

# **2019 Research, Invention, and Innovation Congress (RI2C 2019)**

**Bangkok, Thailand  
11 – 13 December 2019**



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2019 Research, Invention, and Innovation Congress (RI<sup>2</sup>C 2019)  
11-13 December 2019 at Arnoma Grand Hotel Bangkok

## Scientific Program

Day 1 : Wednesday, 11 December 2019	
13.00–16.30	Registration / Tutorial session (I – III) Room : Thip-Ubol, Subongkoj, Pathummas (3 <sup>rd</sup> floor) (I) Smart Grid “DC Microgrid: Stability Issue & Solutions” (Prof.Dr. Babak Nahid-Mobarakeh; University of Lorraine) (II) Innovative Sensors and LoRaWan Applications (Prof.Dr. Prayoot Akkaraekthalin et al.; KMUTNB) (III) Innovative Materials and Mechanics (Prof.Dr. Oh Seok Kwon; Korea Research Institute of Bioscience & Biotechnology) (Prof.Dr. Joachim Kaschta; Friedrich-Alexander-University of Erlangen-Nürnberg) (15.00–15.15 : Coffee Break)
17.30–19.30	Welcome Reception and Dinner (Room : Patamachart, 23 <sup>rd</sup> floor)

Day 2 : Thursday, 12 December 2019	
08.00–09.00	Conference Registration (3 <sup>rd</sup> floor)
09.00–09.30	Opening Session (Room : Arnoma II – III, 3 <sup>rd</sup> floor)
09.30–10.00	<b>Keynote Lecture I</b> : Prof.Dr. Ashwani K. Gupta (University of Maryland) Topic : International Collaborations with Focus on Energy and Environment
10.00–10.30	<b>Keynote Lecture II</b> : Assoc.Prof.Dr. Yu-Shen Cheng (National Yunlin University of Science and Technology) Topic : Insect based biorefinery: a promising platform for conversion of agroindustrial wastes into value-added products
10.30–11.00	<b>Coffee Break</b>
11.00–11.30	<b>Keynote Lecture III</b> : Assoc.Prof.Dr. Rapeephun Dangtungee (KMUTNB) Topic : Novel functional polymers: Anti-ant and insect polymer masterbatch
11.30–12.00	<b>Keynote Lecture IV</b> : Mrs. Kalyaporn Ungsamatkosa (Robert Bosch Automotive Technologies (Thailand) Co., Ltd) Topic : Trend in Automotive Industry and Implication to Thailand...N/A
12.00–13.00	<b>Lunch</b> (Room : Arnoma I (3 <sup>rd</sup> floor) & Mango (1 <sup>st</sup> floor))

Day 2 : Thursday, 12 December 2019			
Session: Environmental & Energy Technology (EN)			
Food Science (FS)			
Room: Arnoma III (3 <sup>rd</sup> floor)			
Time	Paper ID	Title	Authors
13.00–13.15	RI2C-0121	Carbon Footprint Analysis of Napier Pakchong 1 Grass Plantation in Prachinburi Province...N/A	Thanutyot Somjai and Chalita Suwan
13.15–13.30	RI2C-0162	Mobility of Polyethylene Glycol-Modified Urethane Acrylate (PMUA) Nanoparticles in Soils...N/A	Warapong Tungittiplakorn, Viranart Kongbua, Anyamane Tulaphan, and Kannika Kaewtawee
13.30–13.45	RI2C-0067	Investigation of morphology and photocatalytic activities of electro spun chicken feather keratin/PLA/TiO <sub>2</sub> /Clay nanofibers...N/A	Isarankura Na Ayutthaya Siroin and Wootthikanokkhan Jatuphorn
13.45–14.00	RI2C-0057	Electrochemical Oxygen Reduction Reaction Performance of Water Hyacinth Derived Porous Non-precious Electrocatalyst in Alkaline Media...N/A	Kriangsak Ketpang, Jenkamol Pratham, Punnarut Juprasat, Wararak Junla, Kittisak Wichianwat, Apichat Saejio, Chedthawut Poompipatpong, and Noppavan Chanunpanich



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14.00–14.15	RI2C-0060	Highly Active and Durable Transition Metal-Coordinated Nitrogen Doped Carbon Electrocatalyst for Oxygen Reduction Reaction in Neutral Media...N/A	Kriangsak Ketpang, Apikom Boonkitkoston, Nattawan Pitipuech, Chedthawut Poompipatpong, Jakkid Sanetuntikul and Sangaraju Shanmugam
14.15–14.30	RI2C-0028	Rapid drying of high-moisture paddy using a pneumatic dryer with corrugated-surface drying column...N/A	Chatchai Nimmol, Aswin Yodru, and Anucha Hirunwat
14.30–14.45	RI2C-0061	Input/output Linearization Control Technique for Anaerobic Digestion Reactor with Recirculation...N/A	Sura Srisuddee, Malinee Sriariyanun, Chanin Panjapornpon, and Atthasit Tawai
14.45–15.00	RI2C-0085	Performance and ethanol crossover of passive direct ethanol fuel cell stack...N/A	Panuwat Ekdharmasuit
15.00–15.15	<b>Coffee Break</b>		
15.15–15.30	RI2C-0144	Preliminary analysis of hydrogen production integrated with proton exchange membrane fuel cell...N/A	Lida Simasatitkul, Suksun Amornraksa, Natcha Wangprasert, and Thanaporn Wongjirasavat
15.30–15.45	RI2C-0122	Development of Purification Process using Electrocoagulation Technique for Biodiesel Produced via Homogeneous Catalyzed Transesterification Process of Refined Palm Oil..N/A	Rossarin Ampairojanawong, Ajalaya Boripun, Sayan Ruankon, Thanapong Suwanasri, and Tawiwat Kangsadan
15.45–16.00	RI2C-0123	Electrocoagulation with AC electrical current at low voltage for separation of crude glycerol from biodiesel product mixture...N/A	Warakorn Sakkamas, Ajalaya Boripun, Rossarin Ampairojanawong, Sayan Ruankon, Thanapong Suwanasri, and Tawiwat Kangsadan
16.00–16.15	RI2C-0154	Catalytic Cracking of Heavy Oil from Waste Plastic in Tapered Circulating Fluidized Bed Riser Reactor...N/A	Parinya Khongprom, Thanapat Whansungnoen, Permsak Pienduangsri, Waritnan Wanchan, and Sunun Limtrakul
16.15–16.30	RI2C-0170	Microwave-assisted pyrolysis of fuel oil for hydrocarbons upgrading...N/A	Suksun Amornraksa, and Thanida Sritangthong
16.30–16.45	RI2C-0031	Criteria Analysis of Food Safety using the Analytic Hierarchy Process (AHP) - A Case study of Thailand's Fresh Markets N/A	Chewaphorn Chaiyaphan, Kasin Ransikarbum
16.45–17.00	RI2C-0126	Influence of Packaging and Storage Conditions on the Quality and Shelf-life of Chewy Santol (Kraton-Yee) Candies...N/A	Phanida Renumarn1 and Natthaya Choosuk
17.00–17.15	RI2C-0108	Possible intestinal absorption enhancers from Citrus hystrix...N/A	May Phyu Thein Maw, Panadda Phattanawasin, Chanokporn Sukonpan, and Nusara Piyapolrungrroj
17.15–17.30	RI2C-0013	Resistant Starch from Mixed Flours (Banana, Jackfruit Seed and Job's Tear) and The Application in Food Product...N/A	Ratchanee Charoen, Sakaewan Tasana, Wacharin Somprasong, Sriwiang Rittisak and Wanticha Saveboworn

