

4th International Conference on Advanced Material for Better Future (ICAMBF 2019)

Insight Toward Novel Research in Field of
Materials for a Better Life

IOP Conference Series: Materials Science and Engineering
Volume 858

Surakarta, Indonesia
7 - 8 October 2019

ISBN: 978-1-7138-3616-2
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. (2021)

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

CIVIL AND CONSTRUCTION MATERIALS (CCM)

THE IMPLEMENTATION OF ROAD EVALUATION AND MONITORING SYSTEM AT THE CITY ROAD CONDITIONS	1
<i>Martri Daniyati, Ary Setyawan, F. Pungky Pramesti, Bayu Setyawan</i>	
THE EFFECT OF VEHICLE SPEED ON THE STIFFNESS MODULUS OF CONVENTIONAL ASPHALT AND BIOASPHALT	7
<i>R A S S Putra, A Setyawan, F P Pramesti</i>	
THE ASSESSMENT OF PHYSICAL CONDITION OF DELINGAN DAM IN 2019 AS AN EVALUATION ON DAM MAINTENANCE	17
<i>Erhar Augusto, Cahyono Ikhsan, Rintis Hadiani</i>	
RETENTION POND AND PUMP STATION AS AN ALTERNATIVE TO FLOOD MANAGEMENT IN BENGAWAN JERO IRRIGATION AREA	24
<i>Sabdoyono Wiyasa Harimurti</i>	
USING BAKING POWDER AS ADDITIONAL CONCRETE MATERIAL	31
<i>FK Budi Nugroho, S Sumarni, A G Thamrin, Roemintoyo, FD Isnantyo</i>	
UTILITY OF LOCAL QUARTZ POWDER AND SILICA FUME TO PRODUCE HIGH EARLY STRENGTH OF SELF COMPACTING HIGH STRENGTH CONCRETE	40
<i>A Lisantono, J B Susanto</i>	

MATERIALS CHEMISTRY AND PHYSICS (MCP)

EFFECT OF WATER CONTENT ON THE CHARACTERISTICS OF BAGASSE ASH-CALCIUM CARBIDE RESIDUE STABILIZED ORGANIC SOIL	47
<i>J Hatmoko, L Handoko</i>	
CONSTRUCTING HYDROTALCITE MG-AL-CO ₃ BY UTILIZING CO ₂ ²⁻ FROM NATURAL RESOURCE	56
<i>L Mahardiani, S Saputro, R Arinda, Y F Astuti</i>	
SIMPLE SYNTHESIS OF RGO (REDUCED GRAPHENE OXIDE) BY THERMAL REDUCTION OF GO (GRAPHENE OXIDE)	61
<i>R Hidayat, S Wahyuningsih, AH Ramelan</i>	
FREUNDLICH ADSORPTION ISOTHERM IN THE PERSPECTIVE OF CHEMICAL KINETICS (III): ISOLATION METHOD APPROACH	69
<i>Patiha, M Firdaus, S Wahyuningsih, F Rahmawati, T Kusumaningsih</i>	
PHASE CHARACTERIZATION AND ELECTRICAL PROPERTIES OF FLUORHYDROXYAPATITE : INFLUENCE OF MOLARITY VARIATION AND MICROWAVE IRRADIATION	76
<i>Z S Kubro, K Dahlan, S T Wahyudi</i>	
CHARACTERIZATION AND PERFORMANCE OF LOW COST AMENDMENTS TO IMMOBILIZE LEAD IN CONTAMINATED SOIL	85
<i>Himawan, P Setyono, S Suntoro, Sentot B Rahardjo</i>	

