Table of Contents

Preface, Committee and Sponsors

I: Material Science, Chemical Engineering and Biotechnology

Dimethyl Ether Synthesis via Methanol Dehydration over BEA Zeolite from Bagasse Fly Ash with Zircronium- and Nickel-Ion Exchange	
W. Pranee, P. Assawasaengrat, A. Neramittagapong, S. Intarachit and S. Neramittagapong	3
Optimization of COD Removal from an Aqueous Lignin Solution Using Photo-Fenton Reaction over Fe-Ce-Zn Catalysts S. Neramittagapong, A. Neramittagapong and S. Choorueang	7
Synthesized BG-MCM-41 as Support Catalyst for Fenton-Like Reaction of Lignin	,
Degradation	
P. Sriprom, A. Neramittagapong and S. Neramittagapong	12
Methanol Dehydration to Dimethyl Ether over Silica Derived from Rice Husk as the Component-Based Catalysts N. Chaba, S. Neramittagapong and A. Neramittagapong	17
Toluene Degradation by Thermal Catalytic Oxidation over K-OMS-2 Catalysts	17
P. Boonruam, S. Neramittagapong, A. Neramittagapong and K. Wantala	22
Methanol Synthesis in a Slurry Phase Reactor over Cu/ZnO/Al ₂ O ₃ Catalyst K. Krekkeitsakul, T. Utistham and U.W. Hartley	27
Catalytic Wet-Air Oxidation of Aniline Removal from Synthetic Wastewater	20
P. Sriprom, P. Assawasaengrat, A. Neramittagapong and S. Neramittagapong	32
Parameter Screening for the Important Factors Influencing the Aniline Removal by Photocatalysis over Supported Zinc Oxide Catalyst	
P. Sriprom, S. Prothanatt, A. Neramittagapong and S. Neramittagapong	37
Dimethyl Ether Synthesis via Methanol Dehydration over Diatomite Catalyst Modified	
Using Hydrochloric Acid W. Pranee, P. Assawasaengrat, A. Neramittagapong and S. Neramittagapong	42
Catalytic Pyrolysis of LDPE Plastic Wastes over Mortar Cement Catalyst	72
V. Srakeaw, S. Yodjai and U. Wetwatana	47
Preparation and Properties of Polyurethane Adhesive Derived from Modified Rubber Seed	
Oil and Toluene Diisocyanates N. Saetung, D. Dawkrajai and A. Saetung	52
Rice Bran/Poly(lactic acid) Composites in Packaging Product	32
R. Dangtungee, R. Srisuk and S. Siengchin	57
Preparation and Properties of Poly(ether imide) Ultrafiltration Membrane Modified with Polyether Diamine	
P. Phomdum and W. Chinpa	63
Preparation and Properties of Sponge Rubber Based on Natural Rubber and Cassava Starch	
K. Temna, N. Saetung and A. Saetung	68
Preparation of Graft Copolymer of Natural Rubber and Polystyrene by Electron Beam	
Irradiation T. Khamplod, S. Loykulnant, C. Kongkaew and P. Prapainainar	73
Synthesis of New Bio-Based Thermoset Resin from Palm Oil	
A. Fakhari, A.R. Rahmat, M.U. Wahit and Y. Shoot Kian	78
Rheological Properties and Extrudate Swell of PHBV-Bagasse Composites R. Dangtungee, S. Siengchin and C. Puritung	83
Novel Method for Recycle Epoxy Resin from Waste Printed Circuit Board R. Dangtungee, S. Siengchin and C. Kitpaosong	90
Analytical Model for Effect of Polymer Composite Membrane Properties on Direct Methanol Fuel Cell Performance T. Apichaya, P. Prapainainar and C. Prapainainar	95
- · · · · · · · · · · · · · · ·	, ,

Variable Frequency Microwave Curing of SU8 Photoresist Films C. Antonio and P. Watanachai	101
Enhancing the Flexural and Impact Properties of Bioplastic Poly(lactic acid) by Melt	
Blending with Poly(butylene succinate) N. Lertwongpipat, N. Petchwatana and S. Covavisaruch	106
Carvacrol as an Antimicrobial Agent for Poly(butylene succinate): Tensile Properties and Antimicrobial Activity Observations	
S. Wiburanawong, N. Petchwattana and S. Covavisaruch Effect of Sr Doped La ₄ Ni ₃ O _{10±δ} as a Cathode for IT-SOFC	111
S. Chokkha and S. Kuharuangrong	116
Electrical Conduction Mechanisms in n-CdS/p-CuFeO ₂ Heterojunction Diode T. Gaewdang and N. Wongcharoen	122
Influence of Na Doping on the Thermoelectric Properties of CuAlO ₂ Delafossite N. Wongcharoen and T. Gaewdang	127
Fabrication of Al ₂ O ₃ /ZrO ₂ Micro/Nano Composites Using Powder Alkoxide Mixtures W. Boonsorn, S. Watcharamaisakul and B. Golman	132
Effect of ZrO ₂ Additive on Phase Composition of CaO-ZrO ₂ -SiO ₂ Glaze K. Traipanya and S. Watcharamaisakul	137
Synthesis, Characterization and Solar-Reflective Properties of Cr ₂ O ₃ -Based Green Pigment M. Suwan, P. Sakchaikul, S. Yoriya and S. Supothina	142
Structure and Microstructure of Binary Nitride TiN Thin Films Deposited by DC Reactive Sputtering	
A. Buranawong, N. Witit-Anun and S. Chaiyakun	147
Thermal Degradation and Fire Retrandancy of Wood Impregnated with Nitrogen Phosphorus Flame Retardant A. Phromsaen, P. Chindaprasirt, S. Hiziroglu and P. Kasemsiri	152
BiVO ₄ Powder Synthesized via the Solvothermal Method	132
P. Jansanthea, P. Pookmanee, S. Phaisansuthichol, S. Satienperakul, S. Sangsrichan, R. Puntharod and S. Phanichphant	157
Feasibility Study of Bio-Hydrogenated Diesel (BHD) Production: A Case Study in Thailand K. Angsana, C. Prapainainar, P. Narataruksa and H. Piyapong	162
Influence of Hydrophilic Polymer on Pure Water Permeation, Permeability Coefficient, and Porosity of Polysulfone Blend Membranes A. Ali, M. Awang, R. Mat, A. Johari, M.J. Kamaruddin and W.R.W. Sulaiman	168
Effect of Applied Pressure on the Separation of Succinate and Acetate in Dead-End	100
Nanofiltration K. Sribut and C. Umpuch	173
Parameter Screening for the Important Factors Influencing the As(V) Adsorption Using a	173
Plackett-Burman Design N. Pojananukij, K. Wantala, S. Neramittagapong and A. Neramittagapong	178
Oil Solubilization Using Surfactant for Biohydrogen Production M.A. Siddiqui, S. Kungsanant and S. Chaiprapat	183
Acid Hydrolysis Sorghum Straw for Bioethanol Fermentation of Saccharomycescerevisiae	
TISTR 5596 P. Jutakridsada, C. Ladadok and K. Kamwilaisak	188
The Acid Hydrolysis of Sugarcane Leaves as a Biofeedstook for Bioethanol Production S. Boochapun, W. Lamamorphanth and K. Kamwilaisak	194
Development of Gelatin-Thai Silk Fibroin Microspheres for Three Dimensional Cell Culture	
S. Sinthop, S. Patumraj and S. Kanokpanont	200
Dielectric Relaxation Process and Microwave Heating Mechanism in ε-Caprolactone as a Function of Frequency and Temperature	
M.J. Kamaruddin, A. Johari, R. Mat, T.A. Tuan Abdullah, S.H. Mohd Setapar, W.R.W. Sulaiman and A. Ali	205
Effect of Pre-Treatment of Lignocellulosic Fiber on Mechanical Properties of Chitosan- Filled Filter Media	
A.N. Sadikin, N. Othman and M.G.M. Nawawi	210