**Session: Innovative Materials and Mechanics (iMM) I**

Room: Pathummas (3<sup>rd</sup> floor)

Time	Paper ID	Title	Authors
13.00–13.15	RI2C-0200	Comparative Study on Cutting Force Simulation Using DEFORM 3D Software During High Speed Machining of Ti-6Al-4V...N/A	K.K Prasad, S.K. Tamang, M.Chandrasekaran
13.15–13.30	RI2C-0238	Experimental Investigation of Steel Confinement of Clustered Large-Size Stud Shear Connector in Full-Depth Precast Bridge Deck Panel...N/A	Krissachai Sriboonma and Sacharuck Pornpeerakeat



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13.30–13.45	RI2C-0202	Wrinkling Prediction of Rectangular Cup Deep Drawing Process for Aluminum Alloy Sheets by Using the Modified Yoshida Buckling Test...N/A	Tanongsak Bunyan, Suthep Yiemchaiyaphum, Sansot Panich
13.45–14.00	RI2C-0203	Effect of Blank Holder Force and Edge Radius on Joining Strength in Flat-Clinching Process...N/A	Parinya Kumma and Panuwat Soranansri
14.00–14.15	RI2C-0204	A Simplified Element-By-Element Preconditioned Conjugate Gradient Iterative Solver for LEFM Analysis...N/A	Manat Hearunyakij and Sutthisak Phongthanapanich
14.15–14.30	RI2C-0205	Implicit Formulation of Assumed Strain Quasi-Conforming Finite Element...N/A	Sacharuck Pornpeerakeat, Krissachai Sriboonma, Pasin Plodpradit and Kim Ki-Du
14.30–14.45	RI2C-0266	Effect of Cooling Rate on Microstructure of Rejuvenated Fe-Ni Based Superalloys...N/A	Kittawat Srimark, Panyawat Wangyao, and Tanaporn Rojhirunsakool
15.00–15.15	<b>Coffee Break</b>		
15.15–15.45	RI2C-0208	Real-time Process Monitoring of Laser Welding by Infrared Camera and Image Processing...N/A	Boonrit Kaewprachum and Pornsak Srisungsitthisunti
15.45–16.00	RI2C-0201	Numerical Simulation of Cutting Force in High Speed Machining of Inconel 718...N/A	S.K.Tamang, Nabam Teyi and Rinchin Tashi Tsumkhapa
16.00–16.15	RI2C-0210	Investigation of Anisotropy Effect on the Material Properties obtained from Biaxial Tests...N/A	Chalida Udomraksasakul, Thanasan Intarakumthornchai, Yingyot Aue-u-lan
16.15–16.30	RI2C-0211	Development of Barkhausen Noise Measuring System for Evaluating Steel Properties: Hardness...N/A	Jadsalid Khongpreechar, Sai-Yan Primee, Rungsinee Canyook and Nopparat Seemuang
16.30–16.45	RI2C-0212	Case Depth Evaluation of Induction Hardened Steel Using Barkhausen Noise Technique...N/A	Porawon Nitjarunkul, Sai-Yan Primee, Komkamol Chongbunwatana, and Nopparat Seemuang
16.45–17.00	RI2C-0213	Shaft Crack Detection during operation by Using Ultrasonic Technique...N/A	Saharat Kositkun, Nopparat Seemuang, Pramuk Jenkittiyon and Jirapoong Lim
17.00–17.15	RI2C-0244	Investigation of Welding Speed Parameters on Ni-Base Superalloy by Laser Welding Process...N/A	Tanaporn Rojhirunsakool and Kumpanat Sirivedin
17.15–17.30	RI2C-0132	Optimization Approach to Multi-Objective Person-Job Fit Job Assignment Problem...1	Krisada Asawarungsaengkul and Wanida Laoraksakiat

**Session: Innovative Materials and Mechanics (iMM) II**

Room: Sarocha (3<sup>rd</sup> floor)

Time	Paper ID	Title	Authors
13.00–13.15	Invited speaker I	Modified Biaxially Stretched PP for Energy Storage in Capacitors...N/A	Joachim Kaschta
13.15–13.30	Invited speaker II	Receptonics for Bionanoelectronic Nose...N/A	Oh Seok Kwon
13.30–13.45	Invited speaker III	Synthesis of Interfacing Agents for Selective Molecular Recognition: Toward High-Performance Biosensors...N/A	Chul Soon Park
13.45–14.00	RI2C-0218	Experimental Study on Heat Dissipative Ability in Recycled Thermoplastic Vulcanizate and Reclaimed Rubber Composites...N/A	Rungsima Yeetsorn, Yaowaret Maiket and Thitinun Ungtrakul
14.00–14.15	RI2C-0219	Physical and Mechanical Properties of Poly(Butylene Succinate) and Poly(Lactic Acid) under Landfill Conditions N/A	Narumon Seeponkai and Krisana Poolsawat
14.15–14.30	RI2C-0220	Antimicrobial Assay on PVDF Nanofiber Membrane...N/A	Kanokwan Kitinyom, Chonlada Suwanboon, and Noppavan Chanunpanich
14.30–14.45	RI2C-0221	Effect of Solvent Cleaning on Thermo-Mechanical and Rheological Properties of Plastic Wastes from Municipal Solid Waste (MSW)...N/A	Laongdaw Techawinyutham and Wiroj Techawinyutham
14.45–15.00	RI2C-0206	A Microscopic Numerical Simulation of Carbon Dissolution in Different Coke Shapes in the Dripping Zone of Blast Furnace...N/A	Jennarong Tungtrongpairoj



