

Table of Contents

Preface and Committee

Thin Film of Giant Magnetoresistance (GMR) Material Prepared by Sputtering Method M. Djamal and Ramli	1
Effects of Different Types of Power Plant Ashes on Foamability and Structure of Al Foams S. Asavavisithchai and A. Prapajaraswong	10
Investigations of Physical and Optical Properties on Glass from Rice Husk Ash Doped with MnO₂ S. Insiripong, N. Srisittipokakun, K. Kirdsiri and J. Kaewkhao	14
Effect of Oxygen Partial Pressure on the Morphological Properties and the Photocatalytic Activities of Titania Thin Films on Unheated Substrates by Sputtering Deposition Method P.P. Pansila, N. Witit-Anun and S. Chaiyakun	18
Preparation and Characterization of the New Y257 Superconductors T. Kruaehong	22
Investigate the Properties of Y211 Doping Effect in the New Superconducting Y₇Ba₁₁Cu₁₈O_y Compound T. Kruaehong, S. Sujinnapram, T. Nilkamjon, S. Ratreng and P. Udomsamuthirun	26
Performance of Near-Infrared Reflective Tile Roofs T. Thongkanluang, J. Wutisatwongkul, N. Chirakanphaisarn and A. Pokaipisit	30
Enhanced Photocatalytic Activities of Ag/ZnO Powders Modified by Diblock Copolymer P. Amornpitoksuk, S. Suwanboon, N. Muensit and J. Baltrusaitis	34
Synthesis, Characterization and Optical Properties of La-Doped ZnO Nanoparticles Prepared by Precipitation Method S. Suwanboon, P. Amornpitoksuk and N. Muensit	38
Synthesis and Luminescence Properties of Sm³⁺ in Bismuth Borate Glass S. Rakpanich, N. Chanthima, H.J. Kim, M. Djamal, P. Limsuwan and J. Kaewkhao	42
Experimental Study of Double Glass Window with Phase Change Material W. Rattanongphisat	46
Effect of Rice Husk Ash to Mechanical Properties of Clay Bricks S. Janbuala, U. Kitthawee, M. Eambua and P. Laoratanakul	50
Preparation and Properties of Er³⁺ Doped with Bi₂O₃-BaO-B₂O₃ Glass R. Ruamnikhom, P. Limsuwan, N. Chanthima and J. Kaewkhao	54
Visible Luminescence of Pr³⁺ in Bismuth Borate Glasses N. Chanthima, K. Boonin, P. Limsuwan and J. Kaewkhao	59
Thermoelectric Generator of Ceramic Materials A. Gavpisarn, S. Jugsujinda and T. Seetawan	64
Synthesis and Characterization of Nanocrystalline ZnO Powders by a Direct Thermal Decomposition Route Using Zinc Nitrate Hexahydrate S. Sujinnapram, U. Termsuk, A. Charoentam and S. Sutthana	68
Effect of Addition TiO₂ on Bi₂O₃-TiO₂-B₂O₃ Glasses K. Kirdsiri, N. Srisittipokakun, Y. Ruangtawee, K. Boonin, P. Limsuwan and J. Kaewkhao	72
The Effect of Heat-Treatment on the Phase Transformation of Hard Clam Shell K. Poch-Chongdach, J. Kaewkhao, W. Siriprom, K. Teanchai, P. Limsuwan and K. Kirdsiri	76
Experimental Performance of a Mix Mode Solar Dryer for Drying Centella Asiatica N. Srisittipokakun and K. Kirdsiri	80
Utilization of <i>Pennisetum purpureum</i> Ash for Use in Glass Material N. Srisittipokakun, K. Kirdsiri, Y. Ruangtawee and J. Kaewkhao	84
Effects of T6 Age Hardening on Microstructure and Mechanical Properties of Al-Si-Cu Cast Aluminium Alloy A. Wiengmoon, P. Apichai, J.T.H. Pearce and T. Chairuangstri	88
Design and Synthesis of Ruthenium (II) Complexes and their Applications in Dye Sensitized Solar Cells (DSSCs) P. Prompan, K. Wongkhan and R. Jitchati	92
