

# Table of Contents

## Preface

## Chapter 1: Optics, Magnetic and Strongly Correlated Electron Materials

<b>Optical Band Transitions and Excitonic States in ZnO:Cu Films</b>	3
Y. Darma and A. Rusydi	
<b>Optical Properties of Erbium Doped Borotellurite Glass System</b>	7
M.K. Halimah, M.N. Azlan and S.Z. Shafinas	
<b>Characterization of Mg<sub>0.8</sub>Zn<sub>0.2</sub>TiO<sub>3</sub> Prepared via Liquid Phase Sintering</b>	11
M. Saukani and S. Suasmoro	
<b>Synthesis and Electrical Characterization of 0.8(K,Na)NbO<sub>3</sub>-0.2(Ba,Ca)(Zr,Ti)O<sub>3</sub> Lead-Free Ceramics</b>	15
N.A. Rohmah, N. Hikmah and S. Suasmoro	
<b>Crystal Structure and Magnetic Properties of Zn Doped Barium M-Hexaferrite</b>	19
U. Nuraini, L. Amalia, K.C. Rosyidah and M. Zainuri	
<b>Raman Spectra of Multiferroics TbMnO<sub>3</sub></b>	23
I.P. Handayani, N. Mufti, A.A. Nugroho, T.T.M. Palstra and P.H.M. van Loosdrecht	
<b>Structure and Magnetic Properties of Spark Plasma Sintered NdFeB</b>	27
T. Sudiro, D. Aryanto, N.R. Djauhari, C.W.B. Sinuraya, S. Humaidi and N. Sudrajat	
<b>The Influence of Glucose Concentration to Resonant Wavelength Shift of Polymer-Based Microring Resonators</b>	31
B. Mulyanti, L. Hasanah, T. Hariyadi, R. Novitasari, A.B. Pantjawati, H. Yuwono and K. Khairurrijal	
<b>Verification of Theoretical Model for Tunneling Currents in Al/SiO<sub>2</sub>/p-Si MOS Capacitors with Nanometer-Thick Oxides</b>	35
B. Mulyanti, L. Hasanah, A.B. Pantjawati, H. Murakami and K. Khairurrijal	
<b>Theoretical Investigation on Electronic Properties of ZnO Crystals Using DFT-Based Calculation Method</b>	37
Y. Darma, F.G. Setiawan, M.A. Majidi and A. Rusydi	

## Chapter 2: Nanostructured Materials and Nanotechnologies

<b>A Simple Dissolved Metals Mixing Route to Prepare Nanostructured Mg<sub>0.8</sub>Zn<sub>0.2</sub>TiO<sub>3</sub> Solid Solution</b>	47
F.U. Ermawati, S. Suasmoro and P. Suminar	
<b>Characterizations of Carbon Nanospheres Synthesized Using Activated Carbons and Palm Oil</b>	53
A. Andreas Arie, H. Kristianto, R.F. Susanti, H. Devianto, M. Halim and J.K. Lee	
<b>Stress – Strain Analysis on ZnO Nanostructures Synthesized via Wet Chemistry Method</b>	57
A. Sholehah and A.H. Yuwono	
<b>Synthesis and Characterization of Zero-Valent Iron Nanoparticles</b>	62
E.S. Yusmartini, D. Setiabudidaya, Ridwan, Marsi and Faizal	
<b>Synthesis of Various ZnO Nanotree Morphologies through PEG-Assisted Co-Precipitation Method</b>	66
R. Mahendra, M. Arianti, D. Sawitri and D.D. Risanti	
<b><i>Thevetia peruviana</i>: A Wild Natural Resource for the Green Synthesis of Gold Nanoparticles</b>	71
N.N. Rupiasih, A. Aher, S. Gosavi and P.B. Vidyasagar	
<b>Synthesis of Antibacterial Nanofibrous Membrane Based on Polyacrylonitrile (PAN)/Chitosan by Electrospinning Technique for Water Purification Application</b>	76
M. Prama Ekaputra, M.M. Munir, A. Rajak, A. Rahma, A.Y. Nuryantini and Khairurrijal	

