6-7 SEPTEMBER 2018

CONFERENCE & EXHIBITION

Grand Hall, BITEC, Bangkok,Thailand

PROGRAM

10th MSAT

The 10th International Conference on Materials Science and Technology

In conjunction with

- The Annual Meeting 2018 of MRS-Thailand
- Innovative Textiles for Future Healthcare Application

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MSAT The 10th International Conference on Materials Science and Technology

September 6th-7th, 2018 BITEC, Bangkok, Thailand

PROGRAM

Day I September 6th, 2018

08:00-09:00	**Registration (2nd Floor in front of Grand Hall) and Poster Setup (GH202 room, 2nd Floor)**					
09:00-09:15	**Opening Ceremony (Grand Hall, 2nd Floor)**					
09:15-10:00	Plenary Lecture 1: 3D Printing Materials Sciences by ***Dr. Yinmin (Morris) Wang,*** *Materials Science Division, Lawrence Livermore National Laboratory, USA*					
10:00-10:45	Plenary Lecture 2: State-of-the-Art Titanium Alloys by Powder Metallurgy Process by ***Prof. Katsuyoshi Kondoh,*** *Joining and Welding Research Institute, Osaka University, Japan*					
10:45-11:00	**Break**					
Room	**GH201**	**MR221**	**MR222**	**MR223**	**MR224**	**MR225**
Session	**MRS Thailand**	**Biomedical Materials and Devices 1**	**Design & Manufacturing and Computational Science & Engineering 1**	**Materials Technology for Environment 1**	**Polymer 1**	**Ceramics 1 (Advanced and Electroceramics)**
Session Chair (s)		Dr. Danu Prommin	Dr. Somboon Otarawanna and Dr. Sorayot Chinkanjanarot	Dr. Yot Boontongkong	Dr. Atitsa Petchsuk	Dr. Pitak Laoratanakul and Asst.Prof.Dr. Oratai Jongprateep
11:00-11:15	MRS-Thailand Annual Meeting (Closed Session)	BIO-O-01 Wear Resistance of the Asian Specific Knee-Joint Prosthesis ***Kanokporn Pintobtang***	DMC-I-01 Hybrid Metal Forming Processes for Mass Customized Production ***Dr. Suwat Jirathearanat***	ENV-I-01 Metal Nanoparticle/Polymer/ Carbon Nanotube Hybrid Materials for Highly Sensitive and Selective Volatile Organic Compound Detection ***Dr. Worawut Muangrat***	POL-I-01 Functional Materials based on Biodegradable Polylactide Copolymers: Form Synthesis to Fabrication and Applications ***Assoc.Prof.Dr. Pakorn Opaprakasit***	CER-I-01 Local Structure Investigation in some Magnetic Materials Studied by Synchrotron X-Ray Absorption Spectroscopy ***Assoc.Prof.Dr. Rattikorn Yimnirun***
11:15-11:30		BIO-O-02 Design of Modular Proximal Humeral Endoprosthesis based on Thai Anatomical Data ***Kavin Karunratanakul***				
11:30-11:45		BIO-O-03 Fabrication of 3D Microstructure with Superhydrophobic and Antifouling Properties for Marine and Medical Applications ***Nithi Atthi***	DMC-O-01 Determination of Wrinkling Initiation for Aluminum Alloy Sheet based on Instability Behavior ***Channarong Yamchoang***	ENV-I-02 Chiang Rai Zero Waste : A Step-by-Step Approach toward Partnership for Sustainability ***Dr. Panet Manomaivibool***	POL-O-01 Injection Moldable Poly(lactic acid) (PLA)-Polybutylene Succinate (PBS)-Activated Carbon Composite Foams: Effects of PLA:PBS Ratios ***Kittipong Hrimchum***	CER-O-01 Phase Formation of Boron Carbide Powder Synthesized from Glutinous Rice Flour ***Kannigar Dateraksa***
11:45-12:00			DMC-O-02 Analysis and Correction of Defects for Deep Drawing Process of Stainless Sink by Use of Finite Element Simulation ***Benjaphorn Khuanngern***		POL-O-02 Electro-Spinning and Carbonisation of Lignin Fibres ***Bongkot Hararak***	CER-O-02 Study of Electrical and Magnetic Properties of Multiferroic Composite $(BiFeO_3)_X(Ba_5TbTi_3V_7O_{30})_{1-X}$ ***Hage Doley***
12:00-13:00	**Lunch (GH203 room, 2nd Floor)**					
Session	**MRS Thailand**	**Metals, Alloys & Intermetallic Compounds 1**	**Design & Manufacturing and Computational Science & Engineering 2**	**Materials Technology for Environment 2**	**Innovative Textiles for Future Healthcare Application**	**Ceramics 2 (Glass Science & Technology)**
Session Chair (s)		Dr.Wallop Ratanathavorn	Dr. Somboon Otarawanna and Dr. Sorayot Chinkanjanarot	Dr. Yot Boontongkong		Dr. Lada Punsukumtana and Dr. Anucha Wannagon
13:00-13:15	MRS-Thailand Annual Meeting	MET-I-01 Future Manufacturing Now – SLM Solutions at a glance: SLM Technology, Applications, Additive Intelligence and R&D ***Dr. Edwin Mok***	DMC-O-08 Fatigue Assessment of an Offshore Piping System by Finite Element Analysis ***Somboon Otarawanna***	ENV-O-01 Influence of Silica Supports on Photocatalytic Oxidation of Sulfur Compound and Sulfone Adsorption ***Nitipon Chekuntod***	Registration (In front of MR 224)	CER-O-03 Effect of Barium Addition on the Glass Structure of Na-Si-Al-Ca-Zn Glaze System ***Niti Yongvanich***
13:15-13:30			DMC-O-09 Investigation of the Structural Integrity of a Cryogenic Tank with Sunken Marks by Finite Element Analysis ***Somboon Otarawanna***	ENV-O-03 Enhancing the Photocatalytic Degradation of TiO_2 over Pineapple Fibers Material for Methyleneblue Removal ***Suchadee Sribenja***	TEX-I-01 Multifunctionality in Textiles using Metal-organic Frameworks ***Prof. Juan P Hinestroza***	CER-O-04 Effect of Alumina on Mechanical Properties of Glass Fiber from Basalt and Bottom Ash Mixture ***Apirat Theerpapvisetpong***
13:30-13:45		MET-O-01 Surface Smoothing by Friction Stir Forming for A5083 Aluminum Alloy Plate ***Takahiro Ohashi***	DMC-O-03 Bending Limit Curves in Strain and Stress Space for Advanced High Strength Steel Sheet ***Phimmat Kalawong***	ENV-O-04 Bamboo Char-supported Platinum Nanoparticle Electrocatalyst for the Oxygen Reduction Reaction ***Samerkhae Jongthammanurak***		CER-O-05 Effect SiO_2 Contents in TEOS-SiO_2-OTES Hybrid Coating on Glass ***Kanit Tapasa***
13:45-14:00		MET-O-02 Spheroidization of Fe-intermetallic Compounds in Al-Si Alloys by Ultrasonic Vibration ***Chakkrist Phongphisutthinan***	DMC-O-04 Influence of Pre-Stretching mode on the Forming Limit Strain and Stress Diagrams of High Strength Steel Sheet ***Korkiat Laokor***	ENV-O-05 Effect of Surfactant on Collapse in Oil Palm Wood during Drying ***Choosak Rittiphet***		CER-O-06 Study of Crystal Structure and Topography of Sintered Glass-Ceramic Produce from NBS and SLG ***Nattawat Kulrata***
14:00-14:15		MET-O-03 Isothermal Aging of Al-Ni-Sc Alloy containing Al_3Ni Microfibers and Al_3Sc Nanoprecipitates ***Chanun Suwanpreecha***	DMC-O-05 Influence of Pre-Stretching on Fracture Forming Limit Curve of Aluminum Alloys Sheet AA5052-H32 ***Taratip Chaimongkon***	ENV-O-06 Optical Transparent and Hydrophobic Properties of TEOS/OTES Hybrid Materials by Sol-Gel Processing ***Usanee Pantulap***		CER-O-07 Preparation of Lightweight Brick from Waste Glass and Lime Mud ***Piyanan Boonphayak***
14:15-14:30		MET-O-04 Synthesis of Al-Li Alloys by Hybrid Semi-Solid and Sonication Processing ***Payodhar Padhi***	DMC-I-02 CFD Simulation and Modeling of Metallurgical Processes ***Asst.Prof.Dr.-Ing. Pruet Kowitwarangkul***	ENV-O-07 Glass Batch Modification to Improve The Weathering Resistance in Soda-lime Silicate Glass ***Ekarat Meechoowas***	(14:15-15:15) TEX-I-02 Smart Textiles having Sensors and Actuators to help Human Activity ***Prof. Mutsumi Kimura***	
14:30-14:45		MET-O-05 Influence of Magnesium on Microstructures and Mechanical Properties of Cu-38Zn-1Sn-0.2Al-0.2Si Alloys ***Pemika Suksongkarm***		ENV-O-08 Mechanical Properties and Thermal Performance of Autoclaved Aerated Lightweight Concrete Wall Consisting of Phase Change Material ***Aitthi Khongthon***		
14:45-15:00	**Break**					**Break**

