# International Conference on Condensed Matters and Advanced Materials (IC2MAM 2018)

IOP Conference Series: Materials Science and Engineering Volume 515

Malang, Indonesia 5 September 2018

**Editor:** 

**Nandang Mufti** 

ISBN: 978-1-5108-8540-0 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 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 515

International Conference on Condensed Matters and Advanced Materials (IC2MAM 2018)

5 September 2018, Universitas Negeri Malang, Malang, Indonesia

### Preface

Peer review statement

### Papers

Moving Molecules in Crystalline Solids: Gradual Structure Transition and Spin Transition/Crossover

Takayuki Ishida.....1

Efficiency Enhancement of Dye-Sensitized Solar Cells (DSSCs) using Copper Nanopowder (CuNW) in TiO<sub>2</sub> as Photoanode

Shahan Shah, N.N.S. Baharun, S.N.F. Yusuf and A.K. Arof....17

Carbon Adsorbents from Sugarcane Bagasse Prepared through Hydrothermal Carbonization for Adsorption of Methylene Blue: Effect of Heat Treatment on Adsorption Efficiency

Preeyanit Buapeth, Waralee Watcharin, Decha Dechtrirat and Laemthong Chuenchom.....27

Crystal Structure Evolution of Magnetite Ferrofluids: Effect of Heating Treatment

Ahmad Taufiq, Nurul Hidayat, Rosy Eko Saputro, Sunaryono and Hendra Susanto.....34

Synthesis and Characterization of Rotary Forcespun Polyvinylpyrrolidone Fibers Loaded by Garlic (*Allium sativum*) Extract

Fathiyah Zahra, Ahmad Fauzi, Muhammad Miftahul Munir and Khairurrijal Khairurrijal.....41

The Effect of Annealing Temperature of ZnO Compact Layer and TiO<sub>2</sub> Mesoporous on Photo-Supercapacitor Performance

Thathit Suprayogi, Moh. Zahir Masrul, Markus Diantoro, Ahmad Taufiq, Abdulloh Fuad and Arif Hidayat.....47

The Effect of Photoanode TiO<sub>2</sub>/ZnO Ratio in Perovskite Solar Cell and Its Photosensitivity and Solar Cell Performance

Siti Maryam, Nandang Mufti, Abdulloh Fuad, Hari Wisodo and Sunaryono.....58

<u>Magneto-Thermal Effect in Mn<sub>0.25</sub>Fe<sub>2.75</sub>O<sub>4</sub>-PEG Nanoparticles and Their Potential as</u> <u>Hyperthermia Therapy</u>

Sunaryono, Kormil Saputra, Arif Hidayat, Chusnana Insjaf Yogihati, Sigit Tri Wicaksono, Nurul Hidayat, Samsul Hidayat and Siriwat Soontaranon.....66

X-ray Diffraction (XRD) and X-ray Absorption Near Edge Spectroscopy (XANES) Analyses of LiFe<sub>1-x</sub>Cu<sub>x</sub>PO<sub>4</sub> Powders

A. F. Muyasaroh, C. Latif, S. Lapboonruang, A. Firdausi, D. Mardiana and S. Pratapa.....77

PMMA-LiBOB Gel Polymer Electrolytes in Lithium-Oxygen Cell

M Z Kufian, A K Arof and S. Ramesh.....82

Occupancy Fluctuation Effects on 3D Hubbard Model at Quarter Filling within Dynamical Mean-Field Theory

N. A. Tadjuddin, C. N. Rangkuti and M. A. Majidi.....91

In-situ High-Resolution Transmission Electron Microscopy and X-ray Diffraction Studies on Nanostructured  $\beta$ -SiC and Its Promising Feature for Photocatalytic Hydrogen Production

Nurul Hidayat, Abdulloh Fuad, Nandang Mufti, Ummu Kultsum, Anggun Amalia Fibriyanti, Sunaryono and Bambang Prihandoko.....98 The Potency of Biologically Synthesized Silver Nanoparticles Using *Andrographis Paniculata* Extract (S-AgNp) as an Antibacterial Agent

