

Table of Contents

Preface and Committees

Chapter 1: Applied Physics

Micro Plasma Source Design Using WGMs a PANDA Ring R. Siriroj, K. Srinuanjan and P.P. Yupapin	3
The Transmittance to Direct Irradiance due to Absorption by Precipitable Water Vapor in the Atmosphere S. Phokate and N. Pisutthipong	7
Drying Pineapple Using a Mix Mode Solar Dryer N. Srisittipokakun and K. Kirdsiri	11
Detection of Pesticide Residues in Vegetables and Fruits Using Piezoelectric Crystal Biosensor P. Chaiyachate and S. Chaiyachate	16
Physical Parameters for a Contact Binary AY Aquarius W. Maithong, C. Kruea-In and S. Rattanasoon	20
Analysis of Neutron Flux Measurement in Thai Research Reactor-1/Modification 1 Using the Monte Carlo Method S. Sabaibang, S. Lekchaum and C. Tippayakul	23
A Fabrication of Galvanic Cell from Pineapple Peel Residue in Agricultural Industries A. Pancharoen, S. Poomjan, T. Taengtang and K. Srinuanjan	27
Quantum Field Theory Viewpoint of Refractive Index A. Maksuwan	31
Specific Activity and Radioactive Contour Maps of Natural (^{40}K, ^{226}Ra and ^{232}Th) and Anthropogenic (^{137}Cs) Radionuclides in Surface Soil Samples from Phang Nga Province, Thailand P. Kessaratikoon, R. Boonkrongcheep, S. Benjakul and S. Udomsomporn	35
Modification of Solvolytic Sol-Gel Synthesis for Low Temperature TiO_2 DSSC Photoelectrode S. Kalasina, T. Amornsakchai and U. Asawapirom	39
An Electricity Generator Model by the Water Delivery System of Sanitary Ware S. Panthong, S. Poomjan, T. Taengtang and K. Srinuanjan	43
An Improved TA Suppression Method for Coded PR Channels P. Kovintavewat and S. Koonkarnkhai	46
Baseline Popping Detection and Correction Algorithms for Perpendicular Magnetic Recording System P. Kovintavewat and S. Koonkarnkhai	50
Trellis-Based Detecting the Insertion and Deletion Bits for Bit-Patterned Media Recording S. Koonkarnkhai, P. Kovintavewat and P. Keeratiwintakorn	54
Investigation of Graph-Based Detection in Iterative Decoding for Bit-Patterned Media Recording P. Kovintavewat	58
Feedforward Bulk-Driven Class AB Fully-Differential Second-Generation Current Conveyor (FDCCII) T. Thongleam and V. Kasemsuwan	62
Treatment of Wastewater Using Porous Ceramics of Hydroxyapatite P. Chankachang, S. Chantara, S. Punyanitya and C. Saelee	66
Combined Coding Algorithm of LDPC Codes in Bit-Patterned Media Recording Channels C. Prasartkaew, P. Kovintavewat and S. Choomchuay	70
Measurement of Sound Speed in Liquid Using Optical Approach P. Meethom, K. Thamaphat, P. Limsuwan and O. Rewthong	75
The Direct Ethanol Fuel Cell Performance S. Srichai and S. Heng	79

