

Table of Contents

Preface

Chapter 1: Optical and Electronic Materials

Electronic Structure and Optical Properties of Strained Type-II InAs_xSb_{1-x}/InAs Quantum Dots for Mid-Infrared Applications	
G.H. Yeap, S. Rybchenko, I. Itskevich, S. Haywood, P. Carrington and A. Krier	3
X-Rays Diffraction Study of InGaN/GaN Heterostructures Grown by MOCVD Technique at Different Temperatures	
A.K. Tan, N.A. Hamzah and S.S. Ng	9
Effect of Mn Incorporated into LiNbO₃ Crystal Structure on the Electronic and Optical Properties Using First-Principles Study	
L.W. Zainuddin, M.H. Samat, F.W. Badrudin, O.H. Hassan and M.F.M. Taib	15
Characterization of Nanocrystalline SnO₂-Y₂O₃ Thin Films Prepared Using Chemical Bath Deposition	
I.H. Kadhim and H. Nagem Abd	21
Indium Doped ZnO Thin Film Using Spin Coating for TCO Application	
S.S. Shariffudin, A.H. Mohd Zaid, N.E.A. Azhar, P.S.M. Saad, H. Hashim and M.H. Mamat	26
Using the Rods as Collector and Study of its Effect on Morphology and Uniformity of Nanofibers via Electrospinning	
N.Z. Al-Hazeem, S.M. Mohammad, Z. Hassan and H. Naser	32
Rapid Thermal Annealing Process Toward Enhancement of ITO Thin Films	
R.I. Mohd Asri, N.A. Hamzah, M.A. Ahmad, M.A.A.Z. Md. Sahar, M.A. Che Seliman, M. Abdullah and Z. Hassan	38
Fabrication of PS/Al Nanocomposites as Foils and Evaluation of their Optical Properties	
H. Naser, S.M. Mohammad, H. Mohammed Shanshool, Z. Hassan and N.Z. Al-Hazeem	44
Nearly Zero Ultra-Flattened Dispersion in Octagonal Photonic Crystal Fiber	
N. Islam, A. Baul, M.F. Packeer Mohamed, A.B. Sakib and M.F. Hasan	49
Impacts of Wafer Doping Type on Structural and Optical Properties of Black Silicon Fabricated by Metal-Assisted Chemical Etching	
M.A. Sheriff, A. Abdulkadir, M.R. Hashim and M.Z. Pakhuruddin	55
Ray Tracing of Perovskite Thin Films for Solar Windows	
Z. Zahri, M.M. Mohd Rashid and M.Z. Pakhuruddin	62
Study of Porous III-V Surface Structure via Etching Process: Effect of Pore Depth	
M.R. Ramle, R. Radzali, A.F. Abd Rahim, A. Mahmood, A. Abu Bakar, A.N. Mohd Daud and M.H. Abdullah	68

Chapter 2: Optoelectronics and Electronics Devices

Performance of MOS Capacitor with Different Dielectric Material Simulated Using Silvaco TCAD Tools	
L.N. Ismail, N. Sihab and N.S. Mohd Sauki	77
Humidity Sensor Performance Based ZnO/SnO₂ Nanorods Structure Using Different ZnO Seed Layer	
N.D. Md Sin, S.M.S. Ahmad, A.S. Ismail, M.H. Mamat, M.Z. Hussin, F.S. Zahid, N.A. Asli, M.H. Abdullah and M. Rusop	83
Opto-Electronic Characterisation of GaAsBi/GaAs Multiple Quantum Wells for Photovoltaic Applications	
F. Harun, J.R. Rusli, R.D. Richards, M.G. Abdul Rahman and J.P.R. David	89
Characterization of Breath Sensor at Different Frequencies in Outdoor Condition	
N. Suhimi, N.H. Saad and N. Yusoff	95
Electrical Properties of GaN Cap Layer for AlGaIn/GaN HEMT	
M.H.A. Hamid, R.I. Mohd Asri, M. Nuzaihan, M. Inaba, Z. Hassan, H. Kawarada, S. Falina and M. Syamsul	101

