

2nd International Tropical Renewable Energy Conference (i-TREC 2017)

IOP Conference Series: Earth and Environmental Science
Volume 105

Bali, Indonesia
3 - 4 October 2017

Editors:

**Filbert H. Juwono
Eny Kusriani**

**Cindy Rianti Priadi
Eko Adhi Setiawan**

ISBN: 978-1-5108-5686-8
ISSN: 1755-1307

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.

Copyright© (2017) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2018)

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 105

2nd international Tropical Renewable Energy Conference (i-TREC) 2017

3–4 October 2017, Bali, Indonesia

Accepted papers received: 18 December 2017

Published online: 25 January 2018

Preface

[2nd international Tropical Renewable Energy Conference \(i-TREC\) 2017](#)

[List of committees](#)

[Conference Photographs](#)

[Sponsor or Funding Acknowledgements](#)

[Peer review statement](#)

Papers

[Preliminary study of natural zeolite from Bayah for solar powered cooling application](#)

Djubaedah, Wulandari and Nasruddin.....1

[Process optimization of microalgae cultivation in a bubble-column photobioreactor](#)

Y Muharam, Dianursanti and A S Wirya.....7

[Performance prediction of vaccine carrier using adsorption process and \$13x/c_acl_2\$ composite zeolite as adsorbent](#)

Nasruddin, Q H Alius, Djubaedah, A Taufan, R G Gurky and A P Arsyad.....13

[Design, development and performance prediction of solar heater for regeneration of adsorbent chamber](#)

Nasruddin, Djubaedah, R G Gurky, Q H Alius and A P Arsyad.....20

[Heat transfer coefficient of near boiling single phase flow with propane in horizontal circular micro channel](#)

Sentot Novianto, Raldi Koestoer and Agus S Pamitran.....26

[Effect of physical and chemical modification on surface area of low-grade bauxite](#)

E Kusrini, A Rahman, Aji A Bumi, C S Utami and E A Prasetyanto.....32

[Product distribution from catalytic conversion of biomass over \$B_2O_3/\gamma-Al_2O_3\$ catalyst](#)

Setiadi and Ervandy Haryoprawironoto.....37

[Sustainable infrastructure transportation to improve society wellbeing in Karawang](#)

D T Winata and A D Rarasati.....43

[Effect of anode depth and conductivity of electrolyte solution on energy consumption in plasma electrolysis](#)

T Sukreni, N Saksono and S Bismo.....51

[Design optimization of hybrid biomass and wind turbine for minapolitan cluster in Domas, Serang, Banten, Indonesia](#)

Erwin Erwin, Tresna P Soemardi, Adi Surjosatyo, Julianto Nugroho, Kurnia Nugraha and Slamet Wiyono.....57

[Experimental study of hybrid loop heat pipe using pump assistance for high heat flux system](#)

Iwan Setyawan, Nandy Putra and Imansyah Ibnu Hakim.....64

[Preparation and characterization of copper oxide catalyst with activated carbon support for ozone decomposition in industrial environment](#)

A S Azhariyah, A Pradyasti and S Bismo.....70

[Preparation of zinc oxide catalyst with activated carbon support for ozone decomposition](#)

A Pradyasti, A S Azhariyah, E F Karamah and S Bismo.....77

[Energy consumption model improvement with principal component analysis method for small village community](#)

Subhan Petrana, Eko Adhi Setiawan and M Yunus H A.....84

[Study on the effects of temperature in the carbothermic reduction laterite ore using palm kernel shell as reducing agent](#)

Risty Hidayanti, Sulaksana Permana, Ahmad Maksum and Johny Wahyuadi Soedarsono.....91

[The influence of palm kernel shell mass ratio as a reducing agent in the lateritic nickel ore carbothermic reduction process](#)

Silmina Adzhani, Risty Hidayanti, Ahmad Maksum, Sulaksana Permana and Johny Wahyuadi Soedarsono.....97

[Pyrolysis of activated carbon from coconut shell and its characteristic in the LiFePO₄/V/C composite for lithium ion battery cathode](#)

N Sofyan, A D Rachmawati, A Zulfia and A Subhan.....103

[Degradation of methylene blue using silver nanoparticles synthesized from *imperata cylindrica* aqueous extract](#)

A A Fairuzi, N N Bonnia, R M Akhir, M A Abrani and H M Akil.....110

[Dynamic operation of water gas shift reaction over Fe₂O₃/Cr₂O₃/CuO catalyst in Pd/Al₂O₃ membrane reactor](#)