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<b>Coffee Break</b>			
15.00–15.15			
15.15–15.30	RI2C-0222	Effect of Natural Rubber Compound (NRC)/ Methyl Methacrylate (MMA) Coating on Abrasion and Hardness, Adhesive and Shear Properties for Pavement Surface...N/A	Matuphum Phutotum, Laongdaw Techawinyutham and Rapeephun Dangtungee
15.30–15.45	RI2C-0223	The Effects of Various Ratios of Hybrid Filler on Rubber Vulcanisates Properties Based on Passenger Car Tyre Tread Compounds...N/A	Chatchatree Thongsae, Pongdhorn Sae-oui and Chakrit Sirisinha
15.45–16.00	RI2C-0224	Effects of Rubber and Mould Temperatures on Solid Tyre Curing Process...N/A	Sitthichai Limrungruengrat, , Arisara Chaikittiratana, Tonkid Chantrasm, Sacharuck Pompeerakeat and Utid Suripa
16.00–16.15	RI2C-0225	Eco-Friendly Composites Derived from Natural Rubber and Wasted Materials...N/A	Chonpicha Loonpun, Arisara Chaikittiratana, Utid Suripa and Atitaya Tohsan
16.15–16.30	RI2C-0226	Influence of Temperature, Time and Crosslinking Agent on Structure and Properties of Polyurethane Gel...N/A	Pornlada Pongmuksuwan and Wanlop Harnnarongchai
16.30–16.45	RI2C-0227	Jute Fiber Reinforced Thermoplastic Composites Fabricated by Direct fiber feeding injection molding process (DFFIM) process...N/A	Prattakon Sarasook, Putinun Uawongsuwan, Anin Memon and Hiroyuki Hamada
16.45–17.00	RI2C-0228	Crystallization Behaviors of Plasticized Poly(Lactic Acid)/Microcrystalline Cellulose Composite Sheet...N/A	Suttinun Phongtamrug and Sirisart Ouajai
17.00–17.15	RI2C-0271	Characterization of a Thermo-Sensitive Injectable Hydrogel as an Iloprost Delivery System for Dental Use...N/A	Saowapa Niyomthai
<b>Special Session: Electromagnetic Waves and Its Applications</b>			
Room: Thip-Ubol (3 <sup>rd</sup> floor)			
Time	Paper ID	Title	Authors
13.00–13.15	RI2C-0155	Infrastructure Robotics Research at the University of Leeds...N/A	Viktor Doychinov, Mohamed Abdellatif, Bilal Kaddouh, Bilal Malik, George Jackson-Mills, Raul Fuentes, Anthony Cohn, Robert Richardson, Nonchanutt Chudpooti, Ian D. Robertson and Nutapong Somjit
13.15–13.30	RI2C-0157	Flexible Rectennas for Wireless Power Transfer to Wearable Sensors at 24 GHz...7	Bilal Tariq Malik, Viktor Doychinov, Syed Ali Raza Zaidi, Ian D. Robertson, Nutapong Somjit, Robert Richardson and Nonchanutt Chudpooti
13.30–13.45	RI2C-0158	Millimeter-wave Dual-Function Hollow Metal Waveguide to Microstrip Transition and Bandpass Filter based on ENZ Metamaterial...12	Binbin Hong, Lei Sun, Guo Ping Wang, Robert Richardson, Nonchanutt Chudpooti, Ian D. Robertson and Nutapong Somjit
13.45–14.00	RI2C-0160	96-GHz Complementary Split Ring Resonator for Thin Photoresist Film Thickness Characterization...17	Nonchanutt Chudpooti, Sukanya Chudpooti, Prayoot Akkaraekthalin, Ian D. Robertson and Nutapong Somjit
14.00–14.15	RI2C-0190	Moisture Content Detection System by using Microwave Sensor...21	Somporn Seewattanapon, Kittipong Tripetch, Titipong Lertwiryaprapa and Prayoot Akkaraekthalin
14.15–14.30	RI2C-0073	Comparison of Different Order Filtering Antennas...25	Ghaith Mansour, Ekasit Nugoolcharoenlap, Michael J. Lancaster and Prayoot Akkaraekthalin



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14.30–14.45	RI2C-0164	Linen Laundry Management System in Hospital by Using UHF-RFID...30	Kiadtisak Salayong, Kittisak Phaebua, Titipong Lertwiryaprapa, Akkarat Boonpoonga, Lalida Chaiyasang and Attaporn Kumjinda
14.45–15.00	RI2C-0165	Sectoral Spherical Dielectric Lens Antenna on a Reflector for Ku-band Communication...34	Sangwon Kittiwittayapong, Kittisak Phaebua, Titipong Lertwiryaprapa, Danai Torrungrueng and H.-T. Chou
15.00–15.15	<b>Coffee Break</b>		
15.15–15.30	RI2C-0021	Triple Band-Notched UWB Slot antenna Using Three Rectangular Slots...N/A	Tuanjai Archevapanich, Pongsathorn Chomtong and Prayoot Akkaraekthalin
15.30–15.45	RI2C-0148	Lowpass Filters with Non-uniform Dielectric Properties using 3D Synthetic Printed Substrates...38	Sarawuth Chaimoola, Kamonpan Kaewheang, Chonnipa Thanomdumrongsak and Amornsak Rattanawongsawat
15.45–16.00	RI2C-0130	Wideband UHF Reflector Antenna for DVB Applications...42	Pracha Osklang, Arnon Sakonkanapong, Sitthichai Dentre, Kittima Lertsakwimarn, Bancha Luadang and Chuwong Phongcharoenpanich
16.00–16.15	RI2C-0079	The indicate purifying of biodiesel with the reflection coefficient measurement of the simple microwave sensor...45	Nutdechatorn Puangngernmak and Thanarak Srisurat
16.15–16.30	RI2C-0037	Droplet Detection with Interdigitated Capacitor Sensor...49	Thanatcha Satitchantrakul, Wutthinan Jeamsaksiri and Suramate Chalermwisutkul
16.30–16.45	RI2C-0120	The Hexa-Band Antenna with Reconfigurable Pattern...53	Thanatcha Satitchantrakul
16.45–17.00	RI2C-0131	Rail Defect Detection using Matrix Pencil Method-Based Radar Target Identification...57	Pongsathorn Chomdee, Akkarat Boonpoonga and Prayoot Akkaraekthalin
<b>Session: Electrical Circuit Design and Systems</b>			
Room: Subongkoj (3 <sup>rd</sup> floor)			
<b>Time</b>	<b>Paper ID</b>	<b>Title</b>	<b>Authors</b>
13.00–13.15	RI2C-0084	High Step-Up DC-DC Push-Pull Resonant Based on low Cost half-wave Class-D Rectifier...61	C. Ekkaravarodome, A. Bilsalam, P. Tantiviwattanawongsa and P. Thounthong
13.15–13.30	RI2C-0087	DC-DC High Conversion Ratio Push-Pull Resonant Converter Based on Voltage Double Rectifier...65	C. Ekkaravarodome, A. Bilsalam, W. Pattarapongsathit, and P. Thounthong
13.30–13.45	RI2C-0072	A Single-Stage High-Power-Factor LED Driver Based on Interleaved ZCDS Class-E Rectifier...70	Thaksin Sangsuwan, Chainarin Ekkaravarodome, Satit Mangkalajarn, Surat Sukanna, Kamon Jirasereamongkul and Kohji Higuchi
13.45–14.00	RI2C-0069	Design of a Balanced Push-Pull Resonant Converter with a Voltage Doubler Class-DE Rectifier...74	Chainarin Ekkaravarodome, Surat Sukanna, Anusak Bilsalam, Songkran Nilphong, Kamon Jirasereamongkul and Kohji Higuchi
14.00–14.15	RI2C-0071	Comparative Study of Si IGBT and SiC MOSFET in Optimal Operation Class-E Inverter for Domestic Induction Cooker...78	Satit Mangkalajarn, Chainarin Ekkaravarodome, Surat Sukanna, Anusak Bilsalam, Kamon Jirasereamongkul and Kohji Higuchi