Determination of Thermodynamic Parameters of Zinc (II) Adsorpton on Pulp Waste as	
Biosorbent P. Charnkeitkong, P. Charnkeitkong and X.S. Feng	215
The Study of Extraction Beta-Carotene from Crude Palm Oil for Analysis Economic W. Wiyaratn and A. Watanapa	220
The Fixed Bed Reaction of Residual Natural Rubber for Oil Production by Pyrolysis Process	
K. Kamwilaisak and M. Thabuot	225
Hydrothermal Synthesis and Characterization of Ho Doped Bi ₂ MoO ₆ Nanoplates and their Optical Properties	
A. Phuruangrat, N. Ekthammathat, B. Kuntalue, P. Dumrongrojthanath, S. Thongtem and T. Thongtem	231
Improvement of TiO ₂ /LDPE Composite Films for Photocatalytic Oxidation of Acetone K. Suwannahong, S. Sirivithayapakorn, P. Noophan and W. Sanongraj	235
Investigations on the Fixed-Bed Column Performance of Acid Brown 75 Adsorption by Surface Modified Fly Ash Granules C. Pansuk and S. Vinitnantharat	241
Estrogens Removal by Sludge from Enhance Biological Phosphorus Removal System A. Ruchiraset and S. Chinwetkitvanich	246
Methylene Blue Removal from Aqueous Solution by Adsorption on Nitric Acid Modified Water Treatment Sludge	
T. Potiya, P. Banjerdkij and N. Pimpha	251
Energy Consumption for Brine Solution Recovery in Direct Contact Membrane Distillation S. Chhun, W. Khongnakorn and W. Youravong	256
Removal of AzO Dye in Water Using Vacuum Ultraviolet (VUV) Process T. Ratpukdi, N. Boonlerdlon, B. Nanthakod and P. Wonghad	261
Investigation of Photoelectrochemical Parameters of Electrospun TiO ₂ Nanofiber Electrode T. Yuangkaew, C. Prasansaeng, P. Jaroenapibal and N. Triroj	266
The Effects of Magnetic Properties of L1 ₀ -FePt/Fe Based Exchange Coupled Composite Media on Switching Field	271
W. Tipcharoen, A. Kaewrawang, A. Siritaratiwat and K. Tonmitra Turbidity Removl Using Silk Sericin and Silk Sericin Powder as Coagulant Aid	271
S. Makvilay, W. Sanongraj and W. Khamwichit	276
The Synthesis of Air Filters from Silk Cocoons Coated TiO ₂ for Use in Air Purifier P. Wadchasit, W. Khamwichit and W. Sanongraj	281
Characterization of Durian Seed Starch/PVOH Composite Hydrogel as a Potential Adsorbent for Removal of Hazardous Dyes W. Pimpa and C. Pimpa	286
Photocatalytic Degradation of 2-chlorophenol over TiO ₂ Powder	200
P. Pookmanee, S. Ngamta, W. Kangwansupamonkon, R. Puntharod, S. Sangsrichan, J. Kittikul and S. Phanichphant	291
Prediction of Boride Thickness on Tool Steels AISI D2 and AISI H13 Using Boriding Kinetics	
Y. Boonplook and P. Juijerm Characterization of Phase hate Class/Hardness and Specifical for Polate Pancin.	296
Characterization of Phosphate Glass/Hydroxyapatite Scaffold for Palate Repair W. Wattanutchariya and P. Yenbut	301
Effects of TIG Pulse Current and Nitrogen Content in Argon Shielding Gas on Microstructure and Mechanical Properties of 15Cr-4Ni-8Mn-1.3Cu Stainless Steel Weld Metal	
P. Petarporn, G. Lothongkum, E. Viyanit and A. Chianpairot Characterization and Ontimized Againg Parameters of Aluminium Alley A A 6110	306
Characterization and Optimized Ageing Parameters of Aluminium Alloy AA6110 A. Kodwichian and P. Juijerm	312
Application of Using the Optical Strain Measuring Device in Material Testing and Tools and Dies Design K. Sirivedin	317
Factors Influencing the Performance of Al-Zn-Sn Anode	317
P. Mungsantisuk	322

A Study Comparative of Cu and Cu-Zn Electrode during Electrical Discharge Machining on Martensitic Stainless Steel AISI 410	
R. Saodaen, P. Janmanee, S. Wonthaisong and A. Muttamara	327
Surface Roughness of Mold Steel AISI-P20 and AISI-1050 during Milling Machining P. Janmanee, S. Wonthaisong, R. Saodaen and S. Ithisoponakul	333
Improvement of Oxidation Behavior at 1,073 and 1,173K of Austenitic Stainless Steels by Addition of Ni	
O. Srihakulung, P. Wangyao, G. Lothongkum and P. Sricharoenchai	338
Investigation of Dissimilar Joint between 356 and 7075 of Semi-Solid (SSM) Aluminum Alloy by Friction Stir Welding W. BOONCHOUYTAN, J. Chatthong, S. Rawangwong, R. Romadorn and P. Muangjunburee	344
Microimprinting Simulation of Anti-Bacterial Pattern on Stainless Steel Sheet P. Koowattanasuchat and N. Mahayotsanun	349
An Investigation of Optimum Cutting Conditions in Face Milling Mold Steel Affect the Surface Roughness and Tool Wear	254
S. Rawangwong, W. Boonchouytan, J. Chatthong and R. Burapa	354
Tuning Optical Properties of Electrospun Titanium Dioxide Nanofibers by Controlling Particle Sizes	260
C. Prasansaeng, T. Yuangkaew, N. Triroj and P. Jaroenapibal Investigation of Nickel Aluminum Bronze Alloy under Hot Compression Test	360
J. Anantapong, S. Suranuntchai, A. Manonukul and V. Uthaisangsuk	365
Preparation and Characterization of Calcium Sources from Golden Apple Snail Shell for Naturally Based Biomaterials P. Leelatawonchai and T. Laonapakul	370
Determination of Material Parameter of Gelatin-Carboxymethylcellouse Scaffold with Dehydrothermal Crosslinking Technique Using Curve Fitting Method	275
N. Siroros and N. Promma Compressive Response of Polyurethane Open-Cell Foam with Electrodeposited Copper	375
Coatings W. Janphongsri, Y. Boonyongmaneerat and P. Jearanaisilawong	381
Thermoelectricity of p-NCO and n-ZAO Thin Films W. Somkhunthot, N. Pimpabute, A. Vora-Ud, T. Seetawan and T. Burinprakhon	386
Study of Heat Transfer Characteristics and Kerf Quality of Flame Jet Cutting C. Nuntadusit, P. Muangjunburee, N. Suwanmala and M. Wae-Hayee	392
Numerical Analysis of Material Temperature Distribution M.A. Jani	397
Influence of RBD Palm Olein on Hydraulic Pump Performance W. Chanbua and U. Pinsopon	403
·	
II: Building Materials and Technologies in Construction	
The Carbonation of Calcium-Silicate-Hydrate C-S-H in Cement Mortar Studied Using Thermal Analysis and Gas Pycnometer: Determination of the Quantity of Calcium Carbonate Produced and the Increase in Molar Volume	411
S.T. Pham and W. Prince	411
Influences of the Ratios of High-Calcium Fly Ash to Low-Calcium Fly Ash on the Strength and Drying Shrinkage of Geopolymer Mortar R. Charoenchai and P. Chindaprasirt	416
Effects of Carbonation on the Specific Surface BET of Cement Mortar Measured by Two Different Methods: Nitrogen Adsorption and Water Adsorption S.T. Pham and W. Prince	421
Probabilistic Assessment of CO ₂ due to Concrete Repairs for Crack-Free Condition of Marine Concrete Structures A. Petcherdchoo	426
Optimizing Mix Proportion of Lightweight Concrete Containing Plastic Waste by Taguchi	120
Method N. Dulsang, P. Chindaprasirt, P. Posi, S. Hiziroglu, P. Sutaphakdee, R. Dangsawat and P. Kasemsiri	431