<b>Electron Tunneling Current in an n-p-n Bipolar Transistor Based on Armchair Graphene Nanoribbon by Using Airy-Wavefunction Approach</b>	80
F.A. Noor, R. Syariati, E. Suhendi, M. Abdullah and Khairurrijal	
<b>Electrical Properties of Carbon-Based Thin Film on Al<sub>2</sub>O<sub>3</sub>/Si</b>	85
H. Alfiadi, A. Virdian and Y. Darma	
<b>Formation of Porous Anodic Alumina from Impure Aluminum Foil in Inorganic Acids</b>	89
A. Nurrudin, B. Yuliarto, Suyatman and A. Sriwongo	
<b>Covalent Functionalization of Graphene Flakes with Well-Defined Azido-Terminated Poly(-caprolactone) and Poly(2-oxazoline)</b>	94
N. Abdullah, K. Hatano, D. Ando, K. Hirata, M. Kubo, A. Koshio and F. Kokai	
<b>Graphene-Based Flexible Circuit on Cotton Fabric Using Wax Patterning Method</b>	98
C.L. Lam, M.F. Mohd Rafi, M.F.H. Mohd Fishol, M.B. Mohd Yudin, A. Michi, C. Sriprachuabwong, A. Tuantranont and D.H.B. Wicaksono	
<b>Modeling of Electron Tunneling Current in a p-n Junction Based on Strained Armchair Graphene Nanoribbons with Extended Tight Binding and Transfer Matrix Method</b>	102
R. Syariati, E. Suhendi, F.A. Noor and K. Khairurrijal	
<b>Study of Carbon Thin Film Deposition on Various Buffer Layer as Characterized by X-Ray Diffraction and Raman Spectroscopy</b>	106
A. Virdian, H. Alfiadi and Y. Darma	
<b>Topographic and Electronic Properties of 3,4,9,10-Perylene Tetra Carboxylic Dianhydride (PTCDA) on Indium Tin Oxide (ITO) Surface</b>	110
Arramel, T. Hasegawa, T. Tsuruoka and M. Aono	
<b>The Methanol Response Sensing Properties Using MWCNT-ZnO Composite</b>	116
N.L.W. Septiani, B. Yuliarto, M. Iqbal, Suyatman, A. Nuruddin and Nugraha	
<b>Laser Ablation of Nanoparticles: A Molecular Dynamics Study</b>	120
R. Fahdiran and H.M. Urbassek	
<b>Optical Properties and Interband Transitions of ZnO and Cu-Doped ZnO Films Revealed by Spectroscopic Ellipsometry Measurement</b>	124
R. Marlina, A. Rusydi and Y. Darma	
<b>Simulation of Dirac Electron Tunneling Current in Armchair Graphene Nanoribbon Tunnel Field-Effect Transistors Using a Transfer Matrix Method</b>	128
E. Suhendi, R. Syariati, F.A. Noor, N. Kurniasih and Khairurrijal	
<b>External and Internal Influences in Silicene Monolayer</b>	133
M. Syaputra, S. Arman Wella, A. Purqon and Suprijadi	

### **Chapter 3: Catalysts, Adsorbents and Related Materials: Fundamentals and Applications**

<b>Development of Emulsion Gels and Macroporous Hydrogels and their Applications to Metal Adsorption and Enzyme Reaction</b>	141
H. Tokuyama	
<b>Gas Permeation Study of Carbon Tubular Membrane by Manipulating Carbonization Temperature Profile</b>	145
W.N.W. Salleh, N. Sazali, H. Hasbullah, N. Yusof, J. Jaafar and A.F. Ismail	
<b>Application of Immobilized Titanium Dioxide as Reusable Photocatalyst on Photocatalytic Degradation of Methylene Blue</b>	149
Sutisna, M. Rokhmat, E. Wibowo, R. Murniati, Khairurrijal and M. Abdullah	
<b>Thermally Activated Clay to Compete Zeolite for Seawater Desalination</b>	154
E. Wibowo, M. Rokhmat, Sutisna, R. Murniati, Khairurrijal and M. Abdullah	
<b>The Role of Fe<sup>2+</sup> Ions on the Photocatalytic Reaction of Ag<sub>3</sub>PO<sub>4</sub> for Rhodamine B Degradation</b>	158
A. Riapanitra, I. Futihah, U. Sulaeman, S. Yin and T. Sato	
<b>Synthesis of Bi<sub>2</sub>O<sub>3</sub>/Ag<sub>3</sub>Po<sub>4</sub> Composites and their Photocatalytic Activities under Visible Light Irradiation</b>	163
U. Sulaeman, E. Yunari, P. Iswanto, S. Yin and T. Sato	
<b>Photocatalytic Removal of 2,4-D Herbicide on Lanthanum Oxide-Modified Titanium Dioxide</b>	168
W.R. Siah, N.A. Roslan, H.O. Lintang, M. Shamsuddin and L. Yuliati	

