MRS Thailand 2023

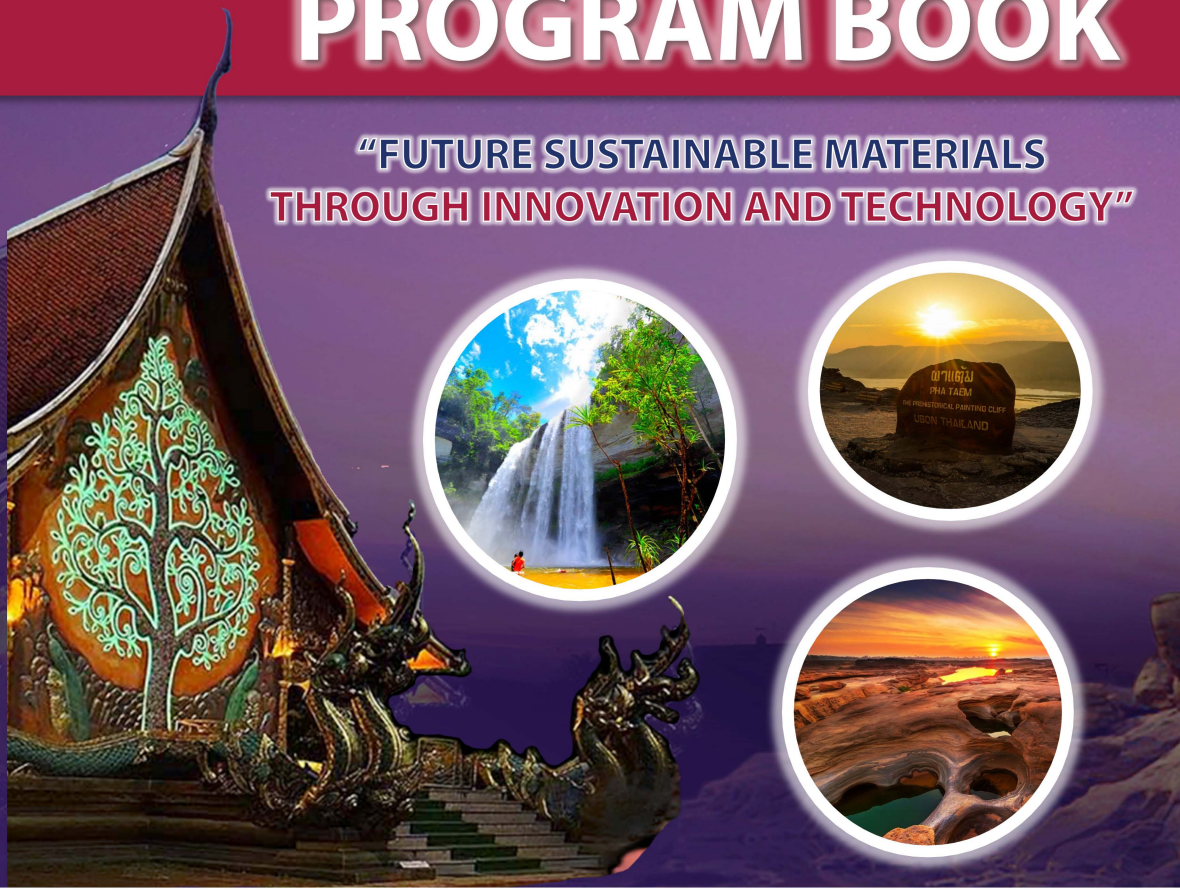
The 4th Materials Research Society of Thailand International Conference

February 28th – March 4th , 2023

Sunee Grand Hotel & Convention Center, Ubon Ratchathani, Thailand

PROGRAM BOOK

"FUTURE SUSTAINABLE MATERIALS THROUGH INNOVATION AND TECHNOLOGY"



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THAI SYNCHROTRON NATIONAL LAB

Suranaree University of Technology

Chula Chulalongkorn University

84 Faculty of Science

Faculty of Science Ubon Ratchathani University

มหาวิทยาลัยอุบลราชธานี

สอวช

AFM Suranaree University of Technology

80 Kasetsart University

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Welcome Message from President of Materials Research Society

On behalf of the Materials Research Society of Thailand (MRS), it gives me great pleasure to wish a very warm welcome to all participants to: The Forth Materials Research Society of Thailand International Conference (MRS-Thailand 2023).

Our previous conferences (MRS-Thailand 2017, MRS-Thailand 2019, IUMRS-ICA 2020 and MRS-Thailand 2021, were successfully organized. The conference were a common ground for scientists from all over the world to present new ideas, share experiences, gain insights in cutting-edge materials research and education, and stimulate the initiatives for collaboration.The MRS-Thailand 2023 conference will cover all fields of materials sciences, engineering and applications in our next generation by the discussion of the most recent advances.

In addition to the scientific program, participants will also have the opportunity to enjoy the many charms of the city of Ubon Ratchathani which is rich in local culture and traditions Ubon Ratchathani province features plateaus and mountain ranges with the Mun River running through the middle. The region where Ubon Ratchathani borders both Cambodia and Laos has been coined "the Emerald Triangle" in recognition of its magnificent green landscapes. Adding to Ubon Ratchathani's natural appeal, Phu Chong Nayoi and Pha Taem national parks are two of Isan's most unspoiled and unvisited natural preserves. Ubon Ratchathani, the north-east's largest City, is also a wonderful place to witness the annual candle festival, a charming Buddhist celebration. While attending MRS-Thailand 2023, we hope to extend our hospitality to make you feel completely at home.

In closing, may I thank Materials Research Society of Thailand and Ubon Ratchathani University, and our co-organizers for their respective contributions. Thanks are also due to the various committees whose hard work and dedication over several months has brought us to this point and made this conference possible. Last but not least, thanks to all participants, both from within Thailand and from overseas, for supporting this event by sharing your knowledge and experience.
I wish you all a rewarding and enjoyable stay here in Ubon Ratchathani at this MRS-Thailand 2023 International Conference.

Prof. Dr. Santi Maensiri
Dean of Faculty of Science, Suranaree University of Technology

Welcome Message from Chair of Organizing Committee

On behalf of Local Organizing Committee (LOC) and Ubon Ratchathani University, I would like to give my warmest welcome to all participants to the land of lotus, Ubon Ratchathani, THAILAND, for the Materials Research Society of Thailand International Conference (MRS-Thailand 2023) which will be held during February 28th-March 4th, 2023. The MRS-Thailand International Conference series started since 2017 by The First Materials Research Society of Thailand International Conference (1st MRS Thailand International Conference) during October 31st -November 3rd, 2017 at Chiang Mai, Thailand. The conference was successfully achieved to strengthen academic society in Materials field along with the MRS-Thailand establishment. Due to the great success of 1st MRS Thailand International Conference, The 2nd Materials Research Society of Thailand International Conference (2nd MRS Thailand International Conference) was continuously held at Pattaya, THAILAND, during July 10th -12th, 2019 in order to expand international recognition. It was very well acknowledged. More than 400 participants around the world joined the conference and contributed their knowledge between researchers. Hence, International Union of Materials Research Societies (IUMRS) decided to hold the 21st International Union of Materials Research Societies-International Conference in Asia (IUMRS-ICA 2020) and the 3rd MRS Thailand International Conference (MRS-Thailand 2021) in Chiang Mai, THAILAND, which hosted and organized by the MRS-Thailand during February 23rd-26th, 2021. Unfortunately, COVID-19 pandemic disrupted many things, therefore, the conference needed to immediately switch to on-line format conference. However, the great spirit of the materials field researchers led the conference successfully passed through those difficult time. Finally, after a long COVID-19 difficult years, it is my very great honor to announce that the 4th Materials Research Society of Thailand International Conference (MRS-Thailand 2023) will be held at Ubon Ratchathani, THAILAND on February 28th-March 4th, 2023.

MRS-Thailand 2023 aims to open a floor of opportunity for all participants to share their research covering in all field of materials science. It is very exciting to see many international participants to join us. Besides academic experiencing, the participants will be surely impressed by the local activities and culture. Ubon Ratchthani is well acknowledged as the land of lotus and the participants will be spelled by their beauty and charm. We hope the participants will gain the best experiences from this conference at the land of lotus, Ubon Ratchathani, THAILAND.

We look forward to seeing you!

Prof. Dr. Siriporn Jungsuttiwong
Dean of Faculty of Science, Ubon Ratchathani University

COMMITTEES

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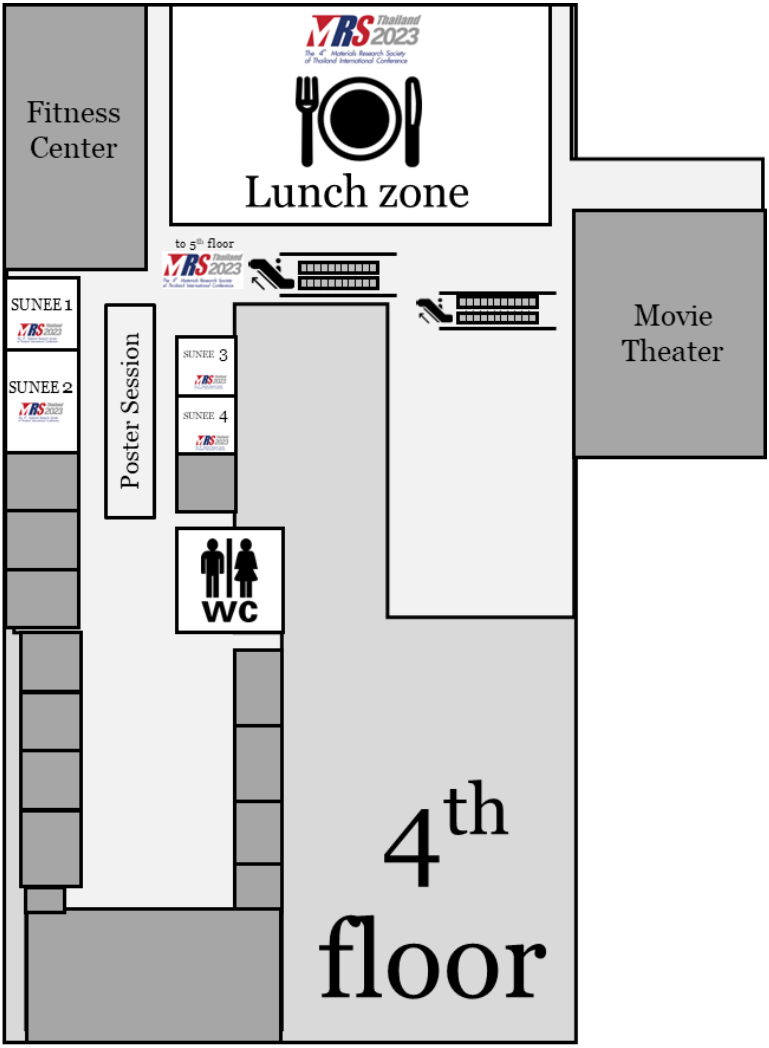
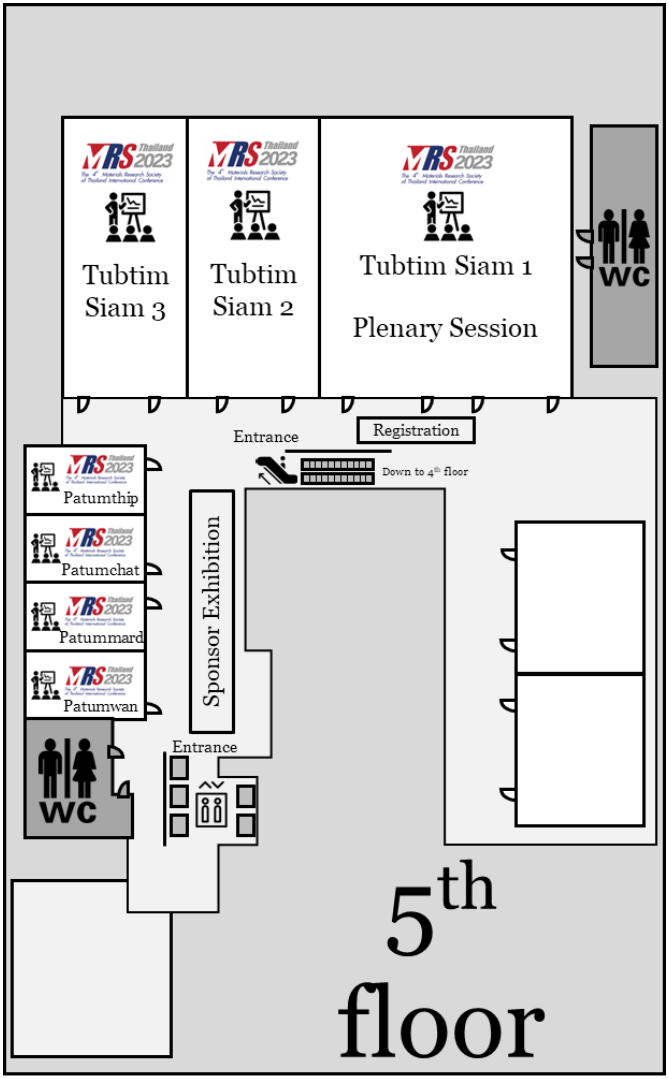
Floor Plans | Sunee Grand Hotel & Convention Center