Ni Nyoman Rupiasih, Gusti Ayu Putu Cyntia Dewi, I Wayan Supardi and I Ketut Putra.....106

Structural Characterization of Ni/ZrO<sub>2</sub>/SiO<sub>2</sub> Nanocomposites Prepared by Wet Impregnation Route

Siti Mariyah Ulfa, Dita Prihartini and Ahmad Taufiq.....115

Analysis of Fe in Sediment Material using a Modified Tessier Technique for Detection of Fe-Anthropogenic and Fe-Naturals

A R Wijaya, R I Arifani, I K Kusumaningrum, E Budiasih, H Daupor, Md. S Hossain and E H Sanjaya.....121

Electron Diffusion Model Based on *I-V* Data Fitting as the Calculation Method for DSSC Internal Parameters

Markus Diantoro, Solehudin, Arif Hidayat, Z. A. Imam Supardi and Setia Budi.....128

<u>Phase and Magnetic Properties of Fe<sub>3</sub>O<sub>4</sub>/SiO<sub>2</sub> Natural Materials-Based Using</u> <u>Polyethylene Glycol Media</u>

Munasir, N. Setyaningsih, S. Yanasin, Z.A.I. Supardi, A. Taufiq and Sunaryono.....138

Studies on Density, Corrosion Rate and Hardness Characteristics of Stainless Steel Implanted by Nitrogen Ion

Ainun Nikmah, Djoni Izak Rudyardjo, Jan Ady and Ahmad Taufiq.....147

Formation of Graphene Island on Si (100) Substrate Prepared by Simple-Spray Method: Morphological and Optical Analyses

R Kurniawan, J Utomo, A A Fibriyanti, S Maryam, N Mufti and A Fuad.....159

Study on Structural Characters of Nano-sized Hydroxyapatite Prepared from Limestone

Yuanita Amalia Hariyanto, Ahmad Taufiq, Sunaryono, Nandang Mufti, Siriwat Soontaranon and Nuntaporn Kamonsutthipaijit.....165

The Influence of Ultrasonic Wave Treatment on the Mechanical Properties of Nanoclayreinforced Starch Biocomposite

H Suryanto, S Jenuardy, D Kustono, RA Dharmabintara, J Maulana and U Yanuhar....173

The Effect of Ag on the Structure and Oxygen Content of YLEBCO Superconductor

I.B. Alit Paramarta, I.W. Supardi, N. Wendri and W.G. Suharta.....180

Photoelectrochemical Performance of ZnO Nanorods Grown on Stainless Steel Substrate

Nandang Mufti, M. Tommy Hasan Abadi, Atsnaita Yasrina, Sunaryono, Yudyanto, Markus Diantoro and Abdulloh Fuad.....186

<u>Study on Distribution of Magnetite (Fe3-xMn<sub>x</sub>O<sub>4</sub>) Filler in Fe<sub>3-x</sub>Mn<sub>x</sub>O<sub>4</sub>-PEG/PVA/PVP Magnetic Hydrogel by Using Twolognormal Function Analysis</u>

Muchlis Fajar Hidayat, Sunaryono, Sujito, Nandang Mufti and Eny Latifah.....192

Studies on Surface Morphology of Irreversible Hydrocolloid Impression Material Based on Brown Algae Type *Padina* sp.

Nurlindah Hamrun, Ahmad Taufiq, Arifin and Dahlang Tahir.....203

<u>Nanostructural Properties of Fe<sub>3-x</sub>Zn<sub>x</sub>O<sub>4</sub>-PEG/Carboxymethyl Cellulose/Polyvinyl</u> <u>Alcohol Magnetic Hydrogel by Using SAXS</u>

Mimin Nurul Kholifah, Sunaryono, Nandang Mufti, Siti Zulaikhah and Siriwat Soontaranon.....210

High-Temperature Oxidation Behavior of Fe-18Al Alloy Added with 2 %ZrO<sub>2</sub> Nanoparticles