Session	MRS Thailand	Metals, Alloys & Intermetallic Compounds 2	Design & Manufacturing and Computational Science & Engineering 3	Materials Technology for Environment 3	Innovative Textiles for Future Healthcare Application (Cont.)	Ceramics 3 (Ceramic Materials for Energy and Environmental Applications)
Session Chair (s)		Dr. Sinthu Chanthapan	Asst.Prof.Dr.-Ing. Pruet Kowitwarangkul	Dr. Pakamard Saewong		Dr. Supawan Vichaphund and Asst.Prof.Dr. Niti Yongvanich
15:00-15:15	MRS-Thailand Annual Meeting	MET-I-02 A Microstructure Based Design for Applications of Advanced High Strength Steels ***Assoc. Prof. Dr.-Ing Vitoon Uthaisangsuk***	DMC-O-06 Ductility Improvement of the Co-28Cr-6Mo Alloy Processed by Selective Laser Melting ***Pongnarin Jiamwatthanachai***	ENV-O-09 Incorporating Black Dust into Autoclaved Aerated Concrete Wall for Heat Transfer Reduction ***Ketwadee Janyoosuk***		CER-I-02 Challenges in Application of Ceramic Materials for Sustainable Water Treatment and Wastewater Recycling ***Assoc. Prof. Dr. Chavalit Ratanatamskul***
15:15-15:30			DMC-O-07 Application of MATLAB GUI for Modeling of Residual Stress and Distortion in Arc Welded Metal ***Kittichai Sojiphan***	ENV-O-10 Influence of Type and Composition of SCM on Expansion of Mortar Bars from Alkali -Silica Reaction ***Suvimol Sujjavanich***	**Break**	
15:30-15:45		MET-O-06 Corrosion Behaviors of Ship Structural Steel in Simulated Marine Tidal Environment ***Nattapol Jaiyos***	DMC-O-10 Study Underflow Diameter, Vortex finder, Cylindrical and Conical Lengths of Hydrocyclone to achieve High Separation Sharpness ***Supachart Pakpoom***	ENV-O-11 Impact of Engine Oil's Additives on Particulate Matter's Micro- and Nanostructure using Electron Microscopy Image Analysis ***Phyo Zin Ko Ko***	**Discussion Panel** Textiles 4.0: Innovation and Market Trend in Well-being Society Panelists: ***Peerawat Thongkam*** Novatec Healthcare Co., Ltd. ***Sutee Tappong*** Thong Thai Textile Co., Ltd. ***Sirinan Thubthimthed*** Thailand Institute of Scientific and Technological Research Moderator: ***Dr. Jarika Makkoch*** Imagine Innovation Co., Ltd.	CER-O-09 Preparation of Porous Alumina Refractory Brick by Addition of Foaming Agent ***Thanakorn Wasanapiarnpong***
15:45-16:00		MET-O-07 Metallurgical Evaluation of 304H Coil for Cracking Furnace ***Siriwan Ouampan***	DMC-O-11 The Quality Improvement of Molten Aluminium Alloy in Melting and Casting Process ***Jintana Tempiamwatcharothai***			CER-O-10 Effect of Zeolite on Early Strength of Portland Cement Mortars ***Raphat Tanasalagula***
16:00-16:15		MET-O-08 Effect of Substrate-Target Distance on the Structure of TiCrN Films Deposited from Mosaic Target by Reactive DC Magnetron Sputtering ***Nirun Witit-Anun***	DMC-O-12 Determination of Internal and External Surface Areas of Atomistic Porous Carbons ***Poomiwat Phadungbut***			CER-O-11 Preparation of Lightweight Clay Brick by Additions of Plaster Mold Waste, Sodium Silicate and Foaming Agent ***Thanakorn Wasanapiarnpong***
16:15-16:30		MET-O-09 One Step Pressing-Annealing to Produce LTP MnBi Magnets ***Thanida Charoensuk***				
16:30-18:00	**Poster Session I (GH202 room, 2nd Floor)**					
18:00-20:00	**Banquet (Fahrenheit Restaurant, 1st Floor)**					

Day II — September 7th, 2018

08:00-09:15	**Registration (2nd Floor in front of Grand Hall)**
09:15-10:00	Plenary Lecture 3: Ceramics Manufacturing by Spark Plasma Sintering by ***Prof. Takashi Goto,*** Tohoku University, Japan and Wuhan University of Technology, China
10:00-10:45	Plenary Lecture 4: Next Generation Rechargeable Batteries by ***Prof. Takeshi Abe,*** Kyoto University, Japan
10:45-11:00	**Break**