Electrical Resistivity of Cement-Based Sensors under a Sustained Load K. Loamrat, M. Sappakittipakorn and P. Sukontasukkul	436
Effect of Clay Brick Powder on ASR Expansion Control of Rhyolite Mortar Bar S. Sujjavanich, T. Meesak and D. Chaysuwan	441
Application of Cement-Based Sensor on Compressive Strain Monitoring in Concrete Members	
K. Loamrat, M. Sappakittipakorn and P. Sukontasukkul	446
Improving the Thermal Insulation Properties of the Concrete Block with EVA Plastic Scrap P. Khamput, S. Tantavoranart and K. Suweero	451
Early Age Properties of Alkali Activated Brown Coal Fly Ash Binders C. Tennakoon, K. Sagoe-Crentsil, J.G. Sanjayan and A. Shayan	457
Ductility Enhancement of High Strength RC Columns Using Steel Fiber Reinforced Concrete (SFRC) K. Rodsin	463
Shear Strength Prediction of Reinforced Concrete Deep Beams Using Strut-and-Tie Model P. Tasenhod and J. Teerawong	468
Shear Behavior of Reinforced Concrete Deep Beams with Various Horizontal to Vertical Reinforcements and Shear Span-to-Effective Depth Ratios P. Amornpinnyo and J. Teerawong	473
Probabilistic Time-Dependent Ratio of Cost to Benefit for Silane Treatment on Chloride-	
Exposed Concrete Structures A. Petcherdchoo	478
Vulnerability Assessment of Existing Low-Rise Reinforced Concrete School Buildings in Low Seismic Region Using Ambient Noise Method	402
A.F. Kamarudin, I. Azmi, Z. Ibrahim, A. Madun and M.E. Daud	483
Appraisal of Strengthening Cost for Increasing Flexural Strength of Reinforced Concrete Slab Bridges in Thailand S. Suparp and P. Joyklad	490
Horizontally Mounted Bender Elements for Measuring Shear Modulus in Soaked Sand Specimen K. Piriyakul and J. Iamchaturapatr	496
Application of Image Processing for Volume Measurement in Multistage Triaxial Tests	470
D. Hormdee, N. Kaikeerati and P. Jirawattana	501
Efficiency Factors for Reinforced Concrete Deep Beams: Part 1 - Improved Models P. Chetchotisak, J. Teerawong, D. Chetchotsak and S. Yindeesuk	506
Efficiency Factors for Reinforced Concrete Deep Beams: Part 2 - Code Calibration P. Chetchotisak, J. Teerawong, D. Chetchotsak and S. Yindeesuk	514
Statistical Analysis on Satisfaction of Residents Living in Prefabricated Concrete Buildings	
in Thailand B. Witchayangkoon, K. Budsaba, S. Buddhawanna, S. Sirimontree and K. Lertpocasombut	520
Uncertainty Model of Concrete Elastic Modulus Effect to Critical Reinforced Concrete Buckling Load	
S. Vongchavalitkul	525
III: Urban Planning and Transportation	
Travel Time Estimation on a Link without Real-Time Data by Correlated Links N. Intiruk, S. Sinthupinyo and W. Pattara-Atikom	531
Effects of Speed Bumps and Humps on Motorcycle Speed Profiles W. Satiennam, T. Satiennam, P. Urapa and T. Phacharoen	536
A Study of Potential Electric Motorcycle Use to Support a Low Carbon Society: Case of a Developing Asian City T. Satiennam, W. Satiennam, P. Tankasem, P. Jantosut, J. Thengnamlee and W. Khunpumphat	541
Road Traffic Fatalities Analysis in AEC Countries P. Klungboonkrong and N. Faiboun	546
An Expeditious Model for Equalization of Municipal Tax on Real Estate - An Italian Case	J 1 0
G. de Mare and A. Nesticò	551

The Public-Private Partnerships in Buildings Regeneration: A Model Appraisal of the Benefits and for Land Value Capture	555
F. Calabrò and L. Della Spina The Influential Factors on the Quality Performance of Road Project Implementation	555
W. Oetomo and H. Moetriono Evaluation of Accessibility to Evacuation Centers in Asian Developing City	560
P. Luathep and S. Jaensirisak	567
New Car Assessment Program for Southeast Asian Countries (ASEAN NCAP): Vehicle Selection and Results of Phase II	
R. Mohd Khairudin, I. Mohd Hafzi Md, J.M. Zulhaidi and A.K. Khairil Anwar	572
A Multi-Period Evacuation Vehicle Routing Problem Model S. Chanta and O. Sangsawang	578
Serious Game for Fire Safety Evacuation Plan A. Sacfung, K. Sookhanaphibarn and W. Choensawat	583
Motorcyclist's Helmet Wearing Detection Using Image Processing T. Marayatr and P. Kumhom	588
Developed Driving Cycles for a Passenger Vehicle in Khon Kaen P. Buasri, C. Munyuen and B. Sookananta	593
Sustainable Strategy for Governmental Urban Poor Housing Development in Thailand:	
Contribution of Self-Customize Income Generation Space N. Tonmitr, N. Ogura and T. Irie	598
IV: Environmental Materials, Engineering and Management	
1 v. Environmentar mans, Engineering and management	
Urban Heat Island Intensity in Chiang Mai City Using Mobile Surveying Approach P. Sangnum, N. Kammuang-Lue, P. Sakulchangsatjatai and P. Terdtoon	605
The Relationship between Diurnal Temperature Range (DTR) and Rainfall over Northern Thailand	
L. Beule and S. Tantanee	614
Assessing Water Consumption of S-PVC Resin Manufacturing Process by Life Cycle Assessment	
S. Olapiriyakul Effect of Body Size on Accumulation of Po ²¹⁰ in Mussel, <i>Perna viridis</i> , at Samut Sakhon	619
Province B. Porntepkasemsan, K. Srisuksawad and V. Permnamthip	624
Estimating Mercury Flows through Thermometers and Sphygmomanometers in Healthcare	
Facilities in Thailand on the Basis of a Material Flow Analysis M. Wongsoonthornchai and S. Kwonpongsagoon	629
Effect of Adding Biomass Fly Ash to Co-Composting of Tree Pruning Waste and Cow Dung S. Karnchanawong, Y. Najarut and T. Sawangpanyangkura	635
Efficiency of Bamboo Waste Activated Carbon on Acid Dye Wastewater Treatment K. Suwanasing and M. Poonprasit	640
Comparison of GHG Emission from Municipal Solid Waste Management Technology in Selected Cities in Cambodia C. Hoklis and A. Sharp	645
Assessment of Hydrogen Sulfide Dispersion from Dumpsite Using AERMOD Modeling	
System T. Kanabkaew, N. Rakmak and S. Choosaeng	650
Emission of Oxide of Nitrogen from Household Activity in Rayong Province, Thailand J. Khaosang and S. Thepanondh	655
Emission Factor of VOCs from Non-Point Source: Case Study of Chemical Laboratory T. Wimolrattanasil and S. Thepanondh	660
Quantity of Formaldehyde in Particleboards W. Khamwichit and W. Sanongraj	665
Impact of Fuel Switching to the Level of Air Toxic and its Potential Health Impact in Bangkok, Thailand W. Thongkum and S. Thepanondh	671
· · · · · · · · · · · · · · · · · · ·	J , 1