Chapter 2: Materials Science and Materials Physics

Giant Magnetoresistance in FeMn/NiCoFe/Cu/NiCoFe Spin Valve Prepared by Opposed Target Magnetron Sputtering Ramli, E. Sustini, N. Rauf and M. Djamal	85
Effect of SnO₂ Addition into TiO₂ Thin Films on Photocatalytic Activity and Hydrophilic Property W. Sangchay and T. Rattanakool	90
Effect of Sludge from Water Treatment Plant on Properties of Pottery S. Janbuala, W. Ratanathavorn, M. Aermbua, A. Satayavibul and U. Kitthawee	94
Structural and Optical Properties of Ho³⁺ Doped ZnO-Bi₂O₃-B₂O₃ Glasses P. Chimalawong, K. Kirdsiri, J. Kaewkhao and P. Limsuwan	98
Yellowish-Brown Pigment with High near Infrared Reflective T. Thongkanluang, J. Wutisatwongkul and P. Surin	102
Effect of Step-Heating on Microstructure and Mechanical Properties of Linear Low Density Polyethylene/Multi-Walled Carbon Nanotube Composites Prepared via Melt Mixing Process S. Boonphan and P. Singjai	107
Environmental Study on the Behavior of Water Drops with Circular Resin Insulator Material under DC Electric Field Stress S. Phimmase, K. Tonmitra, A. Siritaratiwat and A. Kaewrawang	111
Effect of Surface Fluorination on Photocatalytic Activity of Titania Nano-Powder I. Chuasontia, K. Hathaisamit and S. Putwat	115
Experimental and Modeling Studies on Thermal Conductivity of Cement Composites Containing Nanosilica P. Jittabut, P. Chindaprasirt and S. Pinitsoontorn	119
Investigate Oxygen Content in YBa₂Cu₃O_{7-δ} Superconductors T. Kruaehong	124
Investigation of the Properties of Soda-Lime Silicate Glass Doped with TiO₂ E. Meechoowas, U. Pantulap and T. Jitwatcharakomal	128
The Exponential Repulsion and Pairing Mechanism in Bisoliton Model on the Critical Temperature of Cuprate Superconductors T. Chanpoom	132
Investigation on Physical and Optical Properties of Vanadium Oxide in Soda Lime Borate Glasses Y. Ruangtaweep and J. Kaewkhao	135
Impact Modification of Wood Plastic Composite from Acrylate-Styrene-Acrylonitrile and Bagasse P. Pakeyangkoon, S. Tuampoemsab, T. Sritapunya and A. Rattanapan	139
Effect of Epoxide Group in Thermoplastic Elastomer on the Properties of Polyamide6 and Low-Density Polyethylene Blends S. Tuampoemsab, S. Riyajan, T. Sritapunya and P. Pakeyangkoon	143
The Photoluminescence and Physical Properties of Eu³⁺ Ions in Li₂O-Y₂O₃-B₂O₃ Glass System E. Kaewnuam, P. Prongsamrong, H.J. Kim, J. Kaewkhao and N. Chanthima	147
Structural and Optical Properties of Nanocrystalline ZnO Powder by a Direct Thermal Decomposition Route Using Zinc Acetate Dihydrate W. Kaewwiset, T. Srisuphang, S. Keawsomrong, S. Sutthana and S. Sujinnapram	151
Waste Silicon Carbide as Filler for Natural Rubber Compounds A. Rattanapan, J. Paksamut, P. Pakeyangkoon and S. Tuampoemsab	155
Antagonism of Natural Anti- and Pro-Oxidants in Synthetic Polyisoprene Rubber Vulcanizates S. Tuampoemsab, A. Rattanapan and P. Pakeyangkoon	159
Structural, Optical and Photocatalytic Properties of ZnO Nanoparticles Prepared by Precipitation Method S. Suwanboon and P. Amornpitoksuk	163