FTIR, SEM AND MICRO-CT SCAN RESULTS OF BIOCOMPOSITE SCAFFOLD CHARACTERISTICS.....	93
<i>K Dahlan, D Y Asra, Y W Sari</i>	
ADSORPTION OF PB(II) ION USING PECTIN MEMBRANE.....	99
<i>B Hastuti, S Hadi</i>	
PREPARATION OF NI/ZEOLITE AS ESTERIFICATION CATALYST IN BIODIESEL PRODUCTION BASED ON OFF-GRADE CRUDE PALM OIL	105
<i>Mazlan, W A Lestari, A Istiqomah, D Krisdiyanto, A W Afrianto</i>	
STUDIES ON THE OPTICAL AND MORPHOLOGY PROPERTIES OF DN-F01 DYE HYBRID BLACK RICE AND AG METAL AS DYE-SENSITIZED SOLAR CELLS (DSSC) TRANSPARENT	116
<i>N E-H Diyanahesa, A Supriyanto, A H Ramelan, M Khairul bin Ahmad, F Nurosyid, S Wahyuningsih, C Cari</i>	
SYNTHESIS, CHARACTERIZATION AND BIODIESEL CONVERSION OF MONODISPERSED SULFONATED-SILICA NANOPARTICLES	124
<i>W A Lestari, O A Saputra, E Pramono, A P Chaniago</i>	
EFFECTS OF HSQ4 CONCENTRATION INTO DYES OF CARICA PAPAYA ON THE PERFORMANCE OF DYE-SENSITIZED SOLAR CELL.....	132
<i>Agus Supriyanto, Fernince Ina Pote, A. H. Ramelan, Fahru Nurosyid, Sayekti Wahyuningsih</i>	
FACILE AND RAPID SYNTHESIS OF TETRAKIS-2-AMINO-5-METHYLPYRIDINECOPPER(II) CHLORIDE PENTAHYDRATE.....	140
<i>H Syaïma, S B Rahardjo, V Suryanti</i>	
PREPARATION COMPOSITE TIO ₂ ANATASE WITH POLYDIMETILSILOXANE AND POLYTETRAFLUOROETHYLENE FOR SELF CLEANING ON GLASS SUBSTRATE.....	147
<i>S Wahyuningsih, A H Ramelan, A N Firdaus, R E Cahyono</i>	
ELECTROSYNTHESIS OF HYDROXYAPATITE BY MULTIPLE ELECTRODE ARRANGEMENT	154
<i>T Salsabila, W Widiyastuti, H Setyawan</i>	
SYNTHESIS N DOPED TÍO ₂ /PTFE BY SOLVOTHERMAL METHOD AND THEIR SELF CLEANING PERFORMANCE	160
<i>F N Aini, S Hastuti, S Wahyuningsih</i>	
SLOW PYROLYSIS OF COCONUT WOOD (COCOS NUCIFERA L.) AND BIO-CHAR COMPOSITIONS	167
<i>Pranoto, D M Widjonarko, S Rafidah, E Elmatiana</i>	
THE EFFECT OF TEMPERATURE ON LIGNIN PURIFICATION FROM BIOETHANOL PRODUCTION WASTE BASED ON PALM OIL EMPTY FRUIT BUNCH	173
<i>W A Lestari, M R Utami, A Istiqomah, A H Setiawan</i>	
<u>DRUG AND BIOMATERIALS TECHNOLOGY (DBT)</u>	
ANTIHYPERCHOLESTEROLEMIA ACTIVITIES OF RED GINGER EXTRACT (ZINGIBER OFFICINALE ROXB. VAR RUBRUM) ON WISTAR RATS.....	180
<i>S Jovita Nirvana, T Widiyani, A Budiharjo</i>	