<b>Synthesis of Mesoporous Silica Particles with Fibrous Morphology via Self-Assembly Process in Microemulsion System</b>	172
E. Febriyanti, R.R. Mukti, V. Suendo, I.N. Marsih, S. Triwahyono, S. Ismadji and Ismunandar	
<b>Photocatalytic Oxidation of Hexanol over Titanium Dioxide Supported on Mesoporous Silica</b>	176
N.U. Mohd Nor, H.O. Lintang, S. Endud and L. Yuliati	
<b>Enhanced Photocatalytic Performance of Copper-Modified Titanium Dioxide Prepared by UV Reduction Method</b>	180
N.A. Roslan, H.O. Lintang and L. Yuliati	
<b>Reduced Graphene Oxide-Mesoporous Carbon Nitride as Photocatalyst for Removal of N-Nitrosopyrrolidine</b>	184
P. Tiong, H.O. Lintang, S. Endud and L. Yuliati	
<b>The Immobilization of Pt/WO<sub>3</sub> on the Glass Substrate for Methylene Blue Degradation</b>	188
I. Firdaus, A. Purwanto and H. Widiyandari	
<b>The Influence of Montmorillonite Incorporation in Mn-Doped ZnO Nanoparticles for Photocatalytic Degradation of Organic Dyes</b>	194
N.F. Djaja and R. Saleh	
<b>A Comparative Study of the Synthesis of MFI Zeolite by Using High- and Low-Temperature Heating</b>	201
G.T.M. Kadja, R.R. Mukti, I. Nyoman Marsih and Ismunandar	
<b>Synthesis of Fe<sub>3</sub>O<sub>4</sub> Nanoparticles Using the Co-Precipitation Method and its Development into Nanofluids as a Catalyst in Aquathermolysis Reactions</b>	205
F. Iskandar, A. Asbahri, E. Dwinanto, M. Abdullah and Khairurrijal	
<b>Photocatalytic Activity Inhibition by ZnO-SiO<sub>2</sub> Nanocomposites Synthesized by Sonochemical Method</b>	209
Widiyastuti, I. Maula, S. Machmudah, T. Nurtono, S. Winardi and K. Okuyama	
<b>Synthesis of CuFe<sub>2</sub>O<sub>4</sub>-Bentonite Composite for Adsorption of Ni(II) from Electroplating Wastewater</b>	213
P.L. Hariani, F. Riyanti, Fatma and S. Sutrimi	
<b>Computational Density Functional Theory Study of Hydrazine Adsorption on Ni(110) Surface</b>	217
K.T. Aji, P.H. Purwoko, A.D. Refino, M.K. Agusta and H.K. Dipojono	
<b>Preparation of Fe<sub>3</sub>O<sub>4</sub>/TiO<sub>2</sub> and Fe<sub>3</sub>O<sub>4</sub>/TiO<sub>2</sub>/CuO Nanohybrids for Photoreduction of Cr(VI)</b>	221
S.A. Arifin, S. Jalaludin, N.F. Djaja and R. Saleh	