P Pawawoi, D H Prajitno, A A Dewi and A Manaf.....218

Analysis of Mechanical and Physical Properties of Al-Si (Al-Si) Casting Alloys Reinforced with Various Eggshell Nanopowders

P Puspitasari, R A Safarudin, M I N Sasongko, M Achyarsyah and Andoko.....224

<u>Preparation of Fe<sub>3</sub>O<sub>4</sub>/OA/DMSO Ferrofluids using a Double Surfactant System as</u> <u>Antifungal Materials Candidate</u>

Rosy Eko Saputro, Ahmad Taufiq, Nurul Hidayat, Sunaryono, Yuanita Amalia Hariyanto and Arif Hidayat.....231

Fibrous Keratin Powder as by-Product of Keratinase Fermentation under Solid State Fermentation using Chicken Feathers as Substrate

Suharti Suharti, Evi Susanti, Uswatun Nurkhasanah and Yuniar Avia Mulyadewi.....239

The Enhancement of Compressive Strength of Cement-Based Composite Filled with LDPE/PET/Styrofoam Aggregates as Candidate for Breakwater Application

S T Wicaksono, M I P Hidayat, A Widodo, Suwarno and Ahmad Taufiq.....245

Additional of NaCl on Chloride Leaching of Gold Ore from Indonesian Artisanal Mining

S Harjanto, F W Pratama, A Lazuardiyani, M Taris and M Y Salam.....254

The Effect of Tempo of Musical Treatment and Acute Exercise on Vascular Tension and Cardiovascular Performance: A Case Study on Trained Non-Athletes

Sugiharto, Hendra Susanto, Desiana Merawati and Olivia Andiana.....263

Study of Nano-Hydroxyapatite:Poly Lactide Acid (n-HA:PLA) Composites and Their Biocompatibility, Bioactivity, and Biodegradability Characteristics

Yudyanto, D Hardianti, Hartatiek, N Hidayat and R Kurniawan.....272

The Influence of Alternating Magnetic Field Frequency on Magneto-Thermal Behavior of Mn<sub>0.25</sub>Fe<sub>2.75</sub>O<sub>4</sub>@PANI Material

Sunaryono, Nadiya Miftachul Chusna, Ahmad Taufiq, Nandang Mufti and Samsul Hidayat.....278

Effect of Temperature Synthesis on Structural Behaviours of NaY Zeolite Using Local Sand as A Silica Source

Sumari Sumari, Fauziatul Fajaroh, Yahmin, Ni'matus Sholihah, Aman Santoso and Agus Budianto.....287 Study of The Synthesis Process and Microscopic Structure of Y-124, Y-259, and Y-358 Superconductors

W.G. Suharta, A.A.N. Gunawan, P. Suardana and K. Putra.....294

Magnon Contribution on Pure Spin Current Generation in Half-Metal

Adam B. Cahaya and M. A. Majidi.....303

Fabrication and Characterization of Rotary Forcespun Styrofoam Fibers

Ahmad Fauzi, Fathiyah Zahra, Muhammad Miftahul Munir and Khairurrijal Khairurrijal.....308

Partial Oxidation of Methane to Synthesize Gas Over  $La_{1-x}$  Sr  $_x$  Co<sub>0.8</sub>Fe<sub>0.2</sub>O<sub>3 ±  $\delta$ </sub> Perovskite

Adilah Aliyatulmuna, R.Y. Perry Burhan, Hamzah Fansuri and Irmina K. Murwani.....315

Deposition of Carbon Thin Film by Means of a Low-Frequency Plasma Sputtering Using Battery Carbon Rods as a Target

Aladin E. Purkuncoro, Dionysius J. D. H. Santjojo, Yudy S. Irawan and Rudy Soenoko.....324

Methyl Ester Synthesis of Crude Palm Oil Off Grade Using the K2O/Al<sub>2</sub>O<sub>3</sub> Catalyst and Its Potential as Biodiesel

