

STEMa2022

3rd International
Conference on Science
and Technology of
Emerging Materials

4 - 6

August 2022

Pattaya, THAILAND

Book of Abstracts



Asst.Prof.Dr. Wanichaya Mekprasart
Dr. Khattiya Chalapat

College of Materials Innovation and Technology, KMITL
College of Materials Innovation and Technology, KMITL

Message from the President of King Mongkut's Institute of Technology Ladkrabang (KMITL)

On behalf of King Mongkut's Institute of Technology Ladkrabang (KMITL), I would like to express a warm welcome to **the International Conference on Science and Technology of Emerging Materials 2022 (STEMa 2022)**. This conference is the 3rd STEMa conference that was postponed from the year 2020 due to the COVID-19 pandemic. For this year, STEMa conference is back onsite and will be held on 4 – 6 August at the Holiday Inn, Pattaya with COVID-19 prevention measures. This conference provides an academic forum for materials science, nanotechnology, and engineering community. It serves as an opportunity for Thai and oversea researchers, lecturers, students, and young scientists as well as those who are interested in material science to discuss and exchange scientific progress and also to develop and strengthen the collaboration network among the research community.

I would like to give special thanks to the organizers and to all speakers and participants. From the success of the previous STEMa conferences, I wish high success to the STEMa 2022 and sincerely hope that this event will provide an inspiring experience and benefit to all participants.

Sincerely yours,



Associate Professor Dr. Komsan Maleesee
President (Acting)
King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand



Associate Professor Dr. Komsan Maleesee
The President (Acting) of King Mongkut's Institute of Technology Ladkrabang (KMITL)

Message from the Dean of College of Materials Innovation and Technology, King Mongkut's Institute of Technology Ladkrabang (KMITL)

It is my honor to welcome you to the International Conference on Science and Technology of Emerging Materials (STEMa2022), which is held on August 4 – 6, 2022 at Holiday Inn, Pattaya, Thailand. This is our 3rd international conference after STEMa2018. The STEMa conference is devoted to the advancement of scientific research and communication of materials science, nanotechnology, engineering, and other related fields. This conference is for the scientists, scholars, engineers, and students from universities, research institutes, and industries to present ongoing research activities. This allows for the free exchange of ideas and challenges among the conference participants.

On behalf of the organizing committee, we would like to welcome participants from all over the country and worldwide to participate in STEMa2022. We are looking forward to meeting you at the conference.

Sincerely yours,



Assistant Professor Dr. Wipoo Sriseubsai
Dean of College of Materials Innovation and Technology,
King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand



Assistant Professor Dr. Wipoo Sriseubsai
The Dean of College of Materials Innovation and Technology,
King Mongkut's Institute of Technology Ladkrabang (KMITL), Thailand

Overview:

International Conference on Science and Technology of Emerging Materials 2022 (STEMa2022) will be held at Holiday Inn, Pattaya, Thailand, during August 4-6, 2022. The STEMa2022 conference is organized by College of Materials Innovation and Technology, King Mongkut's Institute of Technology Ladkrabang (KMITL). The conference will focus on current developing material science and engineering.

Key Topics:

- Advanced Functional Materials (AMF)
- Biomaterials and Carbon-based Materials (BCM)
- Computational Materials (COM)
- Energy and Environment Materials (EEM)
- Materials Fabrication, Characterisation and Manufacturing (MFM)
- Materials for Health Science (MHS)
- Nano-Materials and Applications (NMA)
- Optical and Electronic Materials (OEM)
- Sensors, Sensing Materials and Related Devices (SSM)
- Sensors, Sensing Materials and Related Devices (SSB)

Venue:

Holiday Inn, Pattaya, Thailand

Oral Presentation:

51

Poster Presentation:

52

Organizer:

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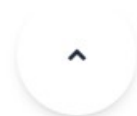
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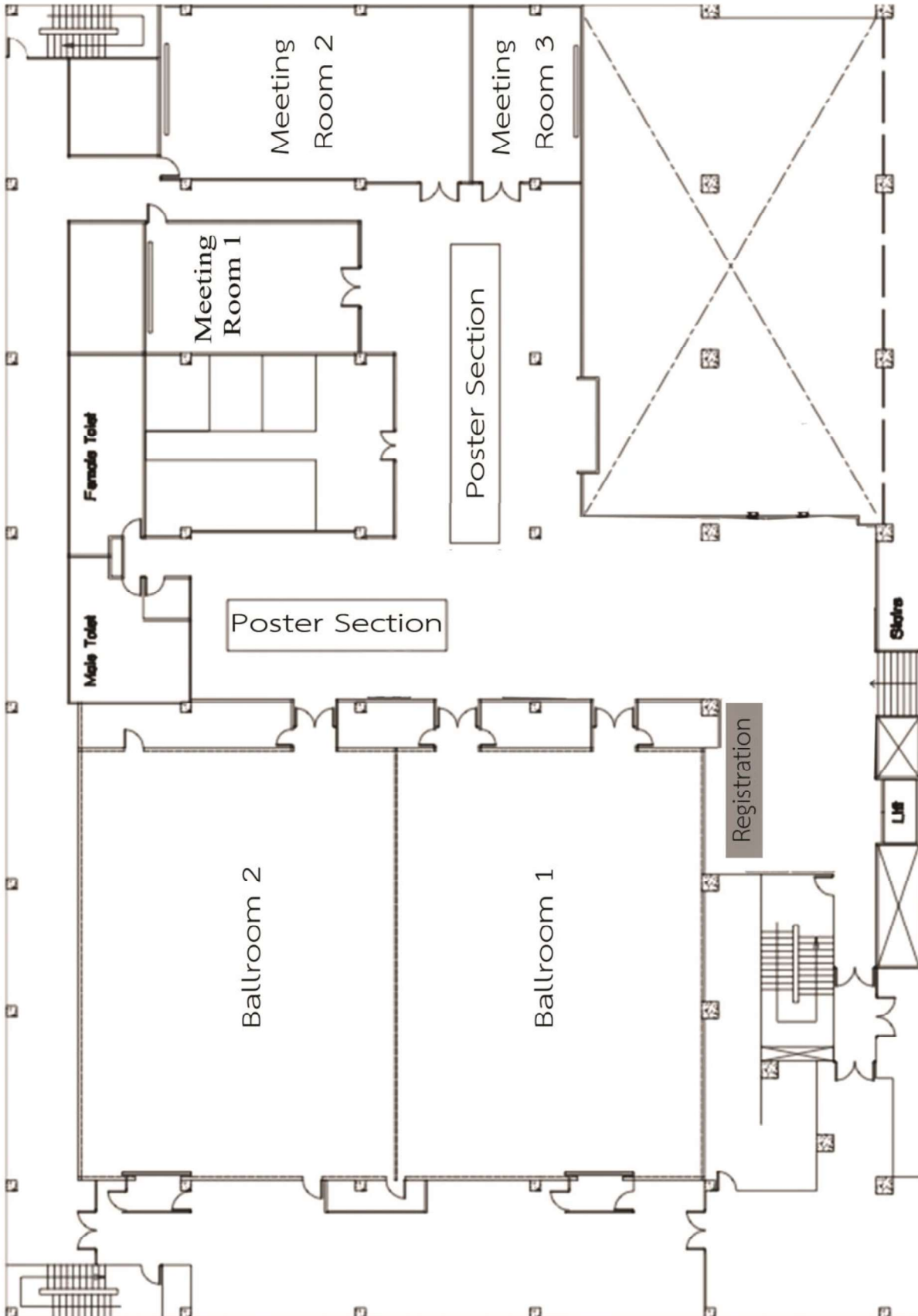
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Floorplan:



Thursday, 4 August 2022

Time	Activity
14.00-18.30	Registration

Friday, 5 August 2022

Time	Activity at Ballroom 1 and 2
08:30-09:10	Registration
09:10-09:40	Welcome and Conference Opening/ Group photo
09:40-10:00	Coffee Break
10:00-10:45	<p>Keynote Presentation I (Online) by Prof. Dr. Morinobu Endo (Shinshu University, Japan) “ Carbon Nanotubes: Mass Production and Applications for Sustainability”</p>
10:45-11:30	<p>Keynote Presentation II by Dr. Adisorn Tuantranont (National Science and Technology Development Agency, Thailand) “ Graphene Technology for Energy Storage Devices”</p>
11:30-12:00	Special Talks
12:00-13:00	Lunch

Friday, 5 August 2022 (P.1)

