# Indonesia Malaysia Research Consortium Seminar (IMRCS 2018)

Development Research Potential in Renewable Energy

IOP Conference Series: Materials Science and Engineering Volume 588

Surabaya, Indonesia 21 – 22 November 2018

ISBN: 978-1-5108-9461-7 ISSN: 1757-8981 Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 3.0 International Licence. Licence details: http://creativecommons.org/licenses/by/3.0/.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2019)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

#### Additional copies of this publication are available from:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571 USA Phone: 845-758-0400 Fax: 845-758-2633 Email: curran@proceedings.com Web: www.proceedings.com

## **Table of contents**

## Volume 588

Indonesia Malaysia Research Consortium Seminar 2018 (IMRCS 2018)

21–22 November 2018, East Java, Indonesia

Accepted papers received: 8 July 2019 Published online: 20 August 2019

Preface

Preface

Peer review statement

Papers

Energy

Criteria analysis in the selection method of mud pumping in coal mining project

Aryoseno and Ervina Ahyudanari.....1

Design of output power control system based on mass flow rate comparison of air and fuel ratio (AFR) on dual fuel generator set by using pid control method

M B Toriki, B L Widjiantoro and A Abdurrakhman.....9

Varition Analysis Of Collector Shift Time Period On Solar Water Heater Efficiency

Mustafa, Sudarno and Wahyudi.....18

Calorific value analysis, reduction of period weight, reaction rate, activation energy of old coconut, young coconut waste briquette burning, cocoa

W Nuriana, A Suryanto and M Kamal.....24

<u>Characterization of Engine Performance, Combustion Process and Emission of</u> <u>Diesel/CNG Dual Fuel Engines with Pilot Injection Timing Variation at Low Load</u>

Dori Yuvenda, Bambang Sudarmanta, Arif Wahjudi and Jose da Silva.....32

Potential of Biomass Utilization in Rotary Kiln of Nickel Processing Plant

B C Pamungkas and H Hadi.....41

Risk Assessment on Liquefied Petroleum Gas (LPG) Handling Facility, Case Study: Terminal LPG Semarang

T A Akbar, A A B Dinariyana, A Baheramsyah, F I Prastyasari and P D Setyorini.....47

The development of the IHL wave-current turbine to convert the ocean energy from both wave and current

Erwandi, D Rahuna and C S J Mintarso.....53

Subsurface Analysis Using Gravity Data at Lili Sepporaki Geothermal Area

Jubilate Sihombing, Wien Lestari, Mariyanto and Wiwid Joni.....61

Effect of jet velocity on LPG to flame stability and flame temperature distribution on Inverse Difusion Flame (IDF)

Pramoda Agung Sumadhijono, Bambang Sudarmanta and Arif Wahjudi.....67

<u>Co – pyrolysis of Empty Palm Fruit Bunch (EPFB) and Low Quality Coal Under CO<sub>2</sub></u> <u>Atmosphere</u>

S Zullaikah, R Y Naulina, L D Puspitasari, U Nadliroh and H Niawanti.....77

Passive design (building envelope) impact to cooling load of researh centre building ITS

T. Soehartanto, Matradji and Roekmono.....86

Effect of acid-catalysed in one step production of biodiesel on total sugars of defatted rice bran

M Yasmin, S Zullaikah, A Permatasari, I Marita and M Rachimoellah.....96

Experimental Validation of the Piezoelectric Energy Harvester for Wearable Devices

Akhmad Afrizal Rizqi, Ariprihartai, I Wayan Dasnai, Purnomoi and Arif Nur Afandyi.....103

## Engineering

Fatigue Calculation of Offshore Jacket Structural For Monitoring

Y W Wu, H T Wu, C H Chung, J R Lyu, S H Yang, S Y Chen and Y Y Chang.....110

<u>Self-powered IoT Based Vibration Monitoring of Induction Motor for Diagnostic and</u> <u>Prediction Failure</u>

Adim Firmansah, Aripriharta, Nandang Mufti, Arif Nur Affandi and Ilham Ari Elbaith Zaeni....116

IoT-based Control and Monitoring for DC Motor Fed by Photovoltaic System

Kusmayanto Hadi Wibowo, Aripriharta, Markus Diantoro, Slamet Wibawanto, Kartika Candra Kirana, Fitrah Wicaksono Yunianto Saputra and M Nuzulul Chanif.....123

Effect of Vacuum Level on Heating Speed on Ethanol Destillation Process Using Coaxial Vacuum Tube Solar Collector

Sutomo, W Nuriana, Sutrisno and J Triono.....132

Numerical study of the effect of oxidation zone inlet air temperature variation on municipal solid waste pellet gasification process on downdraft type reactor characteristics

B Sudarmanta, D Hidayatulloh, D R Ependi, A R Saleh, A Setiyawan and A Bachtiar.....137

Effects of Advancing the Pilot Injection Timing on The Engine Performance, Combustion and Emissions on Diesel dual fuel Engine at High Load

Bambang Sudarmanta, Atok Setiyawan, K P Ary Bachtiar, Dori Yuvenda and Jose da Silva....147

Symbiotic Organism Search for Sizing and Optimal Location of Distributed Generation Using Novel Sensitivity Factor

G Setyawan, Umar, A Soeprijanto and O Penangsang.....156

Analysis of Factors Affecting Continuance Intention of E-Learning Adoption in Lecturers' Perspectives