Aman Santoso, Sumari, U Urfa Zakiyya and A Tiara Nur.....329

Synthesis and Crystal Structure Analysis of  $\text{LiNiSi}_{x}P_{1-x}O_{4}/C$  as a Cathode Material for the Lithium-ion Batteries Application

A A Fibriyanti, A Fuad, W Astutik, N Hidayat, B Prihandoko, N Mufti and M Diantoro.....339

Analysis of Male Urine as Pheromone to Increase Reproduction in Female Tiger Grouper (Epinephelus Fuscoquttatus)

Apri I. Supii, Diana Arifati, Maheno Sri Widodo and Yuni Kilawati.....345

A Tensile Strength Analysis of *Hibiscus cannabinus* L. Fiber and Corn Silk Reinforced Polyester Resin Matrix Hybrid Composite and Optimization of Design Parameters Using Response Surface Methodology

Avita Ayu Permanasari, Poppy Puspitasari, Ahmad Syafii, Sukarni and Moch. Agus Choiron.....358

Nanofluids with Enhanced CHF Prepared from Self-Combustion Synthesized Al<sub>2</sub>O<sub>3</sub> Nanoparticles with PEG 1000 as Fuel

Dani Gustaman Syarif, Djoko Hadi Prajitno and Jupiter S. Pane.....366

Exploring Structural Properties of Cobalt Ferrite Nanoparticles from Natural Sand

Defi Yuliantika, Ahmad Taufiq, Arif Hidayat, Sunaryono, Nurul Hidayat and Siriwat Soontaranon.....374

Simulation of Dye-Sensitized Solar Cells (DSSC) Performance for Various Local Natural Dye Photosensitizers

E Supriyanto, H A Kartikasari, N Alviati and G Wiranto.....385

Synthesis of ZnFe<sub>2</sub>O<sub>4</sub> Nanoparticles with PEG 6000 and Their Potential Application for Adsorbent

Fauziatul Fajaroh, Ita Desi Susilowati, Nazriati, Sumari and Adrian Nur.....396

Sonochemical Synthesis of Nano-Hydroxyapatite/Chitosan Biomaterial Composite from Shellfish and Their Characterizations

Hartatiek, P Dwiasih, Yudyanto, N Hidayat, R Kurniawan and Masruroh.....405

Effect of Cetyl Trimethyl Ammonium Bromide as Template of Mesoporous Silica MCM-41 from Rice Husk by Sol-Gel Method

Hariyati Purwaningsih, Yohan Ervianto, Vania Mitha Pratiwi, Diah Susanti and Agung Purniawan.....412 Recovery of Platinum from Spent Removing Catalyst of Pt/Al<sub>2</sub>O<sub>3</sub> by Ultrasonic-Assisted Acid Leaching

J Utomo, R Kurniawan, M S Nuroni, A A Fibriyanti, A Fuad, N Mufti and E Latifah.....421

The Mechanical Strength and Morphology of Bacterial Cellulose Films: The Effect of NaOH Concentration

H Suryanto, M Muhajir, T A Sutrisno, Mudjiono, N Zakia and U Yanuhar.....426

Protein-Based Biomaterial Marker in Metabolic Syndrome and Colorectal Cancer: A Preliminary Clinical Study of Betatrophin Expression in Javanese Ethnic

Hendra Susanto, Ahmad Taufiq, Dwi Listyorini, Adeodatus Yuda Handaya and Melati Putri Pertiwi.....433

Theoretical Study of Unconventional Plasmons Formation within a Reduced-Size 1D Hubbard Model around a Quarter Filling

A. R. P. Tambunan, W. Wilwin and M. A. Majidi.....442

Removal of BOD and TSS of Student Dormitory Greywater using Vertical Sub-Surface Flow Constructed Wetland of *Ipomoea Aquatica* 

Anie Yulistyorini, Arum Kumala Puspasari, Mujiyono and Astri Anindya Sari.....449

Synthesis, Structural and Toxicity Characters of Nano-sized Titanium Dioxide/Magnetite Nanoparticles

