supporting partners

48th STT
SCIENCE AND TECHNOLOGY FOR ADVANCING TOWARDS SDGs

48th INTERNATIONAL CONGRESS ON SCIENCE TECHNOLOGY AND TECHNOLOGY-BASED INNOVATION

"SCIENCE AND TECHNOLOGY FOR ADVANCING TOWARDS SDGs"

~PROGRAM BOOK~

ทรงพระเจริญ

PROGRAM BOOK

The 48th International Congress on Science, Technology and Technology-based Innovation (STT48)

SCIENCE AND TECHNOLOGY FOR ADVANCING TOWARDS SDGs

November 29th-December 1st, 2022
School of Science, Walailak University,
Thaiburi, Tha Sala District,
Nakhon Si Thammarat, Thailand

Organized by:

The Science Society of Thailand under the Patronage of His Majesty the King
in Association with
School of Science, Walailak University

CONTENT

WELCOME MESSAGE FROM THE PRESIDENT OF THE SCIENCE SOCIETY OF THAILAND UNDER THE PATRONAGE OF HIS MAJESTY THE KING

On behalf of the Science Society of Thailand under the Patronage of His Majesty the King, I am delighted to invite you to the 48th International Congress on Science, Technology and Technology-based Innovation, or STT48, which will be held during November 29th - December 1st, 2022 in Nakhon Si Thammarat, Thailand. This event is our annual congress, jointly organized by School of Science, Walailak University, Thaiburi, Tha Sala District, Nakhon Si Thammarat, Thailand

The theme of STT48, "SCIENCE AND TECHNOLOGY FOR ADVANCING TOWARDS SDGs", is thus important for all people to realize and achieve the sustainable development goals. I believe this congress will provide all not only to network regionally and worldwide, but also will lead to a unique opportunity among scientists in Asia and the world for realizing the role of science and technology in solving global challenges and finding solutions that are sustainable and beneficial to all people.

In addition, you all will enjoy one of the most beautiful cities from Southern of Thailand.

I cordially invite you all to join us for the interesting scientific and science-related research towards SDGs.

I'm so thankful for your co-operations and looking forward to seeing you all at this congress

Associate Professor Thanuttkhul Mongkolaussavarat, Ph.D.

President, the Science Society of Thailand Under the Patronage of His Majesty the King

WELCOME MESSAGE FROM THE CHAIRPERSON OF THE 48TH INTERNATIONAL CONGRESS ON SCIENCE, TECHNOLOGY AND TECHNOLOGY–BASED INNOVATION

On behalf of the organizing committee, we look forward to welcoming you to Thailand and to the 48th International Congress on Science, Technology and Technology-based Innovation (STT48) which will be held at Walailak University based in Nakhon Si Thammarat during November 29th – December 1st, 2022. Nakhon Si Thammarat, the second largest province in southern Thailand, locates 780 kilometers south of Bangkok along the Gulf of Thailand signified by pristine beaches as well as two national parks.

Since its first launch almost half a century ago as The Congress on Science, Technology and Technology, the congress, organized by The Science Society of Thailand under the Patronage of His Majesty the King, has been one of the long-lasting annual scientific meeting events in Thailand. The congress has recently transformed its name to The International Congress on Science, Technology and Technology-based Innovation to reflect its expanding participants from Thailand and overseas as well as the breadth of its scientific program. This year, the congress is arranged in collaboration with Walailak University.

The International Congress on Science, Technology and Technology-based Innovation (STT) is the largest congress of diversified fields in Science, attended by around one thousand local and oversea participants. The aim of the congress is to bring together Thai and overseas scientists from a wide range of areas in science, technology, and innovation, to provide them the opportunity to present their research work, obtain the update knowledge and exchange experiences. A certain number of researchers from overseas countries will be invited to join this congress.

We are most privileged and honored to have Her Royal Highness Princess Maha Chakri Sirindhorn graciously preside over the Opening Ceremony on November 29th, 2022 at 9 a.m. and attend the Keynote Lecture by a world-renowned scientist and the Plenary Lecture from the 2022 Outstanding Scientist of Thailand. During the congress, lectures from several invited speakers, and hundreds of contributed papers from various areas of Science and Technology will be presented orally (onsite or virtual) or in the form of posters. Exhibition on advanced scientific and technological knowledge or instruments/appliances from various organizations and several suppliers will be displayed.