Preparation of Ruby Red Glasses from Gold Nanoparticles: Influence of Soaking Time Y. Ruangtawee and J. Kaewkhao	96

Preparation of Water-Repellent and Flame-Retardant Coating on Mulberry Paper S. Jindasuwan, N. Sukmanee, C. Supanpong, O. Nimittakoolchai and S. Supothina	100
Quantitative Measurement of Gamma Activities of Radionuclides (^{131}I, ^{137}Cs, ^{134}Cs and ^{40}K) in Human Urine Samples Collected from Residents in Southern Region of Thailand N. Phakdee, P. Kessaratikoon and D. Peekhantod	104
Specific Activity and Radioactive Contour Map of Anthropogenic Radionuclide (^{137}Cs) in Surface Soil Samples from Chumphon Province, Thailand S. Chauymanee, P. Kessaratikoon, R. Boonkrongcheep, S. Benjakul and U. Youngchaay	108
Surface Modification of Cellulose Membrane by Air Plasma Treatment N. Binhayeeniyi, A. Jehsu, M. Sukpet and S. Nawae	112
Growth of CNTs Using Liquefied Petroleum Gas as Carbon Source by Chemical Vapor Deposition Method B. Toboonsung and P. Singjai	116
Effects of Precursor Concentration on Hexagonal Structures of ZnO Nanorods Grown by Aqueous Solution Method P. Limnonthakul, C. Chananonawathorn, K. Aiempnanakit, J. Kaewkhao, P. Eiamchai and M. Horprathum	120
The Specific Heat Jump of Hybridized Two-Band Superconductor J. Seechumsang, T. Chanpoom, S. Chantrapakajee and P. Udomsamuthirun	124
Increasing the Melting Ability of Glass Batch by Batch Modification E. Meechoowas, K. Tui-Ai, K. Tapasa, U. Naknikham and T. Jitwatcharakomol	128
The Critical Temperature of Two-Band Superconductors with Pseudogap T. Chanpoom, S. Chantrapakajee and P. Udomsamuthirun	132
Investigation of Electrochromic WO_3 Nanorods Prepared by DC Reactive Magnetron Sputtering with GLAD Technique C. Chananonawathorn, M. Horprathum, P. Eiamchai, T. Srichaiyaperk, K. Aiempnanakit and P. Chindaudom	136
A Study of the Physical and Optical Properties of Ho^{3+} in Soda-Lime-Silicate Glass Systems P. Chimalawong, J. Kaewkhao, K. Kirdsiri and P. Limsuwan	140
New Family of Ruthenium-Dye-Sensitized Solar Cells (DSSCs) with a High Solar-Energy-Conversion Efficiency Y. Thathong, K. Traipop, T. Sudyoasuk and R. Jitchati	145
Effect of Annealing Temperature on Structure and Optical Properties of Ta_2O_5 Thin Films Prepared by DC Magnetron Sputtering T. Plirdpring, M. Horprathum, C. Chananonawathorn, P. Eiamchai, A. Harnwunggmoung, T. Boonpichayapha, P. Lorwongtragool and A. Charoenphakdee	149
Upconversion Luminescence and Optical Studies of Nd^{3+} in Bismuth Borate Glasses O. Chamlek, P. Limkitjaroenporn, H.J. Kim and J. Kaewkhao	153
Study of the Localized Heating of Si Solar Cells by Thermal Imaging and Scanning Electron Microscopy B. Wiengmoon	157
Effect of N_2 Flow Rates on Properties of Nanostructured TiAlN Thin Films Prepared by Reactive Magnetron Co-Sputtering S. Chaiyakun, A. Somwangsakul, A. Buranawong, J. Kaewkhao and N. Witit-Anun	161
Preparation and Characterization of Nanostructured TiN Thin Films Deposited by DC Reactive Magnetron Sputtering A. Buranawong, K. Saisereephap, N. Witit-Anun, J. Kaewkhao and S. Chaiyakun	165
Nitrogen – Doped SnO_2 Thin Films Prepared by Direct Current Magnetron Sputtering P. Suapadkorn, W. Rakreungdet, T. Jutarosaga and W. Samanjit	169
