

Table of Contents

Preface

Chapter 1: Innovative Materials

Influence of Zinc Substitution on Hydroxyapatite Structure Prepared by Chemical Precipitation Method	
N. Nuamsrinuan, P. Naemchanthara, P. Limsawan and K. Naemchanthara	3
Improve the Electrical Properties of the ITO-PET Polymer by Plasma Technique	
K. Janpong and P. Suanpoot	8
Phase Transition and Microstructure Development of BaTiO₃ by Thermal Development of BaTiO₃ by Thermal Decomposition Method	
S. Suntaropas, P. Thonglor and N. Albutt	13
The Grain Structure of Nd Doped Y₂NiMnO₆ Ceramics Sintered at High Temperature	
N. Albutt, S. Pechprasarn, S. Sawekwiharee, A. Kuttiyawong, P. Thonglor and T. Sareein	18
Investigations on Luminescence Properties of Ce³⁺ Ion Doped Bismuth Borophosphate Glasses	
N. Chanthima, T. Sareein, Y. Tariwong, J. Kaewkhao and N. Sangwaranatee	22
Investigation of Luminescence Properties of Dy³⁺ Doped Alkaline Earth Oxides Barium Phosphate Glasses	
N. Chanthima, Y. Tariwong, T. Sareein, J. Kaewkhao and N.W. Sangwaranatee	27
Electrostriction of Dielectric Elastomer Based on Natural Rubber/Graphene Composites for Actuator Applications	
D. Jaaoh, R. Jarawae, M. Intan and H. Chaidana	32
Conductivity Modification of Carbon-Based Nanocomposites	
T. Thurakitseree and W. Leenakul	41
Complete Phase Change of Y₂NiMnO₆ Ceramics Doped with TiO₂ at High Temperature	
N. Albutt, S. Pechprasarn, S. Sawekwiharee, A. Kuttiyawong, P. Thonglor and T. Sareein	47
The Acoustic Impedance and other Properties of (1-3) Piezoceramics Polymer Composite	
T. Tunkasiri, J. Tontrakoon, G. Rujijanagul, U. Intatha, K. Pengpat, K. Sutjarittangtham, W. Leenakul and S. Eitssayeam	51
Effects of Rate-Controlled Sintering on Phase Formation, Dielectric and Ferroelectric Properties of Cobalt Oxide Doped BNKT Ceramics	
C. Kruea-In, S. Inthong and W. Leenakul	57
Synthesis of Molybdenum Trioxide: Structure Properties and Sensing Film Preparation	
U. Inpan, P. Leangtanom, P. Pookmanee, S. Phanichphant and V. Kruefu	62

Chapter 2: Innovation in Food Chemistry, Biotechnologies and Environmental Engineering

Correlation and Multiple Regression Model for Economic Traits of Local Rice (<i>Oryza sativa</i> L.) in Upland Rice System	
T. Kajonphol, N. Seetaput, M. Precharattana and C. Sangsiri	71
Antioxidant Activities of Transgenic Flower Over-Expressing FLS and TT8 Involving in Flavonoid Biosynthesis	
D. Dangrit and K. Sompornpailin	78
An Antagonism of Isolates of Root-Associated Bacteria Consortia Habituating in Banana Rhizosphere	
D. Nicomrat, P. Soongsombat, N. Suenonmueng and N. Marjang	83
A High Potential in Activating Beneficial Indigenous Microbes Involving in the Meat Fermentation Process	
D. Nicomrat and S. Chamutpong	89
Effect of Spacing and No. of Seedling per Hill on Growth and Yield Components of Rice cv. Chai Nat 1 under System of Rice Intensification	
T. Kajonphol, S. Tonwong, S. Nonthakod, C. Sangsiri and M. Precharattana	95

Phytochemical and Nutritional Values of Local Plants in the Phraek Nam Daeng Community Samut Songkhram Province Thailand	101
U. Polium and N.T. Phinthida	
The Study of Calcium Oxide from Cockle Shell Used as a Low-Cost Catalyzer for Biodiesel Production	108
N. Nuamsrinuan, P. Limsuwan and K. Naemchanthara	
Lactic Acid Bacteria Starter Participating in Hygienic Long Shelf-Life of the Plaa-Som Fermented Product	113
D. Nicorat, M. Lakthandee, N. Suenonmueng and N. Marjang	
Distribution of Residue Carbofuran and Glyphosate in Soil and Rice Grain	118
W. Chansuvarn and S. Chansuvarn	
Removal of Phosphate from Wastewater Using Carbonized Filter Cake	125
W. Chansuvarn	
Adsorption of Cadmium(II) Ion from Aqueous Solution onto a Raw Material of Bamboo Powder and its Surface Modification	131
W. Chansuvarn, Y. Pandee, A. Saechim and K. Habunmee	
Immobilization of Peroxidase from Cauliflower Stem on Ultrafiltration Membrane for Phenol Removal	137
K. Ratanapongleka and A. Onsarn	
Determination of Contaminated Heavy Metals in Lacquer Thinner	144
W. Chansuvarn and K. Jainae	

