

Table of Contents

Preface, Committees & Sponsors

Chapter 1: Chemical Materials and Technologies

Calculation of Carrier Mobility in Copper Phthalocyanine by Simple Hopping Model S. Pengmanayol and J. Girdpun	3
Biosorption of Zn(II) from Aqueous Solution by <i>Amusium pleuronectes</i> Shell K. Chantarasunthon, K. Teanchai and W. Siriprom	7
Degree of Esterification and Gelling Properties of Pectin Structure in Coffee Pulp W. Rakitikul and P. Nimmanpipug	11
Density Functional Theory (DFT) Study: Electronic Properties of Silicene under Uniaxial Strain as H₂S Gas Sensor S.A. Wella, I.D. Aditya, T.D.K. Wungu and Suprijadi	15
Pigment Extraction of Safflower, Dyeing Properties and Antimicrobial Study of Dyed Silk P. Ohama, S. Namwong and S. Kumpun	19
The Isotope Effect Coefficient with Pseudogap and One-Band Superconductor T. Chanpoom	23
Development of Microemulsion of Phytosteryl Glycoside in DMSO and Tween 20 for Increase Antiamoebic Activity C. Sangsuwon and W. Jirujchariyakul	27
Reducing Sugar Production from Agricultural Wastes by Acid Hydrolysis A. Kleawkla and P. Chuenkruth	31
Structural and Electronic Properties of β – CuPc: First Principles Study W. Nuleg, P. Thanomngam and K. Sarasamak Phacheerak	35

Chapter 2: Nanosciences and Nanotechnology

Development of Nanohole Array Patterned by Laser Interference Lithography Technique N. Srisuai, M. Horprathum, P. Eiamchai, P. Chindaudom, S. Boonruang and S. Denchitcharoen	41
Functionalization of Au Nanoparticles on ZnO Nanorods through Low-Temperature Synthesis S. Kalasung, A. Kopwittaya, M. Horprathum, J. Kaewkhao, S. Tuscharoen, P. Eiamchai, N. Witit-Anun and K. Aiempnanakit	45
Hydrothermal Synthesis and Characterization of ZnO:F Nanorod Structure W. Sinornate, K. Chongsri and W. Pecharapa	49
Influence of Growth Conditions on Morphology of ZnO Nanorods by Low-Temperature Hydrothermal Method S. Pokai, P. Limnonthakul, M. Horprathum, S. Kalasung, P. Eiamchai, S. Limwichean, N. Nuntawong, V. Pattantsetakul, S. Tuscharoen and J. Kaewkhao	53
Preparation of Nanoemulsion from Sacha Inchi Oil/Water by Emulsion Phase Inversion Methods P. Tunkam and C. Satirapipathkul	57
Size and Shape Tailoring of ZnO Nanoparticles T. Santhaveesuk, Y. Keawtoakrue, K. Siwawongkasem and S. Choopun	61
Solid Lipid Nanoparticles from Active Compounds of Mango Seed Kernel Extract K. Kukaattinun and C. Satirapipathkul	65
Structural and Optical Properties of F-Doped ZnO Nanoparticles Synthesized by Co-Precipitation Process K. Chongsri, W. Mekprasart and W. Pecharapa	69
Synthesis of Silver Nanoparticles by Sparking Process T. Jintakosol	73

