

Table of Contents

Short Description, Organizing Committee and Sponsors

Chapter 1: Thin Film and Nanostructure

Structural and Optical Properties of Nickel-Doped Zinc Oxide Thin Film on Nickel Seed Layer Deposited by RF Magnetron Sputtering Technique M. Mazwan, A.S. Abu Bakar, M. Sobri, K.M. Hakim, N. Ameera, S. Najwa, M.H. Mamat, M.Z. Musa and M. Rusop	3
Properties of Calix4-Lead(Pb) Films Using Langmuir-Blodgett (LB) Technique as an Application of Ion Sensor N.A. Azahari, F.L. Supian, T.H. Richardson and S.A. Malik	8
Effect of Substrate Temperature on Structural and Morphological Properties of Indium Tin Oxide Nanocolumns Using RF Magnetron Sputtering S. Najwa, A.S. Abu Bakar, N. Ameera, K.M. Hakim, M. Sobri, M. Mazwan, M.Z. Musa, M.H. Mamat and M. Rusop	12
Effect of Thickness and Annealing Temperature on the Properties of PZT Films at Morphotropic Phase Boundary Composition Prepared by Sol-Gel Spin-On Technique J. Periyannan, M. Muniyandi and G.N. Venkatesan	17
Preparation of Porous Alumina Template for Nanostructure Fabrication K.K. Ying, I.K. Ng, N.U. Saidin and S.H. Illias	21
Characterization of Al_2O_3 Thin Films Deposited by PLD N. Badar and N. Kamarulzaman	25
Characteristics of Cuprous Oxide Thin Films Deposited on Glass and Polyethylene Terephthalate Substrates P.K. Ooi, C.G. Ching, S.S. Ng, M.J. Abdullah, A.H. Haslan and H. Zainuriah	29
Crystallographic Parameter and Optical Absorption Measurement of CuInSe_2 Thin Films for Solar Cells A.A.I. Al-Bassam and U.A. Elani	35
Plasma Pre-Treatment of Polyethylene Terephthalate Substrate Influence on the Properties of ZnO Thin Film S.Y. Tho and K. Ibrahim	41
Formation and Optical Studies of Porous GaN Thin Films via UV-Assisted Electrochemical Etching Approach S.F. Cheah, S.S. Ng, F.K. Yam, A.H. Haslan and H. Zainuriah	45
Effect of High Intensity Light Irradiance on CuInSe_2 Thin Films C.C. Bin, Z.A. Talib and N. Sabli	51
Effects of Nitridation Temperatures on Gallium Nitride Thin Films Formed on Silicon Substrates C.Y. Fong, S.S. Ng, F.K. Yam, A.H. Haslan and H. Zainuriah	57
Morphology and Optical Studies of $(1-x)\text{ZnAl}_2\text{O}_4 - x\text{SiO}_2$ Thin Films Prepared by Sol-Gel Method M.S. Zulfakar, H. Abdullah, W.N. Wan Jalal, S. Shaari and Z. Zalita	63

Chapter 2: Superconductors

Effect of Heat Treatment on Ca Substitution in a Porous $\text{Y}(\text{Ba}_{1-x}\text{Ca}_x)_2\text{Cu}_3\text{O}_{7-\delta}$ Superconductor A.W. Norazidah, A. Hashim, A. Kasim, H.N. Hidayah and J.S. Hawa	71
Effects of $(\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3)_x$ ($x = 0.0, 0.8, 1.0$) Additions on the Structural and Superconducting Transition Temperature of $\text{YBa}_2\text{Cu}_3\text{O}_{7-\delta}$ System B.N. Fadilah, S.A. Halim, M. Hashim, R.S.N. Ain, H.A.N.N. Amalina and M.M.A. Kechik	75
Comparison of K, Ca and Zn Substitution on the Superconducting and Structural Properties of $\text{YBa}_2\text{Cu}_3\text{-}x\text{M}_x\text{O}_\delta$ H.N. Hidayah, S.Y.S. Yahya, H. Azhan, K. Azman, J.S. Hawa and A.W. Norazidah	79

