

Table of Contents

Preface

Chapter 1: Glass and Ceramic

Optical Properties of La³⁺ NPs/Ag⁺ Co-Doped Zinc Borotellurite Glass M.F. Faznny, H.M. Kamari, A.A. Latif, F.D. Muhammad and L. Hasnimulyati	3
Structural and Optical Properties of Er³⁺-Doped Zinc-Titania Tellurite Glasses S.O. Baki and H.M. Kamari	9
Er³⁺/Nd³⁺ Codoped Lithium Niobate Tellurite Glass: Improvement in Energy Transfer Induced Photoluminescence H. Nurhafizah and M.S. Rohani	16
Small Angle Neutron Scattering Study of a Gehlenite-Based Ceramic Fabricated from Industrial Waste C.W. Loy, K.A. Matori, N. Zainuddin, A.E. Whitten, L. de Campo, N.I.M. Nasir, N.F.B. Pallan, M.H.M. Zaid, N.A. Zarifah and S. Schmid	22
Sol-Gel Synthesis of Solid Solution Based on Cerate-Zirconate Ceramics N. Osman, A.S. Abdullah, W.Z. Wan Zulkifli, M.R. Somalu, A. Muchtar, A.M. Md Jani and O.H. Hassan	29
The Polarizability and Optical Characteristics of Zinc Phosphate Glasses Doped Terbium Embedded with Copper Oxide Nanoparticles S.N.S. Yaacob, M.R. Sahar, E.S. Sazali and S. Sulhadi	35
Judd-Ofelt Parameters of Erbium Doped Zinc Phosphate Glass Containing Natural Ferrite Oxide Nanoparticles P.A. Buchori, M.R. Sahar and S.K. Ghoshal	41
Physical and Structural Properties of Dysprosium Doped Barium Borate Glass N. Yahya, M. Abdullah, M.N.N.M. Zainal Abidin, A. Kasim and A. Hashim	46
Physical and Structural Properties of Neodymium Doped Lithium Boro-Tellurite Glasses N. Yahya, A.R. Bin Ab Rahim and M. Abdullah	53
Structure, Thermal and Conductivity Behavior of Vanadium Substituted Li_{1.4}Ti_{1.6}Al_{0.4}(PO₄)_{2.9}(VO₄)_{0.1} NASICON-Type T. ZANGINA, J. Hassan, R.S. Azis, K.A. Matori, C.E. Ndikilar, M.M. Nasir and A.B. Suleiman	60

Chapter 2: Synthesis and Application of Gold/Silver Nanoparticles

Effect of Template Deposition Method on Formation of AuNPs in Memory Devices Application S.A. Ng, A.R. Khairunisak, K.Y. Cheong and K.C. Aw	67
The Effect of Gold Nanoparticle Size in the Cellular Uptake N.S. binti Rosli, A.A. Rahman, A.A. Aziz, S. Shamsuddin and A.R. Ibrahim	75
Study on the Size Dependence of AuNPs in Enhancement Radiation Effect for Superficial Kilovoltage X-Rays N.S. binti Rosli, A.A. Rahman, A.A. Aziz, S. Shamsuddin and S. Arshad	81
Green Formation of Nano-Hexagon from Nano-Triangle of Gold Nanoparticles Using Palm Oil Fronds Extracts A.I. Usman, A.A. Aziz and O.A. Noqta	87
Effect of Ag NPs: Ultrasonics Attenuation Properties Z.A.S. Nurulwahidah, H. Nurhafizah and M.S. Rohani	93

Chapter 3: Graphene and Graphite

Toxicity Evaluation of Graphene and Poly(Lactic-Acid) Using a Nematode Model C. Kong, A.I. Aziz, A.B. Kakarla, I. Kong and W. Kong	101
--	-----