Floor Plans | Sunee Grand Hotel & Convention Center



Tentative Overview Program

Day 1; Tuesday, February 28th, 2023	
Time	**Schedules**
16:00-18:00	Registration
18:30-21:00	Welcome Party (Tubtim Siam 1)
Day 2; Wendnesday, March 1st, 2023	
8:00-8:30	Registration (30 min)
8:30-9:00	Opening Ceremony and Awards (30 min) Tubtim Siam 1
9:00-9:45	Plenary Talk (PL1) (45 min) Tubtim Siam 1 Prof. Dr. Rodrigo Ferrão de Paiva Martins (Universidade NOVA de Lisboa, Portugal) Title "Laser Induced Graphene to Process Cellulose-based Biosensing Platforms and Process Printed Boards on Paper" Chair: Dr. Adisorn Tuantranont
9:45-10:15	Plenary Talk (PL2) Awardees (30 min) Tubtim Siam 1 Assoc. Prof. Dr. Winita Punyodom (Chiang Mai University, Thailand) Title "CMU Bioplastic Production for Medical Devices: From Basic Research to Industry" Chair: Assoc. Prof. Dr. Pakorn Opaprakasit
10:15-10:25	Sponsor Talk (10 min) PUDITEC 1 (Tubtim Siam 1)
10:25-10:40	Coffee Break (15 min)
10:40-12:00	Parallel Sessions (75 min)
12:00-13:00	Lunch (60 min)
13:00-13:45	Plenary Talk (PL3) (45 min) Tubtim Siam 1 Prof. Dr. Daniel Citterio (Keio University, Japan) Title "Paper-Based Analytical Devices: How Simple Can Analysis Be?" Chair: Assoc. Prof. Dr. Purim Jarujamrus
13:45-13:55	Sponsor Talk (10 min) PUDITEC 2 (Tubtim Siam 1)
14:00-15:00	Parallel Sessions (60 min)
15:00-15:15	Coffee Break (15 min)
15:15-17:00	Parallel Sessions (105 min)
17:00-18:30	Poster Presentation (60 min)
18:30-21:00	Conference Banquet (Tubtim Siam 1)

Tentative Overview Program

Day 3; Thursday, March 2nd, 2023	
Time	**Schedules**
9:00-9:45	Plenary Talk (PL4) (45 min) (Tubtim Siam 1) Prof. Dr. Osvaldo Novais de Oliveira Junior (University of São Paulo, Brazil) Title "Nanomaterials Used in Biosensors and Clinical Diagnosis Based on Knowledge Discovery and Machine Learning" Chair: Assoc. Prof. Dr. Anucha Watcharapasorn
9:45-9:55	Sponsor Talk (10 min) (Tubtim Siam 1)
9:55-10:10	Coffee Break (15 min)
10:10-12:00	Parallel Sessions (110 min)
12:00-13:00	Lunch (60 min)
13:00-13:45	Plenary Talk (PL5) (45 min) (Tubtim Siam 1) Prof. Dr. Sanjay Mathur (University of Cologne, Germany) Title "Bioconjugated Nanocarriers for Precision Drug Delivery" Chair: Assoc. Prof. Dr. Jakrapong Kaewkhao
13:45-13:55	Sponsor Talk (silver) (15 min) (Tubtim Siam 1) Mr. Damien KHOO, Bruker Nano Surfaces Division, Singapore. Title " UMT Tribolab™: A Multi-function Tribometer for Friction and Wear Characterization in Automotive Applications"
14:00-15:00	Parallel Sessions (60 min)
15:00-15:15	Coffee Break (15 min)
15:15-17:00	Parallel Sessions (105 min)
17:00-18:00	Closing Ceremony and Awards (Tubtim Siam 1)
18:30-21:00	MRS & VIP Meeting and Dinner (Outside Sunee Grand Hotel)
Day 4; Friday, March 3rd, 2023	
9:00-18:00	Excursion
Day 5; Saturday, March 4th, 2023	
9:00-18:00	Excursion

Meeting Rooms Summary

Meeting Room	Time	March 1st
Tubtim Siam 2	10:40-12:10	Symposium 11
	14:00-15:00	Symposium 11
	15:15-16:45	Symposium 11
Tubtim Siam 3	10:40-12:10	Symposium 18
	14:00-15:00	Symposium 18
	15:15-17:15	Symposium 18
Patumwan	10:40-12:10	Symposium 9
	14:00-15:00	Symposium 9
	15:15-17:15	Symposium 9
Patummard	10:40-11:55	Symposium 12
	14:00-15:00	Symposium 12
	15:15-17:15	Symposium 12
Patumchat	10:40-11:55	Symposium 8
	14:00-15:00	Symposium 8
	15:15-17:00	Symposium 8
Patumthip	10:40-11:55	Symposium 10
	14:00-15:00	Symposium 10
	15:15-15:45	Symposium 10
	16:00-17:00	Symposium 14
Sunee-1	10:40-11:55	Symposium 2
	14:00-15:00	Symposium 2
	15:15-16:45	Symposium 2
Sunee-2	10:40-12:10	Symposium 3
	14:00-15:00	Symposium 3
	15:15-17:15	Symposium 3
Sunee-3	10:40-12:10	Symposium 17
	14:00-15:00	Symposium 17
	15:15-16:00	Symposium 17
Sunee-4	10:40-11:55	Symposium 6
	14:00-15:00	Symposium 1
	15:15-16:15	Symposium 1
	16:30-17:30	Symposium 13

Meeting Rooms Summary

Meeting Room	Time	March 2nd
Tubtim Siam 2	10:10-11:55	Symposium 11
	14:00-15:00	Symposium 11
	15:15-16:45	Symposium 11
Patumwan	10:10-12:10	Symposium 9
	14:00-15:00	Symposium 5
	15:15-16:30	Symposium 5
Patummard	10:10-11:55	Symposium 12
	14:00-15:00	Symposium 12
Patumchat	10:10-11:55	Symposium 7
	14:00-15:00	Symposium 7
	15:15-16:00	Symposium 7
Patumthip	10:10-11:55	Symposium 14
	14:00-15:00	Symposium 14
	15:15-17:00	Symposium 14
Sunee-1	10:10-12:25	Symposium 19
Sunee-2	10:10-11:55	Symposium 4
	14:00-14:45	Symposium 4
Sunee-3	10:10-12:10	Symposium 16
Sunee-4	10:10-12:10	Symposium 13
	14:00-15:00	Symposium 15
	15:15-17:00	Symposium 15

Session Summary

1. Emerging Solar PV and Energy Harvesting Materials/Devices

Chair: Assoc. Prof. Dr. Supab Choopun
Co-Chair: Assoc. Prof. Dr. Auttasit Tubtimtae
Dr. Sukrit Sucharitakul

2. Energy Storage Materials/Devices/Applications

Chair: Assoc.Prof.Dr. Nonglak Meethong
Co-Chair: Assoc. Prof. Dr. Thapanee Sarakonsri
Dr. Pimpa Limthongkul
Assoc. Prof. Dr. Olivier Fontaine

3. Graphene and Carbon Materials

Chair: Assoc. Prof. Dr. Pisith Singjai
Co-Chair: Prof. Dr. Tawatchai Charinpanitkul
Assoc. Prof. Dr. Chatchawal Wongchoosuk
Asst. Prof. Dr. Weerawut Chaiwat
Dr. Adisorn Tuantranont

4. Dielectrics, Piezoelectrics, Ferroelectrics, Thermoelectrics and Superconductors

Chair: Prof. Dr. Rattikorn Yimnirun
Co-Chair: Prof. Dr. Naratip Vittayakorn
Assoc. Prof. Dr. Sukanda Jiansirisomboon
Assoc. Prof. Dr. Teerachai Bongkarn
Dr. Sora-at Tanusilp
Dr. Thitirat Charoonsuk

5. Magnetic Materials and Their Applications

Chair: Assoc. Prof. Dr. Supree Pinitsoontorn
Co-Chair: Assoc. Prof. Dr. Chitnarong Sirisathitkul
Assoc. Prof. Dr. Jessada Chureemart

6. Manufacturing, Advanced Processing and Additive Manufacturing of Engineering Materials

Chair: Dr. Anchalee Manonukul
Co-Chair: Asst. Prof. Dr. Kittichai Sojiphan
Asst. Prof. Dr. Suwaree Chankitmunkong
Dr. Chanun Suwanpreecha

7. Metals, Alloys, Composites and Construction Materials

Chair:	Prof.Dr.-Ing. Gobboon Lothongkum
Co-Chair:	Asst. Prof. Dr. Chaiyasit Banjongprasert
	Assoc. Prof. Dr. Aphichart Rodchanarowan

8. Ceramic and Glass Technology

Chair:	Assoc. Prof. Dr. Jakrapong Kaewkhao
	Assoc. Prof. Dr. Sirithan Jiemsirilers
Co-Chair:	Assoc. Prof. Dr. Cherdsak Bootjomchai
	Assoc. Prof. Dr. Oratai Jongprateep
	Asst. Prof. Dr. Narun Luewarasirikul

9. Polymers, Rubber, Bioplastics, Colloid and Emulsion

Chair:	Assoc. Prof. Dr. Pakorn Opaprakasit
Co-Chair:	Assoc. Prof. Dr. Supakij Suttiruengwong

10. Biomaterials and Applications

Chair:	Asst. Prof. Dr. Anyanee Kamkaew
Co-Chair:	Assoc. Prof. Dr. Kaemwich Jantama
	Dr. Kantapat Chansaenpak
	Dr. Pishyaporn Sritangos

11. Sensors, Organic Electronics and Printed Electronics

Chair:	Dr. Adisorn Tuantranont
Co-Chair:	Prof. Dr. Vinich Promarak
	Assoc. Prof. Dr. Maliwan Amatatongchai
	Assoc. Prof. Dr. Pongsakorn Kanjanaboos
	Assoc. Prof. Dr. Purim Jarujamrus

12. Computational Material Sciences

Chair:	Assoc. Prof. Theerapong Puangmali
Co-Chair:	Assoc. Prof. Nawee Kungwan
	Assoc. Prof. Dr. Pairot Moontragoon
	Dr. Supawadee Namuangruk

13. Surface Sciences, Tribology and Thin Film Technology

Chair:	Assoc. Prof. Dr. Wisanu Pecharapa
Co-Chair:	Assoc. Prof. Dr. Dheerawan Boonyawan
	Asst. Prof. Dr. Phitsanu Poolcharuansin
	Dr. Mati Horprathum

14. Catalyst and Materials Chemistry for Green Environment

Chair: Dr. Kajornsak Faungnawakij
Co-Chair: Dr. Duangduen Atong
Asst. Prof. Dr. Watsa Khongnakorn
Asst. Prof. Dr. Chalida Klaysom

15. Instrumentation and Advanced Materials Characterization

Chair: Dr. Pinit KidKhunthod
Co-Chair: Assoc. Prof. Dr. Prayoon Songsiriritthigul
Dr. Phakkhananan Pakawanit
Asst. Prof. Dr. Nattapol Laorodphan

16. Quantum Materials and Technologies

Chair: Assoc. Prof. Dr. Worawat Meevasana
Co-Chair: Assoc. Prof. Dr. Anucha Watcharapasorn
Asst. Prof. Dr. Pruet Kalasuwan
Dr. Sorawis Sangtawesin

17. Special session: Advanced Materials for Flow Batteries

Chair: Assoc. Prof. Dr. Soorathep Kheawhom
Co-Chair: Assoc. Prof. Dr. Rojana Pornprasertsuk
Dr. Chakrit Sriprachuabwong
Dr. Pinit KidKhunthod

18. Special Session: Thailand - Taiwan Bridge Project from Bioresources to Materials

Chair: Prof. Dr. Kaito Takahashi
Co-Chair: Assoc. Prof. Dr. Pasit Pakawatpanurut

19. Future of Materials: Education, Research and Industry

Chair: Asst. Prof. Dr. Chaiyasit Banjongprasert
Co-Chair: Asst. Prof. Dr. Panchika Prangkio

ABSTRACT

of Plenary Lectures

PL1

Laser Induced Graphene to process Cellulose-based biosensing platforms and process printed boards on paper

R. Martins*, Ana C. Marques1,†, T. Pinheiro1,†, E. Fortunato1,
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In this presentation we report the use of cellulose-based substrates with both passive (printed board circuit and antennas on paper) and active roles (energy harvesters and biosensing) in smart electronic platforms allied with cost- effective, energy efficient and scalable fabrication routes. The development of accurate, reliable, and inexpensive analytical platforms is of utmost relevance to several fields from clinical diagnosis to environmental screening. Moreover, the use of inexpensive materials and cost-effective manufacturing processes for production of such devices is very attractive and must be aligned with the European Green Deal and the United Nation's Sustainable Development Goals. In that sense, cellulosic materials are appealing candidates to be used as low-cost disposable materials for biosensing platforms, with great emphasis in point-of-care (POC) settings, particularly in resource-poor countries. Here, we show the use of cellulose-based substrates with both passive and active roles in biosensing platforms allied with cost-effective, energy efficient and scalable fabrication routes. These biosensors were developed with both optical and electrochemical mechanisms, due to their meritorious ability to offer high selectivity and sensitivity, ease of fabrication and usage, easy miniaturization, low cost and versatility. Specifically, we present examples of (i) cellulose-based colorimetric biosensors using wax printing technology combined with colorimetric detection using both natural and biomimetic receptors for a multitude of applications, ranging from bacteria detection to diabetes control; (ii) cellulose-based Surface-Enhanced Raman Scattering platforms, produced using both physical and chemical routes, for the detection of antibiotics, cancer biomarkers and spike protein from SARS-CoV-2 virus, where the influence of different types of cellulosic materials is demonstrated; (iii) cellulose-based electrochemical biosensors, using laser-induced graphene electrodes with tailored conductive and electrochemical properties, applied for amperometric, enzymatic biosensing schemes for glucose detection and with potential for sensing of other metabolites. In conclusion, the biosensing concepts explored herein pave the way towards the development of robust analytical devices with potential to be integrated in stand-alone multifunctional platforms to be used in POC settings.