Properties of Rare-Earth Substitution in Bi(Pb)-2223 Superconductor Prepared by Coprecipitation Method	
J.S. Hawa, A. Hashim, S.Y.S. Yahya, A. Kasim, H.N. Hidayah and A.W. Norazidah	83
Effects of Nano-Sized NiF₂ Addition in Bi_{1.4}Pb_{0.6}Sr₂Ca₂Cu₃O_{10+δ} Superconductor	
M. Hafiz and R. Abd-Shukor	87
1-xPr_xBaSrCu₃O_{7-δ} on the Superconductivity and Transport Properties	
N.A. Nik-Jaafar, R. Abd-Shukor and W. Kong	91
Fabrication and Characterization of Porous and Non-Porous Y₂CaBa₄Cu₇O_δ Superconductor	
S.A. Senawi, H. Azhan, M.S.M. Yusof, W.A.W. Razali, A.W. Norazidah, H.N. Hidayah, J.S. Hawa and H.J.M. Ridzwan	95
AC Losses in Sn-Doped Bi_{1.6}Pb_{0.4}Sr₂(Ca_{1-x}Sn_x)₂Cu₃O_δ Superconductors	
A. Hashim, S.A. Halim, A. Nazree, A. Kasim and S.A. Senawi	99
Enhanced Transport Critical Current Density of NiO Nano Particles Added YBCO Superconductors	
S.N. Abd-Ghani, H.K. Wye, I. Kong, R. Abd-Shukor and W. Kong	105

Chapter 3: Biomaterials Based Molecular Electronics

Lyotropic Phase Behaviour and Structural Parameters of Monosaccharide and Disaccharide Guerbet Branched-Chain β-D-Glycosides	
H.A.A. Hamid, R. Hashim, J.M. Seddon and N.J. Brooks	111
Algae Biofilm on Indium Tin Oxide Electrode for Use in Biophotovoltaic Platforms	
F.L. Ng, S.M. Phang, V. Periasamy, K. Yunus and A.C. Fisher	116

Chapter 4: Polymers and Composites

Photoalignment Studies on Azo Containing Thiophene Based Acrylates	
G. Hegde, R. Ata Alla, D. Chambers-Asman, M.M. Yusoff, A.S. Matharu and L. Komitov	125
Proton Conducting Carboxy Methyl Cellulose Solid Polymer Electrolytes Doped with Citric Acid	
W.F. Ng, M.N. Chai and M.I.N. Isa	130
Cellulose Extraction from Hardwood Waste of Resak (<i>Vatica spp.</i>)	
N.A.M. Zainul Abidin, F. Abdul Aziz, R. Shahidan, N. Azraaie, N.A. Mamat Razali and N.A. Ibrahim	134
Effect of Exposure Time on Plasma Modified Polyvinylidenefluoride-Trifluoroethylene (PVDF-TrFE) Film Surfaces	
M.N. Sarip, R. Mohd Dahan, S.L. Yap, M.H.M. Wahid, A.N. Arshad and D. Kamarun	138
Conductivity Studies on the Effect of a Nematic Liquid Crystal on Polyvinyl Alcohol-Based Electrolytes	
A.Z.S. Bin Zulkifli, M.A. Bin Kamarudin, A.B. Mainal and S.B.M. Said	142
Preparation and Characterization of Alpha Cellulose of Pineapple (<i>Ananas comosus</i>) Leaf Fibres (PALF)	
N.A. Ibrahim, N. Azraaie, N.A.M. Zainul Abidin, N.A. Mamat Razali, F. Abdul Aziz and S. Zakaria	147
Preparation and XRD Analysis of Cellulose from Merbau (<i>Intsia bijuga</i>)	
N.A. Mamat Razali, N. Azraaie, N.A.M. Zainul Abidin, N.A. Ibrahim, F. Abdul Aziz and S.A. Rahman	151
Effect of UV Treatment on Optical Properties of Low-Density Polyethylene Films Doped with Eu(TTA)₃phen Complex	
M.I. Khairuldin, N.M.A. Aziz, N.M. Nashaain, S. Wedianti, I. Farehah, H. Hashim, A. Makarimi Abdullah and M.E. Izat	155
Characterization on Optical and Mechanical Properties of Low-Density Polyethylene Films Doped with Eu(III) Complex	
M.N. Nordin, N. Mohd Azmi, H. Hashim, A.M. Abdullah, W. Shualdi, M.I. Ezwan, K. Mohd Isha and F. Ismail	162
Acoustic Evaluation of Hema Polymer Gel Dosimeter Phantoms	
K.A.R. Siti, S.M. Iskandar, A.R. Azhar, M.R. Ramzun and M.K. Halimah	169

