

Table of Contents

Preface, Committee, Organizers

Chapter 1: Biomaterials and Advanced Biotechnologies

Nanoemulsion Containing SangYod Rice Bran Oil and Thanakha Extracts: <i>In Vitro</i> Antioxidant and Irritation Assessments O. Poonsri, W. Kwanhian, A. Poltien, P. Tangteerawatana and J. Tangpong	3
Effect of Fish Scales Gelatin and Mixing Ratio on Chemical and Mechanical Characteristics of Gelatin/Chitosan Films N. Nuamsrinuan, N. Suttisiri, E. Hoonnivathana, P. Limsuwan and K. Naemchanthara	8
Hydroxyapatite Synthesized from Waste Eggshell via Ball Milling N. Nuamsrinuan, W. Kaewwiset, P. Limsuwan and K. Naemchanthara	12
Studying the Effect of ZrO₂ Addition on Hydroxyapatite via Ball Milling Technique N. Nuamsrinuan, E. Hoonnivathana, P. Limsuwan and K. Naemchanthara	17
Suitable Concentration of ZnO Nanoparticles Enhanced Biomaterial Synthesis and Plant Cell Protection W. Chayaprasert and K. Sompornpailin	21
Beneficial Effects of Zinc Oxide Nanoparticles on Plant Regeneration of Vetiver Grass (<i>Vetiveria zizanioides</i> L. Nash) C. Khunchuay and K. Sompornpailin	25
Enhancing Biosynthesis of Flavonol Protective Biomaterials Using FLS Transgenic Plants D. Dangrit and K. Sompornpailin	29
The Influence of Color Shading Net on the Growing of Lettuce N. Choosakul and P. Pagamas	33
Predicting the UV Spectrum of Oligodeoxynucleotide by 2D-Matlab N. Albutt and S. Pechprasarn	37
Image Enhancement for Characterization of MinD Protein Oscillation in <i>Escherichia coli</i> P. Kanthang	41
The Study and Screening of Bacteria for Silver Nanoparticle Biosynthesis P. Kanthang	45
Applications of Tricyclazole and Biosoil on Microbial Inhibition R. Boonthod and T. Bunsri	48
Production of Essention Oil from Tobacco Leaves for Insect Repellents V. Boonyaroj and A. Amornkaew	53
Diversified Microbial Community Developed in Different Fruit Juice of Wine Fermentation D. Nicomrat and S. Chamutpong	57
Enhancing of Acetic Acid Production in Vinegar Production by the Consortium of <i>Aspergillus</i> spp. and Yeasts D. Nicomrat	61
Diverse <i>Aspergillus</i> Isolates from the First Step of Vinegar Fermentation and its Application in Sugar Production D. Nicomrat	65
Assorted Lactic Acid Bacteria with Yeasts in Alcohol Submerged Fermentation Step of Vinegar Production D. Nicomrat and S. Chamutpong	69
Synthesis Hydroxyapatite from Three Types Eggshells by Co-Precipitation Method T. Taewana and R. Wongmaneerung	73
Antimicrobial Property of Cold-Sprayed Transition Metals-Substituted Hydroxyapatite/PEEK Coating N. Sanpo and J. Tharajak	77
Antimicrobial Property of Hydroxyapatite Derivative Nanoparticles N. Sanpo and J. Tharajak	81
The Flour Processing Machine for <i>Musa sapientum</i> Linn P. Kanthang	85

The Study of Turbulent Nutrient Solution Flows in Difference Hydroponics System Arrangements	
A. Pramuanjaroenkij, N. Dabut, S. Sutti and A. Sanboon	88
Inactivation of Bread Molds on Agar by Atmospheric Pressure Plasma Jet	
P. Thonglor and P. Amnuaycheewa	92