The executive committee, the scientific advisory board, and the organizing committee hope to make STT48 an exciting and memorable scientific event. You will also have the opportunity to visit southern Thailand enriched with cultural and natural attractions.

With the re-connecting world, we would like to welcome everyone back after the difficult time of the pandemic for the three days of scientific content and in-person idea exchanges. We look forward to meeting all of you at STT48.

Professor Pranut Potiyaraj, Ph.D.

Chairperson STT48

WELCOME MESSAGE FROM THE HOST OF THE 48TH INTERNATIONAL CONGRESS ON SCIENCE, TECHNOLOGY AND TECHNOLOGY–BASED INNOVATION

On behalf of School of Science, Walailak University and the 48th International Congress on Science, Technology and Technology–based Innovation (STT48), it is my pleasure to invite all the great scientists, academicians, young researchers, teachers and students from all over the world to attend the 48th International Congress on Science, Technology and Technology– based Innovation (STT48) from November 29th to December 1st, 2022 at Walailak University, Nakhon Si Thammarat, Thailand.

STT48 shares an insight into the recent research and cutting-edge technologies, which gains immense interest with the colossal and exuberant presence of adepts, young and brilliant researchers, scientists, vibrant teachers and talented student communities.

STT48's goal is to bring together, a multi-disciplinary group of scientists from all over the world to present and exchange break-through ideas relating to the science, technology and innovation. It promotes top level research and to globalize the quality research in general, thus making discussions, presentations more internationally competitive and focusing attention on the recent outstanding achievements in the field of science, technology and innovation.

Since this conference covers very global aspects on science, technology and innovation from very fundamental issue to newest innovation, advanced technology in research and education.

We are looking forward to an excellent meeting with great scientists from different countries around the world and sharing new and exciting research in science, technology and innovation, which will be held at Walailak University, Nakhon Si Thammarat, Thailand, from November 29th to December 1st, 2022.

Associate Professor Mullica Jaroensutasinee, Ph.D.

Dean of School of Science, Walailak University

HISTORY OF THE CONGRESS ON SCIENCE AND TECHNOLOGY OF THAILAND

International Congress on Science, Technology and Technology- based Innovation (STT) , originally named " The Congress on Science and Technology of Thailand" with the same abbreviation of STT, is one of the most important scientific meetings in Thailand. It was firstly organized in 1974 by the Science Society of Thailand (SST) and Chulalongkorn University. Since then, the alternative Universities in Thailand have gone through the bidding for co-organizing the STT in the following years. It is the annual national congress for 45 years. To mark the 72nd Anniversary of the Science Society of Thailand in 2020, the congress has been changed to the international meeting.

The aim is to create scientific forum for national and international scientists and technologists as well as young Thai scientists from diversified fields of science and technology to meet and to provide them the opportunity to share and exchange their knowledge and experiences. It is our annual congress, which originally was the national meeting since 1971, but this year, it is its first time to be held as the international meeting.

Typically, the Congress Plenary Lecture is given by a Nobel Laureate in Science and Technology, followed by an honorable lecture of the Outstanding Scientist of Thailand in that particular year. During the Congress, lectures by several renowned invited speakers, panel discussions and hundreds of contributed papers from various areas of Science and Technology are presented orally or in the form of posters. In addition, the outstanding teacher awards, the young scientist awards, as well as the innovation awards and the national winners of high school student science projects are awarded in the Congress. An exhibition of advanced scientific and technological instruments and appliances from suppliers and enterprises are also the attractive event of the Congress.