Time	Ballroom 1	Ballroom 2	Meeting room 1	Meeting room 2	Meeting room 3
13:00-13:15	Optics & Electronics I (OEM I)	Energy & Environment I (EEM I)	Sensor & Sensing Materials I (SSM I)		Bio-Carbon Materials (BCM)
13:15-13:30	Invited I: Prof. Dr. C.K. Jayasankar "Compositional Dependence Spectroscopic Studies of Dy ³⁺ -doped Glasses for Optical Device Applications"	Invited I (Online): Prof. Balaji Rao Ravuri "Variation on Long Term Electrochemical Stability of Sodium-Vanadium Glass and Glass-ceramic Anode Half-cell Network Mixed with ZnO"	Invited I: Asst. Prof. Dr. Theerakiat Kercharoen "Digitalization of Smell: Development of Chemical Sensors from Lab to Startup Business"		Invited I: Assoc. Prof. Dr. Dheerawan Boonyawan "Nightingale®: a Novel Source for Plasma-Driven Biocatalysis"
13:30-13:45	Invited II: Asst. Prof. Dr. Piyachat Meejitlaisan "Broadband 1.53 μm Emission Characteristics of Er ³⁺ -Doped Alkali Oxyluorophosphate Glass for Fiber Optic Communication Material"	EEM-OR01 (Ab-ID015): "Effect of Processing Parameters on Dielectric, Ferroelectric and Energy Storage Properties of Nd ₂ O ₃ Modified BNT-based Lead-free Ceramics"	SSM-OR01 (Ab-ID069): "The Sensitivity Improvement of Electrochemical Non-enzymatic Glucose Sensor by Means of Solar-radiation on Gold Nanoparticles-decorated Iron Oxide Nanorods"		Invited II: Assoc. Prof. Dr. Pakorn Opaprakasit "Functional Materials from Responsive Polymeric Hybrid Nanoparticles"
13:45-14:00		EEM-OR02 (Ab-ID046): "Biocompatible and Biodegradable Gamma Glycine Treated Bacterial Cellulose Nanofibrils Based on Hybrid Piezoelectric-Triboelectric Nanogenerator"	SSM-OR02 (Ab-ID091): "The Effect of Temperature on Carbaryl Pesticide Detection by Using Ion-Sensitive Field Effect Transistor"		
14:00-14:15	OEM-OR01 (Ab-ID035): "Improvement of Luminescence Performance by Addition Potassium Fluoride in Li ₂ O-AlF ₃ -NaF-P ₂ O ₅ Glass Doped with Eu ₂ O ₃ Content for Efficient Reddish-Orange Applications"	EEM-EOR01 (Ab-ID080): (Online) "Energy Harvesting of Time-dependent Electromagnetic Field Wasted from Triboelectric Generators"	SSM-OR03 (Ab-ID065): "Photoelectrochemical Hydrogen Peroxide Detections based on Bismuth Vanadate Thin Film Prepared by Pulsed Laser Deposition System"	Special Symposium I: MRS and JASTIP (13.45-17.15)	BCM-OR01 (Ab-ID036): "Synthesis of Nano Porous Carbon Derived from Vinasses Wastes for Trihalomethanes Adsorption Application"
14:15-14:30	OEM-OR02 (Ab-ID030): "Luminescence Behavior of Sm ³⁺ Ion Doped Potassium Aluminium Gadolinium Phosphate Glasses as Orange Laser and Photonics Applications"	Coffee break	SSM-OR04 (Ab-ID072): "Vehicle-Theft Detection Device with Image Recognition on Google Cloud Vision"		BCM-OR02 (Ab-ID039): "Synthesis of Lignin Extracted from Black Liquor to Nano Porous Carbon Materials for Tetracycline Adsorption Application"

Friday, 5 August 2022 (P.2)