Nanomanipulation of Functionalized Gold Nanoparticles on GaN M.A. Che Seliman, N.A. Ali Yusup, M.A. Ahmad, C. Iba, M. Nuzaihan, H. Kawarada, Z. Hassan, M.F. Packeer Mohamed, S. Falina and M. Syamsul	107
Impact of Notch Structures on Transfer Characteristics of AlGaIn/GaN HEMTs: A Simulation Study M. Haziq, N. Ali, S. Falina, H. Kawarada and M. Syamsul	113
Comparison of the Electrical Performance of AlN and HfO₂ Passivation Layer in AlGaIn/GaN HEMT Z. Zulkifli, N. Ali, S. Falina, H. Kawarada, M.F. Packeer Mohamed and M. Syamsul	119
Microfiber Optics Liquid Refractometer: The Effect of Taper Waist M.A.A. Bakar, A.T.B. Li, G. Krishnan, M.S.A. Aziz, S.M. Mohammad, A.F. Omar and M. Abdullah	125
Temperature Dependence of Electrical Characteristics of ZnO Nanowire Field-Effect Transistors with AZO and Aluminium Source/Drain Contact N.A. Ghazali, M.F. Packeer Mohamed, M.F.A. Jalaludin Khan and H. Chong	131
Study of Strained-SiGe Channel P-MOSFET Using Silvaco TCAD: Impact of Channel Thickness S.N.N. Mohd Salleh, A.F. Abd Rahim, N.S. Mohd Razali, R. Radzali, A. Mahmood and I.H. Hamzah	137
Investigation on Absorption and Photocurrent in Silicon Absorber with Varied Pyramid Texture Angles by Ray Tracer M.A.A. Rosle and M.Z. Pakhuruddin	144

Chapter 3: Electronics Packaging Design

Analysis of Transmission Performance for Fine Pitch Interconnect H.Y. Leong, B.K. Yap, L.P. Chin, E.E. Hussin and Z. Awang Mat	153
Interfacial Delamination Validation on Fan-Out Wafer-Level Package Using Finite Element Method A. Conversion, A.T. Ubando and J. Gonzaga	159
Fabrication of Nanocomposite PDMS/Graphene as Flexible Substrate at Different Graphene Volume I.Z. Ghazali, R.A. Awang, S.H. Herman and Z. Zulkifli	165

Chapter 4: Microwave Absorbing Materials

The Optimal Performance of a Geopolymer Hollow Pyramidal Microwave Absorber with Triangular Slotted M.F. Asmadi, H. Abdullah, M.N. Taib, M.I. Fazin, A. Ahmad, N.M. Kasim, N.A. Ismail and M.M. Jumidali	173
The Performance of Hollow Pyramidal Microwave Absorber Using Different Slot Size M.I. Fazin, H. Abdullah@Idris, M.F. Asmadi, A.R. Razali, N.M. Noor and L.M. Kasim	179
Utilization of Carbon Biomass as an Absorbing Material in Anti-Microwave Brick Walls Manufacturing N.H. Narudin, H. Abdullah, M.N. Taib, B.A. Hadi, A. Ahmad, N.M. Kasim and N.A. Ismail	185

Chapter 5: Functional Polymers and Composites

PVA Nanofibers Embedded with Different Concentration of ZnO Prepared by Electrospinning Method M.A. Zulkefle, R.A. Rahman, W.F.H. Abdullah, Z. Zulkifli and S.H. Herman	193
Dielectric Properties of Epoxy Composites Containing Silver Nanoparticle and Carbon Nanotube over the X-Band Frequency N.A. Mohamad, R.N.I.R. Othman and N.F.A. Jamilr	199
Thermomechanical and Dielectric Properties Relationship of Hybrid Carbon Black and Nano Silica Epoxy Composites R.N.I.R. Othman, F. Atira and N.A. Mohamad	206

Impedance and Dielectric Characterization of Epoxy Composites Containing Carbon Black and Carbon Nanotubes

R.N.I.R. Othman, A.Z. Ghani, N.H. Osman and N.A. Mohamad

212

Chapter 6: Nanocatalysts

Effect of Capping Agent on the Shape and Catalytic Activity of PtPd Bimetallic Alloy Nanostructures

M.D. Johan Ooi, N.M. Yusaini, A. Mahmood, N.A.M. Napihah and Y. Yusof

221

Removal of Congo Red Dye Using Green Kyllinga Weed Extract and Silver Nanoparticles as Catalysts

N. Isa, S.H. Khalid, A.N.A. Azizan, N.A. Wahab, M.S. Osman and V. Inderan

227