Yogi Wibisono Budhi, Dhinny Dwi Putri, Afifa Husna, Hans Kristian Irawan, Manabu Miyamoto and Shigeyuki Uemiya.....116

[The effect of pyrogallol antioxidant addition and storage temperature to the change of biodiesel quality during storage period](#)

B H Susanto, Lukman, H Sutanto and M Nasikin.....122

[Techno-economic feasibility of flare gas utilization using adsorbed natural gas](#)

Yuswan Muharam, Fiqi Giffari and Mirza Mahendra.....128

[Use of carbon pyrolyzed from rice husk in LiFePO₄/V/C composite and its performance for lithium ion battery cathode](#)

N Sofyan, P Sekaringtyas, A Zulfia and A. Subhan.....134

[Impregnation of activated carbon-TiO₂ composite and its application in photodegradation of procion red synthetic dye in aqueous medium](#)

M O Ruliza, T E Agustina and R Mohadi.....141

[Adsorption capacity study of ethanol-water mixture for zeolite, activated carbon, and polyvinyl alcohol](#)

J A Laksmono, U A Pangesti, M Sudibandriyo, A Haryono and A H Saputra.....148

[Utilization of steel wool as removal media of hydrogen sulfide in biogas](#)

U Riyadi, G A Kristanto and C R Priadi.....157

[Experimental study of slope angle and low E glazing effects on photovoltaic module](#)

Arrad Ghani Safitra, Fifi Hesty Sholihah and Inas Nabilah Fauziyyah.....163

[Thermal properties of paraffin based nano-phase change material as thermal energy storage](#)

Muhammad Amin, Fitri Afriyanti and Nandy Putra.....170

[Signal detection for identification energy and behaviour of male dolphin bottle nose \(*Tursiops aduncus*\) using NTD Model](#)

H M Taki and M Z Lubis.....176

[Effect of graphenenano-fluid on heat pipe thermal performance for passive heat removal in nuclear spent fuel storage pool](#)

Ainur Rosidi, Nandy Putra and Mukhsinun Hadi Kusuma.....182

[The effect of bucketnumber on breastshot waterwheel performance](#)

Warjito, Dendy Adanta, Budiarmo and Aji P Prakoso.....189

[Study and model development of renewable energy investment feasibility under willingness and ability to pay approach](#)

A Murnandityo, E A Setiawan and Fajardhani.....196

[Influence of temperature on conversion of plastics waste \(polystyrene\) to liquid oil using pyrolysis process](#)

Nasruddin A Abdullah, Amaranggana Novianti, Imansyah Ibnu Hakim, Nandy Putra and Raldi A Koestoer.....202

[Pyrolysis characteristic of rice husk with plastic bag as fuel for power generation by using a thermogravimetric analysis](#)

Muhammad Anshar, Dahlang Tahir, Makhrani and Farid Nasir Ani.....209

[The potential utilization of coconut oil and palm oil as raw material of alkanolamide under alkaline conditions](#)

F Sari, B H Susanto and S Bismo.....215

[Utilization of waste cooking oil as raw material for synthesis of Methyl Ester Sulfonates \(MES\) surfactant](#)

Resi Levi Permadani, Muhammad Ibadurrohman and Slamet.....221

[Effects of reduction time on carbothermic reduction of lateritic nickel ore using palm kernel shell as green reducing agent](#)

Dwipuji Rahayu, Ahmad Maksum and Johny Wahyuadi Soedarsono.....228

[Effect of electrolyte type on the morphology and crystallinity of TiO₂ nanotubes from Ti-6Al-4V anodization](#)

Khalil Gibran, Muhammad Ibadurrahman and Slamet.....234

[Catalytic oxidation of benzene using nano-CuO/ \$\gamma\$ -Al₂O₃ and commercial catalysts](#)

Ryan A. Rahardi, Retno Maharsi, Ferry Iskandar, Hary Devianto and Yogi Wibisono Budhi.....240

[Reading sustainability post annexations of Rumah Gadang architecture](#)

D Trisnawan and A Rifqih.....246

[Power consumption analysis on large-sized electric bus](#)

G Heryana, S Prasetya, M Adhitya and D A Sumarsono.....251

[Characterization of shape-stabilized phase change material using beeswax and functionalized multi-walled carbon nanotubes](#)