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14.15–14.30	RI2C-0135	An Active-only Grounded Capacitance Simulator...82	Montree Siripruchyanun, Jirawat Hirunporm and Krit Angkaew
14.30–14.45	RI2C-0065	Interface Circuit for Three-Wire Resistance Temperature Detector with Lead Wire Resistance Compensation...87	Tipparat Junsing
14.45–15.00	RI2C-0128	On a Design of Adjustable Passive Balancing Circuit Using PWM Technique for Li-Ion Battery...91	Supanat Apipatsakul, Manop Masomtob and Nisai Fuengwarodsakul
15.00–15.15	RI2C-0091	D-STATCOM based Voltage Compensator for a new Micro Hydro Power Generation Scheme Supplying Remote Areas...96	P. Devachandra Singh and S. Gao
<b>Session: Fuel Cell Energy Source for Electric Vehicle Applications</b>			
Room: Subongkoj (3 <sup>rd</sup> floor)			
<b>Time</b>	<b>Paper ID</b>	<b>Title</b>	<b>Authors</b>
15.15–15.30	RI2C-0178	Model Based Control of Battery/Supercapacitor Hybrid Source for Modern e-Vehicle...102	Burin Yodwong, Pongsiri Mungporn, Phatiphat Thounthong, Poom Kumam, Babak Nahid-Mobarakeh, Noureddine Takorabet, Damien Guilbert, Nicu Bizon and Chaiyut Kaewprapha
15.30–15.45	RI2C-0184	Model-Free Control of Multiphase Interleaved Boost Converter for Fuel Cell/Reformer Power Generation...109	Pongsiri Mungporn, Burin Yodwong, Phatiphat Thounthong, Poom Kumam, Babak Nahid-Mobarakeh, Noureddine Takorabet, Damien Guilbert, Nicu Bizon and Chaiyut Kaewprapha
15.45–16.00	RI2C-0175	Differential Flatness-Based Energy/Current Cascade Control for Multiphase Interleaved Boost Fuel Cell Converter...115	Warit Thammasiriroj, Pongsiri Mungporn, Burin Yodwong, Babak Nahid- Mobarakeh, Serge Pierfederici and Phatiphat Thounthong
16.00–16.15	RI2C-0049	Study of Hamiltonian Energy Control of Multiphase Interleaved Fuel Cell Boost Converter...121	Pongsiri Mungporn, Burin Yodwong, Phatiphat Thounthong, Chainarin Ekkaravarodome, Anusak Bilsalam, Babak Nahid- Mobarakeh, Serge Pierfederici, Damien Guilbert, Poom Kumam, Zahir Shah, Nicu Bizon, Piyabut Burikham, Surin Khomfoi and Chaiyut Kaewprapha
16.15–16.30	RI2C-0064	The Effect of Optimal Vehicle Velocity Trajectory and Optimal Hybrid Energy Storage on Electric Vehicle Energy Consumption...127	Waiard Saikong and Thanatchai Kulworawanichpong
16.30–16.45	RI2C-0140	Model-Based Control of Permanent-Magnet Assisted Synchronous Reluctance Motors...132	Songklod Sriprang
16.45–17.00	RI2C-0141	Model-Free Based Torque Control of Permanent Magnet Synchronous Motor Drives...138	Songklod Sriprang
17.00–17.15	RI2C-0038	Maximum Torque per Ampere and Field-weakening Controls for the High-Speed Operation of Permanent-Magnet Assisted Synchronous Reluctance Motors...144	Songklod Sriprang
17.15–17.30	RI2C-0019	Combination of Active Braking and Torque Vectoring in Electronic Stability Control for Four-Wheel Independent Drive Electric Vehicle...151	Sittichok Sittiracha, Saiprasit Koetnियom and Gridsada Phanomchoeng