PL1

Prof. Dr. Rodrigo Ferrão de Paiva Martins

Rodrigo Martins, President of the European Academy of Sciences; President of the International Union of Materials Research Societies; Full Professor at FCT-NOVA. Member of the: • Portuguese Academy of Engineering. • Portuguese Order of Engineers, OE. • Board of Admission and Qualification of OE.

Rodrigo Martins is the founder and director of the Centre of Excellence in Microelectronics and Optoelectronics Processes of Uninova; leader of the Materials, Optoelectronics and Nanotechnologies group and Director of I3N/CENIMAT; member of the nomination committee of the EIT KIC Raw Materials, Editor in Chief of the journal Discover Materials. He is Expert in the field of advanced functional materials, nanotechnologies, microelectronics, transparent electronics (pioneer) and paper electronics (inventor), with more than 575 papers published in WoK; Member of the: • Steering Committee of European Technology Platform for Advanced Engineering Materials and Technologies, EuMat. • Joint Innovation Centre for Advanced Material Sino-Portuguese. • administration board of the nature journal: npj 2D Materials and Applications.

Rodrigo Martins was decorated with the gold medal of merit and distinction by the Almada Municipality for his R&D achievements, in 2016.

He got more than 18 international and national prizes and distinctions for his scientific work.

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PL2

CMU Bioplastic Production for Medical Devices: From Basic Research to Industry

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High-quality biodegradable polyesters and their copolymers/polymer blends have been widely used in a broad range of applications from medical devices to packaging materials. As one of our own CMU's technology in materials design, and based on the Polymer Research Group's more than 30 years' experience of working in this field, our ISO 13485:2016 (Medical devices – Quality management systems – Requirements for regulatory purposes) "Bioplastic Production Laboratory for Biomedical Applications (BPLCMU)" offers customized products for use in various applications, in particular, medical applications. Specialty medical-grade polyester biomaterials both long-and short-term implants according to ASTM F1925-22 guidelines (Standard Specification for Semi-Crystalline Polylactide Polymer and Copolymer Resins for Surgical Implants) can now be designed, produced, and distributed to meet the specific requirements of various biomedical applications. In order to synthesize polyesters via ROP (in a purpose-designed clean room) with tailored microstructures and well-defined molecular weights, CMU's novel initiator is used. The initiator has been shown to be highly selective, stable during storage, easy to prepare at low cost, and non-toxic. For some medical devices such as absorbable surgical sutures and nerve guides, the research is aimed primarily at developing cost-effective materials which could be commercially produced at a price which Thai hospitals can afford. Therefore, such prototypes have been fabricated with fine-tuning to obtain desired properties relevant to each particular application and appropriate to the requirements of the surgeon. Focusing on one of our flagship medical-device products, absorbable monofilament sutures can be fabricated from medical-grade 70:30 mol% poly(L-lactide-co-□-caprolactone) (PLC) copolymer resins. According to the process validation and verification, monofilament fibers were fabricated by using a single-screw melt extruder with stretching units and associated equipment. Firstly, a copolymer melt was extruded through a die followed by sequentially controlled hot-drawing, fixed annealing, and free annealing steps to obtain fibers with improved mechanical properties and stability. 'CMUsorb PLC' suture prototype met all the needed criteria of the USP 3-0 sutures and was subjected to needle attachment, packing, and sterilization for obtaining the finished product. According to ISO 10993-1, biocompatibility tests were conducted and showed that CMUsorb PLC sutures met all the standard requirements. Finally, in accordance with ISO 10993-6, the tissue response (skin, subcutaneous, muscle, and ovarian/vas deferens (sterilization) to implantation of CMUsorb PLC with the response to commercial PDS II sutures were compared using animal models (New Zealand White rabbits and pig model)). From the macroscopic observations such as surgeon's satisfaction, wound scoring, and microscopic examinations, when compared with PDS II, there were no significant differences or inferior properties in the incidence of surgical site wound infection following the use of CMUsorb PLC. Therefore, CMUsorb PLC is more or less comparable with commercial PDS II showing potential for use as an absorbable monofilament surgical suture. Meanwhile, clinical trials are under investigation. This know-how is gradually being developed through a combination of basic and applied research together with close collaborations with industry.

Keywords: ISO 13485:2016, ASTM F1925-22, medical devices, absorbable monofilament suture, biocompatibility, implantation

PL2

Associate Professor Dr. Winita Punyodom

Assistant Professor Dr. Winita Punyodom obtained her PhD (Polymer Physics) from the University of Leeds, UK. Her main research contributions are in the field of biodegradable polymers for use in the biomedical and bioplastic industries. This has included the synthesis of specialty polyesters with controlled polymerization, novel initiators, and the kinetics and mechanisms of ring-opening polymerization (ROP), specialty polymers, and bioplastic innovation for the target industry. This basic research has led to applied research in biomedical applications such as absorbable sutures. Since making her initial contribution to polymer science, she has published more than 100 high-impact research papers, obtained four patents, and received several grants from the Thai Government and industries and the European Commission worth more than 200 million bahts. The work of Winita and her team has been recognized by the National Research Council of Thailand (NRCT) with the award of 2014 Invention Award and Gold Elephant Outstanding Technologist and Invention Award 2017.

PL3

Paper-Based Analytical Devices: How Simple Can Analysis Be?

Daniel Citterio*
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Since Whitesides introduced the concept of (microfluidic) paper-based analytical devices, or (μ)PADs in 2007, hundreds of research papers on this topic have been published. Nevertheless, only few of these devices have made it into practical use. Despite the "promise" of (μ)PADs fulfilling the ASSURED (affordable, sensitive, specific, user-friendly, rapid, equipment-free, deliverable to end user) criteria setup by the WHO, this is not the case for many devices. While there are some inherent limitations in terms of sensitivity when compared to more sophisticated analytical systems, more can be done to improve user-friendliness and to decrease the dependency on equipment unfamiliar to end users. This lecture will provide an overview of approaches evaluated by our group over the past years in collaboration with others to realize (μ)PADs with highest possible user-friendliness, while still providing quantitative results satisfying the requirements for a specific application. A variety of approaches enabling quantitative or semi-quantitative signal readout without the need for device calibration, or the use of specialized equipment will be presented, focusing on optical/colorimetric systems. These include examples of "distance-based" signaling, where the target concentration is indicated by changes in the length of a colored or fluorescent section of a microfluidic channel on paper. It will be shown that the paper substrate plays an important role going beyond capillary flow-driven sample liquid transport and includes active interaction with and binding of target analytes. The use of ordinary smartphones to semi-quantitatively interpret signals in the form of QR codes will also be demonstrated. A further example is a colorimetric device with "traffic-light-type" signaling, where users are informed about the analyte concentration at 5 levels in the form of colored spots (green, yellow, red). Finally, the potential of using paper substrates as signal readout component in a 3D-printed modular device for electrolyte quantification will be shown.

Keywords: *Paper-based microfluidics, Colorimetry, Point-of-need testing, Diagnostic devices, Inkjet printing*

PL3

Professor Dr. Daniel Citterio

Daniel Citterio received his Doctoral degree in Natural Sciences from the Swiss Federal Institute of Technology (ETH) in Zurich (Switzerland) in 1998. After postdoctoral research at Keio University in Japan in the research group of Prof. Dr. Koji Suzuki, he became a Research Associate at ETH Zurich in 2002. Following post-graduate studies at ETH Zurich and work at Ciba Specialty Chemicals in Basel (Switzerland), he returned to Keio University, where he became a tenured Associate Professor in 2009 and was promoted to full Professor in Analytical Chemistry in 2014. He is currently leading the Laboratory for Analytical Chemistry at the Department of Applied Chemistry. In 2016, he has been admitted as a Fellow of the Royal Society of Chemistry (RSC). Since 2021, he is a co-Editor-in-Chief of Sensors and Actuators B: Chemical, published by Elsevier. He is also a member of the Editorial Advisory Board of Analytical Chemistry (ACS), as well as of Analytical and Bioanalytical Chemistry (Springer Nature). In 2022, he has been awarded the Chemical Society of Japan Award for Creative Work. His research has been focusing on the development of chemical sensors and biosensors, as well as molecular probes for imaging purposes. More recently, his research team is strongly engaged in the development of paper-based analytical devices (PADs) by printing technologies for low-cost point-of-need applications.

PL4

Nanomaterials used in biosensors and clinical diagnosis based on knowledge discovery and machine learning

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The integration of approaches from materials sciences and artificial intelligence (AI) has been suggested for the development of computer-assisted diagnosis, especially with the use of machine learning in the analysis of biosensing data combined with other types of data. Impressive developments in natural language processing yielded by deep learning methods makes it possible to leverage multimodal data from distinct sources, namely scientific data, images and text. In this lecture we shall discuss these developments and propose new paradigms not only for clinical diagnosis but also for monitoring processes and phenomena, including health conditions. Essential for these paradigms are the sensors and biosensors employed to generate data, which shall be illustrated with examples of nanomaterials used in electronic tongues, mechanochromic sensors and electrochemical sensors. Some of these sensors are wearable and may be attached to different parts of the human body to determine glucose and urea concentrations in sweat. Others require only videos or images captured with smarphone cameras and treated with image processing and machine learning techniques, thus enabling diagnosis to be made without any specific instrument. Also significant is the possibility of enhancing clinical diagnosis by considering data available in the scientific literature, in platforms originating from the implementation of systems for knowledge discovery from text.

Keywords: *Knowledge Discovery, Clinical Diagnosis, Biosensors, Machine Learning, Renewable Materials*

PL4

Prof. Osvaldo N. Oliveira Jr

Osvaldo N. Oliveira Jr. is the director of the Sao Carlos Institute of Physics, University of Sao Paulo, Brazil, first vice-president of the International Union of Materials Research Societies (IUMRS), a member of the Brazilian Academy of Sciences, and executive editor of ACS Applied Materials & Interfaces. He is a physicist, with BSc and MSc from University of Sao Paulo, and PhD from University of Wales, Bangor (1990). In 2019 he received the Doctor Honoris Causa degree from the Federal University of Mato Grosso do Sul, Brazil. He published over 650 papers in refereed journals, which received ca. 17,400 citations (h = 59) in the Web of Science, and 26,100 citations (h = 74) in Google Scholar, in October, 2022, filed 12 patents, and supervised 52 MSc and PhD students. Prof. Oliveira has led research into the fabrication of novel materials in the form of ultrathin films obtained with the Langmuir-Blodgett and self-assembly techniques. Most of this work has been associated with fundamental properties of ultrathin films with molecular control, but technological aspects have also been addressed in specific projects. This is the case of an electronic tongue, whose response to a number of tastants is considerably more sensitive than the human gustatory system. Prof. Oliveira has helped establish the Núcleo Interinstitucional de Linguística Computacional (NILC), which is a leading institute for natural language processing of Portuguese. Research and development activities at NILC include the development of a grammar checker for Brazilian Portuguese, which was available worldwide through Microsoft Word for many years, and participation in the Universal Networking Language (UNL) Project, sponsored by the United Nations University. He published two books on outreach activities and edited a book on scientific writing. In recent years, Prof. Oliveira has pioneered the combined use of methods from distinct fields of science, with the merge of methods of statistical physics and computer science to process text, and use of information visualization to enhance the performance of sensing and biosensing. In 2006 he was awarded the Scopus Prize, given to 16 Brazilian researchers considered the most productive in terms of papers published and citations.

PL5

Bioconjugated Nanocarriers for Precision Drug Delivery

Sanjay Mathur
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Development of biocompatible nanocarriers that can transport anti-tumor drugs in the body represent a major challenge of precision medicine. For any systemically administered drug, the transport to the site of interest is inhibited by various physiological barriers, which reduces or even blocks the therapeutic efficiency of molecular drugs. Therefore, advanced drug-delivery systems are needed to overcome biological barriers.

In this context, hollow silica (SiO_2) nanoparticles functionalized with receptor-targeting ligands are promising drug-carriers to transport higher amounts of therapeutic payloads and to reduce any undesired off-site effects. Moreover, hollow nanoparticles can incorporate more than one drug enabling theranostic and theraregenerative approaches. This talk will discuss the potential benefits of inorganic nanoparticles towards precision drug delivery.