Growth of Anatase TiO_2 Thin Film for Photokilling of Bacteria by DC Reactive Magnetron Sputtering Technique S. Tongwanichniyom, W. Siriprom, D. Manop, A. Buranawong, J. Kaewkhao and N. Witit-Anun	173
Effect of Sputtering Power on Structural and Optical Properties of AlN Thin Film Deposited by Reactive DC Sputtering Technique N. Witit-Anun, J. Kaewkhao and S. Chaiyakun	177
Maleated Natural Rubber as a Coupling Agent for Sawdust Powder Filled Natural Rubber Composites J. Artchomphoo and S. Rattanapan	181

Ethanol Sensing Characteristics of Sn-Doped ZnO Tetrapods Sensor T. Santhaveesuk and S. Choopun	185
Fabrication and Characterization of Tin Oxide Nanorods Prepared by Glancing Angle DC Reactive Magnetron Sputtering C. Oros, A. Wisitsoraat and M. Horprathum	189
Preparation and Properties of Electrospun PVC Nanofiber K. Phatcharasit, W. Taweepreda, K. Boonkerd and J.K. Kim	193
Influence of Annealing Temperature on Microstructural and Optical Properties of TiN Thin Films Deposited by DC Reactive Magnetron Sputtering T. Rattana, N. Witit-Anun, S. Suwanboon and S. Chaiyakun	197
Development of Barium Borosilicate Glass Using Rice Husk Ash: Effect of BaO S. Tuscharoen, S. Ruengsri and J. Kaewkhao	201
Fabrication of Glass Foams from Industrial Wastes Used as Insulating Board K. Pawanawichian, W. Thiemsorn, A. Wannagon and P. Laoarun	205
Synthesis of Faujasite and Analcime Using of Rice Husk Ash and Metakaolin N. Setthaya, C. Pindi, P. Chindaprasirt and K. Pimraksa	209
Annealing Temperature Dependent on Microstructure and Ethanol Gas Sensing Properties of TiO₂ Thin Films B. Samransuksamer, W. Rakreungdet, S. Dumrongrattana, M. Horprathum, P. Eiamchai, V. Patthanasettakul, A. Wisitsoraat and P. Chindaudom	213
Effect of Thickness on Microstructure, Electrical and Optical Properties of Zirconium Nitride Thin Film Prepared by DC Reactive Magnetron Sputtering at Room Temperature M. Valaiauksornlikit, W. Rakreungdet, M. Horprathum, P. Eiamchai, V. Patthanasettakul and P. Chindaudom	217
Fabrication and Characterization of Antibacterial Ag-TiO₂ Thin Films Prepared by DC Magnetron Co-Sputtering Technique K. Sornsanit, M. Horprathum, C. Chananonnawathorn, P. Eiamchai, S. Limwichean, K. Aiempnanakit and J. Kaewkhao	221
Structural and Optical Properties of TiO₂ Thin Films Prepared by Thermal Oxidation of Ti Thin Films L. Uttayan, K. Aiempnanakit, M. Horprathum, P. Eiamchai, V. Pattantsetakul, N. Nuntawong and P. Chindaudom	225
Study of the Intensity of Global Solar Radiation Incident in Suan Sunandha Rajabhat University A. Sansomboon, N. Luewarasirikul, A. Ittipongse, W. Phae-Ngam and S. Pattarapanitchai	229
The Increment Valuated of Natural Ruby by Heat Treatment T. Kittiauchawal, J. Kaewkhao and P. Limsuwan	233
Low-Temperature Synthesis of Nanocrystalline ZnO Nanorods Arrays S. Kalasung, C. Chananonnawathorn, M. Horprathum, P. Thongpanit, P. Eiamchai, S. Limwichean, N. Pattanaboonmee, N. Witit-Anun and K. Aiempnanakit	237
Development of Low Cost Glass Melting Furnace for Research Scale K. Boonin, S. Tuscharoen and J. Kaewkhao	241