Chapter 3: Building Materials

Effect of Banana Fibers on Mechanical and Physical Properties of Light Weight Concrete Blocks	151
W. Deelaman, K. Chaochanchaikul and K. Tungsudjawong	
Determination of Mass Attenuation Coefficients of Cement Paste Containing Ilmenite and Barite for γ-Rays	156
S. Jaiyen, A. Phunpueok and R. Potong	
Fabrication and Properties of <i>Panicum repens</i> Reinforced Cement	161
V. Boonyaroj and S. Saramanus	
A Feasibility Study Using Para Rubber Leaves for Prototype Lightweight Flat Sheet Production	166
V. Boonyaroj, S. Sanguanpak and W. Shongkittikul	

Chapter 4: Sensors, Measurements and Mechatronics

Designing of Universal WGM Biosensor from Micro Ring Resonator	173
C. Sripakdee and N. Sarapat	
Qubit Noise within Micro PANDA Ring Resonator in QKD Process	178
C. Sripakdee	
Entangled Photon Source of Quantum Key Generator from Micro Ring Resonator for QKD Use	183
C. Sripakdee	
Implementation of Variable Speed Drive for Oil-Pump System	188
N. Phanthuna and S. Thongkeaw	
Shielding Effect and Guarding in High Resistance Measurement	196
N. Phanthuna and C. Jassadajin	
Analytical Processing Development of Tin Element Using Wavelength Dispersion X-Ray Fluorescence (WDXRF) Technique	201
N. Nuamsrinuan, W. Kaewwiset, P. Limsuwan and K. Naemchanthara	
All-in-One Flow Injection Spectrophotometric System for Field Testing	206
S. Panich and L. Pisnui	
The Initial Perturbation for Mesoscale Predictability	212
S. Saiuparad	

Improvement the Largest Lyapunov Exponent for Measurement the Northeast Monsoon Prediction	217
S. Saiuparad	
Compact Fluorescence Microscope for Smartphone and Tablet	222
S. Pechprasarn, P. Pimonsakonwong, P. Kulikhandan, P. Suvarnaphaet, W. Pongruengkiat, P. Suksan and N. Albutt	
Development of Low-Cost Abbe Refractometer	227
W. Pongruengkiat, T. Jungpanich, K. Ittipornnuson, S. Pechprasarn and N. Albutt	
Gas Detector System for Industrial Use	234
M. Thawornsin, W. Ritthong, C. Sangna, P. Lorwongtragool and N. Albutt	

Chapter 5: Innovative Technology in Mechanical Engineering

Voltage Fluctuation Reduction of Industry with Voltage Regulator (VR) on Power Distribution System	241
N. Phanthuna and S. Thongkeaw	
An Approach to Development of Manufacturing Data Report According to International Standards	248
P. Singhatham, C. Singhatham, N. Panya and S. Pukjaroon	
The Design of Medium Size Voltage Capacitor in order to Improve the Power Factor	254
N. Rugthaicharoencheep, A. Charlangsut and C. Boobpa	
Indoor Rainbow Model: An Apparatus for Observing Spectrum in Classroom	260
S. Choegyal and M. Precharattana	

Chapter 6: Modern Technologies in Education

Seesaw Balancing: A Hands-On Model to Understand Moment of Force in Classroom	269
P. Kitrungloadjanaporn, A. Phothong and M. Precharattana	
Development of Computer-Assisted Instruction Lesson on Immune System Organs and Immune System Diseases	276
M. Precharattana	
Development of an Interactive Multimedia Michelson Interferometer Experiment	284
C. Banglieng, S. Jaiyen and J. Authisin	
Development of an Educational Experiment Setup for Measuring the Speed of Sound	290
S. Sirathanakul	
The Helper and Guide System for Cooperative Education via Web Application	295
P. Singhatham, N. Panya, C. Chaitep and R. Kaewlai	