PL5

Prof. Dr. Sanjay Mathur

Sanjay Mathur is a Chair Professor and Director of the Institute of Inorganic Chemistry at the University of Cologne in Germany. He is also the Director of the Institute of Renewable Energy Sources at the Xian Jiao Tong University, Xian, China and a World Class University Professor at the Chonbuk University in Korea. He is a Visiting Professor in the Institute of Global Innovation Research at TUAT, Japan and a SPARC Faculty at IIT Madras, India. His research interests focus on application of nanomaterials and advanced ceramics for energy technologies. He holds several patents and has authored/ co-authored over 500 original research publications (h index, 67) and has edited several books. He serves as the Editor for Journal of Electroceramics, and for NanoEnergy. He is an Academician of the World Academy of Ceramics and Fellow of the American Ceramic Society and ASM International. He was awarded the Honorary Doctorate of the Vilnius University in 2016. He chaired the Academic Affairs Committee of the Materials Research Society and currently serves on the Executive Council of the European Materials Research Society. He was awarded the R. C. Mehrotra Lifetime Achievement Award of Indian Science Congress Association in January 2020. He was elected Fellow of the European Academy of Science in 2020 and as Foreign Fellow of National Academy of Science, India in 2021. He was awarded the Woody White Award of the Materials Research Society (MRS) in 2021 and had received the Medal of the Chemical Research Society of India (2022). He is also the recipient of the Materials Frontiers Award (2022) of the International Union of Materials Research Society (IUMRS, 2022). He is the current President of the American Ceramic Society (ACerS, 2022-23), USA. He was recognized by the Orton Jr. Lecture (2022) of the ACerS.

PROGRAM

of Oral Presentations

1. Emerging Solar PV and Energy Harvesting Materials/Devices

Wednesday, 1st March 2023, Room Sunee-4			
Chair: Assoc.Prof.Dr. Supab Choopun Co-Chair: Assoc.Prof.Dr.Auttasit Tubtimtae and Asst.Prof.Dr.Sukrit Sujarittakul			
Time	Code	Title	Presenter
14.00-14.30	INV S1_O1	Multi-modification of ZnO nanorods for optoelectronic applications	Dr. Vinh Quang Dang
14.30-14.45	S1_O2	Highly stable Perovskite film with ionic liquid additives for ambient air deposition	Ms. Supawinee Chaosukho
14.45-15.00	S1_O5	Development of indium tin oxide stack layer using DC and RF sputtering for perovskite solar cells	Dr. Taweewat Krajangsang
Coffee Break			
15.15-15.30	S1_O6	Efficient Four-Terminal Perovskite/Silicon Tandem Solar Cells by Using an Anti-Reflective Polymer Film as an Intermediate Matching Layer	Dr. Kanyanee Sanglee
15.30-15.45	S1_O8	Interlayer modification for stable P3HT-based perovskite solar cells for indoor light applications	Mr. Chaowaphat Seriwattanachai
15.45-16.00	S1_O3	The effect of Ag addition on high-temperature thermoelectric properties of $Ca_3Co_4O_9$ synthesized by Sol-gel auto combustion	Ms. Pornnipa Nunocha
16.00-16.15	S1_O4	Investigating The Effects of Aqua Regia Acid on Thermoelectric Properties of Silver Selenide Densified by Cold Sintering Process	Mr. Nuttapon Kongsip

2. Energy Storage Materials/Devices/Applications

Wednesday, 1st March 2023, Room Sunee-1			
Chair: Assoc. Prof. Dr. Nonglak Meethong Co-Chair: Dr. Pimpa Limthongkul			
Time	Code	Title	Presenter
10.40-11.10	INV S2_O2	All-inclusive model for evaluating Faradaic electrode materials used in electrochemical energy storage	Assoc. Prof. Dr. Olivier Fontaine
11.10-11.40	INV S2_O5	Valorizing the Ag-Waste, Rice Hull Ash (RHA). Green silicon carbide as an alternate anode to Si	Prof. Dr. Richard M. Laine
11.40-11.55	S2_O1	High-safety zinc ion batteries utilising ionic liquid-added organic electrolyte	Dr. Chatwarin Poochai
Lunch			
Chair: Assoc. Prof. Dr. Thapanee Sarakornsri Co-Chair: Assoc. Prof. Dr. Olivier Fontaine			
14.00-14.30	INV S2_O14	Development of Nickel Rich Active Material for Lithium Ion Battery	Prof. Dr. Eng. Agus Purwanto, S.T.,M.T
14.30-14.45	S2_O3	High-performance and powerful anode material from bamboo- derived hard carbon for sodium-ion batteries	Dr. Sukanya Pothaya
14.45-15.00	S2_O6	The role of Sr and Ta co-substitution on microstructure and ionic conductivity of $Li_{0.5}La_{0.5}TiO_3$ solid electrolyte	Mr. Supasit Paengson
Coffee Break			
15.15-15.30	S2_O7	Freestanding carbon fabric decorated with 1D VS_4 nanorods as an efficient cathode for Zinc ion Battery	Dr Kumuthini Rajendran

2. Energy Storage Materials/Devices/Applications (con't)

Time	Code	Title	Presenter
15.30-15.45	S2_O8	The Effect of Sodium Sources on the Electrochemical Performance of the $Na_4MnV(PO_4)_3$ Cathode of Sodium-Ion Batteries	Mr. Natthapong Kamma
15.45-16.00	S2_O10	Development of Polyacrylonitrile/Polyurethane filled with MOF/MXene for Electrospun Membrane	Mr. Nattapon Tanalue
16.00-16.15	S2_O11	Synthesis and Characteristics of High Surface Area SnO_2 as Cathode Host Material for Li-S Batteries	Ms. Sunisa Buakeaw
16.15-16.30	S2_O13	Advanced Electrode Materials for Reversible Solid Oxide Fuel Cell	Dr. Neetu Kumari

3. Graphene and Carbon Materials

Wednesday, 1st March 2023, Room Sunee-2			
Chair: Assoc. Prof. Dr. Chatchawal Wongchoosuk Co-Chair: Asst. Prof. Dr. Weerawut Chaiwat			
Time	Code	Title	Presenter
10.40-11.10	KN S3_O13	Large-scale simulations of reactive carbon systems – from fullerene to carbon fiber production	Prof. Dr. Stephan Irle
11.10-11.40	KN S3_O11	Carbon Materials for Energy Storage Technologies	Assoc. Prof. Dr. Montree Sawangphruk
11.40-12.10	INV S3_O12	Studies of 2D Materials under the Electron Beam Guided by Machine Learning and Theory	Dr. Ayana Ghosh
Lunch			
Chair: Assoc. Prof. Dr. Pisith Singjai Co-Chair: Prof. Dr. Tawatchai Charinpanitkul			
14.00-14.30	KN S3_O9	Smart sensors by random network of carbon nanotubes used as an intelligent material	Prof. Hirofumi Tanaka
14.30-15.00	KN S3_O10	Room-temperature carbon nanomaterials based sensors for food, agricultural and environmental applications	Assoc. Prof. Dr. Chatchawal Wongchoosuk
Coffee Break			
15.15-15.45	INV S3_O1	Carbon Quantum Dots (CQDs) for agriculture: Their applications for light convertors, delivering systems and nanosensors	Assist. Prof. Dr. Weeraphat Pon-On
15.45-16.00	S3_O8	Physicochemical Properties of As-Prepared Digitonion-Graphene-Iron Oxide Composite with Potential Antioxidant Activity	Prof. Dr. Khaled Shawakfeh

3. Graphene and Carbon Materials (con't)

Time	Code	Title	Presenter
16.00-16.15	S3_O4	Impedance spectroscopy and dielectric properties of graphitic carbon nitride nanosheets/TiO_2 composite for humidity sensing	Assoc. Prof. Dr. Tosapol Maluangnont
16.15-16.30	S3_O2	Electropolymerization of Aniline Monomer on PANI-coated Graphite Carbon Electrode for Microbial Fuel Cell Application	Mr. Andika Wahyu Afrianto
16.30-16.45	S3_O7	CO_2 Capture and Conversion to Carbon Nanomaterial via Molten Salt Electrolysis	Dr. Natthawan Prasongthum
16.45-17.00	S3_O5	Groundwater Purification for Drinking Purposes by a Submerged Module of Layered Double Hydroxides/Graphene Oxides Membrane	Ms. Natcha Kampalanuwong
17.00-17.15	S3_O6	Engineering of ultra-small carbon nanotubes using single Fe sites supported on hierarchical ZSM-5	Mr. Peeranat Chaipornchalerm

4. Dielectrics, Piezoelectrics, Ferroelectrics, Thermoelectrics and Superconductors

Thursday, 2nd March 2023, Room Sunee-2			
Chair: Prof. Dr. Rattikorn Yimnirun Co-Chair: Prof. Dr. Naratip Vittayakorn and Dr. Thitirat Charoonsukl			
Time	Code	Title	Presenter
10.10-10.40	KN S4_O1	Thermophysical properties compatibility of n- and p-type materials in thermoelectric modules	Prof. Dr. Ken Kurosaki
10.40-11.10	INV S4_O6	Fabrication and Piezoelectric properties of piezoelectric ceramic-cement composites	Prof. Dr. Arnon Chaipanich
11.10-11.40	INV S4_O8	Structure and colossal dielectric properties of non-ferroelectric perovskite ceramics	Dr. Jakkree Boonlakhorn
11.40-11.55	S4_O2	The influences of Nd^{3+} doping in A-site on the microstructure, dielectric, and energy storage properties of lead-free $0.88NaNbO_3$-$0.12Sr_{0.7}Bi_{0.2}TiO_3$ ceramics	Mr. Pathit Premwichit
Lunch 🍽			
Chair: Assoc. Prof. Dr. Sukanda Jiansirisomboon Co-Chair: Dr. Sora-at Tanusilp and Dr. Thitirat Charoonsuk			
14.00-14.30	KN S4_O7	Chiral metals and superconductors for spin generation	Prof. Dr. Hiroshi Yamamoto
14.30-14.45	S4_O3	Effects of Na excess on the Crystal Structure and Electrical Properties of $(Bi_{0.487}Na_{0.487}K_{0.06}Ba_{0.026})TiO_3$ Lead-free Piezoceramics	Mr. Wanchaloem Maitreesittikorn
Coffee Break ☕			

5. Magnetic Materials and Their Applications

Thursday, 2nd March 2023, Room Patumwan			
Chair: Assoc. Prof. Dr. Supree Pinitsoontorn Co-Chair: Assoc. Prof. Dr. Jessada Chureemart			
Time	Code	Title	Presenter
14.00-14.30	KN S5_O3	Development of rare-earth-free permanent magnets	Assoc. Prof. Dr. Prayoon Songsiriritthigul
14.30-15.00	INV S5_O4	Magnetic structure and spin dynamics in low-dimensional and frustrated magnets as probed by neutron scattering	Assoc. Prof. Dr. Kittiwit Matan
Coffee Break			
15.15-15.45	INV S5_O7	The myriad applications of magnetic tunnel junctions: from memories to mechanical applications	Dr. Andrea Meo
15.45-16.00	S5_O1	Fabrication of biocompatible magneto-fluorescence nanoparticles as a platform for fluorescent sensor and magnetic hyperthermia applications	Miss Arphaphon Sichamnan
16.00-16.15	S5_O5	Role of synthetic antiferromagnet in performance of magnetoresistive sensor	Miss Rungtawan Khamtawi
16.15-16.30	S5_O6	Light and Thermally Activated Spin Crossover Coupled to an Order-Disorder Transition of a Propyl Chain in an Fe(III) Complex	Dr. Theerapoom Boonprab

6. Manufacturing, Advanced Processing and Additive Manufacturing of Engineering Materials

Wednesday, 1st March 2023, Room Sunee-4			
Chair: Dr. Anchalee Manonukul Co-Chair: Asst.Prof.Dr. Suwaree Chankitmunkong			
Time	Code	Title	Presenter
10.10-10.40	KN S6_O4	Progress in Casting Technology and the Role of AM in Mould Production	Dr. John T. H. Pearce
10.40-10.55	S6_O3	3D printing of carbon-based composite resin and mechanical properties	Mr. Chanwit Pa-art
10.55-11.10	S6_O2	Experimental and simulation study of residual stress and distortion in submerged arc welding of shipbuilding steel plate	Asst. Prof. Dr. Kittichai Sojiphan
Lunch 🍽			