X-Ray Diffraction (XRD) Analysis of Cellulose from Banana (*Musa acuminata*) Pseudo-Stem Waste

N. Azraaie, N.A.M. Zainul Abidin, N.A. Ibrahim, N.A. Mamat Razali, F. Abdul Aziz and S. Radiman

174

Chapter 5: Optical and Dielectric Materials

Structural and Optical Properties of Nickel (Ni)/indium Tin Oxide (ITO) Thin-Films Deposited by RF Magnetron Sputtering

M. Sobri, A.S. Abu Bakar, M. Mazwan, K.M. Hakim, S. Najwa, N. Ameera, M.H. Mamat, M.Z. Musa and M.R. Mahmood

181

Electro-Optic Potential of Room and High Temperature Polymer Stabilised Blue Phase Liquid Crystal

M.A. Rahman, I. Yamana, Y.G. Yeow, S.B.M. Said and M. Kimura

186

Dielectric Properties of Mg-Doped CaCu₃Ti₄O₁₂ Measured at High Frequencies

M.F. Ab Rahman, S.D. Hutagalung, J.J. Mohamed and M.F. Ain

190

Optical Properties of Undoped and Dy³⁺-Doped Boro-Tellurite Glass

A. Ab Rasid, H. Wagiran, S. Hashim, R. Hussin and Z. Ibrahim

194

Dye-Improved Optical Absorption of Vertically Aligned Silicon Nanowire Arrays Synthesized by Electroless Etching of Silicon Wafer

H.C. Teoh and S.D. Hutagalung

200

Substrate-Free Thick-Film Lead Zirconate Titanate (PZT) Performance Measurement Using Berlincourt Method

S.L. Kok, K.T. Lau and Q. Ahsan

204

Influence of Er³⁺ Dopants on Optical Properties of Boro-Tellurite Glass

Z.A.S. Mahraz, M.R. Sahar and S.K. Ghoshal

211

Dielectric Properties of ZrO₂ Doped on NiO at High Frequency

A.S.S. Sharifah, J.J. Mohamed and Z.A. Ahmad

216

The Effect of Annealing Temperatures on the Dielectric Constant of PVDF/MgO Nanocomposites Thin Films

A.N. Arshad, R. Mohd Dahan, M.H. Mohd Wahid, M.N. Sarip and M.R. Mahmood

221

Optical Properties of Zinc Oxide (ZnO) Thin Films Prepared by Spray Pyrolysis Method

B.V. Rajendra, V. Bhat and D. Kekuda

226

Luminescence Spectra of Erbium Doped Zinc Tellurite Glass Embedded with Gold Nanoparticles

M.R. Sahar, E. Jaafar and S.K. Ghoshal

231

Optical Absorption of Nd³⁺ Doped Tellurite Glass Containing Ag Nanoparticles

N.A. Azmi, M.R. Sahar and S.K. Ghoshal

236

Enhanced Luminescence from Erbium Doped Phosphate Glass Containing ZnO Nanoparticles

R. Arifin, N.A. Zulkifeli, M.R. Sahar and S.K. Ghoshal

241

Optical Absorption of Erbium Doped Tellurite Glass

S.I. Fatimah, M.R. Sahar, S.K. Ghoshal, R. Arifin and K. Hamzah

245

Structural and Optical Properties of Nickel-Doped and Undoped Zinc Oxide Thin Films Deposited by Sol-Gel Method

S.H. Basri, M.A. Mohd Sarjidan and W.H.A. Majid

250

Growth of Au Nanoparticles Stimulate Spectroscopic Properties of Er³⁺ Doped TeO₂-ZnO-Na₂O Glasses