Feby Artwodini Muqtadiroh, Anisah Herdiyanti, Indra Wicaksono and Tsuyoshi Usagawa....163

Design of ironing dies with CAD/CAM topsolid7 assistance for making 20 milimeter caliber bullet case

I M L Batan and I G A N W Baskara.....172

Estimation of Hourly Solar Radiation on Horizontal Surface Using GAMF (Genetic Algorithm Modified Fuzzy) (Case Study in Surabaya)

Erma Hakim Setyawan, Imam Abadi and Sartika Arie Kusumawarni.....180

Numerical Analysis of Heterogeneous Oxidation Reaction on Multi-stage Air Inlet Downdraft Gasifier

Arif Rahman Saleh, Bambang Sudarmanta and Depi Rustam Ependi.....193

A Study on conceptual design of mini FSRU as LNG receiving facility

I W G K D D Putra, K B Artana, I M Ariana and L G M P Sudiasih.....202

Hybrid Saliency-SVM Method Implementation for Automatic Data Training Selection in Image Segmentation

Rully Soelaiman, Chastine Fatichah and Aisha Yuliandari.....209

Exterior Electric Hatchback Crossover Car Design with Strong, Vicious and Sharp Concept

Baroto Tavip Indrojarwo, Andhika Estiyono and Abdur Rosyid Pratama.....219

The Vibration Reduction in Multilevel Structure Model with the addition of Tuned Liquid Column Damper (TLCD):Study of the Influence of variations in TLCD's mass ratio & orifice cross-sectional area

H L Guntur, A A A Daman and W Hendrowati.....230

## Material

<u>Physical and Optical Characterization of Mn-doped ZnS Nanoparticles Prepared via</u> <u>Reverse Micelle Method Assisted by Compressed CO2</u>

Rahizana Mohd Ibrahim, Masturah Markom, Huda Abdullah, Muneer M. Ba-abbad and Kamal Firdausi Abd Razak.....242

Determination of Shelf Life and Proximate Analysis of Orumy Beverage Produced by Micro, Small and Medium Enterprise INOKAM in Dolly Distric

Yatim Lailun Ni'mah and Vennycha Dwi Ameswari.....247

Study on the structural evolution of SiO2 extracted from Sidoarjo mud

Devita Rachmat and Doty Dewi Risanti.....257

Enrichment Chromite Sand Grade Using Magnetic Separator

S Subandrio, W Dahani, M Alghifar and T T Purwiyono.....262

Tricycle Applications for Physical Therapy Sufferers

I Made Londen Batan, Teditya Nico Aji Sukma Lutiawan and Lutfi Agus Salim.....267

The effect of rice husk ash addition as pozzolan on geopolymer binder using alkali activators

R Bayuaji, D P Dibiantara, R Ilmiah, N A Husin, MS Darmawan, R Buyung and S Subekti.....276

The Chemical and Mineral Composition Effect on Rock Mass Strength in Kaliwadas Limestone Hills, Karangsambung, Kebumen, Central Java

W Dahani, I Marwanza, A Susilo, F A Pramesti and R Kurniawati.....286

The effect of Titanium dioxide precursors variation to morphology of TiO<sub>2</sub>/ZSM-5 composite

A Iryani, R Kurniawati, S Jovita, F A Pramesti, H Nur and M Santoso.....291

The Relevancy of Mineral Composition to Rock Shear Strength in Kaliwadas Hills, Karangsambung, Kebumen

W Dahani, I Marwanza, R Safitri, A B Pambudi and M I Rizki.....297

On The Synthesis of ZSM-5 Directly from Kaolin Bangka with Aging Time

D Hartanto, A B Pambudi, D N Cahyanti and W P Utomo.....304

<u>Preparation and Morphological Property of  $Co_3O_4/Ba_xSr_{1-x}Co_{0.8}Fe_{0.2}O_{3-\delta}$  (x=0.5-0.7)</u> <u>Membranes using Starch as Binder Agent</u>

W.P. Utomo, A.S. Wijayanti, S.D. Nurherdiana, R.M. Iqbal, D. Hartanto and H. Fansuri.....314

Experimental study of influence injection moulding on shrinkage material sisal-glass fiber biocomposite using response surface methodology (RSM)

M A Al-amin, D Harnany and I M L Batan.....325

Antioxidant Evaluation of Ganoderma lucidum Extracts

Fahmi Hidayat and Sri Fatmawati.....337

Usage of power plant waste for airport pavement surface

N Widayanti and E Ahyudanari.....341

Absorption of indigosol dye waste from batik home industry at ex redlight district, Dolly, Surabaya using activated carbon

Yatim Lailun Ni'mah, Ita Sulistyani, Suprapto Suprapto and Kartika Sari Dewi.....349

Alternative of stone ash as a sand replacement in fc'40 mpa quality concrete mixture on pressure stress

R Hidayata, Iswinarti and Asnun Parwanti.....357

Application of savonius turbine behind the propeller as energy source of fishing vessel in indonesia

Madi, M E N Sasono, Y S Hadiwidodo and S H Sujiatanti.....366

Energy harvesting and vibration reduction analysis on cantilever piezoelectric double vibration absorber (CPDVA) mechanism

W Hendrowati, H L Guntur and A A A Daman.....376