7. Metals, Alloys, Composites and Construction Materials

Thursday, 2nd March 2023, Room Patumchat			
Chair: Prof. Dr.-Ing. Gobboon Lothongkum Co-Chair: Asst. Prof. Dr. Chaiyasit Banjongprasert			
Time	Code	Title	Presenter
10.10-10.40	KN S7_O10	Current progresses and challenges in additive manufacturing of materials, from 3D printing of metals, to soft bio-printing of biomaterials	Assoc. Prof. Dr. Boonrat Lohwongwatana
10.40-11.10	INV S7_O12	Development of Breath Figure method: A Facile Self-Templating Fabrication Method for Ordered Porous Composite Films	Dr. Charasphat Preuksarattanawut
11.10-11.25	S7_O9	Laser powder-bed fusion additive manufacturing of Ti-based bulk metallic glass composite	Asst. Prof. Dr. Chedtha Puncreobutr
11.25-11.40	S7_O3	Crushing Response of Aluminium Foam-Filled Circular Tubes Having Different Foam-Filler and Interfacial Bonding Strength	Mr. Thein Htay Hlaing
11.40-11.55	S7_O1	Fabrication of Highly Conductive Copper Layers by Low-Temperature Sintering Using Self-Reducing Mixed Ink Composed of Copper Particles and Copper Complexes for Printed Electronics	Mr. Ren Watanabe
Lunch			

7. Metals, Alloys, Composites and Construction Materials (con't)

Chair: Asst. Prof. Dr. Chaiyasit Banjongprasert Co-Chair: Assoc. Prof. Dr. Aphichart Rodchanarowan			
Time	Code	Title	Presenter
14.00-14.30	INV S7_O5	Development of aluminum alloys for high-temperature applications	Asst. Prof. Phromphong Pandee
14.30-15.00	INV S7_O6	The equiatomic high entropy alloys (HEAs): effect of alloying elements on corrosion aspects	Assoc.Prof.Dr. Aphichart Rodchanarowan
Coffee Break			
15.15.-15.30	S7_O4	Corrosion and Wear Behaviors of Al-Ni-(Zr,Sc) alloys Processed by Equal Channel Angular Pressing	Miss Wichuda Choodokput
15.30-15.45	S7_O7	Effects of combinations of limestone powder and metakaolin on mortar compressive strength development	Dr. Thwe Thwe Win
15.45-16.00	S7_O2	Early stage hydration investigation of ordinary Portland cement (OPC) using Combination of lab on a chip technology and synchrotron radiation technique	Dr. Wutthikrai Busayaporn
16.00-16.15	S7_O8	Development of a rapid-set plastering mortar for using in the ASEAN region	Mr. Kantawich Suphunsaeng

8. Ceramic and Glass Technology

Wendnesday, 1st March 2023, Room Patumchat			
Chair: Asssoc. Prof. Dr. Kitipun Boonin Co-Chair: Ms. Nuttawadee Intachai			
Time	Code	Title	Presenter
10.40-11.10	KN S8_O12	$Eu^{2+/3+}$ Emission in a Lithium Phosphate Glass Network	Dr. Sudipta Saha
11.10-11.40	INV S8_O5	Improvement on spectroscopic properties of oxyfluoride boro-tellurite glass for luminescence materials applications	Assoc. Prof. Dr. Patarawagee Yasaka
11.40-11.55	S8_O1	The $^4F_{3/2} \rightarrow {}^4I_{11/2}$ transition of Nd^{3+}-embedded in Ca-Na-Al Borate Glasses for NIR Laser Application	Miss Nawarut Jarucha
Lunch			
Chair: Asst. Prof. Dr. Narun Luewarasirikul Co-Chair: Assoc. Prof. Dr. Patarawagee Yasaka			
14.00-14.30	INV S8_O13	Solution combustion synthesis of ceramics for environmental and medical applications	Assoc. Prof. Dr. Oratai Jongprateep
14.30-14.45	S8_O2	Optimization of Tb^{3+}-doped silicoborate glass for green emission in photonic applications	Miss Nuttawadee Intachai
14.45-15.00	S8_O3	Structural, optical, and luminescence analysis of CeF_3 containing different alkali borophosphate glasses	Ms. Nuchjaree Kiwsakunkran
Coffee Break			
15.15-15.30	S8_O4	Analysis of CFS & Racah parameter of NiO doped sodium calcium aluminium borosilicate glasses	Mr. Nakarin Singkiburin
15.30-15.45	S8_O6	Effect of Praseodymium Ion Concentration on Optical and Luminescence Properties of Tellurite Glasses Produced by Melt-Quenching Technique	Assoc. Prof. Dr. Kitipun Boonin

8. Ceramic and Glass Technology (con't)

Time	Code	Title	Presenter
15.45-16.00	S8_O7	The development of zinc calcium sodium barium borate glass for gamma ray shielding material	Mr. Supakit Yonphan
16.00-16.15	S8_O8	Optical and gamma-rays shielding properties of BaO-Al_2O_3-CaO-Na_2O-B_2O_3 and Bi_2O_3-Al_2O_3-CaO-Na_2O-B_2O_3 glass systems	Assoc. Prof. Dr. Cherdsak Bootjomchai
16.15-16.30	S8_O9	Improved of rice husk ash (RHA) glasses doped dysprosium for light-emitting applications	Miss Nattaporn Mahingsa
16.30-16.45	S8_O10	Broadband optical amplifiers and lasers application in Erbium-doped oxyfluoride phosphate glasses	Assoc. Prof. Dr. Jakrapong Kaewkhao
16.45-17.00	S8_O11	Understanding the role of starting precursor and temperature on phase purity of Ti_3Al/SiC_2 MAX phase	Prof. Nisha Verma

9. Polymers, Rubber, Bioplastics, Colloid and Emulsion

Wednesday, 1st March 2023, Room Patumwan			
Chair: Assoc. Prof. Dr. Pakorn Opaprakasit Co-Chair: Assoc. Prof. Dr.-Ing. Supakij Suttiruengwong			
Time	Code	Title	Presenter
10.40-11.10	KN S9_O1	Tailoring the morphology and properties of biodegradable semi-crystalline isodimorphic random copolyesters	Prof. Dr. Alejandro J. Müller
11.10-11.25	S9_O2	Effect of traditional calcium carbonate on properties of rice bran oil plasticized natural rubber composites	Ms. Kanokporn Lertkanchanaporn
11.25-11.40	S9_O6	Effect of Reactive Agents on Mechanical and Morphological Properties of Biodegradable Polymers derived from Poly(butylene adipate-co-terephthalate) (PBAT) Blends	Mr. Natthaphon Muangkaeo
11.40-11.55	S9_O7	Effect of organic and inorganic fillers on mechanical property and microwave irradiation of polylactic acid	Mr. Montree Udomchawee
Lunch 🍽			
Chair: Prof. Dr. Alejandro J. Müller Co-Chair: Assoc. Prof. Dr. Pakorn Opaprakasit			
14.00-14.30	INV S9_O24	Facile Passive Loading/Solvent Diffusion-Assisted Encapsulation of Sacha Inchi Oil in Natural Microcapsule Spores for Personal Care Products	Asst. Prof. Chariya Kaewsaneha
14.30-14.45	S9_O15	Synthesis of Nanoparticle-embedded PMMA Composite via Pulsed Laser Ablation	Mr. Wai Yan Lin Kaung

9. Polymers, Rubber, Bioplastics, Colloid and Emulsion (con't)

Time	Code	Title	Presenter
14.45-15.00	S9_O11	Bio-Based Antiscalant Derived from Poly(Itaconic Acid)	Ms. Chakriya Kong
Coffee Break			
15.15-15.45	INV S9_O22	Challenges towards the implementation of biodegradable plastics in commercial: biodegradable mushroom grow bag	Assoc. Prof. Dr.-Ing. Supakij Suttiruengwong
15.45-16.00	S9_O5	In-situ synthesis of lignin/ZnO nanocomposite from black liquor for UV-resistant and antioxidant agents in bioplastics	Ms. Kannika Pleejaroen
16.00-16.15	S9_O18	Selection of Additives in Plastic Film for Daytime Radiative Cooling	Miss Chattrarat Ponghiransmith
16.15-16.30	S9_O13	3D Bioprinting of Multifunctional Polylactic acid (PLA) / Modified Graphene Composite Scaffold for Tissue Engineering Applications	Mr. Worathep Khimlek
16.30-16.45	S9_O19	Electrospun composite membranes based on poly(lactic acid): Effect of a layered ternary carbide as membrane additive for curcumin release	Miss Tharnthip Krasian
16.45-17.00	S9_O17	Melt Extrusion Lemon Essential Oil Encapsulation in Maltodextrin-Sorbitol Matrix	Miss Zin Wint Thu

9. Polymers, Rubber, Bioplastics, Colloid and Emulsion (con't)

Thursday, 2nd March 2023, Room Patumwan			
Chair: Prof. Pranut Potiyaraj Co-Chair: Assoc. Asst. Prof. Chariya Kaewsaneha			
Time	Code	Title	Presenter
10.10-10.40	INV S9_O27	A Tosylated Hyper-Crosslinked Polymer: A Novel Polymeric Building Block for Preparations of Functional Polymers in Environmental Remediation	Dr. Thanthapatra Bunchuay
10.40-10.55	S9_O10	Synthesis of MOFs from recycled waste PET bottles and spent alkaline batteries	Ms. Nutthawadee Punklahan
10.55-11.10	S9_O20	Synthesis and Characterization of Composite Polymer TiO_2 PVA : PEO Toward Optical Properties Enhancement	Mr. Luqman Hakim
11.10-11.25	S9_O9	Controlling the colorimetric response of polydiacetylene to amine by co-assembly with various polymers	Ms. Pichnaree Sakuna
11.25-11.55	INV S9_O26	Role of organic molecules: From functional device to sensing application	Asst. Prof. Dr. Shu Han Hsu
Lunch 🍽			

10. Biomaterials and Applications

Wednesday, 1st March 2023, Room Patumthip			
Chair: Asst. Prof. Dr. Anyanee Kamkaew Co-Chair: Dr. Pishayaporn Sritangos			
Time	Code	Title	Presenter
10.40-11.10	KN S10_O19	Tumor Microenvironment-mediated Nanoplatform for Cancer Theranostics	Prof. Liang Cheng
11.10-11.40	INV S10_O2	Engineering a core-shell carbon-silica nanostructure for a highly effective hybrid carrier for thymol with prolonged antibacterial activity	Dr. Pongtanawat Khemthong
11.40-11.55	S10_O3	Organic Nanoparticles based on Aggregation-Induced Emissive Triazaborolopyridinium Derivatives for Biological Imaging	Dr. Kantapat Chansaenpak
Lunch			
Chair: Assoc. Prof. Dr. Kaemwich Jantama Co-Chair: Dr. Kantapat Chansaenpak			
14.00-14.30	INV S10_O18	Advanced Applications of Nanotechnology in Veterinary Medicine and Animal Health	Dr. Teerapong Yata
14.30-14.45	S10_O4	Scanning Ion Conductance Microscopy for Biomaterials Characterization	Dr. Petr Gorelkin
14.45-15.00	S10_O9	The effect of bioresorbable polymer coating on the freeze-dried bone allograft, an in vitro study	Mr. Krissana Tangamatakul
Coffee Break			
15.15-15.30	S10_O10	Structural and Mechanical Properties of PMMA/SrBHA Composites	Dr. Sirikarn Khansumled

10. Biomaterials and Applications (con't)

Time	Code	Title	Presenter
15.30-15.45	S10_O12	Development of shape memory effect on a poly(L-lactide-co-glycolide-co-caprolactone) (PLGC) terpolymer using hexamethylene diisocyanate (HDI) as a crosslinker	Mr. Kittisak Yarungsee

11. Sensors, Organic Electronics and Printed Electronics

Wednesday, 1st March 2023, Room Tubtim Siam 2			
Chair: Prof. Dr. Daniel Citterio Co-Chair: Prof. Dr. Nantanit Wanichacheva			
Time	Code	Title	Presenter
10.40-11.10	KN S11_O21	Precious metal nanoparticles based electrochemical sensors for medical diagnosis	Prof. Dr. Orawon Chailapakul
11.10-11.40	INV S11_O19	Improvement of Some Electrochemical Sensors by Utilizing Novel Nanocomposites	Assoc. Prof. Dr. Jaroon Jakmunee
11.40-12.10	INV S11_O7	Core–shell Molecularly Imprinted Polymers and Its Applications for Smart Electrochemical Sensors	Assoc. Prof. Dr. Maliwan Amatatongchai
Lunch			
Chair: Assoc. Prof. Dr. Jaroon Jakmunee Co-Chair: Assoc. Prof. Dr. Anchalee Samphao			
14.00-14.30	INV S11_O17	Nanocomposite optosensing probes based on quantum dots incorporated into molecularly imprinted polymer for ultra-trace detection	Assoc. Prof. Dr. Opas Bunkoed
14.30-14.45	S11_O24	A Dual-Responsive Fluorescent Sensor Based on Carbon Quantum Dots for Simultaneous Detection of Cytosine and 5-Methylcytosine	Miss Janpen Thonghlueng
14.45-15.00	S11_O6	Bioluminescence Readout Lateral Flow Immunoassay Using Nanobody Targeting Aflatoxin B1	Mr. Shun Takahashi
Coffee Break			