Room	GH201	MR221	MR222	MR223	MR224	MR225
Session	Materials for Energy 1	Metals, Alloys & Intermetallic Compounds 3	Biomedical Materials and Devices 2	Testing and Reliability 1	Polymer 2	Ceramics 4 (Geopolymers, Cements, and Conventional Ceramics)
Session Chair (s)	Dr. Vituruch Goodwin	Dr. Dhritti Tanprayoon	Dr. Robert Molloy	Dr. Chanchana Thanachayanont	Assoc.Prof.Dr. Ittipol Jangchud	Asst.Prof.Dr. Sirithan Jiemsirilers and Dr. Charusporn Mongkolkachit
11:00-11:30	ENR-I-01 Lithium-ion Battery: Material and System Design towards High Rate Capability ***Dr. Pimpa Limthongkul***	MET-I-03 Microstructure Formation of Solder Alloys During Soldering Using Synchrotron Radiography Imaging ***Dr. Mohd Arif Anuar Mohd Salleh***	BIO-I-01 Stereo lithographic Additive Manufacturing of Bio-Ceramic Implants with Graded and Fluctuated Structures ***Prof. Soshu Kirihara***	TES-I-01 Understanding Nanostructures and Nanostructure Development using X-ray and Complementary Spectroscopic Techniques ***Prof. Lam Yeng Ming***	POL-I-02 Superior Tough Polymers: Recent Advances in Polymer Processing ***Prof.Dr.Eng. Hiroshi Ito***	CER-I-03 Processing and Properties of Ceramic Geopolymer Based Materials ***Assoc. Prof. Dr. Mohd Mustafa Al Bakri Abdullah***
11:30-11:45	ENR-O-01 Decreasing Precipitation in Biodiesel Blending with Fossil Diesel by Using Partial Hydrogenation ***Ukrit Sahapatsombut***	MET-O-10 Effects of Admixed Ni, B and C Elements on Microstructure and Property of Sintered Steels ***Bhanu Vetayanugul***	BIO-I-02 Tissue Intergrated 3DP Porous Polyethylene Implant ***Dr. Jintamai Suwanprateeb***	TES-I-02 XPS and XAS for Characterization of Carbon Materials ***Assoc.Prof.Dr. Prayoon Songsiriritthigul***	POL-O-03 Stretchable and Ultrasensitive Strain and/or Self-sensing Material Based on Carbon Nanostructures-polymer Nanocomposites ***Tejendra Kumar Gupta***	CER-O-12 Fly Ash-Based Geopolymer: Fabrication and Applications ***Patthamaporn Timakul***
11:45-12:00	ENR-O-02 Effect of SiO_2 Pore Size on Sulfur Tolerance of Metallic Catalysts used for Partial Hydrogenation of Biodiesel ***Theerapron Leung-On***	MET-O-11 Microstructure, Mechanical and Wear Properties of Sintered Fe-Mo-Si-C Alloys ***Kittikhun Ruangchai***			POL-O-04 Formation of Porous Polymer Nanostructures by Imprinting Process: Phase Separation and Foaming of PS/PVA Blend at the Nanoscale ***Paritat Muanchan***	CER-O-13 Cenospheres Separation from Lignite Fly Ash ***Sorachon Yoriya***
12:00-13:00	**Lunch (GH203 room, 2nd Floor)**					

Session	Materials for Energy 2	Metals, Alloys & Intermetallic Compounds 4	Biomedical Materials and Devices 3	Testing and Reliability 2	Polymer 3	Ceramics 5 (Novel Synthesis and Coating)
Session Chair (s)	Dr. Worawarit Kobsiriphat	Bhanu Vetayanugul	Asst.Prof.Dr. Weerachai Singhatanadgit	Dr. Bralee Chayasombat	Dr. Witchuda Daud	Dr. Kullachate Muangnapoh and Dr. Siriporn Larpkiattaworn
13:00-13:15	ENR-O-03 The Influence of Precursors on Optical Properties of Carbon Nanodots Synthesized via Hydrothermal Carbonization Technique ***Kamonwan Aup-Ngoen***	MET-O-12 Mechanical and Wear Properties of Pearlitic Ductile Iron-like Sintered Fe-Cr-Mo-Si-C Alloys ***Kittikhun Ruangchai***	BIO-O-05 Strontium Containing Sol-Gel Bioactive Glass Nanoparticles (Sr-BGNPs) for Bone Regeneration Applications ***Parichart Naruphontjirakul***	TES-I-03 Applications of Synchrotron-based X-ray Absorption Spectroscopy and Infrared Microscopy to Investigate on Advanced Functional Materials ***Dr. Pinit Kidkhunthod***	POL-O-05 Oxygen Permeability Enhancement of Commercial Polyethylene Terephthalate/ Polyethylene Laminated Film by Laser Micro-Perforation Technique; Modified Atmosphere Packaging for Ready to Eat Fresh-Cut ***Ajcharaporn Aontee***	CER-I-04 Solid-state Synthesis of NIR-reflective Black Pigment: Effect of Raw Material on Pigment's Property ***Dr. Sitthisuntorn Supothina***
13:15-13:30	ENR-O-04 Effects of Cr Doping into Mn-site on Physical and Electrochemical Properties of Li_2MnSiO_4 Cathode Materials for Li-ion Batteries ***Thanya Phraewphiphat***	MET-O-13 Influences of Cooling Rate and Carbon Content on Microstructures, Mechanical and Wear Properties of Sintered Fe-Mo-C Steels ***Monnapas Morakotjinda***	BIO-O-06 Association between Extracellular Matrix Accumulation and Oxidative Stress-induced Apoptosis in Chondrocytes Cultured on 3D-porous Scaffolds in Static versus Dynamic Cultures ***Tareerat Lertwimol***		POL-O-06 A Comparison of Microhole Formation Behavior on Polypropylene and Poly(lactic acid) Film Using CO2 Laser Irradiation ***Charinee Winotapun***	
13:30-13:45	ENR-O-05 Synthesis and Characterizations of a Family of Dual-functional Lithium Salts for Lithium-Polymer Batteries ***Priew Eiamlamai***	MET-O-14 Effect of Boron Addition and Sintering Atmosphere on Precipitation in Sintered Fe-Mo-C Steels ***Nattaya Tosangthum***	BIO-O-07 Radiation Processing of Hydrogel Sheet Dressings Incorporated with Antibacterial Properties for Wound Healing Application ***Pimpon Uttayarat***	TES-O-01 Application of Ultrasonic Inspection for Microstructure Analysis of Metals ***Kittichai Sojiphan***	POL-O-07 Enhancement of Cellular Structure and Properties of Flame Retardant Insulation Polyethylene Octene Elastomer (POE) Foam by Blending with Natural Rubber ***Karnjana Sawangpet***	CER-O-14 Double Ceramic Layer Thermal Barrier Coating (DCL-TBC) Architecture : An Overview ***Azrina Arshad***
13:45-14:00	ENR-O-06 Electrophoretic Deposition of Carbon Nanotubes onto Metal Substrates: Characterization and Electrochemical Applications ***Napapon Massa-Angkul***	MET-O-15 Thermoelectric Properties of Lead Telluride Processed by Mechanical Grinding and Hot-Pressing Technique ***Mongkol Bumrungpon***	BIO-O-08 Preparation of 3D-Printed Oligolactide-Hydroxyapatite Composite Scaffolds Loaded with Bone Morphogenetic Protein-2 for Bone Tissue Engineering ***Jitlada Sansatsadeekul***	TES-O-02 A Barkhausen Noise Measuring System for Steel Hardness Evaluation ***Nopparat Seemuang***	POL-O-08 The Stress-strain Extraction of Rubber-foam Material by using Artificial Neural Network and Genetic Algorithm ***Ekachai Ouysook***	CER-O-15 Workability and Setting Time of Superplasticizers on Alkaline-Activated Class C Fly Ash ***Khanthima Hemra***
14:00-14:15			BIO-O-04 Shear Bond Strength of Resin Cement to Saliva-contaminated Metal Alloys After Various Surface Treatments ***Atikom Surintanasarn***			
14:15-14:45	**Break & Poster Session II (GH202 room, 2nd Floor)**					