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Day 3 : Friday, 13 December 2019			
Session: Food Science (FS) Applied Biotechnology (AB) Room: Arnoma III (3 <sup>rd</sup> floor)			
Time	Paper ID	Title	Authors
08.30–08.45	RI2C-0025	Utilization of egg albumen: Application and optimization of gelatin and carrageenan for pudding production via response surface methodology (RSM)...N/A	Sunee Eadmusik, Daungporn Chaiya, and Supaporn Soichuen
08.45–09.00	RI2C-0042	Effect of oatmeal as a fat replacer on physical properties and sensory acceptance of creamy salad dressing...N/A	Nutsuda Sumonsiri, Benjaporn Panjun, Supanna Naksuk, Sarisara Boonmawat, Amornrat Mukprasirt, Pattama Phasuthan
09.00–09.15	RI2C-0099	Effect of Drying on b-Carotene, a-Carotene, Lutein and Zeaxanthin Content in Vegetables and Its Application for Vegetable Seasoning...N/A	Kullamethee Piyarach, Kamnerd Nipawan, Chumphukhaw Chadapon, Suwannasit Daluwan and Rotjanapun Kunjana
09.15–09.30	RI2C-0145-0183	Nutritional quantification and shelf life analysis of non-thermal processed coconut juice...N/A	Sasithorn Kongruang, Srawut Kleesuwan
09.30–09.45	RI2C-0100	Antioxidant Activities of Centella asiatica Extract-loaded Bovine Serum Albumin Nanoparticles in Simulated Gastrointestinal System Study...N/A	Kittiya Kesornbuakao, Patteera Chanapongpisan, Malinee Sriariyanun, Ir. Lindayani and Patchanee Yasurin
09.45–10.00	RI2C-0022	Surface Characteristics of Leafy Vegetables and Their Effects on Salmonella Attachment...N/A	Chanthima Phungamgoen and Sriwiang Rittisak
10.00–10.15	RI2C-0136	Silver Nanoparticles impregnated Biocellulose Produced by Sweet Glutinous Rice fermentation with the genus Acetobacter...N/A	Duongruitai Nicomrat
10.15–10.30	RI2C-0083	Application of Gelatin derived from Waste Tilapia Scales to an Antibiotic Hydrogel Pad...N/A	Benjamaporn Wonganu
10.30–10.45	<b>Coffee Break</b>		
10.45–11.00	RI2C-0156	Analysis of microbial consortia with high cellulolytic activities for cassava pulp degradation...N/A	Raviporn Runajak, Santi Chuetor, Wawat Rodiahwati, Malinee Sriariyanun, Prapakorn Tantayotai, and Somkiat Phornphisutthimas
11.00–11.15	RI2C-0002	Profiling analysis of fatty acids and collagens obtained from sea cucumbers...N/A	Pascal Budzinski, Mananya Maimeun, Parita Mutrakulcharoen, Benjamaporn Wonganu, and Malinee Sriariyanun
11.15–11.30	RI2C-0080	Physiochemical profiles, antioxidant and antibacterial capacity of honey from stingless bee <i>Tetragonula laeviceps</i> species complex...N/A	Araya Khongkwanmueang, Arpatsorn Nuyu, Lars Straub and Jakkrawut Maitip
11.30–11.45	RI2C-0133	Improvement of Anthocyanin Stability in Butterfly Pea Flower Extract by Co-pigmentation with Catechin...N/A	Phoomjai Charurungsipong, Chairath Tangduangdee, Suksun Amornraksa, Suvaluk Asavasanti <sup>3</sup> , and Jenshinn Lin
11.45–12.00	RI2C-0149	Statistical approach of nutrient optimization for microalgae cultivation...N/A	Pichayatorn Bunkaew and Sasithorn Kongruang
12.00–12.15	RI2C-0150	Renewable Biodiesel Production from Oleaginous Yeast Biomass using Industrial Wastes...N/A	Sasithorn Kongruang, Sittiruk Roytrakul, Malinee Sriariyanun
Session: Innovative Materials and Mechanics (iMM) III Room: Pathummas (3 <sup>rd</sup> floor)			
Time	Paper ID	Title	Authors
08.30–08.45	RI2C-0230	Compressive Strength and Workability of Cement Mortar Containing Recycled Asphalt Pavement...N/A	Jirayat Suebsuk and Panupong Panpipat



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08.45–09.00	RI2C-0231	Eco-Friendly Fired Clay Tiles with Greenish and Greyish Colored Incorporating Alternative Recycled Waste Materials...N/A	Ubolrat Wangrakdiskul, Purinut Maingam and Natthakitta Piyarat
09.00–09.15	RI2C-0232	Properties of Cement Fly Ash Gravel Materials in Laboratory...N/A	Uthairith Rochanavibhata, Marupatch Jammongwong, Krissakorn Krairan, Pitthaya Jamsawang and Xiaobin Chen
09.15–09.30	RI2C-0233	The Behavior of Cement Fly Ash Gravel Column under Triaxial Compression Test...N/A	Uthairith Rochanavibhata, Marupatch Jammongwong, Wiroj Kanwiriyalert, Pitthaya Jamsawang and Xiaobin Chen
09.30–09.45	RI2C-0234	Effect of Bottom Ash on Swelling Characteristics of Expansive Clay...N/A	Bundit Adulyamet, Nunthanis Wongvatana, Pitthaya Jamsawang, Kullachai Tantayopin and Xiaobin Chen
09.45–10.00	RI2C-0235	Unconfined Compressive and Splitting Tensile Strength of Dredged Sediments Stabilized with Cement and Fly Ash...N/A	Hatairat Poorahong, Nunthanis Wongvatana, Pitthaya Jamsawang, Kamolwan Lueprasert, Kullachai Tantayopin, Xiaobin Chen
10.00–10.15	RI2C-0236	Flexural Behavior of Compacted-Cement Sand Reinforced with Geogrid...N/A	Uthairith Rochanavibhata, Marupatch Jammongwong, Supphanut Chuenjaidee, Pitthaya Jamsawang and Xiaobin Chen
10.30–10.45	<b>Coffee Break</b>		
10.45–11.00	RI2C-0237	Application of Lateritic Soils Stabilized with Para Rubber and Geopolymer as Pavement Materials...N/A	Marupatch Jammongwong, Wanlop Harnnarongchai, Chanon Dejdombom, Pitthaya Jamsawang, and Xiaobin Chen
11.00–11.15	RI2C-0253	A Novel Ceramic Backing Strip from Metakaolin-Based Geopolymer with Gas Flow Holes for Welding Application...N/A	Songphop Plaichum, Attaphon Kaewvilai, Thammaros Pantongsuk, Duangrudee Chaysuwan and Chayanee Tippayasam
11.15–11.30	RI2C-0239	Strength and Noise Reduction of Geopolymeric Material Produced from Waste Sludge...N/A	Janjit Iamchaturapatr and Keeratikan Piriyakul
11.30–11.45	RI2C-0240	Numerical Simulation and Experiment on Steel Fiber Concrete Beams...N/A	Thanh Quang Khai Lam, Thi My Dung Do, Van Thuc Ngo, Trong Chuc Nguyen and Trong Phuoc Huynh
11.45–12.00	RI2C-0241	Effect of Plastic and Tire Wastes on Marshall Properties, Density and Water Absorption of Polymer Pavement...N/A	Chanidapa Choeycharoen, Laongdaw Techawinyutham, and Rapeephun Dangtungee
12.00–13.00	<b>Lunch (Room : Arnoma I (3<sup>rd</sup> floor) &amp; Mango (1<sup>st</sup> floor))</b>		
13.00–13.15	RI2C-0242	Microstructure, Hardness, Adhesion and Corrosion Properties of Ti and TiN Films on Stainless Steel 316L...N/A	K. Wathanyu, K. Tuchinda, S. Daopiset, S. Sirivisoot and S. Surinpong
13.15–13.30	RI2C-0243	Manufacturing of the Talar Body Prosthesis by Hot Forging Process...N/A	Panuwat Soranansri, Tanaporn Rojhirunsakool, Narongsak Nithipratheep, Chackapan Ngaouwnthong, Piyapat Chuchuaiy, Kraikus Boonpradit, Chawaphon Treevisootand, Walinee Srithong, and Kumpanat Sirivedin
13.30–13.45	RI2C-0245	Development of Stress- and Strain-Based Fracture Forming Limit Curves of Sheet Aluminium-Alloy AA2024-T3 through Various Approaches...N/A	Tanakorn Jantararicha, Sansot Panich and Komkamol Chongbunwatana