Assessment of Dust Concentrations Affecting People Working on Roadsides to Mahasarakham University	
A. Bridhikitti, K. Thongsanit, S. Chumphuthim, P. Khwasui, P. Nabumrung and T. Puangsuk	676
Behaviors of Ni and Zn Adsorption on Different Soils Found in the Northeastern Thailand N. Sangiumsak and P. Punrattanasin	681
Potential of Using Natural Materials as Support Media in Anaerobic Filter for Tapioca Wastewater Treatment W. Phiwluang and M. Poonprasit	687
Characteristics of Bacterial Cellulose Production from Agricultural Wastes S. Khami, W. Khamwichit, K. Suwannahong and W. Sanongraj	693
Effect of Urease Dosages in Biocementation Process for Improving Strength of Sandy Soil J. Iamchaturapatr and K. Piriyakul	698
Estimation of Missing GPS Precipitable Water Vapor Data by Zenith Wet Delay and Meteorological Data D. Hong Asia S. Wingmildon and K. Whyanmar	703
P. Uang-Aree, S. Kingpaiboon and K. Khuanmar Spatial Variability of Sodium Adsorption Ratio and Sodicity in Salt-Affected Soils of Northeast Thailand	/03
P. Phontusang, R. Katawatin, K. Pannangpetch, S. Kingpaiboon and R. Lerdsuwansri The Analysis of Shallow Groundwater Quality around Laemchabang Sanitary Landfill,	709
Chonburi, Thailand W. Ponsai and S. Chotpantarat	716
Occurrence of Estrogens in Wastewater Treatment Plants and Surface Water in Bangkok Area, Thailand A. Ruchiraset and S. Chinwetkitvanich	721
Environmental Risk Assessment of Mn, Cu and Fe in the Lam Takhong Reservoir, Nakhon Ratchasima Province, Thailand	
T. Shutiwat, S. Chinwetkitvanich, D. Kitkeaw and P. Pataranawat	727
Marine Litter Observed by Tidal Circulation at Phi Phi Islands, Andaman Sea R. Junlah, P. Worachananant and S. Vannarat	733
Simulation of Nitrate Concentration Affected from Land Use Changes in the Lower Part of Yom River Basin, Thailand: A Preliminary Study S. Boonkaewwan and S. Chotpantarat	738
Mercury Emission from Artisanal Buladu Gold Mine and its Bioaccumulation in Rice Grains, Gorontalo Province, Indonesia A. Mallongi, P. Pataranawat and P. Parkpian	744
The Review on Significant Adverse Impact of Poor Indoor Air Quality on Employees Health M.A.A. Rahman, M.K. Musa and M.L.A. Jeni	749
The Effect of pH in the Tap Water on Nutrient Release from Slow Release Fertilizers J. Buates, P. Chawakitchareon and R. Anuwattana	754
Slow Release Fertilizer Prepared from Leonardite and Zeolite P. Chawakitchareon, P. Poovuttikul and T. Chantanurak	758
Utilization of Waste from Para Rubber Industry to Produce Compost W. Taenkaew, S. Samo, P. Pongyeela, J. Chungsiriporn and J. Pornpunyapat	762
Applying AHP to Evaluate Hydropower Projects of Lao PDR in Implementation of the Environmental Management and Monitoring Plan B. Vorachit and P. Srichetta	768
Roof Fruit and Vegetable Garden, is Accurate as the Element Eco Green Settlement, Housing in the City Today? Case Study: House Live in Downtown Surabaya Indonesia W. Uniek Praptiningrum	774
Developing River Lane as an Alternative for Water Tourism Destination — Case Study: "Kalimas" River Lane of Surabaya, Indonesia R. Hastijanti	781
Effectiveness of Ubol Ratana and Lam Pao Reservoirs for Flood Mitigation in the Downstream Area of the Chi River Basin Using HEC-HMS Model	
K. Kuntiyawichai Quantifying Consequences of Land Use and Rainfall Changes on Maximum Flood Peak in	785
the Lower Nam Phong River Basin K. Kuntiyawichai, W. Sri-Amporn and C. Pruthong	791