The Entrapment of Vitamin E in Nanostructured Lipid Carriers of Rambutan Seed Fat for Cosmeceutical Uses	
K. Uraiwan and C. Satirapipathkul	77
Treatment of Wastewater from Rubber Processing Using Hydroxyapatite and Lampang Clay Nanocomposite Filters	
P. Chankachang, S. Chantara, S. Punyanitya, C. Saelee and S. Thiensem	81
Alcohol Sensing Properties of SnO₂/CNT Nanocomposites Synthesized by Microwave-Assisted Process	
N. Sawangjit, W. Techitdheera and W. Pecharapa	85
Development of Self-Striking Red Glass from Gold Nanoparticles	
Y. Ruangtaweep and J. Kaewkhao	89
Dielectric Property of NaCu₃Ti₃NbO₁₂ Ceramics Doped with Small Amount MgO Nanopowder	
W. Chomchai and C. Warangkanagool	93
Effect of Cobalt Dopant on Structural and Optical Properties of Co-Precipitated TiO₂ Nanopowders	
P. Junlabhut, C. Wattanawikkam, W. Phoohinkong, W. Mekprasart and W. Pecharapa	97
Effects of CdS-TiO₂ Working Electrode Layer on Dye Sensitized Solar Cell Investigated by Impedance Spectroscopy	
P. Prachopchok, J. Potisart, C. Photiphitak and T. Tippo	101
Effects of Sintering Temperature on Physical and Mechanical Properties of HA/YSZ Nanocomposites	
S. Inthong, W. Dongnai, U. Intatha and S. Eitssayeam	105
Electrical Properties of Single-Walled Carbon Nanotubes due to Compressive Load	
I.D. Aditya, S.A. Wella, Widayani and Suprijadi	109
Enhanced Antibacterial Activity by Au Nanoparticle Decorated ZnO Nanorods	
K. Sornsanit, M. Horprathum, P. Eiamchai, C. Chananonawathorn, S. Kalasung and J. Kaewkhao	113
Fabrication of Zinc Oxide Nanorods for Photoelectrochemical Water Splitting Application	
P. Phetban, N. Khemasiri, S. Kalasung, S. Jessadaluk, M. Horprathum, P. Eiamchai, S. Pornthreeraphat and D. Phromyothin	117
Green Synthesis and Characterization of Iron Nanoparticles from Holy Basil Leaves and Mint Leaves	
W. Wonsawat and Y. Panprom	121
Growth of Zinc Oxide Nanoparticles on Graphene Assembly Using to Detect of Acetone Concentrations	
S. Rattanaveeranon, R. Ruamnikhom and S. Pangmanayon	125
Hydrothermal Growth of ZnO Nanorods along the Ultra-Thin ZnO Seed Layer Prepared by Magnetron Sputtering	
W. Sakulsaknimitr, K. Teanchai, M. Horprathum, C. Chananonawathorn, S. Limwichean and W. Siriprom	130
Hydrothermal of ZnO Nanorod Arrays on ITO Transparent Conductive Oxide Substrate: Effect of Precursor Concentration	
P. Khamkhom, M. Horprathum, P. Eiamchai, C. Chananonawathorn, S. Kalasung, S. Tuscharoen and J. Kaewkhao	134
Modification of Structural and Vibrational Properties of ZnO Nanoparticles Prepared by Simple Chemical Precipitation Method	
N. Chaithanakun, K. Onlaor, T. Thiawong and B. Tunhoo	138
Optimizations of Sealing Conditions for Blank Silver Nanorod Used as SERS Substrates	
W. Somrang, S. Denchicharoen, S. Limwichean, N. Nuntawong, V. Patthanasettakul, M. Horprathum, P. Eiamchai and P. Chindaudom	142
Preparation of Nanosized Manganese Oxide Particles via Solid-State Route Reaction	
W. Phoohinkong and T. Sukonket	146
PVP-Assisted Sb-Doped SnO₂ Nanofibers Synthesized by Electrospinning Process	
S. Santibenchakul, S. Chaiyasith and W. Pecharapa	150
Removal of Cu²⁺ from Aqueous Solutions by Magnetic Nanoparticles-Pomelo Peel Composite	
I. Pengsaket, K. Thamaphat and P. Limsuwan	154

Synthesis and Characterization of MgO by Microwave-Assisted Thermal Oxidation for Dye-Sensitized Solar Cells S. Nilphai, M. Thepnurat, N. Hongsith, P. Ruankham, S. Phadungthitidhada, A. Gardchareon, D. Wongratanaphisan and S. Chooon	158
Fabrication and Ethanol Sensing Characterization of Tin Oxide Nanorods Prepared by Glancing Angle Deposition Technique C. Oros, A. Wisitsoraat and M. Horprathum	163
Vertical Alignment TiO₂ Nanotube Based on Ti Film Prepared via Anodization Technique K. Aiempnanakit, S. Jessadaluk, S. Tongmaha, A. Supati, N. Khemasiri, S. Pornthreeraphat, M. Horprathum, V. Patthanasetakul and P. Eiamchai	167
Investigating Power Factor of CaMnO₃ Added Carbon Nanotubes M. Rittirum, A. Vora-Ud and T. Seetawan	171

