi-sources light electric vehicles. <i>F.A. Azidin, Z.A. Ghani, M.A. Hannan, Azah Mohamed</i>	125

64.	On the dynamics of a beam-SDOF energy harvester system. <i>S. Susilo, A. Putra, K.S. Leong, M.J.M. Nor</i>	127
65.	Relationships derived from physical properties of waste cooking oil / diesel blends and biodiesel fuels. <i>M.I. Ali, J. Faezah</i>	129
66.	Broadening the bandwidth of energy harvesting devices by using different magnet configurations. <i>H.A. Ghani, R. Ramelan, M.J.A. Latif, P.S. Low</i>	131

Theme 11: Surface Engineering and Coatings

67.	The evaluation of machinability and surface roughness in conventional vertical milling machine. <i>M.A.M. Daud, W.T. Ng, D.L. Sivakumar, M.Z. Selamat</i>	133
68.	Study on surface diffusion of an effective powder-pack boronizing. <i>N.H. Omar, R. Hasan, S.M.M. Shahidan, N.R. Morjani, M.H. Kamaludin</i>	135
69.	Comparative study of surface roughness in milling AISI D2 steel using PVD coated and uncoated tungsten carbide insert. <i>B.I. Redzuwan, M.S.A. Aziz, M.F. Ayub, M.S. Kasim, R. Izamshah, M. Amran</i>	137

Theme 12: Others Related Topic

70.	Comparison of camera calibration method for a vision based mesoscale measurement system. <i>A.R.K. Anuar, H. Hanizam, S. Mohd Rizal, N. Nazrul Anuar</i>	139
71.	Analysis of body dynamic posture to detect body discomfort by using a webcam and python image histogram. <i>N.S.A. Ramdan, A.Y. Bani Hashim, Seri Rahayu Kamat, Siti Azirah Asmai</i>	141
72.	Development of innovation in Malaysian traditional palm sugar cooking machine. <i>R. Hasan, S.A. Shamsudin, N. Muhammad, N. Tamaldin, H. Ali, M.I. Jaafar, T.E. Tengku Mansor, F.Z. Zainuri, N.S.A. Abdul Razak</i>	143
73.	A humanoid robot for autism rehabilitation: Does IQ influence response in child-robot interaction? <i>S. Shamsuddin, H. Yussof, F.A. Hanapiah, S. Mohamed</i>	145
74.	A comparative study for concrete strength prediction using Fuzzy modeling and Neuro-Fuzzy modeling techniques. <i>S.S. Syed Ahmad</i>	147