Time	Ballroom 1	Ballroom 2	Meeting room 1	Meeting room 2	Meeting room 3
14:30-14:45	OEM-OR03 (Ab-ID031): "Development Luminescence and Energy Transfer from Gd ³⁺ to Sm ³⁺ of Tungsten Calcium Silicoborate Glass for Orange Emission Material Application"	Coffee break	SSM-EOR01 (Ab-ID056): (Online) "IoT-Based Real Time pH Monitoring of University of Mindanao's Chemical Laboratory Wastewater"		BCM-OR03 (Ab-ID042): "Bacterial Cellulose Nanopaper: Preparation, Characterization and Its Applications as Sensing Platforms"
14:45-15:00	OEM-OR04 (Ab-ID034): "A Study on Physical and Luminescence Properties of Sm ³⁺ Ions Doped Li ₂ O:Al ₂ O ₃ :La ₂ O ₃ :B ₂ O ₃ Glasses"	Nanomaterials I (NMA I) Invited I: Dr. Waluree Thongkam "Thailand Nanosafety and Nanotechnology Ethics Implementation"	Coffee break	Special Symposium I: MRS and JASTIP (13.45-17.15)	BCM-OR04 (Ab-ID097): "The Preparation Characterization and Bioactivity Study of Bioactive Glass Nanoparticles"
15:00-15:15	OEM-OR05 (Ab-ID044): "Influence of Calcium Fluoride on the Radiative Properties of Sm ³⁺ Doped Zinc Borophosphate Glasses"	Invited II (Online): Prof. Dr. Takashi Ikuno "High-yield Conversion of Plastics into Carbon Nanotubes"	Material Fabrication (MFM) Invited I: Dr. Tossaporn Lertvanithphol "Design and Fabrication of Nanoscale Plasmonic Structures for Optical Sensor Devices"		BCM-OR05 (Ab-ID098): "A Study on Conversion of Liquid Benzene Derivatives to Value-added Carbon Nanotubes Using Fe and Ni on Alumina Catalysts"
15:15-15:30	Coffee break			Coffee break	
15:30-15:45	Optics & Electronics II (OEM II) Invited III: Prof. Dr. Supon Ananta "Perovskite Ferroelectric Ceramics: Domain Evolution Behavior and Dielectric Properties"	NMA-EOR01 (Ab-ID064): (Online) "Direct Fabrication of Carbon Nanotube Wires on Plastic Films Using a Laser Thermal Transfer Method"	Invited II: Dr. Pinit Kidkhuntod "X-ray Absorption Spectroscopy: The State of the Art Synchrotron-based Characterization"		Materials for Health Science (MHS) Invited I: Assoc. Prof. Dr. Paul Gleeson "Probing Inorganic Catalytic Materials and Biological Enzymes using Computational Simulations"
15:45-16:00				Special Symposium II: MRS and JASTIP (13.45-17.15)	

Friday, 5 August 2022 (P.3)

Time	Ballroom 1	Ballroom 2	Meeting room 1	Meeting room 2	Meeting room 3
16:00-16:15	OEM-OR06 (Ab-ID033): "Investigation of Manganese Oxide (Mn ₂ O) Doped in Calcium Sodium Borosilicate Glasses for Photonics Materials Application"	NMA-EOR02 (Ab-ID060): (Online) "Improvement of Output Power of Triboelectric Generators by Adding TiO ₂ Particles into PDMS Films"	MFM-OR01 (Ab-ID019): "Design and Fabrication of Flexible Thermoelectric Generator: An Experimental and Simulation Study"		MHS-OR01 (Ab-ID017): "Effects of Ag-doped Content on Antimicrobial Activity and Substrate Color of Chromium Thin Films Deposited by DC Magnetron Sputtering"
16:15-16:30	OEM-OR07 (Ab-ID025): "X-ray Source Using Pyroelectric Crystals under UV Laser Irradiation"	NMA-OR01 (Ab-ID047): "Flexible Bacterial Cellulose-Titania Nanotubes Composite for Wireless Motion Sensor"	MFM-OR02 (Ab-ID057): "Effect of Copper Percentage in Copper Tungsten Electrode on Ti ₆ Al ₄ V by Electrical Discharge Machining"		MHS-OR02 (Ab-ID048): "Analysis of Asbestos Contamination Found in Talc Powder Products Marketed in Thailand Using X-ray and Infrared Spectroscopies"
16:30-16:45	OEM-OR08 (Ab-ID106): "Giant Dielectric Properties of (Sn/Ta) Co-doped TiO ₂ Ceramics"	NMA-OR02 (Ab-ID061): "The effect of Annealing Treatment on WO ₃ Thin Film Prepared by Reactive DC Magnetron Sputtering for Photo-electrochemical Water Splitting Application"	MFM-OR03 (Ab-ID068): "Role of Sb Species on Electrical Properties of Sb-doped ZnO Prepared by Pulsed Laser Deposition"	Special Symposium II: MRS and JASTIP (13.45-17.15)	
16:45-17:00	OEM-OR09 (Ab-ID010): "Investigation on Optically Ultraviolet Response of Low-dimensional ZnO Structures Prepared by Chemical Processes"	NMA-OR03 (Ab-ID062): "Surface Modification on ZnO Nanorod as a Template Substrate for ELISA Detection Application"	MFM-OR04 (Ab-ID084): "Production of Elastomeric Fibers from Natural Rubber Latex by Electrospinning"		
17:00-17:15		NMA-OR04 (Ab-ID083): "Hydrothermal Fabrication of Nanosheets on Electrospun Titanium Dioxide Nanofibers"	MFM-OR05 (Ab-ID102): "TOPSIS Based Selection of Optimal Parametric Combination during Laser Surface Texturing of Zirconia Ceramic"		
17:00-18:30	Poster Session I (All sessions)				
19:00-21:00	Conference Banquet				