Chapter 3: Coating and Thin Film

Acid Surface Treatment of Sol-Gel Derived ZnO Thin Films for Anti-Reflection Coating Application W. Khamon and W. Pecharapa	177
Effect of Ti Sputtering Current on Structure of TiCrN Thin Films Prepared by Reactive DC Magnetron Co-Sputtering N. Witit-Anun and A. Teekhaboot	181
Fabrication and Characterization of Antibacterial Tantalum Oxide Thin Films Deposited by Reactive Magnetron Sputtering A. Mungchamnankit, M. Horprathum, C. Chananonawathorn, V. Patthanasettakul, P. Eiamchai, A. Thongmee and P. Sukplang	185
Photocatalytic Antibacterial Activity of TiO₂ Thin Films by Spray Pyrolysis Technique S. Saikaew, S. Rayayoi, E. Kaewnuam, K. Sreebunpeng and P. Lertloypanyachai	189
Physical Properties of Copper Films Deposited by Compact-Size Magnetron Sputtering Source with Changing Magnetic Field Strength N. Promros, P. Sittimart, N. Patanoo, S. Kongnithichalerm, M. Horprathum, W. Bhathumnavin and B. Paosawatyanong	193
Spectroscopic Ellipsometry Analyses on Plasma Treatment of Aluminium Oxide Thin Film T. Lertvanithphol, W. Rakreungdet, P. Eiamchai, M. Horprathum, C. Hom-On, P. Jaroenapibal, S. Limwichean, N. Nuntawong, V. Patthanasettakul and P. Chindaudom	197
A Study and Characterization of Photophysical Properties of Fluorene Derivative Thin Film W. Sirijarutus, S. Charoensuwan, P. Thanakit, S. Pratontep and D. Sae-Tang Phromyothin	201
Additive SnO₂-ZnO Composite Films for Photocatalytic Degradation Efficiency of Organic Dye S. Sujinnapram and S. Moungsrijun	205
Characterization of Cellulose/Calcium Carbonate Biocomposite Film W. Siriprom, N. Witit-Anun, A. Choeysuppak and T. Ratana	209
Comparison Trace Element and Structural of Filler Materials in Chitosan Films N. Chamchoi, N. Sangwanate, J. Kaewkhao, A. Montree, K. Teanchai and W. Siriprom	213
Deposition of Transparent Niobium Oxide Thin Film by DC Reactive Magnetron Sputtering N. Sangwanate, M. Horprathum and J. Kaewkhao	217
Effect of Annealing Temperature on Electrochromic Properties of Tantalum Oxide Thin Films Deposited by DC Reactive Magnetron S. Kongsriprapan, K. Teanchai, M. Horprathum, C. Chananonawathorn, P. Eiamchai and W. Siriprom	221
Effect of Annealing Temperature on NiO/ZnO Heterojunction Thin Films Prepared by Sol-Gel Method T. Rattana, S. Suwanboon, C. Kedkaew, K. Wanichchang and A. Choeysuppak	225
Effect of Annealing Temperature on Structural and Optical Properties of Cobalt Oxide Thin Films Prepared by Electrostatic Spray Deposition Technique K. Chansaengsri, K. Onlaor, T. Thiawong and B. Tunhoo	229

Effect of Oxygen Flow Rate and Post Annealing on Vanadium Oxide Thin Films Prepared by DC Pulse Magnetron Sputtering W. Hinchearanun, M. Aiempnanakit, K. Aiempnanakit, M. Horprathum, V. Patthanasetakul, N. Nuntawong, C. Chananonwathorn, S. Limwichean and P. Eiamchai	233
Effect of ZnO Seed Layer with Various Concentrations of Precursor on the Growth of ZnO Nanostructures N. Siriphongsapak, S. Denchicharoen and P. Limsuwan	237
Influence of Ni Doping on Structural, Morphological and Optical Properties of Sol-Gel ZnO Thin Films T. Rattana, S. Suwanboon and C. Kedkaew	241
Influence of Post-Deposition Annealing on Structure and Optical Characteristics of Niobium Oxide Thin Films W. Lertlop, N. Sangwaranatee, M. Horprathum and J. Kaewkhao	245
Influence of Rapid Thermal Annealing on Structural, Optical and Electrical Properties of ITO Thin Films W. Sakulsaknimitr, W. Sriboon, K. Teanchai, M. Horprathum, C. Chananonwathorn, V. Patthanasettakul and W. Siriprom	249
Investigation of Structural and Thermoelectric Properties of Lead Telluride Thin Films Deposited by DC Magnetron Sputtering T. Sumphao, A. Vora-Ud, S. Thaowankaew, S. Phewphong, N. Khottoommee and T. Seetawan	253
Power Factor of Germanium Antimony Tellurium Thin Film on Al₂O₃ Ceramic Substrate Deposited by Pulsed-DC Magnetron Sputtering A. Vora-Ud, S. Thaowankaew, M. Horprathum, P. Muthitamongkol, P. Eiamchai, C. Thanachayanont, W. Somkhunhot and T. Seetawan	257
Supercapacitive Properties of Cobalt Oxide Thin Films Prepared by Electrostatic Spray Deposition Technique at Different Substrate Temperature K. Chansaengsri, K. Onlaor, T. Thiawong and B. Tunhoo	261
The Coated Paper with Silver Nanoparticles and its Antibacterial Activity N. Peungsamran and S. Namwong	265
Carbon Nanotube/Manganese Oxide Thin Film Composites-Based Counter Electrode for Dye-Sensitized Solar Cell N. Ketama, W. Jarernboon and W. Wongwiriyan	269
Electrodeposition of Manganese Oxide Nanosheets as Supercapacitor Electrode Materials T. Wanchaem, S. Rattanamai, P. Dulyaseree, W. Jarernboon and W. Wongwiriyan	273
Highly Sensitive H₂ Sensors Based on Pd- and PdO-Decorated TiO₂ Thin Films at Low-Temperature Operation B. Samransuksamer, T. Jutarosaga, M. Horprathum, A. Wisitsoraat, P. Eiamchai, S. Limwichean, V. Patthanasettakul, C. Chananonwathorn and P. Chindaudom	277
Influence of Substrate Temperature on Deposition Rate and Optical Properties of Aluminum Oxide Thin Films Prepared by Reactive DC Sputtering Technique C. Hom-On, M. Horprathum, P. Eiamchai, S. Limwichean, V. Patthanasetakul, N. Nuntawong, C. Chananonwathorn, N. Triroj and P. Jaroenapibal	281
Growth of Nanostructure Silver Films by DC Magnetron Sputtering for Surface Enhanced Raman Scattering Substrate S. Tuscharoen, M. Horprathum, P. Eiamchai, N. Nuntawong, C. Chananonwathorn, P. Limnonthakul, S. Kalasung and J. Kaewkhao	285
Growth of Nanostructure TiO₂ Films by Glancing Angle Deposition T. Plirdpring, M. Horprathum, P. Eiamchai, B. Samransuksamer, C. Chananonwathorn, T. Boonpichayapha and J. Kaewkhao	289
Investigated Microstructure of Al₂O₃/13wt%MgO Nanocomposite Coating Prepared by Plasma-Sprayed Technique N. Dejang and S. Jiansirisomboon	293