A. Awang, S.K. Ghoshal, M.R. Sahar, M.R. Dousti and F. Nawaz

254

Luminescence Enhancement of Samarium-Doped Tellurite Glass Containing Silver Nanoparticles

N.A. Fauzia Abdullah, M.R. Sahar, K. Hamzah and S.K. Ghoshal

260

Luminescence Properties of Transition Metal and Rare Earth Doped Cadmium Lead Borophosphate Glass

T.Y. Eeu, X.G. Pang, T.Q. Leow, I. Zuahiri and R. Hussin

265

Structural and Luminescence Properties of Eu³⁺ and Dy³⁺-Doped Magnesium Boro-Tellurite Ceramics

N.Z.I. Bohari, R. Hussin, Z. Ibrahim, M.H.H. Jumali, R. Uning and A. Rohaizad

269

Mechanical and Dielectrical Energy Dissipation Phenomena Study in Lead Zirconate Titanate Piezoelectric Materials	274
A. Bouzid and G. Fantozzi	
Structural and Luminescence Study of Rare Earth and Transition Metal Ions Doped Lead Zinc Borophosphate Glasses	280
X.G. Pang, T.Y. Eeu, P.M. Leong, W.N. Wan Shamsuri and R. Hussin	

Chapter 6: Magnetic Materials

Structural, Thermal and Magnetic Analysis of Co_2FeO_4 Spinel Oxide Synthesized by Co-Precipitation Process	287
P. Reddy, Y. Raja and M. Ashok	
Synthesis and Characterization of SnO_2 and Fe_3O_4 Composite Grown by Microwave Method	291
S.Y. Gan, K.K. Lim, M.A.A. Hamid, R. Shamsudin and W.S. Chiu	
Microwave Absorption Characteristics of some Ferrite-Filled Polymer Composites	298
F. Mohd Idris, M. Hashim, I. Ismail, I.R. Ibrahim, M. Manap and M.S. Ezzad Shafie	
Effect of Temperature on the Purity, Particle Size and Morphology of Fe_2O_3 Nanomaterials	305
A.R. Noor Azreen, N. Kamarulzaman, N. Badar, M. Nur Amalina and K. Norashikin	

Chapter 7: Ceramics and Glasses

Effect of Pressing Force on the Physical Properties of CaMgTiO_3 Ceramic Prepared by HEBM	311
N. Hassim, W.N. Wan Shamsuri, N.L.A. Rodin, R. Hussin, K. Deraman and B. Ismail	
Mass Attenuation Coefficients and Effective Atomic Numbers of Strontium Borate Glass System in the Energy Range 0.01- 1.25 MeV	315
T.Y. Lim, H. Wagiran, R. Hussin and S. Hashim	
Effect of Sintering Temperature on the Microstructure, Electrical and Magnetotransport Properties of $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ Compound	319
L.K. Pah, A.H. Shaari, C.S. Kien, C.H. Wei, A. Gan, N.S. Wei and C.K. Hou	
Spectroscopic Studies of Er^{3+}-Yb^{3+} Codoped Multicomposition Tellurite Oxide Glass	323
S.O. Baki, L.S. Tan, C.S. Kan, H.M. Kamari, A.S.M. Noor and M.A. Mahdi	
Electrochemical Behavior of $\text{LiCo}_{(1-x)}\text{Mn}_x\text{O}_2$ Crystalline Powders	334
A. Azahidi, N. Kamarulzaman, K. Elong, N. Badar and N.A. Mohd Mokhtar	
Effect of Two Annealing Temperatures on the Phases of Novel σ-$\text{Al}_{1.9}\text{Zn}_{0.1}\text{O}_3$ Nanopowders	338
M.H. Jasimin, N. Kamarulzaman, N. Badar, R. Rosidah and M.F. Kasim	
Investigation of Phase, Purity, Morphology and Particle Size of $\text{Zn}_{(1-x)}\text{Cu}_x\text{O}$ Materials via X-Ray Diffraction (XRD) and Microscopic Techniques	343
M.F. Kasim, N. Kamarulzaman and S.A. Kamil	
MgO Nanostructured Materials Obtained Via the Solid-State Reaction Method	347
N.F. Chayed, N. Kamarulzaman, N. Badar, R. Rosidah, N. Kamarudin and M.S. Mastuli	
Effect of Calcination Time on the Specific Capacities of $\text{LiNi}_{0.4}\text{Co}_{0.55}\text{Ti}_{0.05}\text{O}_2$ Cathode Materials	351
N. Kamarulzaman, A. Azahidi, K. Elong, N.A. Mohd Mokhtar and N. Mohdi	
The Effect of Fe and Al Substitution in $\text{LiNi}_{0.8}\text{Co}_{0.2}\text{O}_2$ Cathode Material	355
N.A. Mohd Mokhtar, A. Azahidi, K. Elong, N. Badar and N. Kamarulzaman	
The Influence of Yb^{3+} Co-Doping on Optical Properties of Sm^{3+}-Doped Sodium Tellurite Glasses	359
F. Nawaz, M.R. Sahar and S.K. Ghoshal	
Preparation and Characterization of Soft Glass Using Sarawak Silica Sand as Starting Material for Craftware	363
M. Daud and M. Abu Hassan	
The Pumping Parameters for Er-Doped Tellurite Glass	375
N. Sharip, M.R.S.Y. Daud and A.R. Tamuri	
Effect of Boron Carbide Addition on the Strength and Physical Properties of Concrete	385
F.N. Tajul Ariffin, R. Hamid, Y. Abdullah, S. Haji Ahmad and Y.H. Muhammad	