Optical Emission Spectroscopy of Argon Plasma Jet K. Honglertkongsakul	245
Upconversion Luminescence Study of Er³⁺ in Gadolinium-Calcium- Silicoborate Glasses J. Kaewkhao, H.J. Kim, S. Insiripong, N. Chanthima, S. Kaewjaeng and U. Maghanemi	249
Physical and Optical Properties of Ce³⁺ Doped in Bismuth Borate Glass K. Boonin, O. Chamlek, P. Limkitjaroenporn, H.J. Kim and J. Kaewkhao	254
Sintering, Microstructure and Electrical Properties of MnO₂ and CuO-Doped [Na_{0.515}K_{0.485}Li_{0.06}(Nb_{0.99}Ta_{0.01})O₃ Ceramics P. Bomlai	258
Thermal Activation on Phase Formation of Alkaline Activated Kaolin Based System S. Boonjaeng, K. Pimraksa, A. Chaipanich, S. Kuharuangrong and P. Chindaprasirt	262
Preparation of WO₃ Nanorods by Glancing Angle DC Reactive Magnetron Sputtering Deposition for NO₂ Gas Sensing Application T. Srichaiyaperk, K. Aiempnanakit, M. Horprathum, S. Limwichean, C. Chananonnawathorn, A. Wisitsoraat, B. Samransuksamer, D. Phokharatkul, P. Eiamchai and P. Chindaudom	267

Enhanced Deposition Rate of Photo-Induce Hydrophilic TiO₂ Thin Films Prepared by Pulsed DC Reactive Magnetron Sputtering K. Aiempnanakit, S. Phongphao, S. Preechanchueong, M. Horprathum, P. Eiamchai, V. Pattantsetakul, S. Porntheeraphat and P. Chindaudom	271
Interface Polarization Effect on Dielectric and Electrical Properties of Polyurethane (PU)/Polyaniline (PANI) Polymer Composites C. Putson, D. Jaao and N. Muensit	275
Structural Evolution of Cu-In-Se Thin Films Prepared by Spin Coating Technique K. Lipiwongwattanakit, C. Chityuttakan, W. Onreabroy and P. Chityuttakan	279
Structural, Optical and Anti-Bacterial Properties of TiO₂ Thin Films Prepared by DC Reactive Magnetron Sputtering A. Mungchamnankit, K. Sornsanit, M. Horprathum, C. Chananonnawathorn, P. Eiamchai, K. Aiempnanakit and J. Kaewkhao	283
The Mass Attenuation Coefficients and Effective Atomic Numbers of Ruby from Vietnam at Different Photon Energies P. Limkitjaroenporn, S. Tuscharoen and J. Kaewkhao	287
London Penetration Depth $\lambda(T)$ in Type 1.5 Superconductor by Ginzburg-Landau Approach N. Niyomsilpchai, A. Changjan and P. Udomsamuthirun	291
The Preparation and Characterization of Y145 Superconductor P. Chainok, S. Sujinnapram, T. Nilkamjon, S. Ratreng, K. Kritcharoen, P. Butsingkorn, P. Ruttanaraksa and P. Udomsamuthirun	295
SnO₂ Nanoparticle Synthesized by Ultrasonic-Assisted Process R. Noonuruk, W. Mekprasart, N. Wongpisutpaisan, N. Vittayakorn and W. Pecharapa	299
Preparation and Characterization the Cheap Mineral (Calcium Compound): The Preliminary Survey in the Natural Material A. Montree, K. Teanchai and W. Siriprom	303
Effects of Ni²⁺ Ions on Soda Lime Silicate Glasses W. Siriprom, K. Teanchai, O. Chamlek, S. Sukphirom, Y. Ruangtawee, N. Srisittipokakun and J. Kaewkhao	307
The Crystalline Monitoring of Oxide Compound: The Case Study of Influence from Heat Treatment P. Kuha, K. Teanchai, S. Kongsripapan and W. Siriprom	311
Fabrication and I-V Characterization with Monochromatic Light of Multilayer Poly(3-hexylthiophene)-CNT/C60 Thin Films on ITO Glass Substrate A. Sansomboon, T. Jungwon, P. Pasitsuparoad, K. Subannajui and T. Osotchan	315