Chapter 4: Superconductors

Characterizations of YBa₂Cu₃O_x Superconductor Synthesized by Melt Process P. Chainok, S. Sujinnapram, T. Khuntak, T. Nilkamjon, S. Ratreng and P. Udomsamuthirun	299
---	-----

The Comparative Study of Y123 and Y13-20-33 Superconductors Synthesized by Melt Process	
S. Chantrapakajee, P. Chainok, S. Sujinnapram, T. Khuntak, T. Nilkamjon, S. Ratreng and P. Udomsamuthirun	303
Fabrication of the New Y257 Bulk Superconductor by Melt Process	
T. Kruaehong, S. Sujinnapram, T. Nilkamjon, S. Ratreng and P. Udomsamuthirun	307

Chapter 5: Glass Materials

Effect of Bismuth Glass Filling Treatment on Physical Properties of Natural Ruby	
K. Kittiauchawal, Y. Raungtaweeep and J. Kaewkhao	315
Effect of CoO Addition on the Optical and Physical Properties of Silicoborate Glasses	
W. Siriprom, K. Teanchai, N. Srisittipokakun and J. Kaewkhao	318
Effect of Li₂O and Na₂O on Optical Properties of Bismuth Borate Glasses	
N. Sangwananatee, J. Kaewkhao and Y. Ruangtaweeep	322
Effect of Mixed Mn-Co Ions in Soda Lime Silicate Glasses	
N. Srisittipokakun and J. Kaewkhao	327
Effective Atomic Numbers and Electron Densities of BaO-Na₂O-B₂O₃-SiO₂ Glass System: Theoretical Calculation	
N.W. Sangwananatee, N. Sangwananatee, S. Sarachai, S. Tuscharoen and J. Kaewkhao	331
Effects of BST on Optical and Dielectric Properties of Na₂O-B₂O₃-SiO₂ Glasses	
P. Intawin, P. Butnoi, W. Leenakul, A. Munpakdee, T. Tunkasiri and K. Pengpat	335
Fabrication and Properties of Soda-Lime Borate Glass Doped with Fe₂O₃	
S. Ruengsri, J. Kaewkhao and N. Srisittipokakun	339
Influence of NiO on Physical and Optical Properties of Zinc Bismuth Borate Glasses	
K. Chantarasunthon, K. Teanchai, K. Kirdsiri, J. Kaewkhao and W. Siriprom	343
Investigation some Properties of Bismuth Borate Glasses Containing Al₂O₃	
S. Kongsriprapan, K. Teanchai, K. Kirdsiri, J. Kaewkhao and W. Siriprom	347
Luminescence Properties of Er³⁺ Ions in Bismuth Borophosphate Glasses	
N. Chanthima and J. Kaewkhao	351
Luminescence Properties of Nd³⁺ Ions Doped in CaO-Y₂O₃-SiO₂-B₂O₃ Glasses	
N. Chanthima and J. Kaewkhao	355
Optical and Luminescence Properties of Pr³⁺ in Gd₂O₃-CaO-SiO₂-B₂O₃ Glasses	
S. Kaewjaeng, S. Insiripong, H.J. Kim, U. Maghanemi, S. Kothan, S. Ruengsri and J. Kaewkhao	359
Optical, Luminescence and Judd-Oflet Study of Eu³⁺ Doped Lithium Yttrium Borate Glasses for Using as Laser Gain Medium	
E. Kaewnuam, N. Chanthima, C.K. Jayasankar, H.J. Kim and J. Kaewkhao	364
Photoluminescence Properties of CaO-BaO-P₂O₅ Glass Systems Doped with Sm³⁺	
Y. Tariwong, N. Chanthima, J. Kaewkhao, N. Sangwananatee and H.J. Kim	368
Physical, Optical and Luminescence Properties of Er³⁺-Doped Bismuth Borosilicate Glasses	
S. Rakpanich, P. Meejitpaisan and J. Kaewkhao	372
Preparation and Properties of La₂O₃-CaO-P₂O₅ Glasses Doped with Eu³⁺ Ions	
N. Luewarasirikul, P. Meejitpaisan and J. Kaewkhao	376
Properties and Investigation on Effect of Eu³⁺ Ions in Lithium Barium Borate Glasses	
B. Damdee, K. Kirdsiri and J. Kaewkhao	380
Spectral Investigations of Dy³⁺-Doped Gd₂O₃-CaO-P₂O₅ Glasses	
P. Meejitpaisan, C. Kedkaew, C.K. Jayasankar and J. Kaewkhao	384
Spectroscopic Properties and Judd-Ofelt Analysis of Dy³⁺ in Lithium Lanthanum Borate Glass for Laser Medium Application	
N. Wantana, O. Chamlek, N. Chanthima, C.K. Jayasankar, H.J. Kim, M. Djamal and J. Kaewkhao	389
Spectroscopic Properties of Ho³⁺ Doped in B₂O₃-SiO₂-SrO-Bi₂O₃-TiO₂ Glasses	
N. Srisittipokakun, P. Prongsamrong and J. Kaewkhao	393
Study of the Structures and Physical Properties of Calcium Borophosphate Glass Containing Transition Metal Oxides	
W. Thiemsorn, T. Tungyai and H. Hessenkemper	397
The Improvement of Bismuth Barium Borate Glasses through the Applications of Sm³⁺ Dopant	
R. Ruamnikhom and J. Kaewkhao	401