Lateral Inflow Approximation for Flood Forecasting in Mekong River N. Khetkratok and S. Konyai	797
Estimation of Site Dynamic Characteristics from Ambient Noise Measurements Using HVSR Method in Microzonation Study: Senggarang, Batu Pahat, Malaysia A.F. Kamarudin, M.E. Daud, Z. Ibrahim, I. Azmi, M. Khairani Yub and M.A. Mohd Noor	803
Efficiency Analysis for Sustainable Mobility — The Design of a Mechanical Vector in	
Amalfi Coast (Italy) G. de Mare and A. Nesticò	808
A New Method to Recharge Groundwater Using Subsurface Drain S. Smittakorn, S. Dechakampoo and S. Suetrongtrakool	813
Flood Routing in Reservoirs Using Synthetic Unit Hydrograph: The Case of Bung Takreng Reservoir in Yom Basin, Thailand K. Chaibandit and S. Konyai	818
Correlation of Outcrop Hydraulic Conductivity with its Aquifer: A Case Study of the Phu Phan Sandstone in Northeast, Thailand T. Cotanont, C. Buaphan and K. Kromkhun	823
The Assessment Groundwater in Yom Basin by MODFLOW Model K. Chaibandit and S. Konyai	829
Management of the Schmutzdecke Layer in a Slow Sand Filter to Reuse Drainage Water	
from a Greenhouse P. Livingston and D. Slack	834
Java Predictors for Water Level Forecast Based on Daily Gage Height A. Heednacram and W. Werapun	839
Potential Conversion of Plastic Waste in Old Landfill to Fuel B. Charnnok, P. Kirirat and S. Chaiprapat	844
Characterization and Utilization of Char Derived from Fast Pyrolysis of Plastic Wastes J. Jamradloedluk and C. Lertsatitthanakorn	849
V: Power and Electrical Engineering, Microelectronics and Communication	
	857
Communication Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn	
Communication Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV	857 862 867
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in	862
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit	862
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in Laos K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit A Study of Effects of Stochastic Wind Power and Load to Power System Stability Using Stochastic Stability Analysis Method	862 867 873
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in Laos K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit A Study of Effects of Stochastic Wind Power and Load to Power System Stability Using Stochastic Stability Analysis Method P. Parinya, A. Sangswang, K. Kirtikara, D. Chenvidhya, S. Naetiladdanon and C. Limsakul Technique to Improve the Transient Response of Parallel-Connected AC/DC Converters	862867873878
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in Laos K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit A Study of Effects of Stochastic Wind Power and Load to Power System Stability Using Stochastic Stability Analysis Method P. Parinya, A. Sangswang, K. Kirtikara, D. Chenvidhya, S. Naetiladdanon and C. Limsakul	862 867 873
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in Laos K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit A Study of Effects of Stochastic Wind Power and Load to Power System Stability Using Stochastic Stability Analysis Method P. Parinya, A. Sangswang, K. Kirtikara, D. Chenvidhya, S. Naetiladdanon and C. Limsakul Technique to Improve the Transient Response of Parallel-Connected AC/DC Converters Y. Kanthaphayao and V. Chunkag 2-Phase Interleaved Boost Converter for Renewable Energy Source with Nonlinear Control	862867873878883
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in Laos K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit A Study of Effects of Stochastic Wind Power and Load to Power System Stability Using Stochastic Stability Analysis Method P. Parinya, A. Sangswang, K. Kirtikara, D. Chenvidhya, S. Naetiladdanon and C. Limsakul Technique to Improve the Transient Response of Parallel-Connected AC/DC Converters Y. Kanthaphayao and V. Chunkag 2-Phase Interleaved Boost Converter for Renewable Energy Source with Nonlinear Control S. Songjan, M. Phattanasak, W. Kaewmanee and V. Chunkag Wireless Power Transmission Using a PCB Antenna and a MHz Frequency Inverter N. Phokhaphan and K. Choeisai Single Phase Low-Cost Inverter for Low Power Application	862 867 873 878 883 888
Electrical Performance of Zinc Oxide Surge Arresters in 22 kV Distribution System Using Thermal Image Camera W. Thipprasert Development of C.B.T Hot End Yoke Device for Hot Line Insulator Replacement of 230-kV Double Suspension String for Two Bundles with Arcing Horn C. Kajonwattanakul and W. Skolpap Time-Coordination-Based Fault Protection System for Power Distribution Network K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit Distribution Automation in Case of Tie Bus between Two Feeders at Donekoy Substation in Laos K. Phothilath, K. Tonmitra, A. Kaewrawang and P. Artrit A Study of Effects of Stochastic Wind Power and Load to Power System Stability Using Stochastic Stability Analysis Method P. Parinya, A. Sangswang, K. Kirtikara, D. Chenvidhya, S. Naetiladdanon and C. Limsakul Technique to Improve the Transient Response of Parallel-Connected AC/DC Converters Y. Kanthaphayao and V. Chunkag 2-Phase Interleaved Boost Converter for Renewable Energy Source with Nonlinear Control S. Songjan, M. Phattanasak, W. Kaewmanee and V. Chunkag Wireless Power Transmission Using a PCB Antenna and a MHz Frequency Inverter N. Phokhaphan and K. Choeisai	862867873878883888893

A Study on Flash Type A/D Converter Using Neuron CMOS Inverter Y. Harada, K. Fujimoto, M. Yahara and K. Eguchi	915
Design and Analysis of a Generalized Dual Fibonacci Converter Using Improved Charge	
Reusing Techniques K. Eguchi, I. Oota, S. Terada and K. Fujimoto	920
All Current-Mode Operate in High Precision Vector Summation Circuit B. Burapattanasiri, S. Rodthong and T. Rerkmaneewan	925
Performance Evaluation of Concatenate Coding for Body Area Network Applications B. Sansoda and S. Choomchuay	932
The Low Cost LabVIEW Wireless Instrument W. Prommee	937
Enhance Wi-Fi Fingerprinting Indoor-Positioning by Error Flag Framework S. Premchaisawatt and N. Ruangchaijatupon	942
Fairness-Based Resource Allocation with Minimum Rate Guarantee in a Multiuser OFDMA System N. Ruangchaijatupon, Y.S. Ji, C. Charnsripinyo and N. Sonehara	947
Several Contention Window Adjustment Techniques for Improving Unsaturated throughput of Wireless LANs	,,,
J. Sartthong, S. Sittichivapak and N. Chirdchoo	952
A Simple Artificial Solar Cell for Laboratory Study C. Photong	957
The Flashover Phenomena due to Water Drops on Insulating Surface under DC Electric Field S. Chandavong, K. Tonmitra and A. Kaewrawang	962
Study on Partial Discharge with Water Droplets on the Circular Epoxy Resin Insulator under AC Electric Field Stress	
S. Phimmasene, K. Tonmitra, A. Siritaratiwat and A. Kaewrawang	968
Design of Multilayer Polarization Beam Splitters Using Multiobjective Evolutionary and Genetic Algorithms A. Kaewrawang and N. Wannawong	973
The Effect of Deterioration on Insulating Surface due to Flashover under AC Electric Field Stressed by Water Droplets S. Chandavong, K. Tonmitr and A. Kaewrawang	979
A New Mismatch Model of Temperature and Narrow Channel Width Dependence on Threshold Voltage of MOSFETs A. Ruangphanit, N. Sakuna, S. Niemcharoen and R. Muanghlua	984
Joule Heating and Peltier Effects in Thermoelectric Spin-Transfer Torque Mram Devices Using Finite Element Modeling	
S. Harnsoongnoen, N. Phaengpha, S. Ritjaroenwattu, U. Charoen-In and A. Siritaratiwat Effect of Copper Wire Placement Speed Analysis on Actuator Arm by Finite Element R. Wannapop, T. Jearsiripongkul and T. Boonluang	989 994
Localization in Wireless Sensor Networks: Solvability Improvement Technique Using Priori Information from Sensing Data and Network Properties in Unit Disk Graph Model)) 1
P. Kaewprapha	999
VI: Energy and Energy Saving Technologies, Thermal Engineering	
Biodiesel B10 – An Alternative Fuel for Diesel Pick-Up Trucks T. Suthisripok and T. Ruechakiatdtikun	1007
Combustion of Municipal Solid Waste in a Pilot Scale Fluidized Bed Combustor A. Johari, R. Mat, M.J. Kamaruddin, T.A. Tuan Abdullah, W.R.W. Sulaiman and A. Ali	1015
Additional Gas Resource for Coal Bed Methane by Applying Underground Coal Gasification and Enhanced Coal Bed Methane W.R.W. Sulaiman, N. Azizan, M.Z. Jaafar, A.R. Ismail, M.A. Hamid, A. Johari, R. Mat, M.J.	1000
Kamaruddin and A. Ali A Solid Oxide Fuel Cell Micro-Scale Modeling with Cylindrical Particle Shaped Electrodes	1020
P. Saisirirat	1025