Session	Materials for Energy 3	Metals, Alloys & Intermetallic Compounds 5	Biomedical Materials and Devices 4	Testing and Reliability 3	Polymers 4	Ceramics 6 (Novel Synthesis and Coating)
Session Chair (s)	Dr. Ukrit Sahapatsombut	Bhanu Vetayanugul	Asst. Prof. Dr. Dujreutai Pongkao Kashima	Dr. Chanchana Thanachayanont	Dr. Nutthanun Suphadon	Asst.Prof.Dr. Thanakorn Wasanapiarnpong and Dr. Samunya Sanguanpak
14:45-15:00	ENR-O-07 Carbon for Anode Materials from Rice Husk and Rice Straw ***Pranuda Jivaganont***	MET-O-16 Microstructure and Property of Sintered Fe-4Ni-0.5-Mo-0.14Mn-0.22B-xC Steels ***Thanyaporn Yotkaew***	BIO-O-09 Dual-curing Polylactide for Resorbable Bone Cement ***Somruethai Channasanon***	TES-O-04 A Study of Size and Surface Measurement of Nanoparticles and Mesoporous Materials and Interlaboratory Comparison ***Bralee Chayasombat***	POL-I-03 Natural Rubber (NR) in Rail and Agriculture Applications : Rubber Rail Crossing Panels and Reinforced Porous Pipes ***Assoc.Prof.Dr. Ittipol Jangchud***	CER-I-05 Polydiacetylene/Zinc oxide Nanocomposites for Colorimetric Sensing Applications ***Assoc.Prof.Dr. Nisanart Triphol***
15:00-15:15	ENR-O-08 3,12-Bis(phenylmethylamine)-[i]-(1-phenyl-pyrrolidine-2, 5-diono)-[5]helicene: A New Semiconductor Material for Organic Electronic Applications ***Laongdao Kangkaew***	MET-O-17 Effect of Waste-Derived Calcium Sulfate Additions on the Tribological Properties of Sintered Steel-Based Material ***Chiraporn Auechalitanukul***	BIO-O-10 Multifunctional Properties of Mineral Ions Incorporated Hydroxyapatite/Chi-g-PMMA Scaffold for Bone Tissue Engineering ***Tanatsaparn Tithito***	TES-O-05 Failure Analysis of Superheat Tube 2.5Cr-1Mo in Biomass Power Plant ***Boonhlua Khwansri***		
15:15-15:30	ENR-O-09 A Novel Red Dye from [5] Helicene Derivative for Organic Light-Emitting Diode ***Waraporn Panchan***	MET-O-18 Tribological Properties of Sintered Graphite-Steel Composites Containing Lignite Bottom Ash ***Chiraporn Auechalitanukul***	BIO-O-11 Effect of pH on Resorbability of 3D Printed Hydroxyapatite ***Faungchat Thammarakcharoen***	TES-O-06 X-Ray and Computed Tomography as a Tool for Quality Assurance, Process Optimization and Material Characterization in the Field of Additive Manufacturing ***Philip Sperling***	POL-O-09 Strain-induced Crystallization of Natural Rubber/Halloysite Nanotubes Composites in the Presence of Alkanolamide-based Palm Stearin ***Nureeyah Jehsoh***	CER-O-17 Influences of Chemical Composition, Microstructure and Bandgap energy no Photocatalytic Activities of ZnO and Ag-doped ZnO by Solution Combustion Technique ***Kornkamon Meesombad***
15:30-15:45	ENR-O-10 Solution Processable Molybdenum Oxide as a Hole Transport Layer for Organic Photovoltaic Devices ***Chaiyuth Saekung***		BIO-O-12 Effect of Yttria-stabilized Zirconia Addition on Mica-based Glass-ceramic ***Sukanda Angkulpipat***		POL-O-10 Novel Thermoplastic Vulcanizates based on Polyamide-12 Blends: Influence of Modified Devulcanized Natural Rubber Gloves on Properties of the Blends ***Boripat Sripornsawat***	
15:45-16:00			BIO-O-13 Effect of Pre-reaction Glass on Strength of Glass Ionomer Cement as a Dental Filler ***Autcharaporn Srion***		POL-O-11 Influence of Filler Network Formation on De-vulcanization Efficiency of Carbon Black Filled SBR and NR ***Anuwat Worlee***	
16:00-16:30	**Closing Ceremony (Grand Hall, 2nd Floor)**					

LIST OF POSTER PRESENTATIONS

BIOMEDICAL MATERIALS AND DEVICES

BIO-P-01 **A Study of Sericin-Thunbergia Laurifollia Electrospun Fibre for Wound Healing Application**
Pattarinee KlumdoungRajamangala, University of Technology Krungthep, Thailand

BIO-P-02 **Bacterial Cellulose Microcrystal for Medical Materials: Part II**
Pornpen Siridamrong, Thailand Institute of Scientific and Technological Research, Thailand

BIO-P-03 **Influence of Thermal Treatment Temperature on Phase Formation and Bioactivity of Glass-Ceramics Based on the SiO_2-Na_2O-CaO-P_2O_5 System**
Nuttapon Pisitpipathsin, Rajamangala University of Technology Isan, Thailand

BIO-P-04 **Preparation and Evaluation of Electrospun Fibers Containing Antibiotic Tetracycline**
Manisara Phiriyawirut, King Mongkut's University of Technology Thonburi, Thailand

BIO-P-05 **Effect of Ferroelectric BCZT Materials Addition on Bioactive Behavior of 45S5/xBCZT Composites**
Nuttapon Pisitpipathsin, Rajamangala University of Technology Isan, Thailand

BIO-P-06 **Preparation of Semi-interpenetrating Polymer Network Hydrogels from Silk Sericin for Wound Healing Treatment**
Supattra Klayya, Mae Fah Luang University, Thailand

BIO-P-07 **Water Absorption and Granular Agglomeration of 3D Printed Hydroxyapatite Granules**
Faungchat Thammarakcharoen, National Metal and Materials Technology Center (MTEC), Thailand