The Effects of Hydrogen Flowrate during Pre-Annealing on Graphene Growth by Chemical Vapor Deposition Using Methanol as a Liquid Carbon Precursor R. Abdalrheem, F.K. Yam, A.R. Ibrahim, K.P. Beh, H.S. Lim, Y.Z. Ng, A.A. Oglat, M.Z. Mat Jafri and F.H.A. Suhaimi	107
Effect of Carbon Source Injection Rate on CNT Film via Floating Catalyst CVD Method I. Nur Izzaiti, I. Ismail, M.M. Shuhazly and A.N. Lyana	113
Effect Grinding of Graphite on Structural and Morphological Characteristics of Carbon Nanotubes Grown by Microwave Oven N.A. Algadri, Z. Hassan, K. Ibrahim and M. Bououdina	122
Effect of the Sulfate Concentration on the Graphene Film Produced by Electrochemical Exfoliation Y.Z. Ng, K.P. Beh, F.H.A. Suhaimi, R. Abdalraheem, H.S. Lim, M.Z. Mat Jafri and F.K. Yam	127

Chapter 4: Nitride-Based Materials

Aluminum Nitride Thin Films Grown by Sol-Gel Spin Coating Technique N.A. Mohd Isa, S.S. Ng and Z. Hassan	137
Comparative Study of Gas Ratio on Indium Nitride Thin Films Grown on Flexible Substrates Prepared by Reactive Sputtering Method S.A. binti Osman and S.S. Ng	142
Fabrication of $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ Multi-Quantum well Structure for Green Light Emitting Diode on Patterned Sapphire Substrate by Metal Organic Chemical Vapour Deposition S.A.A. Rais, H. Najihah, Z. Hassan and A.S. Abu Bakar	147
Growth Temperature Dependence of Sol-Gel Spin Coated Indium Nitride Thin Films Z.Y. Lee, S.S. Ng, F.K. Yam and Z. Hassan	153

Chapter 5: Polymers and Composites

Studies on the Characteristics and the Effect of Thickness on the Band Gap Energies of Al_2O_3 Thin Films Prepared by PLD N. Badar, N. Kamarulzaman, A.M. Mahat, N.F. Chayed and K. Elong	163
Hydrothermal Reconstructing Routes of Alkali-Free ZnAl Layered Double Hydroxide: A Characterisation Study N.A. Tajuddin, R. Saleh, J.C. Manayil, M. Isaacs, C.M.A. Parlett, A.F. Lee and K. Wilson	168
Effect of Ionic Liquid BMIMNO₃ to Chitosan-Starch Blend Biopolymer Electrolyte System A.H. Shaffie, M.S.M. Misenan, M.I.N. Isa and A.S.A. Khair	177
Chromaticity Study of Curcumin Dye Extracted from <i>Curcuma longa</i> L. Using for UV Light down Conversion for White Light Emitting Diode M. Al Shafouri, N.M. Ahmed, Z. Hassan and M.A. Almessiere	183

Chapter 6: Solid State Sensors

Effect of Concentration and pH of PBS to the Electrocatalytic Performance of Enzymatic Glucose Biosensor M.N. Noorhashimah, A.R. Khairunisak and Z. Lockman	193
The Study on the Effect of Wet and Dry Oxidation of Nickel Thin Film on Sensitivity of EGFET Based pH Sensor D. Abubakar, N.M. Ahmed and S. Mahmud	199
UV Photodetector Based on Mg-Doped GaN Thin Films Prepared by Sol-Gel Spin Coating M.A. Nurfahana and S.S. Ng	208
Effect of Hydrazine on Formation of Bismuth Nanoparticles and its Properties as Pb Sensors J.J. Teh, Z.A. Zulkifli, M.N. Noorhashimah, R. Nur Syafinaz, Z. Nor Dyana, A.R. Khairunisak and H. Toshiaki	214
Growth and Characterization of Tin Sulphide Nanostructured Thin Film by Chemical Bath Deposition for Near-Infrared Photodetector Application M.S. Mahdi, K. Ibrahim, N.M. Ahmed, A. Hmood and S.A. Azzez	220