Anita Listanti, Ahmad Taufiq, Arif Hidayat, Sunaryono, Nurul Hidayat, Hendra Susanto and Siriwat Soontaranon.....455

Simulation of Electron Diffusion Coefficient Interpretation on the Optimum Thickness of TiO<sub>2</sub> Photoanode in Dye-Sensitized Solar Cell (DSSC)

E Supriyanto, N Alviati, H A Kartikasari, L Rohman and K Triyana.....465

The Role of SDS Surfactant in The Synthesis of Polymer Hybrid Latex *Poly-(St-co-BA-co-MMA)* with OMMT as Filler via Mini-Emulsion Polymerization

J. Chanra, E. Budianto and B. Soegijono.....471

K-space Orientation Dependent of the Spin Texture in SF<sub>3</sub>PbI<sub>3</sub> Perovskite Compounds

M. Kharisma Andri and Moh. Adhib Ulil Absor.....479

Effect of Electron Density and Temperature in Oxygen Plasma Treatment of Polystyrene Surface

Masruroh, D J D H Santjojo, Abdurrouf, M A Abdillah, M C Padaga and S P Sakti.....484

<u>Dielectric Properties of Dirt Sugarcane Sediment (DSS) Extract-BaTiO<sub>3</sub> for Organic</u> <u>Supercapacitors</u>

Rizky Aditya Sawitri, Lina Suryanti, Fathinnatussifa Uliyahanun Zuhri and Markus Diantoro.....493

The Low Concentration of Sodium Hydroxide Influence on The Compressive Strength of Fly Ash/Natural Kaolin-Based Geopolymer

M Saukani, S Arief, G R F Syahrillah and N Hidayat.....500

The Current-Voltage Properties of Ch/AgNP Composite Membranes: A Study on the Effect of AgNP Content

Ni Nyoman Rupiasih, W. G. Suharta, Made Sumadiyasa and Maulida Nirwana Islami.....506

Structural, Optical, and Magnetic Properties of Mn-doped ZnO Nanoparticles Synthesized by Coprecipitation Method

Pelangi Eka Yuwita, Aprillia Dwi Ardianti, Kusuma Wardhani Mas'udah and Darminto.....514

The Microstructure of Y-359 Superconducting Phase with Various of Y-211 Compound

P. Suardana, IGA. Putra Adnyana, IB. Alit Paramarta and WG. Suharta.....520

Numerical Study of the Influence of Defect on the Material Side in Vortex-Antivortex Formation Based on TDGL Equation

Prawitasari, Radiktyo Permono, Hari Wisodo, Eny Latifah, Arif Hidayat and Sunaryono.....526

Time-Dependent Ultrasonic Assisted Recovery of Platinum from Spent Removing Catalyst of Pt/Al<sub>2</sub>O<sub>3</sub> by Acid Leaching

R Kurniawan, M S Nuroni, A A Fibriyanti, J Utomo, A Fuad, N Mufti and E Latifah.....534

Caloric Regulation Linked Thermogenesis in Acute Submaximal Intensity Exercise Model as The Effect of Audio Frequency Exposure

Sugiharto, Hendra Susanto, Olivia Andiana and Desiana Merawati.....539

<u>Physical and Chemical Properties of Water Hyacinth (*Eichhornia crassipes*) as a <u>Sustainable Biofuel Feedstock</u></u>

Sukarni Sukarni, Yahya Zakaria, Sumarli Sumarli, Retno Wulandari, Avita Ayu Permanasari and M. Suhermanto.....549

<u>Calculation of Optical Conductivity of Anderson Impurity Model for Various Model</u> <u>Parameters</u>

Sion Hadad Halim, Lentara Pundi Syaina and Muhammad Aziz Majidi.....556

The Effect of Electrode and Number of Passes on Hardness and Micro Structure of Shielded Metal Arc Welding

Yeni Ratih Pratiwi and Salnan Sabdo Wibowo.....562

Effect of Stirring Duration on Hardness and Antibacterial Characteristics of Polyethylene Glycol-Hydroxyapatite Nanocomposites