Friday, 5 August 2022 (P.4)

Special Symposium on “Materials for Environment Applications” during 13.45-17.00 at Meeting Room 2

Time	Activity
13.30-13.45	Registration for onsite and online participants
13.45-14.00	Welcome and Workshop Opening/ Group photo
14.00-14.20	Speaker 1 Prof. Dr. Keiichi N. Ishihara (Kyoto University) “The Mechanism of Z-scheme in Photocatalytic Degradation of Dyes”
14.20-14.40	Speaker 2 Dr. Anis Natasha Shafawi (Online) (Universiti Sains Malaysia) “Bi ₂ O ₃ Particles Decorated on Porous g-C ₃ N ₄ Sheets: Enhanced Photocatalytic Activity through a Direct Z-scheme Mechanism for Degradation of Reactive Black 5 under UV-Vis Light”
14.40-15.00	Speaker 3 Dr. Nonni Soraya Sambudi (Online) (Universiti Teknologi PETRONAS) “Photoreduction of CO ₂ by Using f-CQDs/TiO ₂ : Preliminary Study”
15.00-15.20	Speaker 4 Assoc. Prof. Dr. Bridgid Chin Lai Fui (Online) (Curtin University, Malaysia) “Catalytic Pyrolysis of Oil Palm Wastes for Bio-oil Production”
15.20-15.40	Coffee break
15.40-16.00	Speaker 5 Assoc. Prof. Dr. Sorapong Pavasupree (Rajamangala University of Technology Thanyaburi (RMUTT)) “Applications of Nano-materials from Thai Minerals”
16.00-16.20	Speaker 6 Asst. Prof. Dr. Wanichaya Mekprasart (King Mongkut's Institute of Technology Ladkrabang (KMIL)) “Photocatalytic Performance of BiVO ₄ Photocatalyst Incorporated with Different Metal Dopants”
16.20-16.40	Speaker 7 Assoc. Prof. Dr. Pakorn Opaprakasit (Thammasat University) “Towards A Circular Economy: Chemical Upcycling of Postconsumer Polymeric Products for Functional Materials”
16.40-17.00	Speaker 8 Dr. Siwarutt Boonyarattanakalin (SMS Group Thailand) “TAPIOPLAST®: The Functional Thermoplastic Starch Resin for Bioplastic Applications”
17.00-17.10	Q&A, Group discussion and Closing symposium

Saturday, 6 August 2022

Time	Ballroom 1	Ballroom 2	Meeting room 1	Meeting room 2
08:30-09:30			Registration	
09:15-10:30		Poster Session II (All sessions and Online poster)		
10:30-10:45		Coffee break		
10:15-10:45			Computational (COM) Invited I (Online): Prof. Dr. Sirporn Jungsuittiwong "Encouraging Metal-free Catalyst Reactivity with a Synergistic Effect on Phosphorus and Nitrogen co-doped Graphene for Catalyzed co-oxidation Reaction"	
10:45-11:00	Sensor&Sensing Materials II (SSM II) Invited II (Online): Prof. Dr. Toru Aoki "TlBr Single Crystal Growth and Device Process for Radiation Detector"		Advanced Functional & Nanomaterials II (AFM) & (NMA II) Invited I (Online): Prof. Dr. Andrej Kuznetsov "Disorder Induced Ordering in Materials: Discovery of a New Nanoscale Process Resulting in Macroscopic Transformations"	Energy&Environment II (EEM II) Invited II (Online): Prof. Dr. Puangrat Kajitvichyanukul "Pesticide Removal from Environmental Media Using Physico-chemical and Biological processes"
11:00-11:15		Special Session: Biomedical Applications (09.45-12.00)		
11:15-11:30	SSM-OR05 (Ab-ID009): "Gas Sensors Based On Tellurium-Filled Carbon Nanotubes"		AFM-OR01 (Ab-ID020): "Design and Construction of Lanthanide Coordination Polymers for Highly Performance Catalysts in CO ₂ Cycloaddition Reactions"	EEM-OR03 (Ab-ID086): "Mercury Removal Efficiency of Disulfide- and Thiol-functionalized Lanthanide Coordination Polymers"
11:30-11:45	SSM-OR06 (Ab-ID022): "Study of Novel Neutron Detector Using Vertical Type BGaN Semiconductor"		NMA-OR05 (Ab-ID104): "Comparison of TOPSIS, ARAS and MOORA MCDM Techniques in Optimization of Photochemical Machining Process"	EEM-OR04 (Ab-ID107): "Synthesis and Characterization of 2-Dimensional ZSM-5 Catalyst Using C22-6-6Br2 Template"