Chapter 7: Superconductors

Effect of Nano-Sized Nickel Ferrite Addition on Superconducting Properties of $(\text{Ti}_{0.85}\text{Cr}_{0.15})\text{Sr}_2\text{CaCu}_2\text{O}_{7-\delta}$ Superconductors	
W. Kong, I. Kong, N.A. Jaafar, M.A. Kamarudin, N.R. Suib and R. Abd-Shukor	227
Synthesis and Characterization of Magnesium Diboride Additions of Bi-2223 on the Microstructure and Superconducting Transition	
A. Ali, A.H. Shaari, S.K. Chen, J.J. Mohamed, N.M. Kamal and M.M.A. Kechik	233
Superconducting Properties of Te-Substituted $(\text{Ti}_{2-x}\text{Te}_x)\text{Ba}_2\text{CaCu}_2\text{O}_{8-\delta}$	
S. Humaidi, E. Marlianto, S. Marhaposan and R. Abd-Shukor	239
Effect of Sol-Gel Synthesized BiFeO_3 Nanoparticle Addition in $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ (Y123) Superconductor Synthesized by Standard Solid State Reaction Method	
A. Bahboh, A.H. Shaari, H. Baqiah, S.K. Chen, M.M.A. Kechik, Z.A. Talib and M.M. Dihom	245
Effect of Cr Substitution on the Formation and Fluctuation-Induced Conductivity Analysis of $(\text{Ti}_{1-x}\text{Cr}_x)\text{Sr}_2\text{CaCu}_2\text{O}_7$ Superconductor	
M. Ranjbar Ghazeeian, M. Ghoranneviss and R. Abd-Shukor	252

Chapter 8: ZnO-Based Materials

Growth of ZnO Microstructure on Porous Silicon	
N. Rosli, M.M. Halim and M.R. Hashim	261
Feasibility of ZnO and Zn Seed Layers for Growth of Vertically Aligned and High-Quality ZnO Nanorods by the Sonochemical Method	
N.A. Hammed, A.A. Aziz and A.I. Usman	267
Characterization and <i>In Vitro</i> Toxicity of French Process Zinc Oxide Nanoparticles with High Surface Zinc	
S. Nordin, S. Mahmud, A. Seeni, N.M. Kamaruddin and N.S. Ahmad	274
Morphology Controlled Synthesis of ZnO Nanorods for Glucose Enzymatic Biosensor	
R. Nur Syafinaz, A.R. Khairunisak and Z. Lockman	280
Cytotoxicity of Pharma Grade ZnO with Higher Surface Oxygen on L929 Mouse Cell	
N.M. Kamaruddin, S. Mahmud, S. Nordin, A. Abuelsamen, A. Seeni and M.F. Izwan	286
Functionalization and Mechanical Properties of Cotton Fabric with ZnO Nanoparticles for Antibacterial Textile Application	
L.Y. Tan, L.T. Sin, S.T. Bee, T.T. Tee, C.T. Ratnam, K.K. Woo and A.R. Rahmat	292

Chapter 9: Other Nanomaterials

Synthesis of PVP Coated Superparamagnetic Iron Oxide Nanoparticles with a High Saturation Magnetization	
O.A. Noqta, A.A. Aziz and A.I. Usman	301
Structural and Morphological Properties of Manganese-Zinc Ferrite Nanoparticles Prepared by Thermal Treatment Route	
N.M. Al-Hada, H.M. Kamari, A.H. Shaari, E. Saion, S.A. Aziz and I.S. Mustafa	307
Unsteady Boundary Layer Flow of Sphere Filled with Nanofluid in the Presence of Magnetic Fields	
M.A. Bin Ismail, N.F. Mohammad and S. Shafie	314
Effect of Cu Doped in MgO on Nanostructures and their Band Gap Energies	
N.F. Chayed, N. Kamarulzaman, N. Badar and K. Elong	323
Properties of Nanostructured Rutile Titanium Dioxide (TiO_2) Thin Film Deposited with Silver Sulfide (Ag_2S) Quantum Dots as Photoanode for Solar Photovoltaic	
N.S.M. Mustakim, S. Sepeai, N.A. Ludin, M.A. Mat Teridi and M.A. Ibrahim	329
Magnetic Cooperative Phenomenon with Unpaired sp-Electrons System by MBE Low-Temperature Growth	
M.A. Mohamed and B.Y. Majlis	336