The Effect of Fuel Type on Temperature Profile within Pilot-Scale Downdraft-Gasifier for the LPG Replacement in Electricity Production	
P. Chaijunda, C. Kruehong, M. Thabuot, C. Waisurasingha and P. Chindaprasirt	1033
Optimization of Base-Catalyzed Transesterification in Biodiesel Production from Refined Palm Oil via Circulation Process through Static Mixer Reactor S. Niseng, K. Somnuk and G. Prateepchaikul	1038
Spray Visualization of Biodiesel and Diesel in a High Pressure Chamber P. Srichai, C. Chareonphonphanich, P. Karin and N. Chollacoop	1043
Numerical Investigation of Airflow Pattern inside Environmental Chamber J. Thongsri and W. Suksawaeng	1048
Mixed-Mode [I/III] Fracture Simulation of Rubber K. Permpipat and P. Jearanaisilawong	1053
Simulated Trajectories of Particles and the Number of Particles Trapped by the Circulating Filter in a Hard Disk Drive J. Thongsri and V. Pongkom	1058
Successful Simulation of Airflow in the Microenvironment of an Assembly Automation Machine and its Implication J. Thongsri and A. Khaokom	1063
PV Modules Deterioration with Less than 15 Years Installation in Thailand B. Wiengmoon, K. Kirtikara, C. Jivacate and D. Chenvidhya	1068
The Study of Renewable Heat Incentive in Thailand T. Limwittayakorn and W. Wongsapai	1073
Design an Economy Cooling System for the Solar Panel W. Phayom and A. Namahima	1078
Prospects of Carbon Based Micro-Fluid Electrolyte for the Vanadium Redox Flow Battery (VRB)	4000
T. Tantisakon and K. Holasut Improving Energy Efficiency by Classroom Scheduling: A Case Study in a Thai University	1083
K. Sethanan, S. Theerakulpisut and C. Benjapiyaporn	1089
Extractive Fermentation of Ethanol from Fresh Cassava Roots Using Vacuum Fractionation Technique S. Phakping, M. Ketudat-Cairns and A. Boontawan	1096
Biogas Production from Human Faece and Community Waste Food S. Poocheera, R. Suntivarakorn and W. Treedet	1101
Cellulase Enzyme Production from Agricultural Waste by <i>Acinetobacter</i> sp. KKU44 N. Poomai, W. Siripornadulsil and S. Siripornadulsil	1106
Cultivation of <i>Chlorella</i> sp. Using Industrial Effluents for Lipid Production T. Sasibunyarat, B. Cheirsilp, B. Charnnok and S. Chaiprapat	1111
Densified Fuels from Mixed Plastic Wastes and Corn Stover U. Auprakul, A. Promwungkwa, N. Tippayawong and S. Chaiklangmuang	1117
The Design of Total Knee Replacement Prosthesis Suitable for Anteroposterior Movement for Thai Female S. Piyasin, K. Nabudda and S. Hemathulin	1122
Differential Evolution Algorithm for Solving a Nonlinear Single Pendulum Problem N. Panagant and S. Bureerat	1122
Effects of an Injection Angle of Water Pipes in an Ultrasonic Cleaning Tank on Particle	112)
Disposal Capability K. Wongmanee, S. Bureerat and J. Benjapiyaporn	1134
CFD in Continuous Stirred Tank: Comparison between Rushton and Paddle Turbines T. Srirugsa, S. Prasertsan, T. Theppaya, T. Leevijit and P. Prasertsan	1139
Heat Transfer Improvement in a Square Duct with Diagonal Inclined Ribs S. Suwannapan, R. Poomsalood, P. Promvonge, W. Jedsadaratanachai and T. Limkul	1144
Laminar Convection Heat Transfer in Square Channel Fitted Diagonally with 45° V-Discrete Baffles	
S. Tamna, R. Poonperm, P. Promvonge and C. Thianpong	1149
Estimation of Smoke Plume Height from Early Burning via Simulation P. Limthavorn and W. Tachajapong	1154

Design and Development the Pressure Chamber of the Continuous Belt Air-Blast Freezer in Freezing Shrimp Process K. Phuekpan and K. Tangchaichit	1163
Numerical Simulation of Al ₂ O ₃ -Water Nanofluid Flow and Heat Transfer in a Tube with Angled Rings	
P. Promvonge, S. Sripattanapipat and W. Jedsadaratanachai	1168
Heat Transfer in Round Tube with Rectangular-Winglet Vortex Generators S. Skullong and P. Promvonge	1173
Air Change Rate Efficiency Improvement for a Broiler House in a Minimum Ventilation Situation	
C. Wisate, R. Suntivarakorn, T. Radpakdee and S. Winitchai	1178
Experimental Study on Flow Friction and Heat Transfer in a Square-Duct Heat Exchanger with Winglet Turbulators S. Suwannapan, P. Hoonpong, P. Promvonge, S. Juengjaroennirachon and M. Pimsarn	1183
Heat Transfer Augmentation in a Round Tube with 60° Winglet Pair Inserts S. Chokphoemphun, P. Tongyote, P. Promvonge, W. Jedsadaratanachai and T. Chompookham	1188
Heat Transfer Enhancement in a Solar Air Heater Channel with Discrete V-Baffles P. Soodkaew, S. Skullong, P. Promvonge and W. Pairok	1193
Thermal Performance in Circular Tube with Co/Counter-Twisted Tapes S. Chokphoemphun, C. Hinthao, S. Eiamsa-ard, P. Promvonge and C. Thianpong	1198
Thermal Characteristics in a Tube Fitted with Inclined Vortex Rings N. Koolnapadol, W. Chingtuaythong, P. Promvonge and S. Kwankaomeng	1203
Thermal Behaviors in a Square Duct with U-Ribbed Tape Inserts C. Khanoknaiyakarn, S. Skullong, P. Promvonge and N. Jayranaiwachira	1208
Flow and Heat Transfer Characteristics of Impinging Jet from Expansion Pipe Nozzle with Air Entrainment Holes	
N. Kaewchoothong, M. Wae-Hayee, P. Vessakosol, B. Niyomwas and C. Nuntadusit	1213
Heat Transfer Enhancement of Impinging Row Jets in Cross-Flow with Mounting Baffles on Surface	
R. Pansang, M. Wae-Hayee, P. Vessakosol and C. Nuntadusit	1218
Investigation of Flow and Heat Transfer Characteristics of Annular Impinging Jet W. Musika, M. Wae-Hayee, P. Vessakosol, B. Niyomwas and C. Nuntadusit	1223
Heat Transfer Enhancement of Impinging Jet from Pulse Jet Combustor P. Narato, K. Maliwan and C. Nuntadusit	1228
Field Investigation of the Small House with the Ventilated Roof Tiles O. Amornleetrakul, W. Puangsombut and J. Hirunlabh	1233
Investigation of Temperature and Air Flow inside Para Rubber Greenhouse Solar Dryer Incline Roof Type by Using CFD Technique P. Somsila and U. Teeboonma	1238
Flow Pattern Map of Malaysian Crude Oil and Water Two-Phase Flow in a Pipe System	1236
I. Ismail, S. Misnan, A.S.I. Ismail and R. Mohsin Pressure Drop and Water Holdup of Malaysian Crude Oil and Water Two-Phase Flow in	1243
Pipes	1240
I. İsmail, S. Misnan, A.S. Izwan Ismail and R. Mohsin	1248
VII: Mechatronics and Control	
$L1_0$ -CoPt Bit Patterned Media with Tilted Easy Axis for Ultrahigh Areal Density over 2.5 Tb/in ²	
A. Kaewrawang Padusing the Theorem I Associate Effect in Pour andicular Magnetic Popular System	1255
Reducing the Thermal Asperity Effect in Perpendicular Magnetic Recording System Y. Suppakhun	1260
Microwave Assisted Magnetization Reversal on Exchange Coupled Composite Media N. Wannawong, W. Tipcharoen and A. Kaewrawang	1265
Designing Decoupler and PID Controller for TITO System S. Dolpullop and S. Chitwong	1270
Electrical Properties of Material Characteristics Using a Microstrip Patch Sensor S. Harnsoongnoen, S. Ritiaroenwattu, U. Charoen-In and A. Siritaratiwat	1275