The Thermoluminescence Response of Dy Doped Calcium Borate Glass Subjected to 6MV Photon Irradiation	390
H.A. Tajuddin, H. Wagiran and R. Hussin	
Absorption Spectra of Neodymium Doped Tellurite Glass	395
N.A. Mat Jan, M.R. Sahar, S.K. Ghoshal, R. Ariffin, M.S. Rohani and K. Hamzah	
Effect of High-Energy Ball Milling on the Charge-Discharge Behaviour of LiCo_{0.3}Ni_{0.7}O₂	400
K. Elong and N. Kamarulzaman	

Chapter 8: Solid State Theory, Simulations and Computation

Fractal Analysis of Morphological Image of Organic Phthalocyanine Tetrasulfonic Acid Tetrasodium (TsNiPc) Film	407
Y.L. Kong, S.V. Muniandy, M.S. Fakir and K. Sulaiman	
Calculation of Confined Electron and Hole States in a Strained InAs-GaAs Pyramidal Quantum Dot System Based on Effective Mass Approximation	411
G.H. Ripan, C.Y. Woon, G. Gopir and A.P. Othman	
Discontinuity Mass of Finite Difference Calculation in InAs-GaAs Quantum Dots	415
C.Y. Woon, G. Gopir and A.P. Othman	
Magnetic Ground State and Electronic Structure Calculations of PbMnO₃ Using DFT	420
S.S. Subramanian and B. Natesan	
Luminescence from Silicon and Germanium Nanowires: A Phenomenological Model	424
S.K. Ghoshal, M.R. Sahar, R. Arifin, M.S. Rohani and K. Hamzah	
DFT Investigations of the Optical Properties of Gallium Arsenide	429
N.N. Anua, R. Ahmed, A. Shaari, U.H. Bakhtiar and M. Binti Mohamad	
Temperature Dependent DC and RF Performance of n-GaN Schottky Diode: A Numerical Approach	439
T. Munir, A. Abdul Aziz, M.J. Abdullah and M.F. Ain	

Chapter 9: Carbon and Related Materials

Selective Detection of Dopamine in the Presence of Uric Acid Using Polymerized Phthalo Blue Film Modified Carbon Paste Electrode	447
J.G. Manjunathaa, M. Deraman, N.H. Basri and I.A. Talib	
EMI Shielding Effectiveness of Polyvinyl Chloride and Carbon Fiber Composites in Building Construction	452
M.S. Ruslan, S.P. Chew, M. Sharif, A.A. Azid and A. Yusof	
Growth and Structural Properties of ZnO-SWCNTs Produced by Chemical Bath Deposition and Sol-Gel Methods	460
A. Omar, A. Huda, M.R. Razali, S. Shaari and M.R. Taha	