## **Chapter 4: Photovoltaics, Batteries and Fuel Cells: Emerging Materials and Devices**

<b>Graphene and Activated Carbon Based Supercapacitor Electrodes</b>	231
M. Deraman, N.S.M. Nor, N.H. Basri, B.N.M. Dollah, S. Soltaninejad, R. Daik, R. Omar, M.A. Hashim@Ismail and M.A.R. Othman	
<b>Electrochemical Impedance Spectroscopy Study of Supercapacitors Using Deposited Nickel Oxide Nanoparticles Carbon Monolith Electrodes</b>	236
N.H. Basri, M. Deraman, R. Daik, M.T.M. Ayob, M.I. Sahri, N.S.M. Nor, B.N.M. Dolah and S. Soltaninejad	
<b>Synthesis and Characterization of Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> Doped by Na and Al as Anodes Material for Li-Ion Batteries</b>	241
S. Priyono, B. Prihandoko and A. Zulfia	
<b>Enhancement of TiO<sub>2</sub> Particles Based-Solar Cells Efficiency by Addition of Copper(II) Nitrate and Post-Treatment with Sodium Hydroxyde</b>	245
M. Rokhmat, E. Wibowo, Sutisna, E. Yuliza, Khairurrijal and M. Abdullah	
<b>Photovoltaic Characteristics of Inverted Bulk-Heterojunction Organic Solar Cells with Titanium Doped ZnO as their Electron Transport Layer</b>	251
Y.S. Handayani, P. Wulandari and R. Hidayat	
<b>Photovoltaic and Impedance Characteristics of Quasi Solid-State Dye-Sensitized Solar Cell Using Polymer Gel Electrolytes</b>	256
W.S. Arsyad, Herman, Fitrialawati and R. Hidayat	
<b>Enhancing the Value of Local Silica Sand from Bancar as a Fuel-Cell Sealing Material</b>	262
E. Dewa, Musyarofah, U. Nurbaiti, Triwikantoro, S. Firdaus and P. Suminar	

<b>Composite Electrolyte of SOFC Based on Stabilized Zirconia 1Yb10ScSZ Nanopowder</b> J. Raharjo, O. Arjasa, Agustanhakri and Damisih	266
<b>Evaluating Capacitive Deionization for Measurements of the Salt-Removal of NaCl, KCl and MgCl at Various Cell Voltages</b> D. Anggoro and Endarko	271
<b>Proton Conducting Biopolymer Electrolytes Based on Starch Incorporated with Ammonium Thiocyanate</b> F.N. Zulkefli, S. Navaratnam and A.H. Ahmad	275
<b>Effect of Al<sub>2</sub>O<sub>3</sub> on the Electrical Conductivity of MgI<sub>2</sub>-Mg<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> Solid Electrolyte</b> A.H. Ahmad and A. Aziz	279
<b>Absorbance Studies of Perovskite CH<sub>3</sub>NH<sub>3</sub>PbI<sub>(3-x)</sub>Cl<sub>x</sub> as Light Harvester in Solar Cell</b> P. Noorlaily, M. Ulfa, S.Z. Bisri and F. Iskandar	282
<b>First Principle Calculation of Li<sub>2</sub>Fe<sub>0.5</sub>Cr<sub>0.5</sub>SiO<sub>4</sub> for Li-Ion Battery Cathode</b> G. Kurniawan Sukandi, T.D. Kencana Wungu and F. Iskandar	286
<b>Synthesis of Reduced Graphene Oxide (rGO)/Ni Composite by a Combination of Marcano's and Microwave Assisted Reduction Methods</b> F. Iskandar and Y. bin Rus	290
<b>Phase Analysis of Natural Silica-Sand-Based Composites as Potential Fuel-Cell Seal Material</b> G.A. Gita Aristia, Istiqomah, N. Hidayat, Triwikantoro, M.A. Baqiya and S. Pratapa	294
<b>Supercapacitor Carbon Monoliths Electrodes from Activation of Precarbonized Biomass Fibers Added with Cellulose Powder</b> S. Soltaninejad, M. Deraman, R. Daik, N.S.M. Nor, B.N.M. Dolah, N.H. Basri, N.E.S. Sazali, E. Hamdan and M.R.M. Jasni	299
<b>Supercapacitor Activated Carbon Electrode from Composite of Green Monoliths of KOH-Treated Pre-Carbonized Oil Palm Empty Fruit Bunches and HNO<sub>3</sub>-Treated Graphite</b> N.S.M. Nor, M. Deraman, N.H. Basri, B.N.M. Dollah, R. Omar, S. Soltaninejad, R. Daik and M.D. Norizam	303
<b>Effects of Activation Time on the Performance of Supercapacitor Binderless Activated Carbon Electrodes Derived from Fibers of Oil Palm Empty Fruit Bunches</b> M.M. Ishak, M. Deraman, B.N.M. Dolah, M.A.R. Othman, R. Omar, N.H. Basri, N.S.M. Nor, E. Taer, Awitdrus, R. Farma and A.A. Aziz	308
<b>On the Role of NaCl Addition to Phase Transformation of TiO<sub>2</sub> from TiCl<sub>3</sub></b> I.E. Putri, H. Ariesta Budiarti, D. Sawitri and D.D. Risanti	313
<b>Theoretical Investigation of Anthocyanidin Aglycones as Photosensitizers for Dye-Sensitized TiO<sub>2</sub> Solar Cells</b> E. Cahya Prima, B. Yuliarto, Suyatman and H.K. Dipojono	317