Push-Mode Printhead Using Magnetic Linear Actuator	
M. Saedan and M. Mangkrai	1280
Controlling Robots Using Thai Speech Recognition T. Phanprasit	1285
Design, Constructand Performance Evaluation of a 2-Stage Parabolic through Solar Concentrator in Pathumthani	
K. Sookramoon	1291
Tangible Programming for Basic Control System New Frameworks to Engineering Education for Children	
T. Meadthaisong, S. Meadthaisong and S. Chaowaskoo	1298
Development of on Board Motorcycle System to Measure on Road Driving Pattern A. Seedam, T. Satiennam, T. Radpukdee and W. Satiennam	1303
Determination of Tensile Properties of Hemp-Fiber Bundle by Using Tensile Testing Equipment with Raspberry Pi P. Limpitipanich and A. Promwungkwa	1308
Smart Wheelchair Stair Lift Using RFID Detection Method and Fuzzy-PI with PLC Ladder Control	
S. Kantawong	1313
Tuning PID Controller Using Genetic Algorithms for Electro-Hydraulic System with Tracking Force Control	
P. Moonumca, N. Depaiwa and Y. Yamamoto	1318
Design and Control of One Degree of Freedom Haptic Interface System with PID Controller N. Pothi	1323
Energy Analysis in Zigbee Based Wireless Sensor Node Powered by Piezoelectric Energy	
Harvester D. Isarakorn, T. Sudhawiyangkul and S. Nundrakwang	1328
VIII: Computer and Information Technology, Data Processing	
Thai Handwriting Practice on Android Tablets	
K. Damkliang, P. Nanphan and T. Mamodee	1335
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part	
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee	1335 1342
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn	
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval	1342
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags	1342 1348
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm	1342 1348 1353
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise	1342 1348 1353 1360
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise K. Anusornpakdee, M. Limpanadusadee, S. Vasupongayya and S. Kamolphiwong Departure Prediction of Online Game Players K. Savetratanakaree, K. Sookhanaphibarn, S. Intakosum, R. Thawonmas and K.T. Chen Hybrid Balancing Technique Using GRSOM and Bootstrap Algorithms for Classifiers with Imbalanced Data	1342 1348 1353 1360 1365 1370
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise K. Anusornpakdee, M. Limpanadusadee, S. Vasupongayya and S. Kamolphiwong Departure Prediction of Online Game Players K. Savetratanakaree, K. Sookhanaphibarn, S. Intakosum, R. Thawonmas and K.T. Chen Hybrid Balancing Technique Using GRSOM and Bootstrap Algorithms for Classifiers with Imbalanced Data S. Pattanapairoj, D. Chetchotsak and B. Arnonkijpanich	1342 1348 1353 1360 1365
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise K. Anusornpakdee, M. Limpanadusadee, S. Vasupongayya and S. Kamolphiwong Departure Prediction of Online Game Players K. Savetratanakaree, K. Sookhanaphibarn, S. Intakosum, R. Thawonmas and K.T. Chen Hybrid Balancing Technique Using GRSOM and Bootstrap Algorithms for Classifiers with Imbalanced Data S. Pattanapairoj, D. Chetchotsak and B. Arnonkijpanich A Framework of Personalized Travelling Information Services for Thailand D. Asavasuthirakul, A. Harfield and K. Kesorn	1342 1348 1353 1360 1365 1370
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise K. Anusornpakdee, M. Limpanadusadee, S. Vasupongayya and S. Kamolphiwong Departure Prediction of Online Game Players K. Savetratanakaree, K. Sookhanaphibarn, S. Intakosum, R. Thawonmas and K.T. Chen Hybrid Balancing Technique Using GRSOM and Bootstrap Algorithms for Classifiers with Imbalanced Data S. Pattanapairoj, D. Chetchotsak and B. Arnonkijpanich A Framework of Personalized Travelling Information Services for Thailand	1342 1348 1353 1360 1365 1370
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesorn A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise K. Anusornpakdee, M. Limpanadusadee, S. Vasupongayya and S. Kamolphiwong Departure Prediction of Online Game Players K. Savetratanakaree, K. Sookhanaphibarn, S. Intakosum, R. Thawonmas and K.T. Chen Hybrid Balancing Technique Using GRSOM and Bootstrap Algorithms for Classifiers with Imbalanced Data S. Pattanapairoj, D. Chetchotsak and B. Arnonkijpanich A Framework of Personalized Travelling Information Services for Thailand D. Asavasuthirakul, A. Harfield and K. Kesorn Multi-Platform Institutional Repository	1342 1348 1353 1360 1365 1370 1375 1382
K. Damkliang, P. Nanphan and T. Mamodee Development of Automatic Copper Wire Locating System for HDD Manufacturing Process: Image Processing Part R. Wannapop, T. Jearsiripongkul and T. Songsee A Modified Cosine Similarity for Cross Language Information Retrieval C. Inparaprapan and K. Kesom A Method of Recommendation the Most Used XML Tags S. Vacharaskunee and S. Intakosum Classification of Tourism Web with Modified Naive Bayes Algorithm N. Panawong, C. Snae Namahoot and M. Brückner Personal Health Assistant on Android Mobile Device: Sleeping, Nutrition and Exercise K. Anusornpakdee, M. Limpanadusadee, S. Vasupongayya and S. Kamolphiwong Departure Prediction of Online Game Players K. Savetratanakaree, K. Sookhanaphibarn, S. Intakosum, R. Thawonmas and K.T. Chen Hybrid Balancing Technique Using GRSOM and Bootstrap Algorithms for Classifiers with Imbalanced Data S. Pattanapairoj, D. Chetchotsak and B. Arnonkijpanich A Framework of Personalized Travelling Information Services for Thailand D. Asavasuthirakul, A. Harfield and K. Kesorn Multi-Platform Institutional Repository P. Roengniransathit, W. Taweepworadej and P. Polpinit Classifiers for Ground-Based Cloud Images Using Texture Features	1342 1348 1353 1360 1365 1370 1375 1382 1387