Visible Luminescence Properties of Sm^{3+} Doped Magnesium Bismuth Phosphate Glasses N. Sangwaranatee, J. Kaewkhao and N. Chanthima	405
White Light Emission from Dy^{3+} Doped Zinc Bismuth Borate and Bismuth Borate Glasses: A Comparative Study P. Yasaka, K. Boonin and J. Kaewkhao	409
Luminescence Characteristics of $\text{Li}_2\text{O}_3\text{:Gd}_2\text{O}_3\text{:B}_2\text{O}_3\text{:Dy}_2\text{O}_3$ Glasses System K. Boonin, W. Sa-Ardsin and J. Kaewkhao	414
Spectroscopic Investigation and Optical Properties of Eu^{3+}-Doped Fluorophosphate Glasses K. Kiran Kumar, P. Manasa, N. Vijaya, J. Kaewkhao and C.K. Jayasankar	418
Structural and Optical Properties of Nd^{3+} Doped $\text{Na}_2\text{O-PbO-ZnO-Li}_2\text{O-B}_2\text{O}_3$ Glasses System J. Rajagukguk, R. Hidayat, Suprijadi, M. Djamal, Y. Ruangtawee, M. Horprathum and J. Kaewkhao	424
Development of $\text{Al}_2\text{O}_3\text{-Bi}_2\text{O}_3\text{-B}_2\text{O}_3$ Glasses for Neutron Shielding Material S. Tuscharoen, S. Insiripong, T. Korkut and J. Kaewkhao	430
Luminescence and Scintillation Response of Ce^{3+}-Doped Oxide Glasses with High Gd_2O_3 Content P. Lertloypanyachai, N. Pattanaboonmee, W. Chewpraditkul, D.P. Chen, V. Babin and M. Nikl	434
Mass Attenuation Coefficients and Partial Interactions of $\text{BaO-ZnO-B}_2\text{O}_3$ Glasses System S. Kothan, M. Tungjai, S. Sarachai, S. Kaewjaeng, S. Tuscharoen, P. Limkitjaroenporn and J. Kaewkhao	438
Photon Interactions Study of $\text{Bi}_2\text{O}_3\text{-Na}_2\text{O-CaO-SiO}_2\text{-B}_2\text{O}_3$ Glasses P. Limkitjaroenporn, W. Cheewasukhanont, K. Boonin and J. Kaewkhao	443
Theoretical Investigation on Radiation Properties of Calcium-Silico-Borate Glasses Doped with Varying Lu_2O_3 Concentration K. Kirdsiri and J. Kaewkhao	447