## Chapter 5: Surfaces, Coatings and Hardening of Materials for Industrial Application

<b>The Improvement of Product Quality and Production Capacity of Metal Coin Dies by Tempering Treatment and PVD TiN Coating in Isodur™ Steel</b> M. Fitruallah, M. Hendra, A.A. Alhamidi, A. Herliawan, A. Aziz, D. Yanyan, T. Adhitya, P. Tri and J. Andinnie	323
<b>Correlation between Frequency and Sound Absorption Coefficient of Polymer Reinforced Natural Fibre</b> M. Farid, H. Ardhyananta, V.M. Pratiwi and S.P. Wulandari	329
<b>The Synthesis of Ethyl-1-Benzyl-5-Methyl-1H-1,2,3-Triazoles-4-Carboxylate Using Microwave Assisted Organic Synthesis Method and Determination of its Corrosion Inhibition Activity on Carbon Steel</b> R.M. Syifa Insani, D. Wahyuningrum and B. Bundjali	333
<b>Analysis of YSZ-Al<sub>2</sub>O<sub>3</sub>/YSZ Flame Sprayed Thermal Barrier Coating to Thermal Resistance</b> Widyastuti, K. Parindra, L. Mariani, H. Ardhyananta and Sulistijono	338
<b>Objective and Combinational Analysis of Multiple Kinds of Data Obtained from Severe-Mild Wear Transition</b> K. Fukuda and T. Morita	345

<b>Comparative Studies on Thermal Barrier between Modified Polyurethane Using Titanium Dioxide to Montmorillonite Nanoclay</b>	349
R. Zakaria and A.H. Ahmad	
<b>Effect of Pack Cementation Temperature on Oxidation Behavior of NiCoCrAl Coated Layer</b>	353
E. Sugianti, K.A. Zaini, Y.M. Wang, N. Hashimoto, S. Ohnuki and S. Hayashi	
<b>Curing Time and Water Repellent Properties of Dammar-Titanium Dioxide Thin Film</b>	359
A.N. Hasnan and A.H. Ahmad	
<b>Hot Corrosion of Aluminide Coated Ti-Al-Cr-Nb-Zr-Y Intermetallic Alloys</b>	363
E. Basuki, F. Mohammad, A. Fauzi and D. Prajitno	
<b>Development of Sound Absorbent Material Based on Waste and Bamboo Fiber</b>	367
A.B. Pantjawati, E.A. Juanda, B. Mulyanti, A. Muttahid and A. Wiryadi	

## Chapter 6: Polymers and Composites: Synthesis and Properties

<b>Tensile and Flexural Properties of Montmorillonite Nanoclay Reinforced Epoxy Resin Composites</b>	373
Z.S. Alsagayar, A.R. Rahmat, A. Arsal and S.N.H. binti Mustaph	
<b>Flexural Properties of MMT Reinforced Unsaturated Polyester/Epoxydized Palm Oil Biobased Resin</b>	377
S.N.H. binti Mustaph, A.R. Rahmat, A. Arsal, Z.S. Alsagayar and Y. Shoot Kian	
<b>Effect of Magnesium on Hardness and Microstructure of Metal Matrix Composite Al.6061/(Al<sub>2</sub>O<sub>3</sub>)<sub>p</sub> Produced by Stir Casting Route</b>	381
S. Junus, A. Zulfia and L. Mariani	
<b>Dynamic Mechanical Properties of PEG 4000 + Quartz Composites</b>	385
F. Nur Aini, Musyarofah, Triwikantoro, Mashuri, S. Firdaus and P. Suminar	
<b>Effect of Composition Variation on the Mechanical Strength of Domestic Waste-Based Composites</b>	389
N. Surtiyeni, E. Yuliza, N. Kurniasih, K. Khairurrijal and M. Abdullah	
<b>Effect of Mica Content on Mechanical Properties of Regenerated Cellulose Nanocomposites via Ionic Liquids</b>	393
N. Abdul Hanid, M.U. Wahit and Q.P. Guo	
<b>The Effect of Silica Nanoparticle Filler and Mg(OH)<sub>2</sub> Particle Addition on the Compressive Strength of Rice Husk Composite</b>	397
I. Sriyanti, L. Marlina, D. Edikresnha, Khairurrijal and M. Abdullah	
<b>Effects of Stabilization Temperature on the Chemical and the Physical Properties of Polyacrylonitrile Stabilized Fibers</b>	402
N. Yusof, A.F. Ismail, J. Jaafar, W.N.W. Salleh and H. Hasbullah	
<b>Development of Statues from Domestic Waste Composites Coated with Carboneus Phosphor Materials</b>	406
M. Nurhanisa and M. Abdullah	
<b>Effect of Curing Temperature and Cross-Linker to Pre-Polymer Ratio on the Viscoelastic Properties of a PDMS Elastomer</b>	410
F. Prabowo, A.L. Wing-Keung and H.H. Shen	
<b>Characterization of Chitosan-Acrylamide Hydrogels as Soil Conditioner</b>	414
K.T. Basuki, D. Swantomo, Sigit and N.T. Sanyoto	