BIO-P-08 **Effects of Surface Modification Processes on the Adhesion of Hydroxyapatite Layers Coated onto Titanium Substrates**
Benjaporn Inseemeesak, Kasetsart University, Thailand

BIO-P-09 **Development of In Situ Cross-Linking Hydrogel from Sodium Alginate/ Banana Peel Polysaccharides and Calcium Carbonate for Biomedical Applications**
Saranyou Oontawee, Thammasat University, Thailand

BIO-P-10 **Effect of Heat Treatment on Properties of Calcium Phosphate Cement**
Kannaporn Pooput, National Metal and Materials Technology Center (MTEC), Thailand

CERAMICS

CER-P-01 **Effect of ZrO_2 and MgO Addition on Structure, Mechanical and Thermal Properties of Metakaolin-Based Geopolymer Products**
Rewadee Wongmaneerung, Maejo University, Thailand

CER-P-02 **Effect of Ferric Oxide Nanoparticles Incorporation on Structure and Electrical Properties of Modified BNKT Lead-Free Ceramics**
Pharatree Jaita, Chiang Mai University, Thailand

CER-P-03 **Mechanical and Electrical Properties of BZT Modified by Barium Hexaferrite**
Supalak Manotham, Chiang Mai University, Thailand

CER-P-04 **Temperature Dependence on Mechanical, Dielectric and Electric Field-Induced Strain Response of Lead-Free BSrT-Modified BNKT Ceramics**
Pharatree Jaita, Chiang Mai University, Thailand

CER-P-05 **The Effects of Replacement Metakaolin with Diatomite in Geopolymer Ceramic Materials**
Suwanan Thammarong, Chiang Mai University, Thailand

CER-P-06 **Utilization of Lignite Ash as Raw Materials for Ceramic Tile Preparation**
Mateekul Jiarawattananon, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-07 **Influence of Mechanical Activation on the Phase Formation in the Synthesis of Cordierite from Talc and Andalusite**
Chatcharin Vairojanakit, Chulalongkorn University, Thailand

CER-P-08 **Antibacterial Activity of Silver Exchanged Zeolite: Effect of Si/Al Ratio on Zeolite Framework**
Nissapa Wattanawong, Chulalongkorn University, Thailand

CER-P-09 **Characteristic and Preparation of TiO_2/PVP Nanofiber using Electrospinning Technique**
Tawat Soitong, Maejo University, Thailand

CER-P-10 **Mechanical and Electrical Properties of La Modified $Bi_{0.5}(Na_{0.4}K_{0.1})(Ti_{0.98}Zr_{0.02})O_3$ Ceramics**
Pichitchai Butnoi, Chiang Mai University, Thailand

CER-P-11 **Effects of Bituminous Coal Ash Addition in Pottery Products**
Yannawut Wonghom, Chulalongkorn University, Thailand

CER-P-12 **Reducing Water Absorption of Fiber-Cement Composites for Exterior Applications by Crystal Modification Method**
Parinya Chakartnarodom, Kasetsart University, Thailand

CER-P-13 **Effect of Pore Formers on Anode Pore Structure and Electrochemical Performance of Solid Oxide Fuel Cell**
Nutthita Chuankrerkkul, Metallurgy and Materials Science Research Institute, Thailand

CER-P-14 **Fabrication of $Li0.06(K_{0.5},Na_{0.5})_{0.94}NbO_3$ Nanofibers by Electrospinning Technique**
Supattra Wongsaenmai, Maejo University, Thailand

CER-P-15 **Influence of Sintering Temperature on Electrical Properties of Lead-Free $Ba_{0.93}Ca_{0.04}La_{0.03}Ti_{0.9}Sn_{0.1}O_3$ Ceramics**
Nuttapaphat Akkaramontrekun, Rajamangala University of Technology Isan, Thailand

CER-P-16 **Synthesis and Characterization of (Cr, Sb)-co-doped TiO_2 Orange Pigment with High NIR Reflectance**
Mantana Suwan, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-17 **Synthesis and Textural Properties of High Surface Area Mesoporous MCM – 41**
Punchaluck Sirinwaranon, Chulalongkorn University, Thailand

CER-P-18 **Effects of SnO_2-SiO_2-MgO-Bi_2O_3-Y_2O_3 Additions on Liquid Phase Sintering Silicon Nitride**
Sasijuta Wattanarach, Chulalongkorn University, Thailand

CER-P-19 **Conversion of Coal Fly Ash to Zeolite X: Alkaline Fusion Followed by Hydrothermal Method**
Panida Wimuktiwan, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-20 **Synthesis and Characterization of SiO_2 Nanoparticles Via Sol-gel Process for Latent Fingerprints Detection Applications**
Suttikan Chaikul, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-21 **Effect of Alumina Addition on Rheological Behavior of Shear Thickening Fluid**
Natnicha Nuampakdee, Chulalongkorn University, Thailand

CER-P-22 **Influence of Pattern and Frequency of Mechanical Force on Electrical Output Power of Piezoelectric Circular Diaphragm**
Muangjai Unruan, Rajamangala University of Technology Isan, Thailand

CER-P-23 **Synthesis and Thermal Properties of C3AH6 Cement Hydrate Derived from C12A7 Cement**
Chaiwat Phrompet, King Mongkut's Institute of Technology Ladkrabang, Thailand

CER-P-24 **Photocatalytic Activities of $Sr_XCa_{(1-X)}TiO_3$ (x=0, 0.25, 0.5, 0.75 and 1) Powders Synthesized by Solution Combustion Technique**
Nicha Sato, Kasetsart University, Thailand

CER-P-25 **A Prototype of Rubber Energy Harvesting Floor**
Sujitra Unruan, Rajamangala University of Technology Isan, Thailand

CER-P-26 **Characterization and Properties of Lampang Kaolinite Clay for Standard Clay**
Soravich Mulinta, Lampang Rajabhat University, Thailand

CER-P-27 **Effects of Firing Temperature of Red Clay and Sponge Waste on Physical Properties for Plant Materials**
Sukanya Pukpobsuk, Lampang Rajabhat University, Thailand

CER-P-28 **The Preparation of Bone China Body from Pig Bone Ash, Lampang Kaolinite and Fly Ash**
Apinan Khankhom, Lampang Rajabhat University, Thailand

CER-P-29 **Effect of Binder Content on the Slip Rheology and Green Properties of Slip Cast Alumina**
Kritkaew Somton, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-30 **Use of Waterglass from Rice Husk and Bagasse Ashes in the Preparation of Fly Ash Based Geopolymer**
Khemmakorn Gomonsirisuk, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-31 **The Study and Development of High Porous Geopolymer Concrete from Industrial Wastes for Energy Saving Building**
Suteerapun Punler, National Metal and Materials Technology Center (MTEC), Thailand

CER-P-32 **Physical Properties and Thermal Conductivity of Soil - Cement Block Geopolymer**
Pongsak Jittabut, Nakhon Ratchasima Rajabhat University, Thailand