S Rawi, M Amin, E Kusri and N Putra.....257

[Pentamaran configuration design with modeling hull form for resistance minimization](#)

Yanuar and S Wiwin.....263

[Acquisition of Co metal from spent lithium-ion battery with emulsion liquid membrane technology using cyanex 272 as extractant](#)

Yuliusman, P T Wulandari, R A Amiliana, M Huda, Silvia and F A Kusumadewi.....269

[Battery thermal management system using loop heat pipe with LTP copper capillary wick](#)

Bambang Ariantara, Nandy Putra and Sugeng Supriadi.....275

[Design of a combination package of heat exchanger and heater for organic rankine cycle power plant](#)

M Muslim, M Idrus Alhamid, Nasruddin, R Dieter, S M Zaky, Edi Marzuki and Nyayu Aisyah.....281

[The properties of vegetable cooking oil as a fuel and its utilization in a modified pressurized cooking stove](#)

Suhartono, Suharto and Andisa Eka Ahyati.....287

[Manufacture of solid soap based on crude papain enzyme and antioxidant from papaya](#)

Setiadi, Putri and Famila Anindia.....297

[Effect of feed composition of co-pyrolysis of corncobs–polypropylene plastic on mass interaction between biomass particles and plastics](#)

D Supramono, M A Nabil, Setiadi and M Nasikin.....304

[Effect of coconut fiber suspensions on drag reduction in circular pipe](#)

W Wulandari, K T Waskito, S Mau, Yanuar and Marcus A Talahatu.....310

[Synthesis of green diesel through hydrolysis and hydrodeoxygenation reaction from waste cooking oil using NiMo/Al₂O₃ catalyst](#)

R U Putri, B H Susanto, D F Pratama and M B Prakasa.....317

[Biodiesel synthesis optimization from wet and dry based microalgae *chlorella vulgaris* by reaction time arrangement](#)

Dianursanti, D N Putri, P Religia and P Anggraini.....323

[Biodiesel synthesis from *nannochloropsis oculata* and *chlorella vulgaris* through transesterification process using NaOH/zeolite heterogeneous catalyst](#)

Dianursanti, A G Sistiafi and D N Putri.....329

[Influence of anodizing concentration and electric potential on surface morphology and corrosion behavior of anodized magnesium in seawater activated battery](#)

Supriyono, R Oktavian, L P M I Wulaningfitri, J C Pradana and I Feliana.....335

[Synthesis of kemiri sunan \(*reutealis trisperma \(blanco\) airy shaw*\) H-FAME through partially hydrogenation using Ni/C catalyst to increase oxidation stability](#)

E Ramayeni, B H Susanto and D F Pratama.....341

[Application of modified microwave polyol process method on NiMo/C nanoparticle catalyst preparation for hydrogenated biodiesel production](#)

D F Pratama, B H Susanto and E Ramayeni.....347

[Performance analysis \(WHP and torque\) on SI engine fueled with low-grade bioethanol and oxygenated fuel additive](#)

Setia Abikusna, Bambang Sugiarto, Ratna Monasari, Raihan Aditya and Dimas Hendrawan.....353

[Analysis of emission gas and fuel consumption on SI engine fueled with low-grade bioethanol and oxygenated cycloheptanol additive](#)

Ratna Monasari, Setia Abikusna, Bambang Sugiarto and Briano Ajiseno.....360

[An eco-friendly preparation of cellulose nano crystals from oil palm empty fruit bunches](#)

Arie Wibowo, Haroki Madani, Hermawan Judawisastra, Elvi Restiawaty, Chrisella Lazarus and Yogi W. Budhi.....367

[Study of curcuma xanthorrhiza extract as green inhibitor for API 5L X42 steel in 1M HCl solution](#)

Johny Wahyuadi Soedarsono, Muhammad Nafies Shihab, Muhammad Fikri Azmi and Ahmad Maksum.....373

[Study of corrosion resistance of pipeline API 5L X42 using green inhibitor bawang dayak \(*Eleutherine americana Merr.*\) in 1M HCl](#)

Muhammad Fikri Azmi and Johny Wahyuadi Soedarsono.....379

[Utilization of secang heartwood \(*caesalpinia sappan l*\) as a green corrosion inhibitor on carbon steel \(API 5L Gr. B\) in 3.5% NaCl environment](#)

Erol Efraim Kaban, Ahmad Maksum, Sulaksana Permana and Johny Wahyuadi Soedarsono.....385