## Chapter 7: Biomaterials and Biomedical Engineering

<b>Effect of Alloying Elements on Microstructure of Biomedical Co-Cr-Mo F75 Alloy</b>	421
Alfirano	
<b>Reduction of Harmful Substances in Cigarette Smoke Using TiO<sub>2</sub> Nanoparticles</b>	425
R. Murniati, Sutisna, E. Wibowo, M. Rokhmat, N. Surtiyeni, E. Yuliza, Khairurrijal and M. Abdullah	
<b>The Influence of Non-Ionic Surfactant on the Physical Characteristics of Curcumin-Loaded Nanofiber Manufactured by Electrospinning Method</b>	429
A. Rahma, M.M. Munir, Khairurrijal and H. Rachmawati	

<b>Cytotoxicity Test of Brown Silk from <i>Attacus atlas</i> L. on Rat Smooth Muscle Cells</b>	433
M.F. Ulum and D. Noviana	
<b>Cotton Thread for Size-Based Blood Cells Sorting</b>	437
F. Yazdani, S. Sadir, F.Z. Huyop and D.H.B. Wicaksono	
<b>Wax-Impregnated Cotton Fabrics as Cell Culture Platform</b>	441
N.M. Wahab, S. Abdul Jamil, D.G. Ribam, F.A. Abdul Majid, M.R. Abdul Kadir and D.H.B. Wicaksono	
<b>Effect of Propofol and Isoflurane Long-Term Anesthesia on Rabbit's Heart Size as Consideration for Biomaterial Implant Placement</b>	445
S.F. Siallagan, K.T. Tan, M. Fakhrul Ulum, Gunanti and D. Noviana	
<b>In Vitro Cytotoxicity and In Vivo Tissue Response Study of Foreign Bodies Iron Based Materials</b>	449
D. Noviana, S. Estuningsih, D. Paramitha, M. Fakhrul Ulum and H. Hermawan	
<b>Poly(Vinyl Alcohol)/Chitosan Nanofibrous Membrane Containing <i>Anredera cordifolia</i> (Ten.) Steenis</b>	453
A.Y. Nuryantini, M.M. Munir, A. Rahma, T. Suciati and Khairurrijal	
<b>Synthesis of Chicken's Eggshells-Based <math>\beta</math>-Tricalcium Phosphate Bioceramics</b>	458
K. Dahlan and N.A. Nuzulia	
<b>Microstructure and Mechanical Properties of Extruded Mg-1.6Gd as Prospective Degradable Implant Materials</b>	462
O. Susanti, S. Harjanto and M.A. Mochtar	
<b>Radiography Study of Iron-Based Foreign Body Material Degradation at Different Implantation Site in Mice</b>	466
D. Paramitha, D. Noviana, S. Estuningsih, M. Fakhrul Ulum and H. Hermawan	
<b>Radiodensity Study of Hydroxyapatite Coated Porous Tantalum Implant Material of Rat Animal Model</b>	470
B. Panjaitan, D. Noviana, Gunanti, I. Sukmana and M. Fakhrul Ulum	
<b>Sintering of Mg-Ca-Zn Alloy Metallic Foam Based on Mg-Zn-CaH<sub>2</sub> System</b>	474
D. Annur, M.I. Amal, C. Sutowo, S.G. Sukaryo and I. Kartika	