Chapter 6: Materials Science and Applications

Application of Chitosan Film for the Removal of Triclosan from Aqueous Solutions by Adsorption P. Noirod, J. Lamangthong and P. Ninjiranai	455
Characteristic of Pore Structure and Cells Growth on the Various Ratio of Silk Fibroin and Hydroxyapatite in Chitosan Base Scaffold K. Thunsiri, S. Udomsom and W. Wattanutchariya	459
Characterization and Analyzation of Chitosan from <i>Anadara granosa</i> Shell K. Teanchai, N. Witit-Anun and S. Chaikhun	463
Characterization and Spectral Selectivity of $\text{Sn-Al}_2\text{O}_3$ Solar Absorber T. Chorchong, T. Suriwong, S. Sukchai and T. Threrujirapapong	467
Characterization of Gelatin Composite with Low Content Hydroxyapatite and the Influence on Mesenchymal Stem Cell Culture J. Tanum, S. Udomsom, W. Wattanutchariya, P. Sooksaen and F. Kantawong	473
Characterization of Ni-Al Solar Absorber Prepared by Flame Spray Technique C. Bunmephiphit, T. Suriwong, S. Jiajitsawat and N. Dejang	477
Characterization the Raw Material of Filler in Cellulose Film A. Montree, K. Teanchai and W. Siriprom	482
Cobalt-Doped ZnO Powders by a Simple Solid-State Method P. Panyajirawut, K. Sriethep, C. Namsa, R. Kitcharoen and W. Pecharapa	486
Cordierite Composites Using New Source of Waste; Sludge Cake from Cosmetic Industry in Thailand S. Rattanavadi	490
Detection of Magnetic Material in Soil Subsurface Using Electromagnetic Induction Method Based on Fluxgate Sensor M. Djamal, W. Indrasari, R. Ramli and W. Srigutomo	494
Dielectric and Mechanical Properties of Mullite/Modified BaTiO_3 Composites N. Lertcumfu, K. Sanjoom, P. Arkornsakul, D.R. Sweatman, T. Phatungthane, K. Chokethawai and G. Rujijanagul	501

Dyeing Properties and Color Fastness of Cotton Fabrics Dyed with Uncaria Gambir Extract by the Padding Techniques P. Morakotjinda and W. Nitayaphat	505
Effect of BCZT Dopant on Ferroelectric Properties of PZT Ceramics P. Butnoi, P. Intawin, P. Yongsiri, N. Pisitpipathsin, P. Pengpad, P. Bintachitt and K. Pengpat	509
Effect of Cooling Rate on the Microstructure and Mechanical Properties of Sn-0.7wt.%Cu Solder Alloy P. Sungkhaphaitoon and T. Plookphol	513
Effect of Silver Addition on the New $Y_3Ba_8Cu_{11}O_x$ Superconductors S. Ratreng and T. Kruaehong	517
Effect of Sintering Condition on Electrical Properties of PLZT Ceramics N. Funsueb, A. Ngamjarurojana and A. Limpichaipanit	522
Effect of Sintering Temperature on Electrical Properties of SFN Ceramics Doped with Al Prepared by a Solid-State Reaction Technique T. Phatunghane, K. Sanjoom, D.R. Sweatman, B. Samran, C. Randorn and G. Rujijanagul	527
Effect of Slurry Formulation on Morphology and Flowability of Spray-Dried Alumina/Zirconia Composite Particles S. Chiangka, S. Watcharamaisakul and B. Golman	531
Effect of Zn:Al Ratio and Calcination Time on Structural Properties of Zn-Al-O Compound W. Mekprasart, S. Worasawat, T. Tangcharoen and W. Pecharapa	535
Effect of Zn:Sn Ratio and Calcination Temperature on Phase Transformation of Zn-Sn-O Compound P. Nakhanivej, T. Tangcharoen, W. Mekprasart and W. Pecharapa	539
Effects of Dwell Time Sintering on Microstructure, Piezoelectric and Mechanical Properties of Modified BNT-Based Ceramics S. Manotham, T. Phatunghane, T. Tunkasiri and K. Chokethawat	544
Effects of Electrode on Dielectric Properties of Barium Iron Niobate Ceramics Doped with Gallium Oxide K. Sanjoom, T. Phatunghane, D.R. Sweatman, S. Eitssayeam, C. Randorn and G. Rujijanagul	548
Effects of Ga Content on Optical and Scintillation Properties in Ce^{3+}-Doped $YGa_2(Al,Ga)_5O_{12}$ Scintillators W. Chewpraditkul, N. Pattanaboonmee, K. Wantong, W. Chewpraditkul, V. Babin, M. Nikl, K. Kamada and A. Yoshikawa	552
Electroless Plating of Pd on Macro-Porous Alumina Support for H_2 Purification K. Lertwittayanon, O. Truektrong, W. Inthanu and W. Youravong	556
Enhancement for Photocatalytic Activity of TiO_2 Combined with Activated Carbon under Surface Fluorination (F-TiO_2/AC) J. Sivapatarnkun, K. Hathaisamit and S. Pudwat	560
Enhancing Properties of Deproteinized Natural Rubber with Rice Husk Ash Silica for Use as a Dental Material T. Saowapark, U. Amphaiphan, E. Chaichana and P. Wongwitthayakool	564
Experimental and Theoretical Study of Heat Transport Parameters of Plasters Containing Pozzolanic Admixtures L. Fiala, M. Čáchová, E. Vejmelková and R. Černý	569
Growth and Characterization of Ammonium Dihydrogen Phosphate (ADP) Doped with H_3BO_3 Crystals Grown by Slow Evaporation Method P. Thongpanit, W. Chewpraditkul and N. Pattanaboonmee	573
KOH Treatment of Photoanode on Photovoltaic Properties of ZnO Based Dye-Sensitized Solar Cell S. Sujinnapram and S. Moungsrijun	577
Oxidation Behavior of 30wt.%Cr-3.75wt.%V High Chromium Cast Iron A. Wiengmoon, J. Nakpratum, T. Chairuangsi and J.T.H. Pearce	581
Performance of Light Green Pigment for Near-Infrared Reflection T. Thongkanluang and N. Chirakanphaisarn	585
Phase Formation, Microstructures and Mechanical Properties of Lead-Free BNKT Ferroelectric Ceramics Doped with BZZ C. Kruae-In, P. Puanpia, O. Takhan and S. Inthong	589