Effects of YMnO_3 Addition on Phase Structure, Microstructure and Electrical Properties of $(\text{Na}_{0.515}\text{K}_{0.485})_{0.94}\text{Li}_{0.06}(\text{Nb}_{0.8}\text{Ta}_{0.2})\text{O}_3$ Lead-Free Ceramics P. Bomlai	167
The Photoluminescence, Optical Absorption and Physical Properties of Dy^{3+} Ions in $\text{Li}_2\text{O}-\text{La}_2\text{O}_3-\text{B}_2\text{O}_3$ Glass System N. Wantana, H.J. Kim, O. Chamlek, J. Kaewkhao and N. Chanthima	171
Angular and Intensity Distributions on Multiple Scattering of 662 keV Gamma Photons in Aluminium K. Siengsanoh, W. Chewpraditkul, P. Limsuwan, K. Boonin, J. Kaewkhao and P. Limkitjaroenporn	175
Effect of the Mole Ratios of $\text{Zn}^{2+}:\text{OH}^-$ on the Morphologies and Photocatalytic Activities of Ag/ZnO Photocatalysts P. Amornpitoksuk and S. Suwanboon	180
A Facile Fynthesis of ZnS Nanostructures via Liquid-Solid Reactions W. Phoohinkong, T. Sukonket and U. Kitthawee	184
A Simple Method for Large-Scale Synthesis of Nano-Sized Zinc Sulfide W. Phoohinkong and T. Sukonket	188
Investigation on Nanostructure and Morphologies of ZnO Nanowires Prepared by Hydrothermal Method P. Khamkhom, M. Horprathum, P. Eiamchai, C. Chananonawathorn and J. Kaewkhao	192
Fabrication of Tantalum Oxide Nanorods by DC Magnetron Sputtering with Glancing Angle Deposition T. Plirdpring, M. Horprathum, P. Eiamchai, S. Limwichean, C. Chananonawathorn, T. Boonpichayapha and T. Suriwong	196
Structure and Magnetic Properties of Co-Substituted Strontium Hexaferrite P. Chaya, T. Jutarosaga and W. Onreabroy	200
Effect of Annealing Temperature on ZnO Nanorods Prepared by Hydrothermal Process A. Mungchamnankit, P. Eiamchai, C. Chananonawathorn, S. Limwichean, M. Horprathum, A. Thongmee and P. Sukplang	204
Influence of Calcination Temperature on Synthesis of Magnetite (Fe_3O_4) Nanoparticles by Sol-Gel Method A. Worawong, T. Jutarosaga and W. Onreabroy	208
The Study on Zero-Temperature Gap of Superconductor Having the Coexistence of SDW and CDW K. Thongcham and P. Udomsamuthirun	212
Low-Cost and Fast Production of Nano-Silica from Rice Husk Ash W. Phoohinkong and U. Kitthawee	216
The Synthesis of $\text{YBa}_3\text{Cu}_4\text{O}_x$ Superconductor and Comparison with $\text{YBa}_2\text{Cu}_3\text{O}_x$ P. Chainok, S. Sujinnapram, T. Nilkamjon, S. Ratreng, K. Somsri, N. Phomphuag, P. Mychareon and P. Udomsamuthirun	220
The Study on Surface Critical Magnetic Field of a Layered Magnetic Superconductors S. Meakniti, A. Changjan and P. Udomsamuthirun	224
The Preparation and Characterization of Y235 Superconductor and Y235 Doped Fluorine T. Khuntak, P. Chainok, S. Sujinnapram, T. Nilkamjon, S. Ratreng and P. Udomsamuthirun	228
Synthesis and Characterization of BNKT/ZnO Ferroelectric Lead-Free Nanocomposites C. Wichasilp, S. Inthong, W. Maithong, N. Kruea-In and C. Kruea-In	232
Physical and Gamma-Ray Shielding Properties of Strontium Borosilicate Glasses S. Tuscharoen and J. Kaewkhao	236
High Performance Metal Surface Coating Using Ta_2O_5 Thin Film Prepared by D.C. Magnetron Sputtering N. Khemasiri, C. Chananonawathorn, M. Horprathum, P. Eiamchai, P. Chindaudom, S. Pratontep, D. Phromyothin, S. Porntheeraphat and J. Nukeaw	240
Determination of Thickness and Optical Properties of Tantalum Oxide Thin Films by Spectroscopic Ellipsometry C. Chananonawathorn, N. Khemasiri, T. Srichaiyaperk, B. Samransuksamer, M. Horprathum, P. Eiamchai, S. Limwichean, K. Aiempnanakit and P. Chindaudom	244
Effects of Annealing Treatment on WO_3 Thin Films Prepared by DC Reactive Magnetron Sputtering T. Srichaiyaperk, K. Aiempnanakit, M. Horprathum, P. Eiamchai, C. Chananonawathorn, S. Limwichean and P. Chindaudom	248