Chapter 2: Climatology, Environmental Engineering and Waste Recycling

Defluoridation of Groundwater Using Raw Material of Autoclaved Aerated Concrete	
W. Chansuvarn	99
Projection of Extreme Temperature over Northern Thailand by WRF Model	
P. Ratjiranukool and S. Ratjiranukool	104
Evaluation of Temperature Simulation over Northern Thailand from Regional Climate Model Coupled with Land Surface Model	
T. Saesong, P. Ratjiranukool and S. Ratjiranukool	108
Characterization of Residues Involved in the Ash Quenching System: A Material Recycling Perspective	
K. INKAEW, A. Saffarzadeh and T. Shimaoka	112
Adsorption of Pb(II) from Solution by Mangosteen Peel Charcoal Powder	
S. Sawekwiharee, S. Pechprasarn, A. Kuttiyawong and N. Albutt	116
Adsorptive Removal of Lead(II) Ions from Aqueous Solution onto Chemical Modified Autoclaved Aerated Concrete	
W. Chansuvarn and K. Jainae	119
Modification of Natural Clay Surface with Manganese-Oxide for Removal of Cadmium(II) Ion from Aqueous Solution	
W. Chansuvarn	124
Solid Waste Management Services in Pathio Subdistrict Municipality, Chumphon Province	
V. Boonyaroj, O. Unprasit and S. Saiuparad	128
In-Vessel Composting of Municipal Solid Waste with Varied Press Air and Organic Fraction	
V. Boonyaroj, M. Khonthee, N. Maneewong and C. Doungkaew	132
Phytoremediation of Soil Contaminated with Used Lubricant Oil Using <i>Spathiphyllum</i> spp.	
V. Boonyaroj, N. Kaewsrijan and N. Sangkhamnaruepon	136
Decline in Sulfate Reducing Bacterial Consortia by the Sulfur Oxidizing Bacterial Activity	
D. Nicomrat	140
The Relationships among Microorganisms in Paddy Soil of Rice Varieties at Sanamchaikate, Chachoengsao	
D. Nicomrat, P. Kanthang and S. Chamutpong	144
<i>In Vitro</i> Susceptibility of Silver Nanoparticles on Thai Isolated Fungus <i>Pyricularia oryzae</i> from <i>Oryza sativa</i> L. Leaves	
D. Nicomrat, W. Janlapha and N. Singkran	148
Effects of Silver Nanoparticles on Heterotrophic Bacterial Community Inhabiting the Anoxic Paddy Soil of Flooded Rice Microcosms	
D. Nicomrat and S. Chamutpong	152
Southwest Monsoon Change in Thailand Using the Regional Climate Model-WRF	
S. Ratjiranukool and P. Ratjiranukool	156
The Development of Predictability Measurement Method for Winter Monsoon Forecasts in Thailand	
S. Saiuparad	160
The Meridional Pressure Gradient Prediction by the Global Climate Model	
S. Saiuparad	164
Fuel Briquettes from Sisal Waste in Thailand	
U. Polyium and A. Pigoolthong	168
Elemental Composition and Crystal Phases of Carbonized Spent Coffee Grounds	
N. Barnthip, P. Kantha, R. Potong and N. Pisitpipathsin	172
Development Plant Pots from Carbon Powder and Oil Palm Fiber	
W. Deelaman, M. Lakthandee, W. Inchan, P. Srilarat and N. Panthong	176

Chapter 3: Composites and Polymers

Influence of BNBK Particle Size on Properties of 0-3 Lead-Free BNBK Ceramic-Portland Cement Composites	
R. Potong, R. Rianyoi, A. Ngamjarurojana and A. Chaipanich	183
Characterization of Cement-Rice Husk Ash Composites	
T. Jaihlong, N. Jaitanong and S. Narksitipan	187
The Influence of Aluminium Dross on Phase Compositions and Microstructure of Cement Composites	
K. Lamasai, N. Jaitanong and S. Narksitipan	191
Microstructure and Mechanical Properties of Cement/Fly Ash/Natural Rubber Composites	
R. Promudom, S. Narksitipan and N. Jaitanong	195
Physical and Mechanical Properties of Cement Paste Were Used Partially with Fly Ash and Kaolin Waste	
C. Chaiej, S. Narksitipan and N. Jaitanong	199
Determination of Radiation Attenuation Coefficients of Rubber Containing Barite	
S. Jaiyen, A. Phumsuwan, V. Thongpool and A. Phunpueok	204
Influence of Natural Oil Polyol on Mechanical Properties of Polylactic Acid	
K. Chaochanchaikul	208
Plywood Production from Coconut Coir Fiber and Water Hyacinth	
V. Boonyaroj, M. Srijab, M. Thiangsagul and M. Larpsongserm	212
Effect of Sodium Hydroxide Concentrations on Properties of <i>Panicum repens</i> for Pulp and Paper	
V. Boonyaroj and S. Sanguanpak	216
Wetting Time Measurement of Fabric-Foam-Fabric Plied Material	
C.W. Kan, C.M.C. Ko, K. Boontorn and R. Mongkholrattanasit	220
Mechanical Study of Fabric-Foam Plied Material	
C.W. Kan, C.M.C. Ko, K. Maha-In, K. Manarungwit, C. Sarikanon, P. Numahun and R. Mongkholrattanasit	224
Study on Air Permeability and Warmth Retention Ability of Polyurethane Foam Plying with Fabrics	
C.W. Kan, C.M.C. Ko, K. Ariyakuare, W. Changmuong and R. Mongkholrattanasit	233
Fabrication NiAl/Cu Composite Powder for Thermal Spray Coating	
N. Dejang	240
The Development of Electrospinning Apparatus to Fabricate Nanofiber for Future Material Applications	
P. White and P. Pankaew	244