Chapter 10: Semiconductors and Devices

Interface-Induced Modifications of Polarization in Nanoscale Ferroelectric Superlattices	477
K.G. Lim and K.H. Chew	
Morphological Distinctions on CdSe QDs Synthesized via Auto Clave and Organometallic Route	481
U.C. Ahamefula, M.Y. Sulaiman, Z. Ibrahim, N.B. Ibrahim, M.Y. Othman and C.H. Lim	
Implementations of PID Controller and its Transient Behaviour in Active Suspension System	490
N.H. Amer, R. Ramli, W.N.L. Wan Mahadi, M.A. Zainul Abidin and Z. Rasol	
Effects of Growth Temperature on the Structural Properties of Zinc Oxide Nanograins Deposited by RF Magnetron Sputtering	500
N. Ameera, A.S. Abu Bakar, S. Najwa, K.M. Hakim, M. Mazwan, M. Sobri, M.H. Mamat, M.Z. Musa and M. Rusop	
Electrical Properties of Azo-Ferrocene as Organic Diode	505
S.A.M. Jamali, H. Salleh and T. Tagg	

Effect of Time Conditions on the Growth of ZnO Nanorods via Hydrothermal Method N.A. Nik Aziz, M.I.N. Isa and H. Salleh	509
Study the Electrical Properties and the Efficiency of Polythiophene with Dye and Chlorophyll as Bulk Hetero-Junction Organic Solar Cell H. Salleh, E.A.E.A. Ghapur, N.A. Nik Aziz, W.A. Dhafina, A. Hamizah, A.R.N. Laily and H. Che Hassan	513
Nanoscale Growth of CdS and PbS Semiconductor within Calix[4]Arene Langmuir-Blodgett LB Film for Ion Sensing Application F.L. Supian, T.H. Richardson, A.V. Nabok, M. Deasy and M.S.M. Azmi	520
Preparation of Photoelectrochemical Cell of ITO/Cu₂O/PVC-LiClO₄/Graphite Using Cu₂O Films as an Active Layer D.S.C. Halin, H. Haroon, I.A. Talib, A.R. Daud and M.A.A. Hamid	526
Investigations on Fractal Nanostructure of Zinc Oxide by Small Angle Neutron Scattering (SANS) R. Razali, E.G.R. Putra, A.A. Mohamed, W.H. Abd Majid, W.A.T. Wan Abdullah and Z.A. Ibrahim	531
Theoretical Studies of InGaN/GaN Multiple Junction Solar Cell with Enhanced Tunneling Junction Diode S. Hussain, G. Ali, H. Mehmood, M. Omar and T. Zaidi	535
The Effect of V/III Ratio on the Crystal Structure of Gallium Arsenide Nanowires R. Muhammad, Y. Wahab, Z. Ibrahim, Z. Othaman, S. Sakrani and R. Ahamad	539
The Photodegradation of Organic Compounds by ZnO Nanopowder T.K. Tan, P.S. Khiew, W.S. Chiu, S. Radiman, R. Abd-Shukor, N.M. Huang and H.N. Lim	547
Properties of Pt Schottky Contact on Porous In_{0.27}Ga_{0.73}N Thin Film Revealed from I-V Measurements S.H. Abud, Z. Hassan, F.K. Yam and M.A. Ahmad	558

Chapter 11: Metals and Alloys

High Temperature Storage and Gamma Radiation Effects on Mechanical Properties of Stacked Die Package A. Jalar, W.Y. Wan Yusoff, N.K. Othman and I. Abdul Rahman	567
Nonsurfactant Surface Modifications of Monodispersed Si-Cu Core-Shell Nanocomposite M.A. Salim, H. Misran, S.Z. Othman, N.N.H. Shah, N.A.A. Razak and K.M. Mahbor	571
Electrical Resistivity of Fe-Bearing Sn1Ag0.5Cu Lead-Free Solder Alloys N.A.A. Mohd Amin, D.A.A. Shnawah, M.F. Mohd Sabri and S.B.M. Said	575