A Hybrid Technique of Noise Reduction with Periductal Fibrosis Ultrasound Images for Periductal Fibrosis Detection System of Cholangiocarcinoma Surveillance P. Wayalun, S. Saiyod and N. Chamadol	1407
Thai Face Cartoon Detection and Recognition Using Eigenface Model Y. Jirawatanakul and S. Watanapa	1412
Objects Centroid Correlation Using MATLAB's Neural Network Toolbox for Visually-Guided Object Manipulation S. Wanchat, S. Plermkamon and D. Chetchotsak	1417
A Guided Genetic Algorithm for Bilateral Negotiation with Incomplete Information T. Threepatcharatip and S. Somhom	1422
Ensemble Learning Model for Diabetes Classification N. Nai-Arun and P. Sittidech	1427
MFFV3: An Improved Integer Factorization Algorithm to Increase Computation Speed K. Somsuk and S. Kasemvilas	1432
Secure Remote Biometric Authentication Protocol A. Salaiwarakul	1437
The Construction of ElGamal over Koblitz Curve K. Kamthawee and B. Chiewthanakul	1441
Evidence-Based Design Principles for Web Sites Advancing eHealth Literacy M. Brückner, S. Sivilai and C. Snae Namahoot	1447
Formal Verification of WS-BPEL Using Timed Trace Theory W. Kongburan and D. Pradubsuwun	1452
New Key Factors Discovery to Enhance Dengue Fever Forecasting Model P. Ongruk, P. Siriyasatien and K. Kesorn	1457
A Study on the Relationship between Search Engine Optimization Factors and Rank on Google Search Result Page	
T. Nasomyont and N. Wisitpongphan Enhancing Decision Tree with AdaBoost for Predicting Schizophrenia Readmission	1462
J. Thongkam and V. Sukmak Factors Affecting the Quality of MMORPG Online Games in Bangkok	1467
P. Aimsupasit and W. Feungchan	1472
Development of Instruction Model by FATAC Model on Electromagnetic Field and Wave for Electrical Engineering Program A. Promtee and C. Akkanit	1477
Prediction of Evaluation Learning by Using Neuro-Fuzzy System R. Wonsathan, I. Seedadan, N. Nunloon and J. Kitibut	1482
A Meshless Local Petrov-Garlerkin Method for Solving the Biharmonic Equation S. Kaewumpai, S. Tangmanee and A. Luadsong	1488
IX: Agricultural Engineering and Food Technology	
Feasibility of Using a Multistage Drying Method Including Infrared Heating, Tempering and Sun Drying for Wet Paddy	
W. Duangkhamchan and J. Laohavanich	1497
Ultrasound Assisted Extraction for Preparation Dietary Fiber from Cassava Pulp P. Chirinang, R. Oonsivilai and T. Kulrattanarak	1502
Chlorophylls Contents in <i>Echinocactus grusonii</i> Extract N. Chaicharoenaudomrung, A. Oonsivilai and R. Oonsivilai	1507
Effect of Drying Methods on Chemical and Functional Properties of Jerusalem Artichoke (Helianthus tuberosus L.) Powders S. Inchuen, O. Porniammongkol and W. Duangkhamchan	1512
Production of Recombinant β-Galactosidase in <i>Lactobacillus plantarum</i> , Using a pSIP-Based Food-Grade Expression System	
N. Thaiwong, S. Thaiudom, D. Haltrich and M. Yamabhai	1518
Shikimic Acid Production from <i>Ginkgo biloba</i> via Callus Culture S. Phongtongpasuk and P. Piemthongkham	1524

Germinated Brown Rice	
S. Pilawut and W. Chinsuwan	1529
Pilot-Scale Continuous Conveyor Diffusion Extraction System for Sweet Sorghum P. Livingston and D. Slack	1534
BioClean and Bioextracts to Pilot Institutions 2013 S. Uparivong	1539
Modeling Keeping Quality of Pasteurized Milk N. Lucknakhul, V. Jindal and W. Jonglertjunya	1544
Determine of Moisture Content for Rough Rice Single Kernel by Visible/NIR Spectroscopy A. Heman and C.L. Hsieh	1549
The Study of Cassava Root Conveying Equipment Attached to a Truck C. Junsiri and A. Panpoom	1555
The Influence of the Metering Device Arrangement to the Discharging Consistency of the Sugarcane Billet Planter	1561
T. Thienyaem, K. Saengprachatanarug, S. Wongpichet, T. Eizo and P. Thongrak Effects of Mixing Ratio between Eucalyptus Bark Charcoal and Cassava Starch on the	1561
Performance of a Charcoal Block Pressing Unit K. Laloon and S. Sudajan Some Physical and Mechanical Properties of Sugarcane Trash Relating to the Criteria	1568
Design of a Sugarcane Trash Chopping Machine N. Khongthon and S. Sudajan	1574
Application of Electronic Nose for Classification of Fish Sauces Using Transient Responses and Learning Vector Quantization Algorithm	
N. Nimsuk	1582
Total Phenolic and Flavonoid Contents of Soybean Fermentation by <i>Bacillus subtilis</i> SB-MYP-1	1587
W. Samruan, P. Gasaluck and R. Oonsivilai Calibration and Accuracy Determination of a Microwave Type Sensor for Measuring Grain	138/
Flow R. Eka Putri, A. Yahya, N.M. Adam, S.A. Aziz and T.A. Ishola	1592
Saccharification of Delignified Sugarcane Bagasse for Lactic Acid Fermentation Using <i>Lactobacillus</i> sp.	
W. Jonglertjunya, N. Srimarut, N. Lukkanakul, C. Sakdaronnarong and N. Nasongkla Butanol, Ethanol and Acetone Production from Sugarcane Bagasses by Acid Hydrolysis and	1597
Fermentation Using <i>Clostridium</i> sp. W. Jonglertjunya, P. Chinwatpaiboon, H. Thambaramee and P. Prayoonyong	1602
Acid Hydrolysis from Corn Stover for Reducing Sugar J. Satarn, W. Lamamorphanth and K. Kamwilaisak	1608
Sweet Pepper Seed Inspection Using Image Processing Techniques P. Chupawa and K. Kanjanawanishkul	1614
X: Industrial Engineering	
Operation Management: Project Management in Jig and Fixture Industries T.O. Kowang, N.B. Mohd Hamel, C.S. Long and A.B. Mohd Rasli	1621
Identifying Optimum Parameter Setting for Layout Design via Experimental Design and Analysis	
S. Vitayasak and P. Pongcharoen	1626
Robustness Evaluation of Job-Shop Scheduling Based on Theory of Constraints (TOC) C. Kasemset and U. Smutkupt	1631
An Approach to Dealing with Importance Weights of Customer Needs and Customer Dissatisfaction in Quality Function Deployment Optimization D.E. Setyo Rahaju and D.R. Sari Dewi	1636
Processed Parboiled-Rice Product Development Using HoQ Technique C. Kasemset, N. Kumpong and W. Wattanutchariya	1642
Global Challenge Disaster Logistics Lessons Learned from the 2004 Tsunami in Thailand H. Gruenwald	1647

Impact of Order Splitting on Bullwhip Effect in Supply Chain: Case of Identical Lead Time at Distributors-Retailer Links K. Sirikasemsuk	1652
Cassava Transportation Planning under Uncertain Demand Using Hybrid Algorithm: Case Study of Roi Et Province T. Sujjaviriyasup and K. Pitiruek	1658
Delivery Planning of Water-Treatment Chemicals in Vendor Managed Inventory Context P. Suttipongkaset and P. Chaovalitwongse	1664
Potentials and Suggestions for the Development of High-Quality Beef Industry in Thailand D. Ubalee, S. Arunyanart and W. Sessomboon	1669
An Analysis of Ethanol Supply Chain in Thailand R. Homchalee, S. Arunyanart and W. Sessomboon	1676
A Genetic Algorithm for Minimizing Relocations at Container Yard in Container Terminal P. Sriphrabu, K. Sethanan and S. Theerakulpisut	1683
Ant Colony Optimization for Solving Container Stacking Problems P. Sriphrabu, K. Sethanan and S. Theerakulpisut	1689
A Pre-Feasibility Study of Limestone Quarry Development for Cement Industry in Cambodia	
S. Kem and S. Pumjan	1696
Establish the Regional Excellence through the Cluster Development of Small and Medium Manufacturing Industry Center with Effective and Dynamic E. Puspanantasari Putri and I. Supardi	1701
Strategic Training Approach to Improve Performance at Workplace M. Abdulrahim and A.B. Rachman	1705