DESIGN AND MANUFACTURING + COMPUTATIONAL SCIENCE AND ENGINEERING

DMC-P-01 **Numerical-Experimental Model and Polynomial Regression Method for Interpretation of G-BHN Relation of Kraft-based Fibrous Composites Evaluated by using Brinell Analysis**
Rakdiaw Muangma, Chiang Rai Rajabhat University, Thailand

MATERIALS FOR ENERGY

ENR-P-04 **Synthesis and Characterizations of Y-doped $BaCeO_3$ Ceramic for Use as Solid Electrolyte in Solid Oxide Fuel Cell**
Wiset Somkhuan, Chiang Mai University, Thailand

ENR-P-05 **Physical and Electrical Property of TiO_2 Nanotube Arrays for Supercapacitors**
Somwan Chumphongphan, Mae Fah Luang University, Thailand

ENR-P-07 **Phase Transformation in Sputtered-vanadium Oxide Films under Post-annealing Heat Treatment**
S.Tipawan Khlayboonme, King Mongkut's Institute of Technology Ladkrabang, Thailand

ENR-P-08 **Electrochemical Behavior of the Zinc Anode in Various Conditional Environments**
Sawitta Triamthaisong, Khon Kaen University, Thailand

ENR-P-09 **The Interconnected Open-channel Highly Porous Carbon Material Derived from Pineapple Leaf Fibers as a Sustainable Electrode Material for Electrochemical Energy Storage Devices**
Supacharee Roddecha, Kasetsart University, Thailand

ENR-P-11 **Improvement of the Electrical Properties in $Ba(Ti_{0.92}Sn_{0.08})O_3$ Lead-Free Ceramics by Ca Addition and Sintering Profile**
Pornsuda Bomlai, Prince of Songkla University, Thailand

ENR-P-12 **Activated Carbon for EDLC Electrodes from Palm Empty Fruit Bunch**
Yatika Somrang, National Metal and Materials Technology Center (MTEC), Thailand

ENR-P-13 **Influence of Gd on Water-Gas Shift Performance of Ni/CeO_2 Catalyst**
Pannipa Tepamatr, Thammasat University, Thailand

MATERIALS TECHNOLOGY FOR ENVIRONMENT

ENV-P-01 **The Effects of Biochar Additive on the Properties of Geopolymer Materials**
Phitchayanin Khamlue, Chiang Mai University, Thailand

ENV-P-02 **Preparation and Characterization of Ceramic Waste-Based Geopolymer Ceramic Composites for Substrate Culture Application**
Kannikar Kaewapai, Chiang Mai University, Thailand

ENV-P-03 **Surface Morphologies and Durability on Water Contact Angle of Titanium Dioxide Nanoparticle Thin Films**
Buppachat Toboonsung, Nakhon Ratchasima Rajabhat University, Thailand

ENV-P-04 **Ammonia Adsorption using Activated Carbon Derived from Nipa Palm Husk Via Chemical Activation**
Chaichana Piyamawadee, Chulalongkorn University, Thailand

ENV-P-05 **Room Temperature Gas Sensor Based on Helical Carbon Coils**
Udomdej Pakdee, Rajamangala University of Technology Krungthep, Thailand

ENV-P-06 **Synthesis of Modified Chitosan with Thiamine Hydrochloride as the Adsorbent for Calcium (II) Ion Removal**
Ratana Sananmuang, Naresuan University, Thailand

ENV-P-07 **Removal of Chromium(VI) ion in Solution by Chitosan-Polyaniline Composited Membrane and Coating on Plaster Rod as Adsorbed Electrode**
Ratana Sananmuang, Naresuan University, Thailand

ENV-P-08 **Effect of Sintering Temperature on Mechanical and Electrical Properties of Lead-free $Bi_{0.5}(Na_{0.4}K_{0.1})Ti_{0.98}Zr_{0.02}O_3$ Piezoelectric Ceramics**
Pichitchai Butnoi, Chiang Mai University, Thailand

ENV-P-09 **Utilization of Aluminum Buffing Dust as a Raw Material for the Production of Mullite**
Nuntaporn Kongkajun, Thammasat University, Thailand

ENV-P-10 **Physical and Thermal Properties of Cement Board made from Waste Paper and Rice Straw**
Watcharapong Wongkeo, Nakhon Ratchasima Rajabhat University, Thailand

ENV-P-11 **Photoelectrocatalytic and Ultrasonic-assisted for Organic Dye Degradation using Zinc Oxide (ZnO) Electrode**
Chirarat Lunkham, Rajamangala University of Technology Thanyaburi, Thailand

ENV-P-12 **Preparation and Characterization of Polyurethane Sponge Decorated with Reduced Graphene Oxide for Oil Removal**
Natcha Jirasuttisarn, King Mongkut's Institute of Technology Ladkrabang, Thailand

ENV-P-13 **Strength Improvement of High-Yield Pulp Fibers from Jute Using Alkaline-Oxygen Treatment**
Jatuporn Kongcrup, Kasetsart University, Thailand

ENV-P-14 **Chemical Composition and Morphological Properties of Oil Palm Fronds and Its Application in the Production of NSSC Pulp for Reinforcing Corrugating Medium Paper**
Wiroj Savangsrisutikun, Kasetsart University, Thailand

ENV-P-15 **Effect of Basalt Addition and Curing Condition on the Strength Development of Geopolymer**
Pimpun Henpraserttae, National Metal and Materials Technology Center (MTEC), Thailand

ENV-P-16 **Effects of the Chemical Treatment on Coal Bottom Ash for the Utilization in Fiber- Reinforced Cement Composites**
Passakorn Sonprasarn, Kasetsart University, Thailand

ENV-P-17 **The Influences of Chemical Treatment on Recycled Rejected Fiber Cement Used as Fillers in the Fiber Cement Products**
Peerapat Pahusuwanno, Kasetsart University, Thailand

ENV-P-18 **Hydrophobic and Oleophilic Filter Paper for Oil/Water Separation**
Sunisa Jindasuwan, King Mongkut's University of Technology North Bangkok, Thailand

METALS, ALLOYS AND INTERMETALLIC COMPOUNDS

MET-P-01 **The Corrosion Resistance of CoCrFeNi High Entropy Alloys in Chloride Solution**
Piyanut Muangtong, University of Sheffield, United Kingdom

MET-P-02 **Porous Copper Fabrication Using Powder Metallurgy Routes**
Shaiful Anwar Ismail, University of Sheffield, United Kingdom

MET-P-03 **Structure and Morphology Study of Very Thin TiCrN Films Deposited by Unbalanced Magnetron Co-sputtering**
Chutima Paksunchai, Rajamangala University of Technology Krungthep, Thailand

MET-P-05 **Effect of Heat Input in Welding on the Size and Quantities of Titanium Carbonitride Ti(C,N) for Heat Affected Zone in Stainless Steel Grade AISI 321**
Titinan Methong, King Mongkut's University of Technology Thonburi, Thailand