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13.45–14.00	RI2C-0246	Welded Stainless Steel: Surface Oxidation, Characterization, Hardness and Corrosion Resistance...N/A	Chayanee Tippayasam, Jednupong Palomas, Panya Wiman, and Attaphon Kaewvilai
14.00–14.15	RI2C-0247	New emerging Al7075 based hybrid nanocomposite for automotive applications: a sustainability approach...N/A	Sweety Mahanta, M. Chandrasekaran and Sutanu Samanta
14.15–14.30	RI2C-0248	Development of the Fuel Briquette Compression Machine...N/A	Sakultala Wannapakhe
14.30–14.45	RI2C-0249	Effects of Preheating and Dual Shielding on Flux-Cored Arc Welded High-Strength Carbon Steel for Hardfacing Application...N/A	Chaiyanan Taengwa and Attaphon Kaewvilai
14.45–15.00	RI2C-0207	Crashworthiness investigation of multi-stage structures designed for underrun protection devices...N/A	Tongchana Thongtip and Saharat Chanthanumataporn
<b>Session: Innovative Materials and Mechanics (iMM) IV</b>			
Room: Sarocha (3 <sup>rd</sup> floor)			
<b>Time</b>	<b>Paper ID</b>	<b>Title</b>	<b>Authors</b>
08.30–08.45	RI2C-0250	Synthesis of Palladium Chloride Impregnated on Al <sub>2</sub> O <sub>3</sub> - Pillared Clay for Reduction of Nitrobenzene...N/A	Piyarat Trikitiwong and Jedsada Maliwong
08.45–09.00	RI2C-0251	Ring Opening of Epoxides Catalyzed by PdCl <sub>2</sub> Impregnated on Al <sub>2</sub> O <sub>3</sub> - Pillared Clay...N/A	Piyarat Trikitiwong and Sauwalak Wassanapadit
09.00–09.15	RI2C-0252	The Properties of 0.5BZT - 0.5BCT Piezoelectric Ceramic from Gel Casting Process by Using Ethylene Glycol Diglycidyl Ether (EGDGE) Epoxy Resin as a Gelling Agent...N/A	Tanikan Thongchai
09.15–09.30	RI2C-0209	Effect of Fiber Laser Surface Modification on the Corrosion Behavior of 316L Stainless Steel...N/A	Rachapong Tangkwampian, Pornsak Srisungsitthisunti, Siriporn Daopiset, Pruet Kowitwarangkul
09.30–09.45	RI2C-0254	Electrically Conducting Poly(Pyrrole-co-Para-Phenylenediamine) as Potentiometric Transducers in Urea Biosensor Fabrication...N/A	Walaiporn Prissanaroon-Ouajai and Anuvat Sirivat
09.45–10.00	RI2C-0255	Programmable 4D-printed Responsive Structures...N/A	Sunanta Chuayprakong, Araya Wanamonkol, Manuschaya Khayandee and Paisan Khanchaitit
10.00–10.15	RI2C-0256	Phase Inversion-Induced Rosin In situ Forming Matrix Using Various Organic Biocompatible Solvents for Periodontitis Treatment...N/A	Nutdanai Lertsuphotvanit, Jongjan Mahadlek, Sarun Tuntarawongsa and Thawatchai Phaechamud
10.15–10.30	RI2C-0257	Morphological, Thermal and Mechanical Properties of Poly(Lactic Acid)/Cellulose/ Nanoclay Composite...N/A	Sirisart Ouajai and Suttinun Phongtamrug
10.30–10.45	<b>Coffee Break</b>		
10.45–11.00	RI2C-0258	Catalytic Oxidation of Furfural to Succinic Acid in the Presence of Sulfonic Resins...N/A	Wipawan Kingkaew, Thanis Kaewwiset, Uthen Thubsuang, Chairat Siripattana and Kamchai Nuithitikul
11.00–11.15	RI2C-0259	Compatibility between Magnesium Stearate and Pharmaceutical Acidic Active Compounds/Excipients with DSC...N/A	Pornsit Chaiya and Thawatchai Phaechamud
11.15–11.30	RI2C-0260	Synthesis of Biogenic Nanosilica from Rice Husk: Using Scaling-Up Batch Reactor from Laboratory...N/A	Ravisara Chainaruprasert, and Thirawudh Pongprayoon
11.30–11.45	RI2C-0261	Emulsification of Water in Fuel Oil Emulsion by Phase Inversion...N/A	Prakorn Kittipoomwong, Karn Panasupamassadu and Monpilai Narasingha
11.45–12.00	RI2C-0262	Preliminary Ions Removal from Synthetic Iron Solution by Zeolite and Perlite via XRF Technique...N/A	Kronnika Saetan, Chaisiri Kitpaosong, Siwawit Buasuwan and Rapeephun Dangtungee
12.00–13.00	<b>Lunch (Room : Arnoma I (3<sup>rd</sup> floor) &amp; Mango (1<sup>st</sup> floor))</b>		



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13.00–13.15	RI2C-0263	Ellingham Approximation of the Formation of Oxides of Metals Constituent in Stainless Steels...N/A	Thamrongsin Siripongsakul, Panya Wiman, Phichai Saranyachot and Somrerk Chandra-ambhorn
13.15–13.30	RI2C-0264	Geometrical Construction of Auxiliary Axes in an Ellingham Diagram...N/A	Thamrongsin Siripongsakul, Panya Wiman, Phichai Saranyachot and Somrerk Chandra-ambhorn
13.30–13.45	RI2C-0265	Utilization of the Waste Chromium Oxide Rods from Thermal Spray Processes by Carbothermic Reduction...N/A	Penpisuth Thongyoug, Jennarong Tungtrongphairoj, Phichai Saranyachot, Somrerk Chandra-ambhorn
13.45–14.00	RI2C-0267	The Effects of Austempering Temperature and Time on Mechanical Properties of Ductile Cast Iron Grade FCD450...N/A	Janthira Chantarach, and Rungsinee Canyook
14.00–14.15	RI2C-0268	Effect of Double-Step Solution Treatment on Rejuvenation Heat Treated Microstructure of IN-738 Superalloy...N/A	Chuleeporn Paa-rai
14.15–14.30	RI2C-0269	High Temperature Degradation of Thermal Oxides on AISI 430 and 304 Stainless Steels by Carbon...N/A	Jennarong Tungtrongphairoj, Penpisuth Thongyoug, Phichai Saranyachot, Somrerk Chandra-ambhorn
14.30–14.45	RI2C-0270	Effect of Atmosphere on Duplex Oxide Formed on 9Cr Steel at 550 °C...N/A	Mohammad Hassan Shirani Bidabadi, Abdul Rehman, Yu Zheng, Liang Yang, Somrerk Chandra-ambhorn, and Zhi-Gang YANG