OPTIMIZING ANTIOXIDANT SUBSTANCES EXTRACTION PRODUCED BY HOLOTHURIA ATRA USING ULTRASONIC WITH RESPONSE SURFACE METHOD.....	187
<i>T Murniasih, Muthi'ah, S B Widjanarko</i>	
WOUND HEALING ACTIVITY OF SKIN INCISION AND SKIN BURN FROM SPRAY GEL FORMULA CONTAINS COMBINATION OF BANANA STEM (MUSA ACUMINATA COLLA) AND ALOE VERA ETHANOL EXTRACTS ON MICE	199
<i>W Kundarto, K A Y Pangesti, F Shabrina, H Sasongko</i>	
THE EFFECT OF HEAT TREATMENT ON ANTIOXIDANT ACTIVITY OF ETHYL ACETATE EXTRACTS ARBILA BEANS FROM KAPAN, EAST NUSA TENGGARA	204
<i>H Funome, A Pangastuti, R Setyaningsih</i>	
COMPARISON OF BLASTING CREAM ANADARA GRANOSA WITH MYTILUS VIRIDIS IN WHITE RAT SKIN(RATTUS NOVERGICUS)	211
<i>Ariyanti Ariyanti, Eni Masruriati, Sulistyani Mardaning Tyas, Khilya Aulia Nur Khasanah</i>	
MICROENCAPSULATION OF RIBOFLAVIN (VITAMIN B ₂) USING ALGINATE AND CHITOSAN : EFFECT OF ALGINATE AND CHITOSAN CONCENTRATION UPON ENCAPSULATION EFFICIENCY	220
<i>YC. Danarto, Rochmadi, Budhijanto</i>	
INHIBITION OF PSEUDOMONAS AERUGINOSA VIRULENCE FACTORS EXPRESSION REGULATED BY QUORUM SENSING SYSTEM USING ETHYL ACETATE EXTRACT OF TEMU IRENG (CURCUMA AERUGINOSA)	226
<i>A Pangastuti, SL Arum Sari, ER Nugraheni, RT Astuti</i>	
NANOCOMPOSITE MESOPOROUS SILICA-ALGINATE HYDROGELS FOR EXTENDED DELIVERY OF ANTIBIOTICS	233
<i>Michael, S Caroline, J Lady, E A Prasetyanto</i>	
DEVELOPMENT OF HYBRID GELATINE/ALGINATE/PVA HYDROGELS FOR EXTENDED DELIVERY OF ANTIBIOTICS	237
<i>A. Mujono, J. Evelyn, E.A. Prasetyanto</i>	
CATHAFILINE FROM CASSYTHA FILIFORMIS AND BR-XANTHONE A FROM GARCINIA MANGOSTANA AS POTENTIAL BONE MORPHOGENETIC PROTEIN RECEPTOR TYPE I (BMPR-I) INHIBITOR FOR IRON-REFRACTORY IRON DEFICIENCY ANEMIA IN SILICO	242
<i>Y H Suselo, A Alhaqq, D Indarto</i>	
<u>ELECTRICAL, OPTICAL AND MAGNETIC MATERIALS (EOM)</u>	
EFFECT OF TiO ₂ ADDITION ON OPTICAL PROPERTIES OF TeO ₂ -ZNO-PBO GLASSES.....	249
<i>Ahmad Marzuki, Devara Ega Fausta</i>	
TEMPERATURE-DEPENDENT PHOTOLUMINESCENCE OF H ₂ TPP AND ZNTPP THIN FILMS ON SI SUBSTRATES	254
<i>Nurhayati, V Suendo, A A Nugroho, A Alni</i>	
<u>POLYMER & COMPOSITE MATERIALS (PCM)</u>	
STARCH-BASED BIOFOAMS REINFORCED WITH MICROCRYSTALLINE CELLULOSE FROM BANANA STEM: HYDROPHOBICITY AND BIODEGRADABILITY	260
<i>S Fatrozi, L Purwanti, S K Sari, M N Ariesta, T Kusumaningsih, S D Marliyana</i>	

THE ANALYTICAL AND NUMERICAL SOLUTIONS OF TWO DIMENSIONAL HEAT TRANSFER EQUATION IN A MULTILAYERED COMPOSITE CYLINDER 266
S Alaa, Irwansyah, D W Kurniawidi, S Rahayu

THE EFFECTIVENESS OF ZEOLITE/CLAYSTONE/ACTIVATED CHARCOAL COMPOSITE IN REDUCING LEVELS OF MERCURY (HG) IN THE WASTE RESULTING FROM THE ACTIVITIES OF UNLICENSED GOLD MINING (PETI) IN SINTANG..... 274
Dwi Rizaldi Hatmoko, Ari Handono Ramelan, Pranoto

THE ASSESSMENT OF CLAYSTONE, QUARTZ AND COCONUT SHELL CHARCOAL FOR ADSORBING HEAVY METALS IONS IN ACID MINE DRAINAGE..... 283
F Mukarrom, Pranoto, R Karsidi, E Gravitiani, F Astuti, W Maharditya

TEST THE EFFECTIVENESS AND CHARACTERIZATION OF QUARTZ SAND/COCONUT SHELL CHARCOAL COMPOSITE AS ADSORBENT OF MANGANESE HEAVY METAL..... 291
Pranoto, Tri Martini, Fitri Astuti, Winda Maharditya

FABRICATION OF SILVER-CHITOSAN NANOCOMPOSITE FILMS AND THEIR ANTIBACTERIAL ACTIVITY 299
E Susilowati, Maryani, Ashadi, Marwan