MET-P-06 **Effects of Heat Treatment and Composition on Ball-Milled MnBi and MnBi/Co Magnets**
Thanida Charoensuk, Walailak University, Thailand

MET-P-07 **Effect of Ethanol on Hydrophilicity of the Anodized Films Performed by Two-Step Anodization at Low Current Density**
Phanawan Whangdee, Rajamangala University of Technology Isan, Thailand

MET-P-08 **Structure and Oxidation Behavior CrN Thin Films Deposited Using DC Reactive Magnetron Sputtering**
Adisorn Buranawong, Burapha University, Thailand

MET-P-09 **Effect of Microstructure on the Low Temperature Toughness of Low Carbon Steel for Spent Nuclear Fuel Storage Cask**
Jehyuk Oh, Korea Institute of Industrial Technology(KITECH), South Korea

MET-P-10 **Comparision of Wear Behavior of Commercial Aluminium and Aluminium - Alumina Metal Matrix Nano Composites in Dry Condition**
Payodhar Padhi, Konark Institute of Science and Technology, India

MET-P-11 **Impact of Oil Additive Characteristics on Biofuel Engine Wear using Electron Microscopy and Laser Diffraction Spectroscopy**
Panyakorn Rungsritanapaisan, King Mongkut's Institute of Technology Ladkrabang, Thailand

MET-P-12 **Microstructure, Mechanical and Wear Properties of Sintered Molybdenum-Containing Steels Modified by Nickel Addition**
Pongsak Wila, National Metal and Materials Technology Center (MTEC), Thailand

MET-P-13 **Design of Experiment for Studying Grain Size of Alpha Aluminum by varying Pouring Temperature and Plate Length**
Suteerapun Punlert, National Metal and Materials Technology Center (MTEC), Thailand

MET-P-15 **Equal Channel Angular Pressing of a Sprayed Formed Al-Cu-Li Alloy**
Chaiyasit Banjongprasert, Chiang Mai University, Thailand

MET-P-16 **Optimization of Hardness of TiAlN Coating using the Taguchi Method**
Kirati Waree, National Metal and Materials Technology Center (MTEC), Thailan

POLYMERS

POL-P-01 **Activated Carbon Loaded Lignocellulosic Fibers by Pulp Refining Process for Dye and Metal Ion Absorbing Paper**
Suteera Witayakran, Kasetsart University, Thailand

POL-P-03 **Use of Steam Explosion as a Green Alternative Method to Prepare Pulp from Pineapple Leaves**
Supachok Tanpichai, King Mongkut's University of Technology Thonburi, Thailand

POL-P-05 **Cellulose/Activated Carbon Biocomposite Film from Sisal Fiber for Dye Removal**
Noppon Somsesta, Chulalongkorn University, Thailand

POL-P-06 **Isolation of Sugarcane Bagasse Nanofibrils from Agricultural Waste Using an Environmentally Friendly Mechanical Treatment**
Intatch Hongrattanavichit, Chulalongkorn University, Thailand

POL-P-07 **Poly(Butylene Succinate) and Recycled Poly(Ethylene Terephthalate) Blends adding GMA as Compatibilizer: Mechanical Properties and Chemical Resistance to Household Chemicals**
Nattakarn Hongsriphan, Silpakorn University - Sanamchandra Palace Campus, Thailand

POL-P-08 **Preparation and Properties of Composite Films From Poly(Butylene Succinate), Poly(Butylene Adipate-Co-Tere phthalate) and Zeolite**
Nattakarn Hongsriphan, Silpakorn University - Sanamchandra Palace Campus, Thailand

POL-P-09 **Preparation and Characterization of Siloxane Modified Polyacrylate**
Weepol Pramualkijja, Chulalongkorn University, Thailand

POL-P-10 **Facile Preparation of Cellulose II Nanofibers Using NaOH/Urea-assisted Pretreatment**
Kraiwit Pakutsah, Chulalongkorn University, Thailand

POL-P-11 **Influence of Pulverized Citrus Fibers on Disintegration of Citrus Fiber/Tapioca Pregel Starch Composite Tablets**
Chaiyaporn Pomchaitaward, National Metal and Materials Technology Center (MTEC), Thailand

POL-P-12 **A Case Study of Recycled Poly(Lactic Acid) Contaminated With Petroleum-based Thermoplastics Used In Packaging Application**
Pajaera Patanathabutr, Silpakorn University - Sanamchandra Palace Campus, Thailand

POL-P-13 **Effect of β-Cyclodextrin on Antifungal, Release Control of Sweet Basil Oil and Mechanical Properties of LDPE Film Incorporated with Essential Oil**
Poonsub Threepopnatkul, Silpakorn University, Thailand

POL-P-14 **Effect of Calcium Ion Concentration on Rheological Properties and Large Amplitude Oscillatory Shear Behavior of Mixed Gels of Low Acyl Gellan Gum and Konjac Glucomanan/Xanthan Gum**
Thidarat Makmoon, National Metal and Materials Technology Center (MTEC), Thailand

POL-P-15 **Effect of Different Organoclay from Different Master Batch on Crystallization of PLA/EVA Blends**
Chanchai Thongpin, Silpakorn University - Sanamchandra Palace Campus, Thailand

POL-P-16 **Preparation and Property Testing of Flame Retardant Soundproofing Sheets from Used Peritoneal Dialysis Solution Containers**
Boonnak Sukhummek, King Mongkut's University of Technology Thonburi, Thailand

POL-P-17 **Structural Modification of Styrene Maleic Anhydride Copolymers for Plant Bioactive Compound Extraction**
Patchara Punyamoonwongsa, Mae Fah Luang University, Thailand

POL-P-18 **Reclaimed Rubber as a Cost Reduction Filler in Natural Rubber/Polypropylene Blend: Effect of Reclaimed Rubber Contents**
Anoma Thitithammawong, Prince of Songkla University, Thailand

POL-P-19 **Preparation and Characterization of Gelatin/Maleic Anhydride Grafted Ethylene Vinyl Acetate Copolymer Film**
Sudsiri Hemsri, Silpakorn University - Sanamchandra Palace Campus, Thailand

POL-P-20 **The Effect of Poly(butylene adipate-co-terephthalate) on Crystallization Behavior and Morphology of Poly (3-hydroxybutyrate-co-3-hydroxyvalerate)**
Sitthi Duangphet, Mae Fah Luang University, Thailand

POL-P-21 **Effect of light-aging on Intelligent pH Indicator Film Composed of Gelatin and Extracted Anthocyanin from Butterfly Pea**
Pornnapa Kasemsiri, Khon Kaen University, Thailand

POL-P-22 **Hydroxylated Natural Rubber Effect on Crystallinity and Mechanical Properties of PLA**
Nutthapong Triampanichkul, King Mongkut's University of Technology Thonburi, Thailand

POL-P-23 **Dynamic Vulcanization of NR/PCL Blends: Effect of Rotor Speed on Morphology, Tensile Properties and Tension Set**
Theeraphat Tanprasert, Silpakorn University, Thailand