Decoration of Gold Nanoparticles on TiO₂ Thin Films for Enhanced Response of Ethanol Gas Sensors	
B. Samransuksamer, M. Horprathum, P. Eiamchai, V. Patthanasettakul, A. Wisitsoraat, C. Chananonnawathorn, D. Phokharatkul, P. Chindaudom, T. Jutarosaga, W. Rakreungdet and S. Dumrongrattana	251
Fabrication of 3D-Hybrid Nanostructure for Surface-Enhanced Raman Scattering Substrate: Effect of Applied Voltage on Porous Size of AAO Template	
A. Supati, P. Limnonthakul, S. Limwichean, W. Chaisriratanakul, P. Eiamchai, M. Horprathum, S. Porntheeraphat, N. Nuntawong, V. Patthanasettakul and P. Chindaudom	255
Vertically Aligned Ag Nanorod Arrays for Trace Cypermethrin Detection	
P. Limnonthakul, S. Limwichean, P. Eiamchai, M. Horprathum, A. Supati, N. Nuntawong, V. Patthanasettakul and P. Chindaudom	259
Effect of Emitting Current Ion Source on Structural, Optical and Electrical Properties of Nanostructured ITO Thin Films by Ion-Beam Assisted Evaporation	
B. Yosvichit, M. Horprathum, P. Eiamchai, V. Patthanasettakul, B. Samransuksamer, P. Chindaudom and S. Denchitcharoen	263
A Study on Composition of Plaster Waste from Ornament Factory	
A. Angnanon, P. Kanchanakul, J. Kaewkhao and N. Srisittipokakun	267
Effects of Na₂O on Borosilicate Glasses Prepared from Coal Fired Ash	
W. Rachniyom, Y. Ruangtaweep, J. Kaewkhao, S. Ruengsri and K. Phachana	271
Fabrication and Investigation some Properties of NiO Doped Borosilicate Glasses	
K. Kirdsiri, N. Srisittipokakun, J. Kaewkhao and P. Limsuwan	275
Optical Absorption and Photoluminescence Properties of Dy³⁺ Ions in Bi₂O₃-SiO₂-B₂O₃ Glass System	
N. Sangwanatee, Y. Tariwong, S. Sarachai, J. Kaewkhao and N. Chanthima	280
Light Yield Non-Proportionality and Energy Resolution of BGO and CsI(Tl) Scintillation Crystals	
W. Chaiphaksa, N. Boonyopakorn, J. Kaewkhao and P. Limkitjaroenporn	285
Effect of Current at Aluminum Target on the AZO Thin Films by DC Magnetron Sputtering	
P. Boosabarat, K. Honglertkongsakul, D. Ngamrunroj, N. Witit-Anun and S. Chaiyakun	289
Relationship of Pressure and Plasma Temperature in Plasma DC Glow Discharge	
K. Honglertkongsakul and D. Ngamrunroj	293
London Penetration Depth of Fe-Based Superconductors	
A. Changjan and P. Udomsamuthirun	297
Method of High Active Preparation and Electrical Properties of CuFeO₂ Delafossite-Type	
C. Rudradawong, A. Wichainchai, A. Sakulkalavek, Y. Hongaromkid and C. Ruttanapun	302
Thermal and Structural of Methyl Cellulose	
W. Siriprom, S. Kongsriprapan and K. Teanchai	307
Chitosan Based Film: Structural and Mechanical Properties	
W. Siriprom, S. Kongsriprapan and K. Teanchai	311
Physical and Thermal Properties of Chitosan	
W. Siriprom, K. Chantarasunthon and K. Teanchai	315
Studying Methylcellulose-Base Edible Films Properties by XRD, EDXRF and FTIR	
W. Siriprom, P. Kuha, S. Kongsriprapan and K. Teanchai	319
Effect of Heat Treatment on Phase-Formation Behavior of Agricultural Material	
W. Siriprom, P. Kuha, S. Kongsriprapan and K. Teanchai	323
Antibacterial Effects of Oxide Compound: The Case Study of Agricultural Waste Material	
W. Siriprom and K. Teanchai	327
The Plastic Deformation Mechanism in Single Point Incremental Forming Process	
K. Rattanachan and C. Chungchoo	331
The Effect of Single Point Incremental Forming Process Parameters on the Formed Part Surface Roughness	
K. Rattanachan and C. Chungchoo	335
Formability of Tailored Welded Blanks in Single Point Incremental Forming Process	
K. Rattanachan, K. Sirivedin and C. Chungchoo	339
Influence of Bi₂O₃ on Borophosphate Glasses Properties	
N. Chanthima and J. Kaewkhao	343