**Session: Wireless Controlling System and Related Topics**

Room: Thip-Ubol (3<sup>rd</sup> floor)

Time	Paper ID	Title	Authors
08.30–08.45	RI2C-0129	Meticulous Illumination Controller for Visual Comfort Using Wireless Sensor...156	N.Loyalakpa Meitei, Dr.R.K.Mehta and Kanan Wahengbam
08.45–09.00	RI2C-0088	Development of a Static Wireless Power Transfer System for Electric Bikes...161	Pharida Jeebklum, Kokiatt Aodsup and Chaiyut Sumpavakup
09.00–09.15	RI2C-0089	Sensor Development for Soil-Property Detection Using Near Infrared Spectroscopy...165	Phongphol Lostapornpipit, Feaveya Kheawprae and Akkarat Boonpoonga and Lakkhana Bannawat
09.15–09.30	RI2C-0052	Effects of Reader Antenna Orientation on Received Signal Strength of UHF RFID Tags for Handheld Reader Localization...170	Wutthisak Watthanapak, Alongkorn Namahoot and Suramate Chalermwisutkul
09.30–09.45	RI2C-0146	Decode-and-Forward Relaying Protocol with Optimal Degrees of Freedom for Proactively Selective Wireless Relay Networks...174	Kampol Woradit
09.45–10.00	RI2C-0081	Glass bottle bottom inspection based on image processing and deep learning...180	Wittaya Koodtalang, Thaksin Sangsuwan and Surat Sukanna
10.00–10.15	RI2C-0189	The Optimal Number of Workers for Job Rotation to Prevent Workers from Occupational Hazards...185	Krisada Asawarungsaengkul and Naritsak Tuntitippawan
10.15–10.30	RI2C-0192	Investigation of Critical Fault Clearing Time by Applying Different Excitation System Models...191	Patrik Kastinen, Nisai Fuengwarodsakul and Wijarn Wangdee

**Session: Innovative Electricals and Electronics (iEE) I**

Room: Thip-Ubol (3<sup>rd</sup> floor)

Time	Paper ID	Title	Authors
10.45–11.00	RI2C-0109	Scaling Up of CO <sub>2</sub> Sorption in DSU Fluidized Bed Reactor Based on CFD Simulation...197	Parinya Khongprom, Piyanat Soontarose, Waritnan Wanchan and Sunun Limtrakul
11.00–11.15	RI2C-0110	CFD Simulation of the Hydrodynamics in Three Phase Fluidized Bed Reactor: Effect of Particle Properties...202	Parinya Khongprom, Waritnan Wanchan, Kongpob Kamkham and Sunun Limtrakul



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11.15–11.30	RI2C-0074	Hydrogen Flow Rate Control of a Proton Exchange Membrane Electrolyzer...208	Damien Guilbert, Burin Yodwong, Wattana Kaewmanee, Matheepot Phattanasak and Melika Hinaje
11.30–11.45	RI2C-0195	A Leveling control Media Prototype in Automatic Control...214	Chanin Joochim, Supod Kaewkorn and Phongsak Keeratiwintakorn
11.45–12.00	RI2C-0196	The 9 Points Calibration Using SCARA Robot...220	Chanin Joochim, Supod Kaewkorn and Alisa Kunapinun
<b>Session: Industrial Process Investigation and Related Topics</b> Room: Thip-Ubol (3 <sup>rd</sup> floor)			
<b>Time</b>	<b>Paper ID</b>	<b>Title</b>	<b>Authors</b>
13.00–13.15	RI2C-0105	An Investigation of Noise Characteristic During End Milling Process...226	Supakorn Charoenprasisit, Nopparat Seemuang and Sansot Panich
13.15–13.30	RI2C-0176	Notifying Problems of a Machine by Using Machine Learning...231	Supod Kaewkorn, Chanin Joochim, Siraphop Prasertprasasna, Chanon Leartrussameejit, Haem Kuhataparuks and Alisa Kunapinun
13.30–13.45	RI2C-0036	Smart Quiz System for Classroom via LINEBot...237	Vitawat Sittakul
13.45–14.00	RI2C-0169	Progress in a Development of a Laser-Based Weed Control System...241	Sirinun Sirikunkitti, Kanokwan Chongcharoen, Prajuab Yoongsuntia and Amarin Ratanavis
14.00–14.15	RI2C-0041	Simulation of Queueing System for Commercial Bank in University: Case Study of Bangkok Bank at King Mongkut's University of Technology North Bangkok...245	Chanakarn Kiatarankul and Khomsan Neamprem
<b>Session: Operation Systems and Data Information Management Technology</b> Room: Arnoma II (3 <sup>rd</sup> floor)			
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08.30–08.45	RI2C-0102	Additive Manufacturing - based Healthcare 3D Model for Education: Literature Review and A Feasibility Study...249	Kasin Ransikabum, Ratana Leksomboon, Chochechai Yingviwatanapong, Tewich Wajanavisit and Natthapon Bijaphala
08.45–09.00	RI2C-0103	Fuzzy Analytic Hierarchy Process (AHP)-based Criteria Analysis for 3D Printer Selection in Additive Manufacturing...255	Peerapat Khamhong, Chochechai Yingviwatanapong and Kasin Ransikabum
09.00–09.15	RI2C-0032	Cost Optimization Model for Plant Assignment in Industrial Estate Planning...260	Niroot Wattanasang and Kasin Ransikabum
09.15–09.30	RI2C-0035	A Multi-objective Model for Ergonomic Workforce Scheduling with Bi Hazard Considerations...266	Tarit Rattanamanee and Wanida Laoraksakiat
09.30–09.45	RI2C-0005	An optimization model for product mix problem...271	Anan Butrat and Srisawat Supsomboon
09.45–10.00	RI2C-0119	Assessment of Supply Chain Reliability: Development of AHP Model for SCOR Performance and Fault Tree Analysis...275	Kittichai Athikulrat, Vichai Ruengrenganun and Sompoo Talabgaew
10.00–10.15	RI2C-0007	The Optimal Number of Reach Trucks and Order Picker Trucks in Warehouse Determining Using Simulation...279	Ananya Chayaphum, Srisawat Supsomboon and Anan Butrat
10.30–10.45	<b>Coffee Break</b>		
10.45–11.00	RI2C-0152	Method to Decrease Complexity in Engineering Design and Technical Systems...284	Kusol Pimapunsi and Pattarawit Srimuang
11.00–11.15	RI2C-0117	Development Process of Student Seats on Modified Pickup for School Transportation...289	Wisit Wiputgasemsuk, Saiprasit Koetnuyom and Chinnawit Glunrawd