Head Instability Detection for Testing Process in Perpendicular Magnetic Recording System P. Kovintavewat, S. Koonkarnkhai and A. Suvichakorn	319
Synovial Fluid Diffusion Behavior Involved in Cartilage Degeneration B. Punantapong	323
Decreased Thermal Conductivity of CaMnO₃ by Added-CNTs P. Thongsri and T. Seetawan	327
Effects of Thermal and Cross-Track Variations for Longitudinal Heat-Assisted Magnetic Recording Systems P. Kovintavewat, A. Kaewpukdee and N. Chirdchoo	331
Preparation of Thin Cu Electrode on Al₂O₃ + Clay Substrate by Pulsed DC Magnetron Sputtering N. Chansimuang and T. Seetawan	335
¹³⁷Cs Adsorption and Desorption on Marine Sediments from the Upper Gulf of Thailand C. Saengkul, P. Pakkong, K. Pachana and P. Sawangwong	339
Thermopower of Sr_{1-x}La_xMnO₃ (x = 0.1-1.0) N. Boonmeethongyoo and T. Seetawan	343
Angular Distribution of Multiple Compton Scattered Gamma Rays in Carbon K. Siengsanoh, P. Limkitjaroenporn, P. Limsuwan, W. Chewpraditkul and J. Kaewkhao	346
Characterization of ZrN Thin Films Deposited by Reactive DC Magnetron Sputtering A. Choeysupaket, N. Witit-Anun and S. Chaikayun	350
Al-Doped ZnO Nanoparticles Synthesized by Sonochemical-Assisted Method K. Chongsri, N. Wongpisutpaisan, A. Sungthong, N. Vittayakorn and W. Pecharapa	354

Reducing Thermal Effect on Thermoelectric Thin Films Fabrication Using Mechanical Chopper Coupling with CO₂ Laser Ablation	
R. Muangma, V. Kosalathip, T. Kumpeerapun, P. Limsuwan and A. Dauscher	358
Investigation of Thermal Expansion Coefficient of Metals from Light Diffraction Pattern	
N. Meekaewnoi, K. Thamaphat and S. Limsuwan	362
Uncomplicated Setting Apparatus for Measurement of Fluid Flow Rate Using Laser Doppler Technique: Physics Teaching	
C. Apiputikul, K. Thamaphat, M. Ranusawad and P. Limsuwan	366
Color Change of Spodumene Gemstone by Electron Beam Irradiation	
P. Noithong, P. Pakkong and K. Naemchanthara	370
Construction of a Cost Effective Current Balance for Physics Teaching	
A. Sankote, K. Thamaphat and S. Limsuwan	374
Growth and Characterization of Boric Acid Doped KDP Single Crystals Grow by Slow Evaporation Method	
P. Thongpanit, W. Chewpraditkul and N. Pattanaboonmee	378
An Optical Antenna Generation Ultra Wide Band by μ-Ring Resonator System	
S. Jurajaturasiraratn, N. Pornsuwancharoen and M. Tasakorn	382
Preparation of Titanium Dioxide Films on Water Wheel for Domestic Wastewater Treatment	
S. Pudwat, I. Chuasontai, K. Hathaisamit, K. Aiempnanakit, M. Horprathum and P. Limsuwan	386
DWDM of Optical Micro Ring Resonator Double Add/Drop Multiplexing for THz Optical Communication	
N. Pornsuwancharoen, M. Tasakorn and S. Jurajaturasiraratn	390
A Gold Particle Nano Antenna by Optical Micro Ring Resonator	
M. Tasakorn, N. Pornsuwancharoen and S. Jurajaturasiraratn	394
Investigation of the Characteristic of the Nd:YAG Laser for Standard Wavelength in Metrology	
P. Potirak, M. Ranusawud, P. Limsuwan and P. Buranasiri	398
Detecting DNA-DNA Hybridization at 3-Mercaptopropionic Acid Self-Assembled on Tin-Doped Indium Oxide Film with Electrochemical Measurement	
L. Suthisa, J.H. Hodak, J. Srisala, T. Srihirin, K. Sritunyalucksana, W. Veerasai and S. Dangtip	402