11. Sensors, Organic Electronics and Printed Electronics (con't)

Chair: Assoc. Prof. Dr. Duangjai Nacapricha Co-Chair: Assoc. Prof. Dr. Maliwan Amatatongchai			
Time	Code	Title	Presenter
15.15-15.45	INV S11_O18	Printed graphene-based electrochemical sensing platform and its applications	Dr. Chanpen Karuwan
15.45-16.00	S11_O4	Innovative Sensor Device for Field Analysis of Microplastics Using Fluorescent Nile Red-Graphene Oxide	Ms. Sukanya Sirimak
16.00-16.15	S11_O5	The Performance of Electrochemical Sensing Electrode Developed from rGO/MoS_2 Composite based 2D-Materials	Ms. Patiya Pasakon
16.15-16.30	S11_O8	Electrochemical detection of 11-nor-delta-9-tetrahydrocannabinol-carboxylic acid using screen-printed graphene electrodes	Miss Wichayaporn Kamsong
16.30-16.45	S11_O9	A simultaneous electrochemical detection of Δ^9-tetrahydrocannabinol and Cannabidiol in cannabis products using screen printed graphene electrode	Mr. Vitsarut Primpray

11. Sensors, Organic Electronics and Printed Electronics (con't)

Thursday, 2nd March 2023, Room Tubtim Siam 2			
Chair: Dr. Adisorn Tuantranont Co-Chair: Dr. Chanpen Karuwan			
Time	Code	Title	Presenter
10.10-10.40	KN S11_O26	Implementation of fluorescence sensors and strategies to improve sensitivity for food security and environmental safety	Prof. Dr. Nantanit Wanichacheva
10.40-11.10	KN S11_O22	New Fluorescent Molecules/Materials for Organic Light-Emitting Diodes	Prof. Dr. Vinich Promarak
11.10-11.25	S11_O2	Circularly Polarized Luminescence Emitting Organic Materials Based on Planar Chiral Molecules	Prof. Yasuhiro Morisaki
11.25-11.40	S11_O11	G-quadruplex DNAzyme-based DNA sensor: a novel signal amplification strategy for electrochemical nucleic acid detection of SARS-CoV-2 virus	Miss Sarida Naorungroj
11.40-11.55	S11_O15	DNA sensor utilizing pyrrolidinyl peptide nucleic acids pair for direct detection of human papillomavirus DNA	Mr. Panon Tungkunaruk
Lunch 🍽			
Chair: Assoc. Prof. Dr. Prof.Dr. Orawon Chailapakul Co-Chair: Assoc. Prof. Dr. Pongsakorn Kanjanaboos			
14.00-14.30	INV S11_O25	Papers as Versatile and Useful Materials for Gas Sensing and Measurement	Assoc. Prof. Dr. Duangjai Nacapricha
14.30-14.45	S11_O10	A chromatographic paper-based electrochemical device to determine Δ^9-tetrahydrocannabinol and cannabidiol in cannabis oil	Mr Tavechai Pholsiri

11. Sensors, Organic Electronics and Printed Electronics (con't)

Time	Code	Title	Presenter
14.45-15.00	S11_O13	Synthesis of molybdenum disulfide and its application for Tetrahydrocannabinol detection	Mr. Sarawut Kondee
Coffee Break			
Chair: Prof. Dr. Vinich Promarak Co-Chair: Assoc. Prof. Dr. Opas Bunkoed			
15.15-15.45	KN S11_O27	Thin Films for Multiplex Applications: Solar Cell, Light Emitting Diode, Photodetector, and Radiative Cooling Film	Assoc. Prof. Dr. Pongsakorn Kanjanaboos
15.45-16.00	S11_O20	Graded Multilayer Triple Cation Perovskites for High Speed and Detectivity Self-Powered Photodetector Via Scalable Spray Coating Process	Mr. Ko Ko Shin Thant
16.00-16.15	S11_O23	Study of electrooptic properties of PEDOT: PSS for tunable optics	Miss Nisakon Janthajam
16.15-16.30	S11_O14	Charge transport in memristive devices	Assoc. Prof. Alladin Jasmin
16.30-16.45	S11_O12	Functionalization of biomolecules on One-Dimensional nanostructures as a template substrate for dengue virus detection	Ms. Pareesa Pormrungruang

12. Computational Material Sciences

Wednesday, 1st March 2023, Room Patummard			
Chair: Assoc. Prof. Thanayut Kaewmaraya Co-Chair: Assoc. Prof. Suparek Praserthdam			
Time	Code	Title	Presenter
10.40-11.10	INV S12_O8	Elucidating the Chemoselective Transesterification Mechanism of Green Sustainable $Mg(BHT)_2$ Catalysts for Industrial Applications	Dr. Manussada Ratanasak
11.10-11.40	KN S12_O19	Computational Chemistry with Constraint Force for Investigation of Reaction Mechanisms	Prof. Dr. Jun-ya Hasegawa
11.40-11.55	S12_O2	Δ-machine learning-driven molecules and materials prediction by improving descriptors	Ms. Wenjun Xu
Lunch 🍽			
Chair: Assoc. Prof. Theerapong Puangmali Co-Chair: Assoc. Prof. Nawee Kungwan			
14.00-14.30	INV S12_O9	ARPES Electron Self-Energy from Electron-Phonon Interaction in Superconducting Materials	Assoc.Prof. Udomsilp Pinsook
14.30-14.45	S12_O3	First-principles Study of $V_2O_5/Ti_3C_2O_2$ Heterostructure as Cathode Materials of Lithium-ion Batteries	Mr. Pariwut Falun
14.45-15.00	S12_O4	Surface Reaction and SEI Formation on anode surface of Room-Temperature Na/S Batteries: Polysulfide and Electrolyte Decomposition	Mr. Sirisak Singsen
Coffee Break ☕			
15.15-15.45	INV S12_O10	Importance of systematic geometric searching for computational catalysis	Assoc. Prof. Dr. Min Gao

12. Computational Material Sciences (con't)

Time	Code	Title	Presenter
15.45-16.15	INV S12_O11	Heterogeneous Catalysts Screening via First-Principles and Machine Learning	Assoc. Prof. Dr. Supareak Praserthdam
16.15-16.45	INV S12_O12	Advanced Thermoelectric Materials from First-Principles Approaches	Assoc. Prof. Dr. Thanayut Kaewmaraya
16.45-17.00	S12_O5	First-Principles Study of High Performance Molybdenum Boride Anodes for Mg and Al Ion Batteries	Dr. Maneerat Chotsawat
17.00-17.15	S12_O6	Graph Neural Networks Accelerated High-throughput Screening of Dual-atom Catalyst for Hydrogen Evolution Reaction	Mr. Kajjana Boonpalit

12. Computational Material Sciences (con't)

Thursday, 2nd March 2023, Room Patummard			
Chair: Assoc. Prof. Pairot Moontrakul Co-Chair: Dr. Supawadee Namuangruk			
Time	Code	Title	Presenter
10.10-10.40	INV S12_O13	Oxidation of 5-Hydroxymethylfurfural to 2,5-Furandicarboxylic Acid on MnO_2 Catalysts: First-Principles-Informed Microkinetic Analysis	Asst. Prof. Dr. Suwit Suthirakun
10.40-11.10	INV S12_O17	The permeation and perturbation of carbon nanoparticles in biological membrane	Assoc. Prof. Dr. Jirasak Wong-ekkabut
11.10-11.40	INV S12_O14	Machine Learning Meets Quantum Chemistry in Catalyst Design	Dr. James P. Lewis
11.40-11.55	S12_O7	Synergetic effect of diatomic metal–boron embedded in C_2N monolayer promotes highly effective electroreduction of N_2 and CO_2 to urea	Dr. Nuttapon Yodsin
Lunch			
Chair: Assoc. Prof. Udomsilp Pinsook Co-Chair: Asst. Prof. Suwit Suthirakun			
14.00-14.30	INV S12_O18	Kinetics of Methane Oxidation on Noble Metal – Ceria Catalysts	Assoc. Prof. Alejandro Montoya
14.30-14.45	S12_O15	Engineering of PLGA-PEG Polymeric Nanocarriersfor Drug Delivery by Atomistic Molecular Dynamic Simulation	Mrs. Cherdpong Choodet
14.45-15.00	S12_O16	Effect of Cyclic RGD Peptide Functionalization on the Optical Properties of $Au_{23}(SR)_{14}$ Nanocluster Revealed by Density Functional Theory	Mr. Pakawat Toomjeen
Coffee Break			

13. Surface Sciences, Tribology and Thin Film Technology

Wednesday, 1st March 2023, Room Sunee-4			
Chair: Prof. Dr. Wisanu Pecharapa Co-Chair: Dr. Pakpoom Buabthong			
Time	Code	Title	Presenter
16.30-17.00	KN S13_O7	Low-Temperature Plasma Technology in Materials Engineering: Applications and challenges	Assoc. Prof. Dr. Dheerawan Boonyawan
17.00-17.15	S13_O2	The fabrication of WO_3 nanorods by controlling duty cycle of high-power impulse reactive magnetron sputtering with GLAD for electrochromic application	Dr. Peerapong Nucuhay
17.15-17.30	S13_O4	Effect of oxygen plasma treatment on the Au nanostructures dimensions and its SERS activity	Dr. Raju Botta

13. Surface Sciences, Tribology and Thin Film Technology (con't)

Thursday, 2nd March 2023, Room Sunee-4			
Chair: Asst. Prof. Dr. Phitsanu Poolcharuansin Co-Chair: Dr. Mati Horprathum			
Time	Code	Title	Presenter
10.10-10.40	INV S13_O8	Investigation of Pinhole Defects and Corrosion of TiO_2 Thin-Film Coating using GaAs Microisland Anodes	Dr. Pakpoom Buabthong
10.40-11.10	INV S13_O9	Light Management for Solar Fuel Technology	Asst. Prof. Wen-Hui (Sophia) Cheng
11.10-11.25	S13_O1	Controlling of the Titanium Content in Hydrogenated Amorphous Carbon Films Deposited using Reactive High Power Impulse Magnetron Sputtering	Miss Pornthip Ratchayotee
11.25-11.40	S13_O3	Antimony Species Dependence of Electrical Properties in Sb-doped Zinc Oxide Thin Films Prepared by Pulsed Laser Deposition	Mr. Sukittaya Jessadaluk
11.40-11.55	S13_O5	Self-cleaning SiO_2/TiO_2/PMMA nanocomposite films fabricated by spin coating technique: effect of different spinning speed and film layers	Miss Maneerat Songpanit
11.55-12.10	S13_O6	In-situ Grown Flexible Cr-doped NiO Binder-Free Thin Film Electrodes: Synthesis and Electrochemical Supercapacitive Properties	Dr. Durai Govindarajan

14. Catalyst and Materials Chemistry for Green Environment

Wednesday, 1st March 2023, Room Patumthip			
Chair: Dr. Kajornsak Faungnawakij Co-Chair: Dr. Bunyarat Rungtaweevoranit			
Time	Code	Title	Presenter
15.45-16.15	KN S14_O14	Research Activities on Materials in Northeastern Asia	Prof. Dr. Soo-Wohn Lee
16.15-16.45	S14_O1	Controlling The Photocatalytic Activity and Benzylamine Photooxidation Selectivity of Bi_2WO_6 via Ion Substitution: The Effects of Electronegativity	Assoc.Prof.Dr. Theeranun Siritanon
16.45-17.00	S14_O11	Chloroaluminate $[HN_{222}][Al_2Cl_7]$ Ionic Liquid Immobilized on the Copper (II) Oxide Nanoparticles $\{CuO[HN_{222}][Al_2Cl_7]\}$ Used in Case Study of Chan-Evans-Lam Coupling approach	Dr. Meena Nemiwal

14. Catalyst and Materials Chemistry for Green Environment (con't)

Thursday, 2nd March 2023, Room Patumthip			
Chair: Dr. Kajornsak Faungnawakij			
Time	Code	Title	Presenter
10.10-10.40	KN S14_O5	Electrochemical Synthesis of Energy Carrier for Efficient Use of Renewable Energy	Prof. Ryuji Kikuchi
10.40-11.10	INV S14_O6	Elaboration of Asymmetric Metal Surfaces for Selective Synthesis of Chiral Compounds and Biomass-Derived Chemicals	Asst. Prof. Dr. Chularat Wattanakit
11.10-11.40	INV S14_O7	On-stream Partial Oxidation of Methane to Methanol over Fe-loaded Metal-Organic Framework Catalysts	Dr. Bunyarat Rungtaweevoranit
11.40-11.55	S14_O4	Electrochemical Reduction of Nitrate to Ammonia on Transition Metals	Asst. Prof. Dr. Mohammadreza Karamad
11.55-12.10	S14_O12	Application of novel core-shell bimetallic catalyst for CO_2 conversion into liquid fuel	Dr. Sonal .
Lunch			
Chair: Asst.Prof. Watsa Khongnakorn Co-Chair: Asst.Prof.Dr. Chalida Klaysom			
14.00-14.30	KN S14_O16	Enhancement of TiO2-based Photocatalysis for Potential Applications in Environmental Purification	Prof. Wenbin CAO
14.30-15.00	INV S14_O15	Engineering Membranes and Functional Materials for Applications Towards Carbon Neutrality	Asst. Prof. Watsa Khongnakorn
Coffee Break			