[Preparation of cellulose nanocrystals from empty fruit bunch of palm oil by using phosphotungstic acid](#)

Y W Budhi, M Fakhrudin, N T U Culsum, V Suendo and F Iskandar.....392

[Exergetic-Economic analysis and optimization of solar assisted heat pump using Multi-objective Genetic Algorithm](#)

Nasruddin, M I Alhamid and N Aisyah.....398

[Kinetic study of free fatty acid in Palm Fatty Acid Distillate \(PFAD\) over sugarcane bagasse catalyst](#)

V A S Augustia, R A Djalal, B Sutrisno and A Hidayat.....404

[Effects of temperature on the direct reduction of Southeast Sulawesi's limonite ore](#)

Yudianto, Ahmad Maksum, Delfiendra and Johny Wahyuadi Soedarsono.....410

[Effect of pellet size addition on the selective reduction of limonite ore from Southeast Sulawesi](#)

Muhammad Azif, Ahmad Maksum, Delfiendra and Johny Wahyuadi Soedarsono.....416

[Effects of Na₂SO₄ addition on the selective reduction of limonite ore from Southeast Sulawesi](#)

Rinanda Rahmat, Ahmad Maksum, Delfiendra and Johny Wahyuadi Soedarsono.....422

[Characteristics of calcium carbonate solution flowing in pipe](#)

Yanuar, A S Pamitran, Sealtial Mau, Kurniawan T Waskito and Winda Wulandari.....428

[Nutrient recovery from anaerobic digester liquid effluent using ornamental aquatic macrophytes](#)

W Ediviani, C R Priadi and S S Moersidik.....436

[Characteristics and effectiveness identification of restructured product of snakehead fish \(*Channa Striata*\) with transglutaminase enzyme addition](#)

Setiadi and Sella Lametta.....442

[Enhanced dielectric properties of Nanocrystalline Ba_{\(1-x\)}Sr_xTiO₃ \(x=0 and 0.3\) ceramics](#)

E Yustanti, M A E Hafizah and A Manaf.....449

[Visible light absorption and photosensitizing characteristics of natural yellow 3 extracted from *Curcuma Longa* L. for Dye-Sensitized solar cell](#)

N Sofyan, F W Situmorang, A Ridhova, A H Yuwono and A Udhiarto.....455

[A preliminary investigation on visualization of oscillating heat pipe with non-destructive test](#)

Adi Winarta, Nandy Putra, Iwan Sumirat, Fahrurrozi and Bharoto.....461

[The effect of antioxidant additives on the growth of deposits on the use of biodiesel fuel \(B100\) at certain temperatures](#)

B Sugiarto, M T Suryantoro, S Yubaidah and M I Attharik.....468

[Effect H₂SO₄ and *Zymomonas mobilis* concentration to bioethanol production by *bintaro* fruit \(*cerbera manghas*\) substrate](#)

R E Santoso, N Fitriana, M Carolina, F C Dewi and Sumari.....476

[SPEKTRA fast and smart software for renewable energy management](#)

D Arengga, W Agustin, Y Rahmawati, S Sendari and A N Afandi.....483

[Internet-based monitoring and warning system of methane gas generated in garbage center](#)

S Sendari, Y Rahmawati, W Kamdi, H Elmunsyah, W Agustin, N C Hadi, F S Wibowo, T Matsumoto and I Rahman.....489

[Developing a simulator of renewable energy as a learning media of energy conversion](#)

Y Rahmawati, A N Afandi, D Arengga, S Sendari, W Agustin, T Matsumoto and I Rahman.....495

[Tropical X-Y transformation design for building courtyard integrated photovoltaic](#)

FX Teddy Badai Samodra.....501

[Review: Home energy management system in a Smart Grid scheme to improve reliability of power systems](#)

BS Hartono, Sri Paryanto Mursid and Sapto Prajogo.....507

[The effect of Pineapple Leaf Fiber \(PALF\) incorporation into Polyethylene Terephthalate \(PET\) on FTIR, morphology and wetting properties](#)

F M Abdul Aziz, S N Surip, N N Bonnia and K A Sekak.....516

[Hydrophilic and hydrophobic characteristics of dry peat](#)

L R Perdana, N G Ratnasari, M L Ramadhan, P Palamba, Nasruddin and Y S Nugroho.....522

[Effect of temperature and type of dispersant on treating oil spills](#)

A A Yudiana, N Widiaksana, Y S Nugroho and M Wibowo.....528

[Experimental study of thermal radiation from jet flame](#)