POL-P-24 **Effect of Alternative Fillers on the Properties of Rubber Compounds**
Wasana Khongwong, Thailand Institute of Scientific and Technological Research, Thailand

POL-P-26 **Effect of Poly(vinyl alcohol) on Thermoelectric Properties of Sodium Cobalt Oxide**
Chutima Oopathump, Rajamangala University of Technology Krungthep, Thailand

TESTING AND RELIABILITY

TES-P-01 **The Effects of Ion Implantation on Crystal Structure, Optical and Mechanical Properties of Natural Spinel**
Chanapa Pantong, Thammasat University, Thailand

TES-P-02 **Measurement of Potassium Ferricyanide Concentration in Electrolyte Solution using Cyclic Voltammetry by Frequency Domain Approach**
Bhanupol Klongratog, King Mongkut's Institute of Technology Ladkrabang, Thailand

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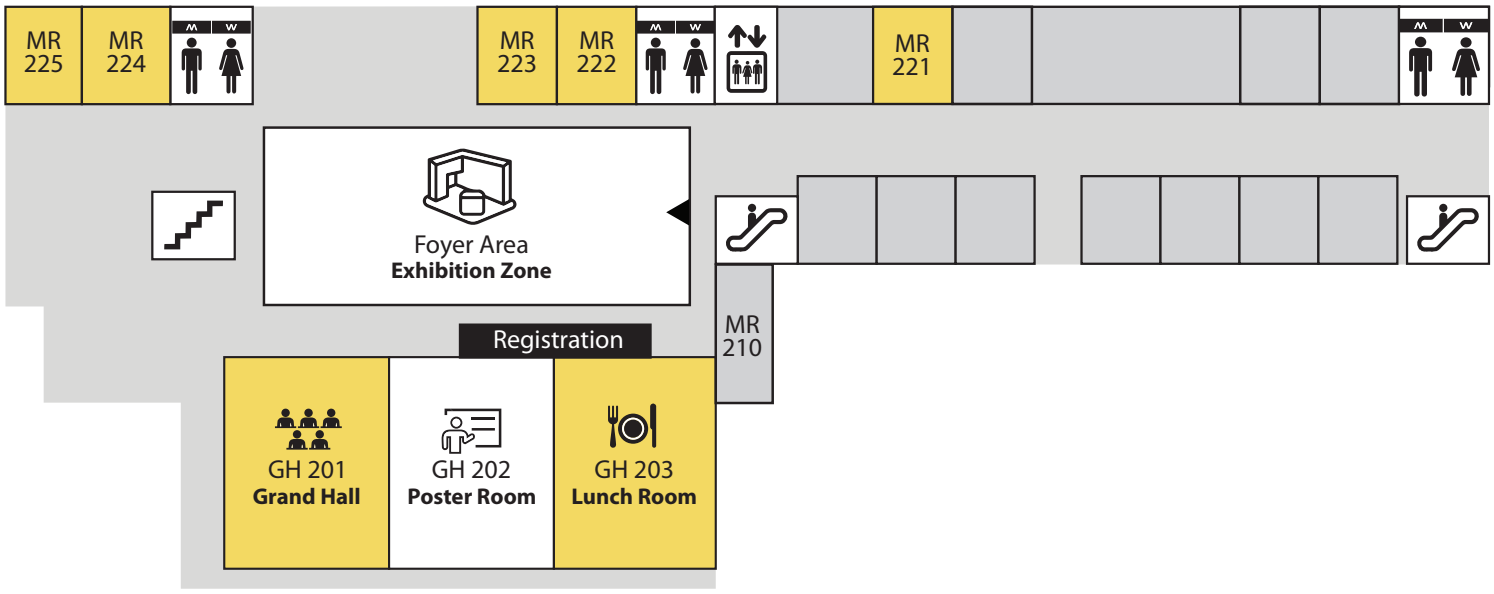
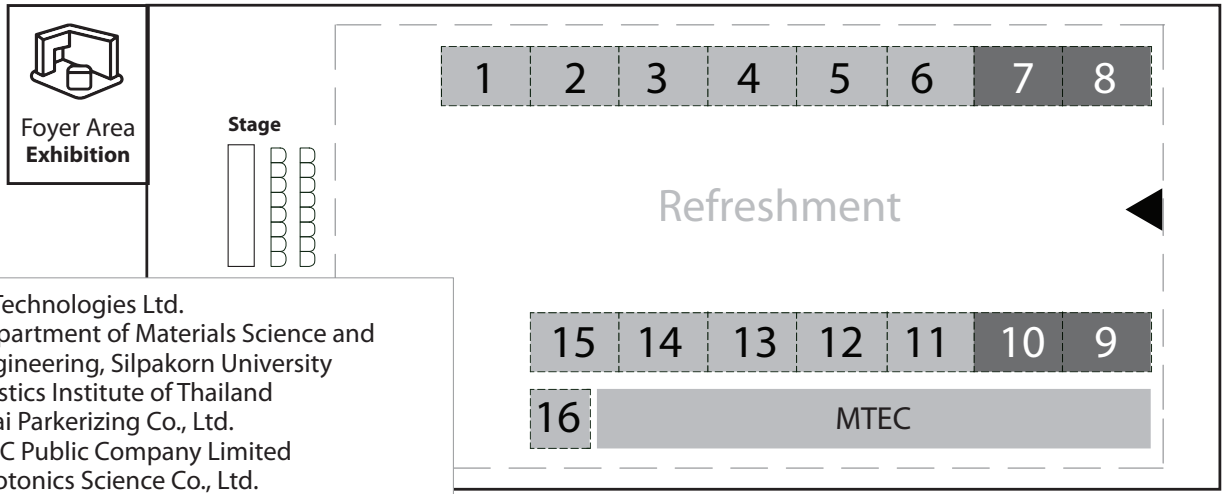
Floor Plan

2nd Floor



GH 202 Poster Room

- **BIO** Biomedical Materials and Devices [BIO-P-01 to BIO-P-10]
- **CER** Ceramics [CER-P-01 to CER-P-32]
- **DMC** Design and Manufacturing + Computational Science and Engineering [DMC-P-01]
- **ENR** Materials for Energy [ENR-P-04 to ENR-P-14]
- **ENV** Materials Technology for Environment [ENV-P-01 to ENV-P-18]
- **MET** Metals, Alloys and Intermetallic Compounds [MET-P-01 to MET-P-16]
- **POL** Polymers [POL-P-01 to POL-P-26]
- **TES** Testing and Reliability [TES-P-01 to TES-P-02]



1	RI Technologies Ltd.
2 – 4	Department of Materials Science and Engineering, Silpakorn University
5	Plastics Institute of Thailand
6	Thai Parkerizing Co., Ltd.
7 – 8	IRPC Public Company Limited
9 – 10	Photonics Science Co., Ltd.
11	Metallurgy and Materials Science Research Institute, Chulalongkorn University
12	Materials Research Society of Thailand
13	Adtech Service Automation Co., Ltd.
14	Kinetics Corporation Ltd.
15	Bara Scientific Co., Ltd.
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