14. Catalyst and Materials Chemistry for Green Environment (con't)

Time	Code	Title	Presenter
15.15-15.45	INV S14_O17	Surface modification for polymeric membrane toward high-flux and anti-fouling	Asst.Prof.Dr. Chalida Klaysom
15.45-16.00	S14_O10	The effect of operating conditions on the removal of 17b-Estradiol (E2) by photocatalytic membrane reactor	Miss Nicha Karnjanamit
16.00-16.15	S14_O2	Development of Photo-Thermal Catalyst from Biomass ash (Bagasse) for Hydrogen Production via Dry Reforming of Methane (DRM): An Experimental Study	Mr. Ittichai Kanchanakul
16.15-16.30	S14_O8	Rational design of hierarchical titanium silicalite-1 (HieTS-1) nanosheets with highly efficient Ti active species for fatty acid methyl esters (FAMEs) epoxidation	Mr. Sorasak Klinyod
16.30-16.45	S14_O13	Preparation of Zr-based MOFs material for absorbing carbon dioxide from waste plastic bottles.	Miss Chawisa Visanupornprasit

15. Instrumentation and Advanced Materials Characterization

Thursday, 2nd March 2023, Room Sunee-4			
Chair: Assoc.Prof.Dr. Prayoon Sonsiriritthigul Co-Chair: Assist.Prof.Dr. Nattapol Laorodphan and Dr.Phakkhananan Pakawanit			
Time	Code	Title	Presenter
14.00-14.30	KN S15_O4	Porous Materials for Electrocatalysis	Prof. Jong-Min Lee
14.30-15.00	KN S15_O5	X-ray Absorption Spectroscopy: The State of The Art Synchrotron-based Characterization	Dr. Pinit Kidkhunthod
Coffee Break			
15.15-15.45	INV S15_O7	Operando Investigation of Zn/Electrolyte Interface in Zinc-ion Batteries	Dr. Jitti Kasemchainan
15.45-16.15	INV S15_O6	Supramolecular Structure Characterisation of Pillararene-based Functional Materials	Dr. Thanthapatra Bunchuay
16.15-16.30	S15_O1	Capability of Ni-Mn-Co ternary lithium-borate glass as energy storage materials	Miss Jintara Padchasri
16.30-16.45	S15_O2	The glass-lithium–sulfur cathode for battery application	Dr. Sumeth Siriroj
16.45-17.00	S15_O3	From Al to Zr: a Review of Recent Applications for Atom Probe Tomography	Mr. Pierre-Yves Corre

16. Quantum Materials and Technologies

Thursday, 2nd March 2023, Room Sunee-3			
Chair: Assoc. Prof. Dr. Worawat Meevasana Co-Chair: Assoc. Prof. Dr. Anucha Watcharapasorn			
Time	Code	Title	Presenter
10.10-10.40	KN S16_O4	Atomic and Superconducting Quantum Devices	Assoc. Prof. Rainer Dumke
10.40-11.10	INV S16_O3	Low-cost instrument for the versatile measurement of spin Caloritronic phenomena: spin Seebeck effect, anisotropic magnetoresistance, anomalous Hall effect and anomalous Nernst effect	Asst. Prof. Dr. Poramed Wongjom
11.10-11.40	INV S16_O6	Interface Passivation for Efficient and Hydrophobic Perovskite Solar Cells	Assoc. Prof. Dr. Duangmanee Wongratanaphisan
11.40-12.10	INV S16_O8	Probing Spin Dynamics on Diamond Surfaces Using a Single Quantum Sensor	Dr.Sorawis Sangtawesin
Lunch			
Chair: Asst. Prof. Dr. Pruet Kalasuwan Co-Chair: Dr. Sorawis Sangtawesin			
14.00-14.30	INV S16_O7	Promising Material Integrations into Photonic Chip for Novel Applications	Dr.Teerapat Rutirawut
14.30-14.45	S16_O5	Silicon Nitride Photonics Biosensors and Bioreceptor Coating Techniques for Protein Detection	Assoc. Prof. Dr. Ukrit Mankong
14.45-15.00	S16_O2	Design and optimization of electron beam lithography dose and develop time for Al/AlO_x/Al Josephson junction	Miss Autpittayakul Aketasaeng
Coffee Break			
15.15-15.45	INV S16_O11	Solving Hard optimization problem with Quantum computer	Prof. Dr. Prabhas Chongstitvatana

16. Quantum Materials and Technologies (con't)

Time	Code	Title	Presenter
15.45-16.15	INV S16_O9	Predicting tensorial properties of materials with symmetries using equivariant neural networks	Dr. Teerachote Pakornchote
16.15-16.45	INV S16_O1	Practical security and certification of quantum key distribution systems	Dr. Hao Qin
16.45-17.15	INV S16_O10	The Unchanging Entropy of The Universe and Its Consequence on The Statistics of Particle Dynamics	Dr. Tanapat Deesuwan

17. Special Symposium: Advanced Materials for Flow Batteries

Wednesday, 1st March 2023, Room Sunee-3			
Chair: Assoc. Prof. Soorathep Kheawhom Co-Chair: Dr. Pinit Kidkhunthod			
Time	Code	Title	Presenter
10.40-11.10	KN S17_O8	Transition Metal Oxide Catalyst on Reduced Graphene Oxide for High Current Operations of Zinc-Air Battery	Prof. Dr. Tetsu Yonezawa
11.10-11.40	INV S17_O2	Graphene-based electrode materials used for energy storage devices	Dr. Chakrit Sriprachuabwong
11.40-12.10	INV S17_O4	Re-utilization of Mn and Zn from Spent Primary Batteries for Zn-Air and Zn-ion Battery Applications	Assoc. Prof. Dr. Rojana Pornprasertsuk
Lunch			
Chair: Prof. Rojana Pornprasertsuk Co-Chair: Dr. Chakrit Sriprachuabwong			
Time	Code	Title	Presenter
14.00-14.30	INV S17_O6	Sodium Ion Batteries- State of Art and Challenges	Asst. Prof. Dr. -Ing Pratap Kollu
14.30-15.00	INV S17_O7	Zinc-based Batteries: Energy Storage for a Circular Economy	Assoc. Prof. Dr. Soorathep Kheawhom
Coffee Break			
15.15-15.45	INV S17_O9	Flow Battery: Materials Technology, Economic and Sustainability Perspective	Dr. Pimpa Limthongkul
15.45-16.15	INV S17_O10	Membranes for Zinc-Based Redox Flow Battery	Prof. Anongnat Somwangthanaroj
16.15-16.30	S17_O3	Identification of MnO_2 and M-doped MnO_2 (M=Cu, Fe or Ni) as an air-electrode catalyst in Zn-Air Battery using X-ray techniques	Dr. Wanwisa Limphirat

18. Special Symposium: Thailand - Taiwan Bridge Project from Bioresources to Materials

Wednesday, 1st March 2023, Room Tubtim Siam 3			
Chair: Prof. Kaito Takahashi Co-Chair: Assoc. Prof. Pasit Pakawatpanuraut			
Time	Code	Title	Presenter
10.40-11.10	KN S18_O8	Advances in mass spectrometry-based metabolomics for precision medicine in kidney disease	Assoc.Prof. Sakda Khoomrung
11.10-11.40	INV S18_O7	Metabolomic-assisted standardization of Teak leaf extract as an active ingredient for hair growth promotion products	Assoc. Prof. Dr. Kornkanok Ingkaninan
11.40-12.10	INV S18_O10	Identification and characterization of natural product-based chloride channel inhibitors for therapeutic applications in epithelial disorders	Professor Dr. Chatchai Muanprasat
Lunch 🍽			
Chair: Assoc. Prof. Pasit Pakawatpanuraut Co-Chair: Prof. Kaito Takahashi			
Time	Code	Title	Presenter
14.00-14.30	KN S18_O11	Semiconducting Polymer Photocatalysts for Solar-driven Hydrogen Evolution	Professor Ho-Hsiu Chou
14.30-15.00	INV S18_O3	Computational Understanding of Photocatalytic Hydrogen Evolution Reaction on Benzothiadiazole Covalent Organic Framework	Prof. Kaito Takahashi
Coffee Break ☕			

18. Special Symposium: Thailand - Taiwan Bridge Project from Bioresources to Materials (con't)

Time	Code	Title	Presenter
15.15-15.45	INV S18_O5	Improving photocatalytic performance of bismuth-based oxides in selective oxidation of benzylamine	Assoc. Prof. Dr. Burapat Inceesungvorn
15.45-16.15	INV S18_O4	Greener Approaches in the Preparation of Energy Materials	Assoc. Prof. Pasit Pakawatpanurut
16.15-16.45	INV S18_O6	Oxidation Reactions of HMF and Furfural	Assoc. Prof. Ekasith Somsook
16.45-17.00	S18_O1	Mechanistic Insights into Hydrogen Production from Formic Acid Catalyzed by Pd@Ndoped Graphene: A Role of Nitrogen Dopant	Dr. Preeyaporn Poldorn
17.00-17.15	S18_O2	Discovery of Lipid Peroxidation Inhibitors from Bacopa Species Prioritized through Multivariate Data Analysis and Multi-Informative Molecular Networking	Dr. Tongchai Saesong

19. Future of Materials: Education, Research and Industry

Thursday, 2nd March 2023, Room Sunee-1			
Chair: Asst.Prof.Dr.Chaiyasit Banjongprasert Co-Chair: Asst.Prof.Dr.Panchika Prangkio			
Time	Code	Title	Presenter
10.10-10.25	OP1	LMS Instruments Co., Ltd	Mr. Apimook Laptippamon
10.25-10.40	OP2	COAX Group Co., Ltd.	Mr. Pornsawan Klayklung
10.10-10.55	OP3	New Technology Materials Research	Ms. Thanisararat Saleesung
10.55-11.10	OP4	Chemical Express Co.,Ltd.	Mr. Apirat Tangwonguthai
Lunch 🍽			

PROGRAM

of Poster Presentations

1. Emerging Solar PV and Energy Harvesting Materials/Devices		
Abstract Code	Title	Presenter
S1_P1	Self-Nucleation of Silver Selenide Interfaces by Cold Sintering Process for Room Temperature Thermoelectric	Dejwikom Theprattanakorn
S1_P2	Color Tuning of Halide Perovskite Solar Cells for Indoor Light Applications	Methawee Nukunudompaanich
2. Energy Storage Materials/Devices/Applications		
S2_P1	N-doped carbon dots coupled NiFe-LDH hybrids on Cathodized Stainless Steel Mesh electrocatalyst for Oxygen Evolution Reaction	Montree Opchoei
S2_P2	The modification of separator via tungsten carbide addition in cellulose nano fiber for Zn-ion batteries	Pattaraphorn Woottapanit
S2_P3	Development of sulfur-doped vanadium-oxides for zinc-ion battery	Kittima Lolupiman
S2_P4	Electroplating of zinc on conductive cloth as zinc anode for flexible zinc-ion batteries	Napat Kiatwisarnkij
S2_P5	$ZnIn_2S_4$ nanosphere interlayer for dendrite-free Zn ion battery	Chengwu Yang
S2_P6	Inhibition of zinc dendrite growth by titanium dioxide - cellulose separators for superb aqueous zinc ion batteries	Jingjing Niu
S2_P7	Effect of ball milling parameters on the dissolution-deposition mechanism of MnO_2 cathode in Zinc-ion battery	Chanin Tangpongkitjaroen
S2_P8	The fabrication of 3-dimensional supercapacitor by direct ink write 3D printing of carbon-based materials	Niwat Hemha
S2_P9	Synthesis and electrochemical properties of delafossite $AgFeO_2$ nanoparticles by a simple co-precipitation method	Choulong Veann
3. Graphene and Carbon Materials		
S3_P1	Synthesis of fluorescent carbon dots from water hyacinth leaves by gamma irradiation pretreated-hydrothermal method	Kanokorn Wechakorn
S3_P2	High-Performance Supercapacitor Employing Microporous Activated Carbon Derived from Gamma-Pretreated Water Hyacinth Leave	Tanagorn Kwamman

Abstract Code	Title	Presenter
S3_P3	The Synthesis of Water Hyacinth Carbon Dots UV–blocking Film via Gamma Irradiation Process for Plant–promoting Application	Threeraphat Chutimasakul
S3_P5	Conversion of water hyacinth to nitrogen-rich microporous carbon via potassium acetate buffer-assisted hydrothermal carbonization	Sopon Butcha
S3_P6	Multi-walled carbon nanotube multilayer thin films decorated with silver nanoparticles for ammonia gas sensing	Ekarat Detsri
S3_P7	Electrophoretic Deposition of Carbon Nanotube and Graphene Composites on Anodized Stainless Steel for Biological Applications	Winadda Wongwiriyapan
4. Dielectrics, Piezoelectrics, Ferroelectrics, Thermoelectrics and Superconductors		
S4_P1	Influence of A-site cation on phase, microstructure, and dielectric properties of titanate-based perovskite oxides	Surapong Boonliang
S4_P2	Preparation of highly dielectric constant and low dielectric loss La-doped HfO_2 films by sol-gel method	Sukanda Jiansirisomboon
S4_P3	Investigation on Dielectric Properties of Ti-doped $LaFeO_3$ Ceramics Synthesized by Polymerized Complex Method	Tossaporn Chullaphan
S4_P4	The effect of firing temperatures on phase formation, microstructure and magnetic properties of $Ni_{0.6}Zn_{0.4}Fe_2O_4$ ceramics synthesized by the solid-state combustion technique	Theerachai Bongkarn
S4_P7	Firing temperatures effect on phase formation, microstructure and electrical properties of BNBKL ceramics fabricated via the solid-state combustion technique	Metarsit Klinbanmor
S4_P8	Synthesis and characterizations of β-Zn_4Sb_3 powders by mechanical alloying method and calcination under Ar atmosphere flowing	Tachgiss Jampreecha
S4_P9	Comparative Study of Electromechanical Properties between A-site (Ag^+) and B-site (Mn^{3+}) Acceptor Doped $(Bi_{0.5}Na_{0.5})_{0.93}Ba_{0.07}TiO_3$ lead-free piezoceramics	Sasipohn Prasertpalichat

