

Life Science, Materials and Applied Chemistry

Selected peer-reviewed extended papers
abstracts of which were presented at the
7th Symposium of Life Science, Materials and Applied
Chemistry (7th ICST_LSMAC, 2021)

Aggregated Book

Edited by

**Ahmad Kusumaatmaja, Dr. Ruchi Gupta,
Dr. Melati Khairuddean, Dr. Roto Roto,
Prof. Nobuyuki Ichikuni, Prof. Laurent Commeiras,
Dr. Adhi Dwi Hatmanto,
Dr. Muhammad Idham Darussalam Mardjan
and Dr. Taufik Abdillah Natsir**

■
■ **Scientific.Net** ■

Copyright © 2022 Trans Tech Publications Ltd, Switzerland

All rights reserved. No part of the contents of this publication may be reproduced or transmitted in any form or by any means without the written permission of the publisher.

Trans Tech Publications Ltd
Seestrasse 24c
CH-8806 Baech
Switzerland
<https://www.scientific.net>

Volume 13 of
Scientific Books Collection
ISBN 978-3-0357-1684-9

Full text available online at <https://www.scientific.net>

Distributed worldwide by
Trans Tech Publications Ltd
Seestrasse 24c
CH-8806 Baech
Switzerland
Phone: +41 (44) 922 10 22
e-mail: sales@scientific.net

Printed with permission by
Curran Associates Inc. (2023)

CURRAN ASSOCIATES INC.
proceedings
.com

Additional copies of this
publication are available from:

Web: www.proceedings.com/68401.html

Table of Contents

Preface	v
Committees	vi
Chapter 1: Environmental Chemistry	
Greener Procedure of Dithizone Immobilization on Coal Bottom Ash for Heavy Metal Adsorbent: Synthesis Optimization and Characterization	
B.N. Huda, E.T. Wahyuni and M. Mudasar	3
Immobilization of Dithizone on Coal Fly Ash in Alkaline Medium as Adsorbent of Cd(II) Ion	
G. Miranda, E.T. Wahyuni and M. Mudasar	11
Modification of Coal Fly Ash with Dithizone for Adsorption of Ni(II) Metal Ion	
D.N. Rohmah, N.H. Aprilita and M. Mudasar	20
Citric and Tartaric Acids Effect on Zn²⁺ Desorption in the Soil around Textile Industry Area-Yogyakarta	
F.F. Oktavianti, T.A. Natsir and S. Suherman	28
Synthesis of Polymer-Derived Carbon for Ibuprofen Removal from Simulated Wastewater	
A.S. Mutia, I. Prasetyo and T. Ariyanto	34
Hydrocracking of LDPE Plastic Wastes into Liquid Fuel by Natural Zeolite Supported Nickel Metal	
M. Taufiqurrohaman, K. Wijaya, A. Nadia, S.E. Purba and A. Syoufian	41
Adsorption of Coomassie Brilliant Blue by Alginate-Chitosan Nanoparticles	
J.A. Putri, A. Suratman and R. Roto	46
Chapter 2: Agricultural Chemistry	
Synthesis Bioplastic Fertilizer of Carboxymethyl Cellulose/N-P-K/Zeolite Using Twin-Screw Extruder as a Model Slow-Release	
S. Wahyuni, S. Suyanta, B.B. Sedayu, W. Nafisyah and I. Kartini	59
The Effect of Polyurethane Multilayer Coating on Nitrogen Release from Controlled Release Fertilizer	
A.R. Wicaksono, Y. Kusumastuti and J. Widada	65
Kinetics Study of Chicken Breast Meat (<i>Pectoralis major</i>) Color Changes Measured Using the TCS 3200 Color Sensor during Storage at Room Temperature	
P.W. Nastiti, N. Bintoro, J.N.W. Karyadi and S. Rahayoe	72
Identification of Toxic Heavy Metals and Trace Elements in Pesticides Used by Shallots (<i>Allium Cepa</i> Var. <i>Aggregatum</i>) Farmers in Brebes District, Indonesia	
S. Murniasih, S.J. Santosa and R. Roto	80
Synthesis of Carboxymethyl Cellulose/Bentonite/N-P-K Composite as Slow-Release Fertilizer Model Using Twin-Screw Extruder	
W. Nafisyah, S. Sutarno, B.B. Sedayu, S. Wahyuni and I. Kartini	89

Vis-NIR Spectroscopy and PLS-Da Model for Classification of Arabica and Robusta Roasted Coffee Bean

M.F.R. Pahlawan and R.E. Masithoh..... 97

Chapter 3: Biomaterials and Pharmaceutical Chemistry**One-Pot Synthesis and Antioxidant Activity of 4-Phenoxyquinoline Derivative from Clove Leaf Oil**

S.M. Lubis, M.F. Hariadi, N. Amalia, M. Inung, B. Purwono, Priatmoko and M.I.D. Mardjan..... 107

Synthesis, Characterization and Molecular Docking of New Naphthalene-Based Chalcone and Pyrazoline Compounds

T.E. Othmani, M.M. Alidmat, M. Khairuddean and T.D. Wahyuningsih..... 113

Molecular Docking Study, Synthesis and Characterization of New Hybrid Anthracene-Thiophene Compounds with Chalcone and Pyridine Scaffolds