P Satrio, R Adityo, R Agung and Y S Nugroho.....534

[Analysis of effectiveness of oil spill recovery using disc-type oil skimmer at laboratory scale](#)

N Widiaksana, A A Yudiana and Y S Nugroho.....539

[Exergoeconomic analysis and optimization of a combined double flash – binary cycle for Ulubelu geothermal power plant in Indonesia](#)

A Rachmat, Nasruddin, A S Wibowo and A Surachman.....545

[Hourly solar radiation in Depok, West Java, Indonesia \(106.7942 Longitude, -6.4025 Latitude\)](#)

Nasruddin, M Arif Budiyanto and M Hanafi Lubis.....552

[Prediction of ignition delay time of Liquefied Gas for Vehicle \(LGV\)](#)

Y Muharam, F M Nur, T D Vollmer and A P Ramadhania.....559

[Numerical study on natural circulation characteristics in FASSIP-02 experimental facility using RELAP5 code](#)

A R Antariksawan, S Widodo, M Juarsa, D Haryanto, M H Kusuma and N Putra.....565

[Estimation of natural circulation flow based on temperature in the FASSIP-02 large-scale test loop facility](#)

M Juarsa, A R Antariksawan, M H Kusuma, D Haryanto and N Putra.....571

[The effect of processing methods on the improvement of tensile properties of Random Ramie Fiber – Reinforced Tapioca Starch Biocomposites](#)

H Judawisastra, Y S Syamsiar and Mardiyati.....578

[The use of Silica from beach sand as catalyst in Magnesium based hydrides for Hydrogen storage materials](#)

Zulkarnain Jalil, Adi Rahwanto, Hizir Sofyan, Mustafa Usman and Erfan Handoko.....584

[Micro-Bubble drag reduction with triangle bow and stern configuration using porous media on self propelled barge model](#)

Yanuar, K T Waskito, B A Rahmat, A Y Perdana and B D Candra.....589

[Selecting and testing of wind turbine blades of the local-wood growing fastly on local wind characteristics](#)

Adi Surjosatyo, Bagus Rizky Dewantoro, Budiman R Saragih, Filbert Nainggolan, Wahyu Dwianto and Teguh Darmawan.....599

[Formulating smart integrated workspace concept to improve energy efficiency](#)

M A Berawi, P Miraj and F Naomi.....605

[Increasing energy efficiency by considering building's life cycle](#)

M A Berawi, A Sihombing, P Miraj and R Windrayani.....611

[MgH₂-SiC based hydrogen storage material prepared by reactive mechanical alloying method](#)

Zulkarnain Jalil, Adi Rahwanto, Hasan Akhyar, Razali Razali and Erfan Handoko.....616

[Thermodynamic analysis and multi objective optimization of kalina and absorption cycle for power and cooling driven by lahendong geothermal source](#)

Nasruddin, Ratna Monasari, Bagus Rizky Dewantoro, Mochammad Ilham Attharik, Agung Satrio Wibowo and Arief Surachman.....621

[Sodium percarbonate addition as electrolyte and buffer to produce electricity economically using industrial-tempeh-wastewater based microbial fuel cell](#)

M A H V Kurnia, T S Utami and R Arbianti.....627

[Utilization of sesame seed sprout biomass as lipase source to hydrolyse palm oil](#)

S Lalang Jati, A Nadia Tuada, U T Surya and H Heri.....633

[Experimental study on horizontal axis wind turbine with splitted winglets](#)

J Pratilastiarso, S Nugroho, E Tridianto and R I Syifa.....638

[Synthesis of biodiesel from palm oil with dimethyl carbonate and methanol as reagent variation using KOH and enzyme catalyst](#)

Setiadi, Hamid and Fairuz Nawfal.....644

[Effect of medium and incubation time on production of AA, DHA and EPA from *Aspergillus oryzae* by solid state fermentation](#)

N P Pinasthika, R Arbianti, T S Utami and H Hermansyah.....651

[Investigation of biomass gasification using indonesian clay as catalyst](#)

SD Sumbogo Murti, Yuta Sudo, Sun Yan, Adiarso and Reiji Noda.....657

[Measurement of thermal radiative heat transfer using a multi-axis heat flux sensor](#)

Reisa Adityo, Rahmat Agung, Pujo Satrio and Yulianto S. Nugroho.....664

[Effect of nano Si addition on synthesized LTO for lithium battery anode](#)