Yudyanto, E N Azizah, N Mufti, Hartatiek, N Hidayat and R Kurniawan.....568

Reflection Loss Characteristic as Coating Thickness Function on the Microwave Absorbing Paint at a Frequency of 8-12 GHz

Y. E. Gunanto, M. P. Izaak, H. Sitompul and W. A. Adi.....575

Zeolite Impregnated with Ag as Catalysts for Glycerol Conversion to Ethanol Assisted by Ultrasonic

Sumari Sumari, Fauziatul Fajaroh, Ida Bagus Suryadharma, Aman Santoso and Agus Budianto.....580

Structural Characterizations of Magnetite/Zinc Oxide Nanocomposites Prepared by Coprecipitation Method

Syamsul Bahtiar, Ahmad Taufiq, Joko Utomo, Nurul Hidayat and Sunaryono.....590

The Effect of Light Irradiation on Performance of Photo-Supercapacitor of FTO/TiO<sub>2</sub>-ZnO-β Carotene-Quercetin/Carbon/Al/PVDF-BaTiO<sub>3</sub>/Al

M Z Masrul, T Suprayogi, M Diantoro, A Fuad, E Latifah and A Hidayat.....598

Occupancy Fluctuation Effect on Metal-Insulator Transition in 3D Hubbard Model within Dynamical Mean-Field Theory Framework

M.G.A. Al Anshori, C.N. Rangkuti and M.A. Majidi.....609

Magnesiothermic Reduction Synthesis of Silicon Carbide with Varying Temperatures: Structural and Mechanical Features

Nurul Hidayat, Ardiansyah, Abdulloh Fuad, Nandang Mufti, Anggun Amalia Fibriyanti, Chusnana Insjaf Yogihati and Bambang Prihandoko.....616

Particle Size Reduction of Polyaniline Assisted by Anionic Emulsifier of Sodium Dodecyl Sulphate (SDS) Through Emulsion Polymerization

M A E Hafizah, A F Riyadi, A Manaf and Andreas.....622

Structural and Magnetic Behaviours of Magnetite/Polyvinyl Alcohol Composite Nanofibers

Ahmad Taufiq, Maqfiratun Ainun Jannah, Arif Hidayat, Nurul Hidayat, Nandang Mufti, Munasir and Hendra Susanto.....629 Synthesis of Biodiesel from Low-Quality Crude Palm Oil with Heterogeneous Catalyst Cao-ZnO

Aman Santoso, C.F Aghnia Hanindita, Sumari and Ihsan Budi Rachman.....637

Silica-Cellulose Hybrid Material Application as Natural Pigment Adsorbent as Studied by Spectroscopy Method

Antonius Dionovta R. P. Molo, Mohammad Sodiq Ibnu and Surjani Wonorahardjo.....648

The Effect of Spin Coating Rotation on the Optoelectronic Properties of PANI/TiO<sub>2</sub>/FTO-Glass Photoanode

S W Himmah, U Sa'adah, A D Iswatin, M Diantoro, Arif Hidayat and Z A Imam Supardi.....657

Antibacterial Performance of Fe<sub>3</sub>O<sub>4</sub>/PEG-4000 Prepared by Co-precipitation Route

Deny Arista, Aulia Rachmawati, Nurlailul Ramadhani, Rosy Eko Saputro, Ahmad Taufiq and Sunaryono.....667

Experimental Investigation and Optimization of Floating Blade Water Wheel Turbine Performance Using Taguchi Method and Analysis of Variance (ANOVA)

Avita Ayu Permanasari, Sukarni, Poppy Puspitasari, Setya Budi Utama and Fajri Ainul Yaqin.....675

A Preliminary Study on the Thermo-optics Characteristics of Chromium Ferrite Ferrofluids

Arif Hidayat, Widya Elyani, Ahmad Taufiq and Sigit Tri Wicaksono.....685

Enhancing the Hardness of Mg-9Al-1Zn Cast Alloy by Solution Treatment

Adi Ganda Putra, Azwar Manaf and Anawati Anawati.....690

Improved Solar Cell and Photoresponse Performance of CH<sub>3</sub>NH<sub>3</sub>PbI<sub>3</sub> Perovskite with ZnO Nanorods