## Chapter 8: Mining, Metallurgy and Chemical Engineering

<b>More from Less, Generating Wealth from Lower Grade and Urban Metal/Ore Sources</b>	481
M.A. Rhamdhani, A. Khaliq, G.A. Brooks, S. Masood, S. Ahmad and M.S. Islam	
<b>Friction Spot Welding of Similar AA5754 to AA5754 Aluminum Alloys and Dissimilar AA5754 Aluminum to AZ31 Magnesium Alloys</b>	485
U.F.H. Suhuddin, D. Piccolo, V. Fischer and J.F. dos Santos	
<b>The Influence of Calcination Temperature on Quantitative Phase of Hematite from Iron Stone Tanah Laut</b>	489
A. Mufid and M. Zainuri	
<b>The Processing of Low Grade Nickel Ore from South East Sulawesi</b>	493
Solihin, M. Zaki Mubarok, A. Hapid and F. Firdiyono	
<b>Study of Frangible Cu-Sn Composite by Powder Metallurgy Method</b>	497
Widyastuti, G.A. Vicko, H. Ardhyananta and R. Rochman	
<b>The Influence of Cooling Rate on Macrosegregation in Bi-Sn Alloy</b>	502
Y.M. Zulaida	
<b>Characterization of Various Types Coal Using Capacitance Measurement Technique</b>	506
D. Haryono, Desiani, M. Al Huda, W.P. Taruno, M.R. Baidillah and I. Maulana	
<b>Modification of Ceramic Mold for Investment Casting with Silica Sand as Stucco and Nylon Addition</b>	510
B.T. Sofyan, M. Syahid, H.A. Khairuddin and R. Nurdin	
<b>Reduction of Low Grade Iron Ore Using a Mixture of Polyethylene (HDPE/LLDPE) and Coal as an Alternate Reductant</b>	515
A. Milandia and S. Oediyani	
<b>Effect of TiO<sub>2</sub> and MgO on Microstructure of <math>\alpha</math>-Alumina Ceramics and its Sintering Behavior</b>	519
J. Raharjo, S. Rahayu, T. Mustika, Masmui and D. Budiyanto	

<b>Utilization of the Ibai River Sediment as a Raw Material for Producing Ceramic Glazes</b>	524
N. Siau Wei and M.A.A. Muhamad Nor	
<b>Study on the Geopolymerization of Geothermal Silica and Kaolinite</b>	528
M. Olvianas, M. Najmina, B.S.L. Prihardana, F.A.K.G.P. Sutapa, A. Nurhayati and H.T.B.M. Petrus	
<b>Effect of Fabrication Method by Powder Metallurgy on Frangibility Green Bullet Cu-10%Sn as Eco-Friendly Bullet</b>	533
K. Metrima Firmansyah, A. Septyantoko, M. Ghulam Isaq Khan, P. Jhony, R. Mardliah and Widiyastuti	
<b>Mechanism of Macroporous Zirconia Particles Formation Prepared by Hydrothermal Synthesis</b>	538
S. Machmudah, O.P. Prastuti, Widiyastuti, S. Winardi, Wahyudiono, H. Kanda and M. Goto	
<b>SiO<sub>2</sub>/MgO Ratio Effect on Carbothermic Reaction of Synthetic Nickelliferous Mixtures</b>	542
S. Harjanto and R.M. Ulum	
<b>Synthesis of Magnesium Carbonate Using Indonesian Dolomite</b>	546
Solihin and E. Sulistiyono	
<b>Synthesis of Magnesia Powder from East Java Dolomite through Leaching, Precipitation and Calcination</b>	550
M.Z. Mubarok and C. Adi Kurniawan	
<b>Physical and Chemical Characteristics of Corals from Bidong Island, Terengganu, Malaysia</b>	555
A.A. Ahmad Zubir, Y. Yusof and M.A.A. Muhamad Nor	
<b>Sonocrystallization Technique to Optimizing the Crystallization Process of PCM CaCl<sub>2</sub>.6H<sub>2</sub>O</b>	559
I.D. Palittin, N. Kurniati, I.M. Sutjahja and D. Kurnia	
<b>The Effect of Additives on the Crystallization PCM CaCl<sub>2</sub>.6H<sub>2</sub>O for Stabilizing the Air Temperature for Energy Conservation</b>	563
N. Kurniati, I.D. Palittin, I.M. Sutjahja and D. Kurnia	