FUNCTIONAL MATERIALS (FM)

STUDY OF ADSORPTION-DESORPTION AU(III) USING IMPRINTED IONIC MATERIAL (SIO² (RHA-BGS)-TMPDT-AU-IMP) 310
F R Prasetyaningrum, S Hastuti, S Wahyuningasih, T Martini

THE DEGREE OF LITHIUM (LI) STABILITY COMPARED TO CALCIUM (CA) AND MAGNESIUM (MG) FROM LOW LITHIUM GRADE BRINE WATER WITH ADDITION OF LIMESTONE AND OXALIC ACID 317
F. Firdiyono, Latifa Hanum Lalasari, Ermiziar Tarmizi, Eko Sulistiyono, Lia Andriyah, Tri Arini, Nadia C. Natasha, Fariza E. Yunita

METALLURGY & ALLOY MATERIALS (MAM)

TIME AND AMPLITUDE EFFECT ON NANO MAGNESIUM OXIDE SYNTHESIS FROM BITTERN USING SONOCHEMICAL PROCESS 324
F E Yunita, N C Natasha, E Sulistiyono, A R Rhamdani, A Hadinata, E Yustanti

ANTI FOULING COATING CHARACTERIZATION WITH PURIFIED ZIRCONIA FROM WEST KALIMANTAN ZIRCON SAND FOR BOILER APPLICATION..... 332
Yulinda Lestari, Anne Zulfia, Radhian Krisnaputra, Nareswari Novita Satiti, Eko Sulistiyono, Efendi Maburri

DISSOLUTION OF QUARTZ SAND IN SODIUM HYDROXIDE SOLUTION FOR PRODUCING AMORPHOUS PRECIPITATED SILICA 339
E Febriana, U A B Manurung, A B Prasetyo, M Handayani, E Y Muslih, F Nugroho, E Sulistiyono, F Firdiyono

IDENTIFICATION OF QUARTZ SAND FROM THE HILLS OF GUNUNG WALAT AT SUKABUMI REGENCY FOR RAW MATERIALS OF NANO SILICA PRECIPITATE 347
E Sulistiyono, M Handayani, A B Prasetyo, Y Irawan, E Febriana, S N Sembiring, E Yustanti

PITTING CORROSION RESISTANCE OF CA6NM AND 410 MARTENSITIC STAINLESS STEELS IN VARIOUS ENVIRONMENTS.....	354
<i>E Mabururi, H M Sigit, M S Anwar, M A Prasetyo, A Nikitasari, A De Fretes</i>	

MISCELLANEOUS TOPICS (MT)

MODAL CHARACTERIZATION OF PLANAR WAVEGUIDE FORMED BY AG ⁺ /NA ⁺ ION EXCHANGE IN SODA LIME GLASS.....	361
<i>Ahmad Marzuki, Seran Daton Gregorius</i>	

DECISION SUPPORT SYSTEM FOR DETECTION OF SKIN DISEASES IN SMART HEALTH DEVELOPMENT PLANNING	368
<i>Hartatik, Abdul Aziz, Rudi Hartono, Rizal Abdilah</i>	

CHEMISTRY OF NATURAL DYES OF BATIK CRAFTS COLOURING PROCESS.....	376
<i>S Wahyuningsih, Rahmawati, S R Handayani, Setyaningsih, Ponimah</i>	

A NOVEL METHOD TO STUDY THE TWIST DYNAMICS IN CHIRAL NEMATIC LIQUID CRYSTALS BY TEXTURE ANALYSIS	385
<i>R Suryantari, Flaviana</i>	

EFFECT OF DVB ON ADSORPTION OF METHYLENE BLUE USING COPOLY(EUGENOL- STREARYL ACRYLATE-DVB).....	392
<i>D S Handayani, A Masykur, N Nareswari</i>	

POWER EFFICIENCY ANALYSIS IN VARIOUS TYPES OF COIL DESIGN.....	398
<i>N Sari, M Khoiro, AY Rohedi, G Yudoyono, YH Pramono</i>	

APPLICATION TO MEASURING FOOD BUSINESS OPPORTUNITIES FOR THE DEVELOPMENT OF SMART CITIES	402
<i>Hartatik, W Putri Ayu</i>	

Author Index