Anggun A Fibriyanti, Nandang Mufti, Abdulloh Fuad, Eny Latifah, Robi Kurniawan, Chusnana I Yogihati and Nurul Hidayat.....697

Investigation of Stress, Deformation, and Cracks in the Brakes of Car Using Finite Element Method

Andoko and W R Amin.....704

Optimization of BCR Microwave from Fe Assessment in Sediment Material in The Gulf of Prigi

A R Wijaya, I Oktaviana, S Wonorahardjo, Y Utomo, M Muntholib, H Daupor, Md. S Hossain and E H Sanjaya.....710

Electro-optics Behaviors of Fe<sub>3</sub>O<sub>4</sub> Ferrofluids: A Preliminary Study

Arif Hidayat, Widya Elyani and Aldila Puspitaningrum.....718

Influence of Lattice Defect to Vortex Flow on Type II Superconductor

Hari Wisodo, Arif Hidayat, Eny Latifah, Nugroho Adi Pramono and Radiktyo Permono.....721

Betatrophin/Lipasin/C19orf80: In Silico Approach for Protein-Based Biomaterial Marker in Metabolic Syndrome and Colorectal Cancer Through Computational-Based Study

Hendra Susanto, Dwi Listyorini, Ahmad Taufiq, Viol Dhea Kharisma, Adeodatus Yuda Handaya, Melati Putri Pertiwi, Silmy Aulia Rufiatin Nisa and Elhah Nailul Khasna.....727

Solid-State Sintering Synthesis of Biphasic Calcium Phosphate/Alumina Ceramic Composites and Their Mechanical Behaviors

Hartatiek, R Kurniawati, Yudyanto, N Hidayat, R Kurniawan and Masruroh.....739

Encapsulation of Peppermint Oil with Carboxymethyl kappa Carrageenan-Gelatine-Chitosan

K K Irma, A Qurrota, M Hanina and M R A Marsasi.....745

Manganese Oxide and Temperature Induced on Microstructure and Electrical Properties of Graphene-(Mn<sub>2</sub>O<sub>3</sub>)x-ZnO/Ni Foam

Markus Diantoro, Lina Suryanti, Fathinnatussifa Uliyahanun Zuhri, Suci Elya Intan Suryani and Laemthong Chuenchom.....750 The Potency of Carica papaya L. Seeds Powder as Anti-Obesity 'Coffee' Drinks

Subandi and Anis Nurowidah.....757

Optimation of AMC's Tensile Properties Using Adaptive Neuro-Fuzzy Inference System (ANFIS)

Yulius Eka Agung Seputra and Bambang Soegijono.....764

Synthesis and Characterization Complex Compound of K3[Fe(SCN)<sub>6</sub>] and Copper(II) Chloride as K-Ion Battery Electrode

Wiwin Dwi Jayanti, Subakti and I Wayan Dasna.....775

Comparative Analysis of Different Starter Driven Gear Materials Using Finite Element Method

Andoko and S N Rohmad.....783

Spectroscopy for Characterization and Application of Silica-Cellulose Biomaterials, a Brief Review Article about Analytical Methods

Surjani Wonorahardjo.....790

Physicochemical Characteristics of Corn Silk as Biomass Fuel Feedstock

Sumarli Sumarli, Citrakara Upendra Sneha Bandhana Kusuma Himawan, Retno Wulandari and Sukarni Sukarni.....803

The Properties of Eggshell Powders with the Variation of Sintering Duration

P Puspitasari, V Yuwanda, Sukarni and J W Dika.....808

Electronics Structure of Monochalcogenide Materials MX (M = Ge, Sn and Pb; X = S and Se) Buckled Square Lattice

Juhri Hendrawan, Moh. Adhib Ulil Absor, Muhammad Arifin, Ibnu Jihad and Kamsul Abraha.....815