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11.15–11.30	RI2C-0173	Environment Generation from Real Map to Investigate Path Planning and Obstacle Avoidance Algorithm for Electric Vehicle...295	Rapas Udomsil, Teerawat Sangpet and Temsiri Sapsaman
11.30–11.45	RI2C-0188	A Feasibility Study of Using Machines in Sauce Manufacturing: A Case Study...300	Kanyapatchara Rakharn, Srisawat Supsomboon and Athakorn Kengpol
11.45–12.00	RI2C-0111	Heuristics for Multi-Depot Inventory Routing Problem...306	Chayathach Phuaksaman and Patcharapong Penpakkol
<b>Session: Innovative Electricals and Electronics (iEE) II</b>			
Room: Arnoma II (3 <sup>rd</sup> floor)			
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13.00–13.15	RI2C-0023	Improvement of Transmission Measuring for The Robotic Wireless Control...312	Sittichai Dentre, Adisak Romputtal and Bancha Luadang
13.15–13.30	RI2C-0114	Designing and Analyzing on Thermoelectric Cooler for Turbomolecular Pump Cooling Applications...316	Athorn Vora-ud, Wassana Kasemsin, Tosawat Seetawan, Somporn Thaowankaew and Damrat Weatchapitak
13.30–13.45	RI2C-0077	Passivity-based Approach for Overhead Crane Anti-Sway Controller Design...320	Jidapa Doktian, Witthawas Pongyart and Pisit Vanichchanunt
13.45–14.00	RI2C-0026	The Instrumentation of surface uniformity Commutator control spindle automatically...324	Panee Noiying, Pisuit Janchaichanakun and Ekkamol Boonyapalanant
14.00–14.15	RI2C-0180	Design and Implementation of Passive Harmonic Filter Using Simulation Tool...329	Nattapon Panmala and Pichet Sriyanong
14.15–14.30	RI2C-0082	Performance of Methods for Testing the Ratio of Coefficients of Variation of Two Gamma Distributions...334	Wararit Panichkitkosolkul
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Room: Subongkoj (3 <sup>rd</sup> floor)			
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08.30–08.45	RI2C-0010	PM2.5 Prediction based Weather Forecast Information and Missingness Challenges: A Case Study Industrial and Metropolis Areas...341	Puttakul Sakul-Ung, Pitiporn Ruchanawet and Nataporn Thammabunwarit
08.45–09.00	RI2C-0012	Towards Privacy Framework in Software Development Projects and Applications: An Integrated Framework...346	Puttakul Sakul-Ung and Sucha Smachat
09.00–09.15	RI2C-0062	Understanding Key Enablers of Cloud Computing Adoption and Acceptance Over Time...352	Nalinpat Porrawatpreyakorn, Siranee Nuchitprasitchai, Kanchana Viriyapant, Sakchai Tangprasert and Ajchareeya Chaipunyathat
09.15–09.30	RI2C-0093	A Conceptual Model of Requirement Engineering in Cloud Project Delivery for Thai Government Organizations...358	Ajchareeya Chaipunyathat, Nalinpat Porrawatpreyakorn, Siranee Nuchitprasitchai and Kanchana Viriyapant
09.30–09.45	RI2C-0115	A Librarian-inspired Approach to Decentralised Web Search...N/A	Mario Kubek and Herwig Unger
09.45–10.00	RI2C-0118	Modeling a Hierarchical Abstraction Process on top of Co-Occurrence Graphs...365	Supaporn Simcharoen, Yanakorn Ruamsuk, Anirach Mingkhwan and Herwig Unger
10.00–10.15	RI2C-0016	A Super-Resolution Image Reconstruction using Triangulation Interpolation in Feature Extraction for automatic sign language recognition...370	Eakbodin Gedkhaw and Mahasak Ketcham
10.15–10.30	RI2C-0197	Development of Cloud Learning Management Systems for Higher Education Institutions...376	Panita Wannapiroon, Nutthapat Kaewrattanapat, Jakkrit Premsmith
10.30–10.45	<b>Coffee Break</b>		
10.45–11.00	RI2C-0033	Numerical Simulation for Fire Emergency Planning in a Home Appliances Factory...382	Wattana Chanthakhot and Kasin Ransikabum



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11.00–11.15	RI2C-0051	Elimination of Blind Spots in Tag Readable Areas for UHF RFID in/Outlet Management System...387	Chawanat Lerkbangplad, Alongkorn Namahoot and Suramate Chalermwisutkul
11.15–11.30	RI2C-0053	Path Planning for Autonomous Mobile Robot Navigation with Evolutionary Particle Swarm Optimization...392	Ittikon Thammachantuek and Mahasak Ketcham
11.30–11.45	RI2C-0066	The Prototype of Anthropomorphic Robot Arm Work Space Design for Self-reliant Patients...397	Chutiwan Boonarchatong and Mahasak Ketcham
11.45–12.00	RI2C-0139	Development of A Reconfigurable Spherical Robot III...401	Supaphon Kamon, Natthaphon Bunathuek and Pudit Laksanacharoen
12.00–13.00	<b>Lunch (Room : Arnoma I (3<sup>rd</sup> floor) &amp; Mango (1<sup>st</sup> floor))</b>		
13.00–13.15	RI2C-0076	High-Resolution Image Generation from Enlarged Image based on Interpolation Technique...N/A	Athaporn Kingboo and Maleerat Sodanil
13.15–13.30	RI2C-0137	Spatio-Temporal Seismic Data Analysis for Predicting Earthquake: Bangladesh Perspective...406	Risul Islam Rasel, Nasrin Sultana, G.M. Azharul Islam, Mahfuzul Islam and Phayung Meesad
13.30–13.45	RI2C-0142	An MQTT-based IoT Cloud Platform with Flow Design by Node-RED...411	Choopan Rattanapoka, Somphop Chanthakit, Apatsaraporn Chimchai and Amorntip Sookkeaw
13.45–14.00	RI2C-0153	An IoT System Design with Real-Time Stream Processing and Data Flow Integration...417	Somphop Chanthakit, Phongsak Keeratiwintakorn and Choopan Rattanapoka
14.00–14.15	RI2C-0075	Intelligent parking system using multiple sensor detection...422	Narongchai jindaprakai and Siranee Nuchitprasitchai
14.15–14.30	RI2C-0127	Designing of Welding Defect Samples for Data Mining in Defect Detection and Classification using 3D Geometric Scanners...426	Papatsorn Singhatham, Suthada Srigate and Sansiri Tanachutiwat
14.30–14.45	RI2C-0168	Creating subsurface defect specimens for Deep Learning Analyzing of Radiographic Weld Testing...432	Niphaporn Panya and Sansiri Tanachutiwat

**\*\* Oral Presentation 15 min (12 min presentation + 3 min Q&A) \*\***