Chapter 4: Functional Ceramics

Electrical Impedance Properties of Y_2NiMnO_6 Ceramics for DC Bias at Atmosphere	
N. Albutt, S. Pechprasarn, R. Wanasuk and T. Sareein	251
Influence of Currents and Electric Fields in YNMO Ceramics	
N. Albutt, S. Pechprasarn and T. Sareein	256
Diffuse Phase Transition and Dielectric Properties of Lead-Free Zr-Doped BCTS Ceramics	
P. Kantha, K. Pengpat and N. Pisitpipathsin	259
Effect of Sintering Method on the Microstructure and Dielectric Properties of Lead-Free BCZT Ceramics	
P. Kantha, T. Bunthod, S. Jansrabua, N. Barnthip, S. Tigunta, K. Pengpat and N. Pisitpipathsin	263
Radiation Dose Evaluation of Colorless Topaz by TL and ESR Spectroscopy	
N. Nuamsrinuan, W. Kaewwiset, P. Limsuwan and K. Naemchanthara	267
Studies of Dielectric Permittivity of Y_2NiMnO_6 Ceramics for DC Bias at Various Temperatures	
N. Albutt, S. Pechprasarn, P. Chobdee and T. Sareein	272
The Giant Dielectric Constant of Y_2NiMnO_6 Ceramics for DC Bias	
N. Albutt, S. Pechprasarn, P. Damkoengsuntorn and T. Sareein	277

Effects of NiO Nanoparticles on Physical and Mechanical Properties of BNKT Lead-Free Ceramics	
C. Kruea-In, S. Inthong and W. Leenakul	282
Phase Transition and Electrical Properties of Ba_{0.8}Sr_{0.2}TiO₃: Comparison of Different Preparation Techniques	
T. Kytae, K. Sutjarittangtham, T. Thurakitseree and W. Leenakul	287
Influence of Feedstock Feed Rate on the Properties of SPPS-Deposited Cobalt Ferrite Splats	
N. Sanpo and J. Tharajak	291
Influence of Lubricating Ceramic Content on Oxidation and Water Contact Angle of Carbon Steel	
N. Sanpo and J. Tharajak	295

Chapter 5: Thin Films

The Effect of Base Pressure on Crystal Structure and Microstructure of CrN Thin Film Deposited by Reactive Magnetron Sputtering	
A. Buranawong and N. Witit-Anun	301
Carbon Thin Film on Silicon by Acetylene DC Plasma Deposition System	
P. Tunkam and C. Pakpum	305
Carbon Thin Film on Silicon by Microwave Plasma	
C. Leena and C. Pakpum	309
Electrical Sheet Resistance and Wetting Properties of TiO₂ Nanoparticle Thin Films Prepared by Sparking Process	
B. Toboonsung	313
Effect of Deposition Time on Structure of TiAlN Thin Films Deposited by Reactive DC Magnetron Co-Sputtering	
N. Witit-Anun and A. Buranawong	318
Effect of Al Sputtering Current on Structure of CrAlN Thin Films Prepared by Reactive DC Magnetron Co-Sputtering	
A. Khambun, A. Buranawong and N. Witit-Anun	322