Photocatalytic Performance of Ball-Milled Anatase/Rutile Mixed Phase TiO₂ Composite Powders	
W. Phoothinkong, W. Mekprasart and W. Pecharapa	593
Pore System and Hydric Properties of Two Different Lime Plasters with Finely Crushed Brick	
M. Čáchová, E. Vejmelková, K. Polozhiy and R. Černý	597
Possibility of Thermoelectric Oxide for Thermal Sensors	
T. Seetawan	601
Preparation and Electrical Behaviour of BaCeO₃ Ceramics	
N. Boothrawong, T. Phatungthane, K. Sanjoom, D.R. Sweatman and G. Rujijanagul	607
Preparation of Spherical Rice Husk Zeolite NaY Granules for Adsorption of Cu²⁺	
J. Chumee and S. Pinkham	611
Properties and Phase Shift Structure of (1-x)BT-(x)BNT Ceramics	
C. Warangkanagool	615
Reducing Property of Bread Crust Extract	
R. Thaipraturum	619
Self-Propagating High-Temperature Synthesis of Si-SiC Composite Powder	
T. Chanadee and N. Sutham	623
Structure Properties Relationship of Pb_{0.92}La_{0.08}(Zr_{0.4}Ti_{0.6})_{0.98}O₃ Ceramics	
L. Chumprasert, N. Funsueb, A. Limpichaipanit and A. Ngamjarurojana	627
Study of the Sorption of Cu(II) from Aqueous Solution Using <i>Amusium pleuronectes</i> Shell	
P. Kuha, K. Teanchai and W. Siriprom	631
Synthesis and Dielectric Properties of [(K_{0.5}Na_{0.5})_{0.935}Li_{0.065}]NbO₃ Added with Mn for Piezoelectric Ceramic	
J. Kongphimai, H. Wattanasarn and T. Seetawan	635
TEM Analysis of Planar Defects in InGaAsN and GaAs Grown on Ge (001) by MOVPE	
P. Wanarattikan, S. Sanorpim, S. Denchitcharoen, V. Yordsri, C. Thanachayanont, K. Uesugi, S. Kuboya and K. Onabe	639
Temperature Dependence of Electric Field Induced Strain in PLZT 9/65/35 Ceramics	
S. Somwan, N. Funsueb, A. Limpichaipanit and A. Ngamjarurojana	643
The Effect of Particle Size Ratio on Porosity of a Particles Deposition Process	
R.R. Septiawan, S. Viridi and Suprijadi	647
The Effects of Sintering Temperature on the Dielectric Properties of Sr(FeNb)_{0.5}O₃ Doped with Ba(Zr_{0.25}Ti_{0.75})O₃	
L. Tawee, K. Sanjoom, T. Phatungthane, T. Tunkasiri, G. Rujijanagul and D.R. Sweatman	651
The Influence of Electron Beam Treatment on Al-Si Alloy Structure Destroyed at High-Cycle Fatigue	
S.V. Kononov, K. Aksenova, V. Gromov, Y.F. Ivanov and O. Semina	655
The Modification of β-Al₅FeSi Phase in Al-Si-Mg-Fe Alloys by Utilizing Recycled Beverage Can Body in Casting Process	
S. Chakthin, P. Kahawong and P. Senthongkaew	660
The Study of the Removal of Cu(II) from Aqueous Solution by <i>Papia undulata</i> Shell	
N. Chamchoi, N. Sangwaranatee, J. Kaewkhao, K. Teanchai and W. Siriprom	664
The Various Concentration Effected on Crystallite Size of Calcium Carbonate	
S. Phewphong, K. Najai and T. Seetawan	667
The Voltammetric Study of β-Glucosidase Hydrolytic Product with Modified Electrode	
C. Pitsanu Wong, S. Charernchai and W. Wonsawat	671
Thermal Expansion of Aluminate Cement-Based Composite Containing Basalt Fibres with Different Length	
D. Koňáková and E. Vejmelková	675
Thermoelectric Properties and Power Generation of p-Ca₃Co₄O₉ and n-Sr_{0.87}La_{0.13}TiO₃ Thermoelectric Modules	
K. Singsoog, C. Thanachayanont, A. Charoenphakdee and T. Seetawan	679
Ultrasonic Assisted Enhancement in Cotton Dyeing with Natural Colorants Extracted from <i>Excoecaria Bicolor</i>	
P. Ohama and S. Kumpun	683
Propagation of Massless Spin-1 Particle between Two Media	
A. Maksuwan	687