A Zulfia, R Satria, B Priyono and A Subhan.....671

[The impact analysis of postage multi-tariff system on gas transportation through the pipeline to increase gas price efficiency as the attraction of more environmentally friendly power plant substitution](#)

A Bawono and E Kusri.....677

[Utilization of waste heat from separation process of Ulubelu's geothermal power plant by implementing an Absorption Refrigeration System \(ARS\) to improve plant performance](#)

Nasruddin and Agung Satrio Wibowo.....683

[Comparative study of the monthly global solar radiation estimation data in Jakarta](#)

Nasruddin, Muhammad Arif Budiyo and Reyzando Nawara.....690

[The effect of centrifugation speed and Chitosan-Sodium Tripolyphosphate ratio toward the nanoencapsulation of Sambilo \(*Andrographis paniculata*\) for the formulation of Hepatitis B drug](#)

Devi Permata Sari, Tania Surya Utami, Rita Arbianti and Heri Hermansyah.....696

[Effect of pH, temperature and medium agitation rate in production of AA, DHA, EPA from *Aspergillus oryzae* with submerged fermentation](#)

Astrid Miranti, Rita Arbianti and Tania Surya Utami.....702

[Enhanced electrochemical performances of Li₄Ti₅O₁₂/Sn composites anode via sol-hydrothermal method for lithium ion batteries](#)

A Z Syahrial, F Aldy, B Priyono and A Subhan.....709

[The influence of Titanium alloying and Co₃O₄ coating on the oxidation behavior of Fe-20Cr ferritic stainless steels for SOFC interconnects](#)

A R Setiawan, A. Ramelan, R. Suratman and A M Qizwini.....716

[Preparation of activated carbon from babassu endocarp under microwave radiation by physical activation](#)

Maria de Fatima Salgado, Adekunle Moshood Abioye, Muhammad Mat Junoh, João Alberto Porto Santos and Farid Nasri Ani.....722

[Ecotect design simulation on existing building to enhance its energy efficiency](#)

D Trisnawan.....735

[Estimating greenhouse gas emission level of a natural gas transmission pipeline from point A to B in West Java based on INGAA and IPCC guidelines](#)

Cindy Dianita, Asep Handaya Saputra and M B P Almagistra.....740

[Modeling of turbine follow control with internal model control tuning method based on hysys](#)

T B Satriyo, H E G Prasetya and P D Permatasari.....746

[Optimizing the performance of \$\text{Li}_4\text{Ti}_5\text{O}_{12}\$ /LTO by addition of silicon microparticle in half cell lithium-ion battery anode](#)

B Priyono, P W Winowatan, A Z Syahrial, Faizah and A Subhan.....752

[Experimental Investigation on the Reduction of Catalyst Costs in the Polyethylene Pyrolysis Process](#)

G K Upreti, S Awad, G Burnens, C Kassargy and M Tazerout.....761

[Utilization of super hydrophobic membrane contactor for NO_x Absorption](#)

S Kartohardjono, S Stephanie, Meylin, A O Dixon and Nelson Saksono.....767

[Tapioca and tofu waste utilization to produce AA, DHA, and EPA](#)

Ardita Rizky Putri Arcanggi, Prastiwi Arum, Ahmad Rafif, Adinda Eka, Kemala, Mustika Sari, Rita Arbianti, Tania Surya Utami and Heri Hermansyah.....772

[Tariff calculating model for natural gas transportation through open access transmission pipeline with multi tariff system to increase gas usage as clean energy](#)

A A Bawono and E Kusriani.....782

[Lipase production from *Bacillus subtilis* with submerged fermentation using waste cooking oil](#)

M Suci, R Arbianti and H Hermansyah.....788

[Design and calculation of mechanical system for solar-powered electric boat](#)

Sunaryo, Dendi Nurachman and Pradhana S Imfianto.....794

[Synthesis and characteristic of \$\text{Cu}_2\text{ZnSnS}_4\$ thin film prepared by appropriate non-stoichiometry precursor](#)

B Munir, B E Prastyo and E Y Muslih.....801

[Output voltage characteristic of heat pipe sink thermoelectric generator with exhaust heat utilization of motorcycles](#)

Wayan Nata Septiadi, Gemilang Ayu Iswari, Muhammad Ainur Rofiq, Bobby Gitawan, Jeplind Morico Gugundo and Chris Ave Duga Purba.....808