Chapter 6: Micro- and Optoelectronics

Intrinsic Light Yield and Loss Parameter of Y₂SiO₅:Ce Single Crystal Scintillator	
A. Phunpueok, V. Thongpool and W. Chewpraditkul	329
Schematic Quantum Synchronization Device from Micro PANDA Ring Resonators	
C. Sripakdee and N. Sarapat	333
The Investigation of WGM Effective Potential from Micro PANDA Ring Resonator	
C. Sripakdee	337
Rigorous Coupled Wave Analysis for Plasmonic Nanoparticles	
S. Pechprasarn, A. Panlomso, S. Aiam-Um, P. Suvarnaphaet, S. Boonyagul, M.G. Somekh and N. Albutt	341
Development of High Power LED Driver Using LNK418EG	
N. Eawsakul and C. Reaungepattanawiwat	345
Photovoltaic Properties of a Conjugated Copolymer Blending with Flame-Made ZnO Nanoparticles	
V. Kruefu, C. Khantha, J. Wootthikanokkhan and S. Phanichphant	350

Chapter 7: Measurements, Monitoring, Computational Methods and Procedures for Modeling and Researches

A Low Cost Time-Coded Confocal Microscope	
S. Pechprasarn, P. Kawilo, S. Somjaiprasert, P. Suvarnaphaet, S. Boonyagul, M.G. Somekh and N. Albutt	357
Back Focal Plane Confocal Ptychography	
M.G. Somekh, S. Pechprasarn, W. Chen, P. Pimonsakonwong and N. Albutt	361

Confocal Surface Plasmon Embedded Interferometric Microscope: A Brief Review S. Pechprasarn, T.W.K. Chow, K. Ittipornnusun, M.G. Somekh and N. Albutt	365
Theoretical Investigation of Surface Plasmon Resonance (SPR)-Based Acoustic Sensor S. Learkthanakhachon, S. Pechprasarn, M. Sangworasil, M.G. Somekh and N. Albutt	370
Friction Tests of Ball Bearings with Comparison of Lubricants S. Sumate and W. Ritthong	375
Time Series Analysis and Statistical Process Control for Anomaly Detection: An Application to the Situation of PM 10 in Northern Thailand U. Tonggumnead and K. Klinjan	379
Methods for Parameter Estimation of the Negative Binomial-Generalized Exponential Distribution S. Aryuyuen and I. Thiamsorn	383
Hybrid Fuzzy Estimation of System Reliability for Multi-State System W. Bamrungsetthapong and A. Pongpullponsak	387
A Study on Temperature Properties of Different Types of Fixed Resistor N. Phanthuna and C. Jassadajin	392
Novel Visual Detection of Mercury(II) Ion Based on <i>In Situ</i> Deposited Gold Nanoparticles W. Chansuvarn and A. Imyim	398
Characterizations of Conductors in Quartic Number Fields with Ramified Prime C. Prabpayak	402
Some Homomorphism Properties of TM-Algebras C. Prabpayak	406
Doubt Fuzzy Ideals of B-Algebras C. Prabpayak	410
Numerical Simulation of Moisture and Temperature in Stored Grains N. Khuttiyamart and W. Yomsatieankul	414
Development of Thermal Spray Map for Liquid Feeding Thermal Spray System N. Sanpo and J. Tharajak	418

Chapter 8: Engineering Management and Product Design

Exploring the Relationship between Brand Green Image, Environmental Performance and Consumer Green Consciousness and Purchase Intention of Fashion Products C.W. Kan, C.Y.T. Chow, U. Thangtham, S. Yabdee, A. Yulek and R. Mongkholrattanasit	425
Design and Application for a Smart Farm in Thailand Based on IoT N. Phanthuna and T. Lumnium	433
Technical and Economic Analysis for Harmonic Distortion Impact and Mitigation Technique in Power Networks N. Rugthaichareoncheep and S. Chaladying	439
A Literature Review of Manufacturing Eco-Friendly Comfort Textiles and Future Agenda K.H. Chau, C.K.Y. Lo and C.W. Kan	444
A Study of Brand Green Image in Relation to Eco-Branding of Fashion Products C.W. Kan, C.Y.T. Chow, C. Sarikanon and R. Mongkholrattanasit	448