5. Magnetic Materials and Their Applications		
Abstract Code	Title	Presenter
S5_P1	Degradation of ferromagnetic MnBi powder synthesized by low-temperature Sintering in vacuum	Thanit Saisopa
6. Manufacturing, Advanced Processing and Additive Manufacturing of Engineering Materials		
S6_P2	Production of Carbon Pre-Agglomerate Pellet from Mill Scale and Rubber Tree Bark as a Charged Material for EAF Steelmaking	Somyote Kongkarat
7. Metals, Alloys, Composites and Construction Materials		
S7_P1	The microstructure response of sintered Fe-Mo-Si-C alloys with high-tempering	Natchanon Kallaya
8. Ceramic and Glass Technology		
S8_P1	Effect of h-BN as an additive on physical and mechanical properties of Al_2TiO_5 composite	Paramapat Treetornkeerati
S8_P3	A study on SiC susceptor configuration for microwave hybrid heating	Akawat Ngamkiatpaisan
S8_P4	The effect of barium content on the luminescence property of dysprosium-doped borate glasses	Narun Luewarasirikul
S8_P5	Nd^{3+}-doped borate glasses development for efficient NIR laser medium material	Narun Luewarasirikul
S8_P6	Synthesis and luminescence properties of Sr_2ZnMoO_6: Eu_2O_3 phosphors	Pacharee Krongkitsiri
S8_P7	Synthesis and structural characterization of $ZnTiO_3$ nanoparticles with enhanced light fastness, UV protection and antibacterial activity for natural fabrics	Rattiphorn Sumang
9. Polymers, Rubber, Bioplastics, Colloid and Emulsion		
S9_P1	Waterborne Silane/Polysiloxane Hydrophobic Coating for Stone-built Cultural Heritage Conservation	Supapit Kongchan
S9_P2	Reusable flexible halochromic cellulose-based composite tape for visual alkaline leaking point detection: Preparation and property testing	Sirawit Fuwongsit
S9_P3	Synthesis and post-polymerization functionalization of a tosylated hyper-crosslinked polymer for fast and efficient removal of organic pollutants in water	Bunyaporn Todee

Abstract Code	Title	Presenter
S9_P4	Nitrogen Functional Groups Functionalized Hyper-Crosslinked Polymers for Removal of Iodine from Nuclear Waste	Kritanan Junthod
S9_P5	Synthetic Methodologies of Reactive Starch Intermediates and Their Applications	Phitawat Namnouad
S9_P7	Improvement of Breath Figure Method for Honeycomb-like Patterned Microporous Biodegradable Polylactic Acid Film with TWEEN 60/80 Emulsifiers	Doungkamon Kaowwongkot
S9_P8	Synthesis of (polylactide-co-glycolide)-block-poly(ethylene glycol) segmented block copolymers using novel catalysts for use as biodegradable hydrogels for cell encapsulation	Nuttawut Khammata
S9_P9	Poly(L-lactic acid)/poly(vinylidene fluoride) composites for use nanofibrous filters in filter mask application	Siriprapa Paebdib
S9_P10	Development of Guar Gum and Borax Smart Thin Film Hydrogel	Aamir Khan
S9_P11	Optimization of Microwave-assisted Alcoholysis of Post-consumer PLA employing Response Surface Methodological Approach: A Two-Component Modelling Using Time and Temperature	Narisara Jaikaew
S9_P12	Preparation and Characterization of Bio-composite Packaging Films from Poly(lactic acid) and Rice Straw Cellulose	Supattra Piewkliang
S9_P13	Polylactide/Modified MXene Composites for Toughened Electronic Packaging Films	Autchara Kham-ek
S9_P14	Preparation of Delayed-Release Film Coating from Cellulose Acetate Phthalate for Food Poisoning Drug	Wissuta Boonbanjob
10. Biomaterials and Applications		
S10_P1	Phase and Properties of Hydroxyapatite Synthesized from Bovine Bone	Jatsada Wadthanakul
S10_P2	Decoration of silver nanoparticles into the surface of activated carbon obtained from agricultural waste and antimicrobial application	Thananchai Dasri

Abstract Code	Title	Presenter
S10_P3	Preparation and Characterization of Nisin-conjugated Liposomal Delivery System Targeting ACE2 Receptors	Panchika Prangkio
S10_P4	DBD-Like Plasma Jet Design for Germination Improvement of Andrographis paniculate seeds	Khattiya Srakaew
S10_P5	Physiology and yield quality of rice (*Oryza sativa* L.) in response to hydroxyapatite nanoparticles as alternative fertilizers	Sirinapa Pongpeera
S10_P6	Biocompatibility of a polypeptide/polyester barrier membrane for guided bone regeneration treatment	Donraporn Daranarong
S10_P7	Microstructural design to improve shape-memory behavior of 3D-printed poly(L-lactide-co-glycolide-co-caprolactone) scaffolds for bone tissue engineering	Amataporn Jompralak
S10_P8	Post-harvest quality and shelf life of Chrysanthemum treated by nanocellulose solution extracted from agricultural waste	Chakkaphan Wattanawikkam
S10_P9	3D printing of proximal interphalangeal (PIP) joints using biomedical grade titanium alloy and the design consideration of biomechanical testing apparatus to investigate wear and longevity of finger joints	Panaruj Bussayasripatt
S10_P10	Applications of Immobilized Bacterial Nanocellulose as Smart Biomaterials for Chemical Sensing	Nathawut Choengchan
S10_P11	Plant pot from fermented straw	Sitthi Duangphet
S10_P12	Fabrication and characterization of biodegradable antibacterial filter layer in a surgical face mask	Jaggawut Suwannachot
11. Sensors, Organic Electronics and Printed Electronics		
S11_P1	Flexible Room-Temperature Gas Sensor Using Cobalt Oxide Nanowires	Supaporn Kamlue
S11_P2	The influence of oxygen flow rate on the preparation of SnO_2 nanorod films by DC magnetron sputtering with GLAD for NH_3 gas sensing	Nampueng Pangpaiboon

Abstract Code	Title	Presenter
S11_P3	Fluorometric Determination of Preservatives in Skincare Products using Layered Double Hydroxides as Peroxidase Enzyme Mimicking	Kanokwan Sakunrungrit
S11_P4	Study of electrical properties of tin dioxide nanowires	Pranlekha Traiwatcharanon
S11_P5	Graphene-Printed Electrode Modified with Multi-Walled Carbon Nanotubes for Voltammetric Detection of 2,4,6 Trinitrotoluene Explosive	Paithoon Prasertying
S11_P6	Quantification of Sulfite by In-situ Generation and Electrochemical Detection of SO_2 gas on a Graphene Printed Sensor	Kanchana Uraisin
S11_P7	Paper-based analytical devices for electrochemical detection of adulterated sibutramine in slimming products	Phoonthawee Saetear
S11_P8	Synthesis and characterization of 2H-pyrano[2,3,4- de]coumarin	Patiphan Jaisabai
12. Computational Material Sciences		
S12_P1	Photoinduced water splitting with graphitic carbon nitride by electron-driven proton transfer	Yuewen YANG
S12_P2	Neural Network Force Field Modeling of LixSny Alloys for Molecular Dynamics Simulation	Panupol Untarabut
S12_P3	Computational Screening of Transition Metal Doped $Mo_2B_2O_2$ as Cathode Materials of Li-S Batteries	Wongsathorn Kaewraung
S12_P4	Effect of Sn doping on Li intercalation in V_2O_5 Cathodes of Li-ion Batteries: A First-Principles Study	Lappawat Ngamwongwan
S12_P5	Photocatalytic CO_2 Reduction on Two-Dimensional Cobalt Porphyrin-Based Metal-Organic Frameworks: A Theoretical Approach	Jirawattana Rungruengkit
S12_P6	The Role of $Ti_3C_2T_2$ as a Cathode Additive for Eliminating the Shuttle Effect in Room-Temperature Sodium-Sulfur Batteries	Niphat Thatsami
S12_P7	Terahertz Sources Based on ZnO/(Sb,N) Codoped ZnO Quantum Well: First-principles Study	Pathipat Latthiwan

Abstract Code	Title	Presenter
S12_P8	Signature Interactions between Cancer DNA and Cysteamine-Decorated Gold Nanoparticles Revealed by Multi-Scale Simulation	Witthawat Phanchai
S12_P9	Design and analysis phase change material based on reflective metasurface at THz frequencies	Asmar Sathukarn
13. Surface Sciences, Tribology and Thin Film Technology		
S13_P1	Electrical Properties and Phase Structure of Aluminium- Doped Zinc Oxide Film on PI Substrate Prepared by RF-Sputtering	Thimada Woraporntassana
S13_P2	Preparation and Characteristics of Carbon film on Glass substrate Prepared by RF-Sputtering.	Chonticha Wannasiri
S13_P3	Effect of heat treatment on the phase structure of the sputtered copper film	Tassanee Prasitdacha
S13_P4	Measurement and data analysis of pesticide in rice by surface-enhanced Raman scattering (SERS)	Ananya Eam Opha
S13_P5	Optical Properties of CuCdS Thin Film Prepared by Vacuum Thermal Evaporation Technique	Montree Hankoy
S13_P6	The influence of oxygen flow rate on the preparation of SnO_2 nanorod films by DC magnetron sputtering with GLAD for NH_3 gas sensing	Nitisai Phongphua
S13_P7	Influence of annealing and etching on physical and wetting properties of acrylic surface	Wattikon Sroila
S13_P8	Corrosion Resistance of Tensioned DLC Film-Coated Ti-6Al-4V Substrate Prepared by PBII Method	Nutthanun Moolsradoo
S13_P9	Tribological Properties of DLC Films Against Aluminum Alloys Under Dry Friction Test	Nutthanun Moolsradoo
S13_P10	The Effect of Cathode Arc Current on The Properties of TiN Thin Films Prepared by Cathodic Arc Deposition	Tanattha Rattana
S13_P11	Competitive Relaxation Mechanisms in Strained Epitaxial InGaSb on GaSb Substrate	Suwit Kiravittaya

Abstract Code	Title	Presenter
S13_P12	Low-temperature structural, optical, and electrical transport investigation of Mo-doped V_2O_3 thin films for high-performance engineering applications	Muthukkumaran Karthikeyan
14. Catalyst and Materials Chemistry for Green Environment		
S14_P1	Band-gap Modulated Carbon Nitride Photoanodes for Enhanced Photoelectrochemical Activity	Haipeng WANG
S14_P2	Microwave-assisted Preparation of Nanoporous Carbon Modify by KOH as a Sorbent for Efficiency Adsorption of Pollutants	Korn Sukphunphoncharoen
S14_P3	Nanoporous carbon derived from sugarcane via hydrothermal-carbonization assisted KOH activation	Sirapop Chanphui
S14_P4	Eco-friendly preparation of biomass-derived nanoporous carbon via hydrothermal carbonization	Naruemon Apinyakul
S14_P5	Low C-C coupling barrier for ethanol synthesis on non-metal doped graphyne driven by bond order conservation and flexible orbital hybridization	Poobodin Mano
S14_P6	Control the morphology of Zirconium-based MOF-808	Sininat Boonmark
S14_P7	Effect of Base Solution in Synthesis of Aluminum-based Metal-Organic Frameworks $[Al(OH)(1,4\text{-ndc})]_n$	Yollada Inchongkol
S14_P8	Effect of Er ion on Physical, Optical and Low-photon-energy Driven Photocatalytic Properties of Yb-doped $BiVO_4$ Synthesized by One-step Sonochemical Process	Kanokthip Boonyarattanakalin
S14_P10	Fabrication of functionalized electrospun Ce-W-TiOx nanofibers to serve as environmentally benign deNOx catalysts in ammonium selective catalytic reduction process	Apiwat Dankeaw
S14_P11	Defective Metal–Organic Frameworks by Linker Fragmentation and Its Effects on Organosulfur Removal	Panyapat Ponchai
S14_P12	Structural, Optical, and Photocatalytic Properties of La^{3+} doped CeO_2 Nanospheres for Enhanced Photodegradation of Tetracycline	Somchai Sonsupap

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S14_P14	The influence of photocatalytic morphology towards activity of TiO_2 under UV-irradiation	Dr Kim Hoong Ng
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16. Quantum Materials and Technologies		
S16_P1	Characterization of Molecular Vortex Beam using the Near-field Detection Method	Pissunee Deechuen
18. Special session: Thailand - Taiwan Bridge Project from bioresources to materials		
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