Numerical Analysis of Constrained Failure Area Effect on Tensile Capacity of Fastening for Concrete Structures J. Fornůsek and P. Konvalinka	691
Green Approach for the Reduction of Graphene Oxide by Thai Shallot V. Thongpool, A. Phunpheok, V. Piriawong and S. Limsuwan	696
Neutron Activation for Analyzing Elements in Material A. Ittipongse and R. Funklin	700
Inner Filter Effect on Fluorescence Dyes Spectra in Methanol Solution S. Sukprasong, Y. Manjit, A. Limpichaipanit and A. Ngamjarurojana	704
Study of Stress Distribution in Homogeneous Plastic by Photoelastic Analysis System Y. Manjit, S. Sukprasong, A. Limpichaipanit and A. Ngamjarurojana	708
Synthesis and Characterization of Red Emitting Eu³⁺-Doped YBO₃ Phosphor G. Sowjanya, C. Basavapoomnima, L. Rama Moorthy, J. Kaewkhao and C.K. Jayasankar	712
The Measurement of Erythrocyte Size by Using Diffraction Technique Base on Laser S. Suchat and C. Boonrod	718
Development of Experimental Set for Determination of Refractive Index of Liquid Using Optical Fiber T. Khanmolee, K. Thamaphat and P. Limsuwan	722
Energy Distributions of 662 keV Multiply Compton-Scattered Photons in Copper P. Prongsamrong, K. Siengsanoh, P. Limkitjaroenporn, P. Kanchanakul and J. Kaewkhao	726
Theoretical Study of the Photon Interaction for Zirconium Alloy at 1 keV to 100 MeV C. Khobkham, W. Chaiphaksa, P. Limkitjaroenporn, P. Prongsamrong, P. Wiwatkanjana and J. Kaewkhao	730
The Study of Decrement in Insulation Resistance of PV String and its Effects on PV System Degradation N. Sitthiphol, C. Sirisamphanwong, N. Ketjoy and K. Sriprapha	734
Mechanical Properties Study of Plasma Treated Epoxy-Base Post in Dual-Material Systems W. Sangprasert, V. Sanghiran Lee, P. Yavirach, D. Boonyawan and P. Nimmanpipug	739
Effect of Atmospheric Pressure Argon Plasma Jet on the Growth of Bread Molds P. Deeyai, P. Amnuaycheewa and P. Kerdongmee	744
Identification of Thermo-Mechanical Parameters of Concrete Samples from Nuclear Plant J. Zatloukal, J. Fornůsek, P. Bezdička and M. Gajdoš	749
Comparative Studies of Commercial Window with Standard Shielding Concretes on the Basis of Photon Interaction Parameters N.W. Sangwaranatee, N. Sangwaranatee, J. Kaewkhao and N. Chanthima	756
Comparative Studies of CsI(Tl), LYSO and BGO Scintillators P. Prongsamrong, P. Limkitjaroenporn, W. Chaiphaksa and J. Kaewkhao	760
Interaction of 662 keV Gamma Rays with LYSO(Ce) and BGO Single Crystal Scintillators A. Phunpueok, V. Thongpool and W. Chaiphaksa	764
Intrinsic Light Yield and Light Loss Coefficient of LuAG: Pr under Excitation with α- and γ-Rays K. Sreebunpeng, W. Chewpraditkul and M. Nikl	768
Luminescence and Scintillation Characteristics of Gd₂SiO₅: Ce Single Crystal Scintillator N. Yawai, W. Chewpraditkul, K. Wantong and M. Nikl	772