Influence of Composition and Isothermal Sintering on the Properties of Hydroxyapatite Bioceramic Bodies	
R. Koonawoot, C. Saelee, S. Thiensem and S. Punyanitya	347
The Influence of Temperature on Secondary Forming of Titanium Gr 2 Sheet by Use of Single Point Incremental Forming	
N. Sornsuwit and S. Sittisakuljaroen	351
Preparation and Properties of TiO₂ Thin Films Deposited on Different Substrates by Sol-Gel Method	
T. Rattana, N. Witit-Anun, S. Suwanboon and S. Chaikyakun	355
The Effect of Lubricants and Material Properties in Surface Roughness and Formability for Single Point Incremental Forming Process	
N. Sornsuwit and S. Sittisakuljaroen	359
Thermoelectric Power Generator Module of Ceramic Materials	
A. Gavpisarn and T. Gavpisarn	363
Carboxymethyl Cellulose from Pineapple Peel: Useful Green Bioplastic	
J. Chumee and P. Khemmakama	366
Structural and Optical Properties of Anatase-TiO₂ Sputtered Nano-Thin Films	
S. Tongwanichniyom and N. Witit-Anun	370
Structural and Optical Properties of ZrO₂ Thin Films Deposited by Reactive DC Unbalanced Magnetron Sputtering	
N. Witit-Anun and S. Chaikyakun	374
Screen Printed Carbon Nano-Powder for Ascorbic Acid Determination with Differential Pulse Voltammetry	
W. Wonsawat, K. Somjit, N. Wangnaitum and O. Chailapakul	378
Eco-Friendly Dyeing of Cotton Fabric Using Ultrasonic Energy with Natural Colorants Extracted from Mulberry Leaves	
P. Ohama	382
Considering Backoff Algorithms Efficiency Focused on the Effect of Wall and Floor Materials for Indoor Radio Network	
J. Sarthong and S. Sittichivapak	386
Upconversion Luminescence and Optical Studies of Nd³⁺: Bi₂O₃-B₂O₃-P₂O₅ Glasses	
N. Chanthima and N. Sangwanatee	390
The Photon Attenuation Coefficients of Building Materials Containing with Lead Carbonate (PbCO₃)	
N. Chanthima, K. Shimada and J. Kaewkhao	395
Comparative Study of Physical and Optical Properties of Glasses from SiO₂ and Napier Ash	
N. Srisittipokakun and N. Sangwanatee	401
Comparative Study on Effective Atomic Numbers of Silicate, Borate and Phosphate Glass Matrices over 1 keV-100 GeV Energy Range	
K. Kirdsiri and N. Sangwanatee	405
Fabrication of Glass Furnace for Research Scale: Case Study for Soda Lime Silicate Melting Process	
K. Boonin, S. Tuscharoen, J. Kaewkhao and N. Sangwanatee	409
Photo and X-Rays Induced Optical Luminescence of Sm³⁺-Doped Bismuth Borate Glasses	
P. Limkitjaroenporn, K. Boonin, P. Yasaka, H.J. Kim and J. Kaewkhao	413
Temperature Difference of Thermoelectric Module on PIC-Microcontroller	
N. Sangwanatee, T. Wongkampha, E. Kaseam, N.W. Sangwanatee and W. Mekhum	417
The Study of Cook-Stove Thermoelectric Generator Power	
N. Sangwanatee	421
Design of Commercial Window as Radiation Shielding Using Domestic Raw Materials	
N. Sangwanatee, J. Kaewkhao and N. Chanthima	426
Influence of Sputtering Power on Structural and Optical Properties of Ta₂O₅ Thin Films Prepared by DC Reactive Magnetron Sputtering	
N. Sangwanatee, M. Horprathum and J. Kaewkhao	431
Characterization of Calcium Hydroxide Derived from Waste Eggshell upon Moisture Effect	
W. Siriprom, K. Teanchai, K. Kirdsiri and J. Kaewkhao	435
Physical and Chemical Properties of Mineral in Soils of Cassava Cropping Area: A Case Study in Chonburi Province	
W. Siriprom, K. Teanchai, S. Kongsriprapan, J. Kaewkhao and N. Sangwanatee	440