Saturday, 6 August 2022 (P.1)

Time	Ballroom 1	Ballroom 2	Meeting room 1	Meeting room 2
11.45-12.00	SSM-OR07 (Ab-ID023): (Online) "Comparison of X-ray Penetration Image Contrast between CdTe and TlBr Detectors"	Special Session: Biomedical Applications (09.45-12.00)	NMA-OR06 (Ab-ID109): "Functional Magnetic Polymeric Nanoparticles and Their Applications in Medical and Industrial Applications"	EEM-OR05 (Ab-ID108): "Cobalt-based Catalysts Supported on Urea-Modified Sheet-Like ZSM-5 for Hydrodeoxygenation of Fatty acid Methyl Esters"
12.00-13.30	Lunch			
13.30-14.30	Closing Ceremony and Award			
14.30-15.00	Coffee break			

Online Poster Program in Poster session II on 6 Aug 2022

Time	Poster ID	Abstract ID	Title
09.45-09.53	BCM-EPO01	11	Adsorption of Heavy Metals through Bio-calcium Oxide Derived from a Golden Apple Snail Shell for Heavy Removal from Contaminated Water
09.53-09.01	BCM-EPO02	12	Synthesis, Scrutiny and Applications of Calcium Carbonate (CaCO ₃) from Cockle Shell Waste for the Adsorption of Heavy Metals in the Water
09.01-09.09	NMA-EPO01	2	Chemical Sterilization of the Culture Medium for in Vitro Culture of Dendrobium Hybrid Using Biogenic Silver Nanoparticles
09.09-10.17	MFM-EPO01	32	Lateral Capillary Interactions of Two-Dimensional Self-Assembly Aggregates on Liquid Film

Saturday, 6 August 2022



Time	Ballroom 2
	<p>Special Session: Biomedical Applications</p> <p>Chairman: Assoc.Prof.Pattarapong Phasukkit, Co-chairman: Assist.Prof.Nongluck Houngkamhang (King Mongkut Chaokhunthahan Hospital: KMCH)</p> <p>Invited speaker : Dr. Chaiyanut Jirayupat (Online)</p>
09.45-10.15	"Breath Odor-based Individual Authentication by an Artificial Olfactory Sensor System and Machine Learning"
10.15-10.30	SSB-OR01 (Ab-ID076): Kusun Tuntiwong
	"Biomechanical Pattern of Canine Distalozation in The Minisew Position: A Finite Element Analysis"
10.30-10.45	SSB-OR02 (Ab-ID081): Shantanu Agnihotri
	"A Simulation Based Performance Analysis of Field-Effect Transistors for Biomedical Sensing"
10.45-11.00	SSB-OR03 (Ab-ID085): Poppohn Laon
	"Deep Learning and Artificial Intelligence for Electrophysiology Mapping and Signal Analysis"
11.00-11.15	SSB-OR04 (Ab-ID087): Solos Punkabutra
	"The Interrelationships Between Low Alpha and Musical Frequencies"
11.15-11.30	SSB-OR05 (Ab-ID088): Sarut Puangragsa (Online)
	"Technical Aspect of 3D Printing in Gynecological Brachytherapy"
11.30-11.45	SSB-OR06 (Ab-ID089): Kamonchat Apivanichkul
	"The Performance Improvement of Deep Learning in Automatic Femur Segmentation using External Feature Addition"
11.45-12.00	SSB-OR07 (Ab-ID090): Nongluck Houngkamhang
	"Antibody Conjugated Gold Nanoparticles for Lateral Flow Immunoassay"