B.I. Bakar, M.M. Alidmat, M. Khairuddean and T.D. Wahyuningsih 121

Effect of Titania and Silver Nanoparticles on the Tensile Strength of Cement-Like Mineral Trioxide Aggregate

M.W.A. Wibowo, A.I. Yunita, L. Mukaromah, I. Kartini and N. Nuryono 128

Synthesis of White Mineral Trioxide Aggregate (WMTA) Using Silica from Rice Husk Ash and CaCO₃ from Limestone

A.I. Yunita, M.W.A. Wibowo, S. Suyanta and N. Nuryono..... 134

Designing Derivative Compounds of 4-Chlorophenoxy N-Alkyl Phosphoramidates as Anti-Cervical Cancer Agents Based on QSAR Model

C.A. Utri, H.D. Pranowo and D. Pranowo 141

Molecular Docking Study for Prediction of Chiral HPLC Separation of Hydroxychloroquine as an Alternative Antiviral of SARS-CoV-2

P.C. Moneteringtyas, A. Kuncaka, D. Hermawan and M. Mudasir 149

Molecular Docking Approach for Prediction of Enantioseparation of Chiral Ibuprofen by α -1-Acid Glycoprotein Column

U.R. Putri, D. Siswanta, D. Hermawan and M. Mudasir 157

Molecular Docking Approach for Prediction of Chromatographic Chiral Separation of Ketorolac Using AGP Column

R. Sabdowati, D. Siswanta, D. Hermawan and M. Mudasir..... 163

Chapter 4: Materials and Technologies of Chemical Production and Biomass Processing**Nanocatalysts of Sulfated Zirconia and Calcium Oxide/Zirconia for Microwave-Assisted Biodiesel Synthesis from Castor Oil**

R.Z. Andiena, K. Wijaya and A. Syoufian 173

Encapsulation of Lipase Enzyme in Silica Gel Matrix from Rice Husk Ash and Transesterification Reaction Activity Test on Palm Oil

L.E.Y. Rahayu, D. Pranowo and T.J. Raharjo 183

Dual Function of Sugarcane Bagasse Ash in Removing Au(III) from Aqueous Solution

S.J. Santosa, N. Nuryono, F.N. Aisyah and M. Hadi..... 190

Immobilization of Ascorbic Acid on Ni-Zn Layered Hydroxide Salts and its Application as $[\text{AuCl}_4]^-$ Adsorbent	
M.M. Christina, B. Rusdiarso and S.J. Santosa	200
Kinetic Study of Polymerization Reaction of Bisphenol a Diglycidyl Ether and Terephthalic Acid	
R. Romadhona, Rochmadi, T. Ariyanto and D.T. Hartanto	208
Effect of Ethylene Glycol on Gas Permeability and Selectivity of CH_4/CO_2 Gas Separation in Zeolite/Alginate Membrane	
T. Suraya, R.C.M. Pratiwi and A. Suratman.....	214
Aluminosilicate Based Solid Acid Catalyst: Effect of Calcination Time, OH/Al Ratio and Keggin Ion Concentration on its Preparation	
A. Mara, R.A. Pratika, K. Wijaya, W. Trisunaryanti, M. Mudasir, H. Ismail, B. Budhijanto and A. Nadia	221
Molybdenum-Tungsten Blue Dispersions: Some Properties of the Colloid System	
M. Myachina, N. Gavrilova and V. Nazarov	229
Chapter 5: Materials Computational Study Based on Density Functional Theory	
Interaction of C_{60} with Small Molecules: Adsorption - Inclusion Energy Calculation Using the Density Functional Theory	
Y.N. Apriati, A.D. Nugraheni and S. Sholihun	237
Strain Effects on the Band Structures of Monolayer GaN from the Density Functional Theory	
S. Hidayati and S. Sholihun	246
Unveiling Electronic Structure and Spin-Resolve of Bulk $\text{Bi}_2\text{O}_2\text{X}$ (X = S, Se, and Te) Materials: A Computational Study Based-On Density Functional Theory	
L.D. Falihin, Harsojo and M.A.U. Absor	252
Chapter 6: Materials for Sensors and Detection Technologies	
Synthesis of Sodium Citrate-Capped Gold Nanoparticles and its Application for Creatinine Detection in Urine Sample by Colorimetric Analysis Based on the Red-Green-Blue (RGB) Digital Image	
H. Findari, Mudasir and S.J. Santosa.....	261
GMR Biosensor Based on Spin-Valve Thin Films for Green-Synthesized Magnetite (Fe_3O_4) Nanoparticles Label Detection	
N. Mabarroh, T. Alfansuri, N.I. Istiqomah, R.M. Tumbelaka and E. Suharyadi.....	270
Preliminary Research on the Analysis of Chromium(III) Based on Digital Image Processing Method Utilizing Gold Nanoparticles as Colorimetric Sensor	
P.S. Dyaninggar, S.J. Santosa and B. Rusdiarso.....	276
Leaky Waveguide Grating (LWG) Biosensor	
R. Gupta, A. Pal and N.J. Goddard.....	284
Keyword Index	291
Author Index	293