Physical and Chemical Properties of Mineral in Soils of Paddy Rice Fields from Chonburi Province, Thailand	
W. Siriprom, K. Teanchai, M. Juntaropakorn, J. Kaewkhao and N. Sangwaranatee	444
Effect of O₂ Flow Rate on Structural and Optical Properties of Tantalum Oxide Thin Films Prepared by DC Reactive Magnetron Sputtering	
N. Sangwaranatee, M. Horprathum and J. Kaewkhao	448

Chapter 3: Optical Science and Technology

Analysis of Effective Numerical Aperture in 2-D Photonic Crystal Waveguide	
T. Chantakit, S. Kamoldilok, K. Srinuanjan and P.P. Yupapin	455
The Effects of Temperature, Injection Current and Optical Feedback on the Frequency Stabilization of External Cavity Diode Laser	
N. Srisuai, N. Chattrapiban and W. Rakreungdet	459
Phase-Shifting Interferometry for Surface Roughness Measurement on Glass Substrates	
S. Suriyasirikun, S.T. Khlayboonme and W. Thowladda	463
Expansion of Free Spectral Range in an Optical Double Ring Resonator	
A. Kanjanavapastit	467
Multi Wavelength Generated by PANDA Ring Resonator for Multi User DWDM WiMAX Network	
S. Songmuang, S. Sappajak, N. Thammawongsa, N. Pornsuwancharoen and P.P. Yupapin	471
Luminescence and Optical Properties of Li₂O₃:Gd₂O₃:B₂O₃:Sm₂O₃ Glasses System	
W. Sa-Ardsin, P. Yasaka, J. Kaewkhao and K. Boonin	479
A Study of Double Microring Resonator Behavior for 1.3 μm Optical Communication	
N. Pornsuwancharoen, M. Tasakorn, R. Phromlounsri and P.P. Yupapin	483
Multi-Wavelength Bits Generation by Mesh Ring Resonator System for Optical Communication Security Application	
P. Youplao, N. Pornsuwancharoen and P.P. Yupapin	487
A New Chaotic Signal Generation of a Series Microring Resonator for Optical Communication	
S. Julajaturasiraratn, N. Pornsuwancharoen and J. Phelawan	491
A Study of Triple Ring Resonator Behavior for Optical Communication	
U. Klongklew, N. Pornsuwancharoen and S. Chaiyasoonthorn	495
Holographic Data Storage and Display by PANDA Ring Resonator Technique	
V. Phetcharat, N. Thammawongsa, K. Somsuk, M. Jamsai and P.P. Yupapin	499
A New Design Optical Tweezers by Triple Ring Resonator	
M. Tasakorn, N. Pornsuwancharoen, P.P. Yupapin and S. Thongmee	504
High Frequency Generation Based-On Nonlinear Micro Ring Resonator for Frequency Band Enhancement	
P. Udomariyasap, S. Noppanakeepong and N. Pornsuwancharoen	508
Determination of Sucrose Concentrates Using Ellipsometry Technique and Transmission Spectroscopy	
P. Viriyavathana, W. Sawangjaitham and S. Suchat	512