ครั้งที่ ปี / วันที่ เดือน	ชื่อการประชุม	สถาบันเจ้าภาพร่วม	ประธาน (จำนวนผลงานวิจัย)	ประธานในพิธีเปิด
1. พ.ศ. 2514 26-27 พฤศจิกายน	การวิจัยทางวิทยาศาสตร์ กรุงเทพฯ 2514	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย	ศ.ดร.ประชุมสุข อาชวอำรุง (83 เรื่อง)	-
2. พ.ศ. 2516 30 พฤศจิกายน - 2 ธันวาคม	การวิจัยทางวิทยาศาสตร์ กรุงเทพฯ 2516	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย	ศ.ดร.ประชุมสุข อาชวอำรุง (219 เรื่อง)	-
3. พ.ศ. 2518 12-13 ธันวาคม	การวิจัยทางวิทยาศาสตร์ กรุงเทพฯ 2518	คณะวิทยาศาสตร์ คณะแพทยศาสตร์ มหาวิทยาลัยมหิดล	ศ.ดร.กำจร มนูญปิจุ (249 เรื่อง)	-
4. พ.ศ. 2520 16-17 ธันวาคม	การวิจัยทางวิทยาศาสตร์ กรุงเทพฯ 2520	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย	รศ.ดร.กำจัด มงคลกุล (344 เรื่อง)	-
5. พ.ศ. 2521 22-24 ธันวาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาภาคเหนือ	คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่	ศ.ดร.พรชัย มาตังคสมบัติ (232 เรื่อง)	-
6. พ.ศ. 2522 21-23 ธันวาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาประเทศ	คณะวิทยาศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ บางแสน	ศ.ดร.พรชัย มาตังคสมบัติ (232 เรื่อง)	-
7. พ.ศ. 2523 4-6 ธันวาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาประเทศ	คณะวิทยาศาสตร์ คณะแพทยศาสตร์ มหาวิทยาลัยมหิดล	รศ.ดร.นัยพินิจ คชภักดี (233 เรื่อง)	สมเด็จพระเจ้าลูกเธอเจ้าฟ้าจุฬาภรณวลัยลักษณ์
8. พ.ศ. 2525 28-30 ตุลาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาประเทศ	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย	รศ.ดร.สัณห์ พณิชยกุล (245 เรื่อง)	-

ครั้งที่ ปี / วันที่ เดือน	ชื่อการประชุม	สถาบันเจ้าภาพร่วม	ประธาน (จำนวนผลงานวิจัย)	ประธานในพิธีเปิด
9. พ.ศ. 2526 27-29 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาภาคตะวันออกเฉียงเหนือ	คณะวิทยาศาสตร์ มหาวิทยาลัยขอนแก่น	รศ.ดร.สัณห์ พณิชยกุล (174 เรื่อง)	รัฐมนตรีว่าการกระทรวงวิทยาศาสตร์เทคโนโลยีและการพลังงาน (ฯพณฯ ดำรง ลัทธพิพัฒน์)
10. พ.ศ. 2527 25-27 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย	คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่	ศ.ดร.มนตรี จุฬาวัฒนทล (280 เรื่อง)	นายกรัฐมนตรี (พลเอก เปรม ติณสูลานนท์)
11. พ.ศ. 2528 24-26 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย	คณะวิทยาศาสตร์ มหาวิทยาลัยเกษตรศาสตร์	ศ.ดร.มนตรี จุฬาวัฒนทล (251 เรื่อง)	สมเด็จพระเจ้าลูกเธอเจ้าฟ้าจุฬาภรณวลัยลักษณ์
12. พ.ศ. 2529 20-22 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย	คณะวิทยาศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ ประสานมิตร	รศ.ดร.ภิญโญ พานิชพันธ์ (277 เรื่อง)	สมเด็จพระบรมโอรสาธิราชฯ สยามมกุฎราชกุมาร
13. พ.ศ. 2530 20-22 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย	คณะวิทยาศาสตร์ มหาวิทยาลัยสงขลานครินทร์ วิทยาเขตหาดใหญ่	รศ.ดร.ภิญโญ พานิชพันธ์ (420 เรื่อง)	สมเด็จพระเจ้าลูกเธอเจ้าฟ้าจุฬาภรณวลัยลักษณ์
14. พ.ศ. 2531 19-21 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีแห่งประเทศไทย	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย	ศ.ดร.จริยา บรอดเคลแมน (259 เรื่อง)	นายกรัฐมนตรี (พลเอกชาติชาย ชุณหะวัณ)
15. พ.ศ. 2532 18-20 ตุลาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาทรัพยากรภาคเหนือ	คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่	ศ.ดร.จริยา บรอดเคลแมน (394 เรื่อง)	ผู้แทนสมเด็จพระเจ้าลูกเธอเจ้าฟ้าจุฬาภรณวลัยลักษณ์
16. พ.ศ. 2533 25-27 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาประเทศ	คณะวิทยาศาสตร์ สถาบันเทคโนโลยีพระจอมเกล้า เจ้าคุณทหารลาดกระบัง	ศ.ดร.วิชัย ริ้วตระกูล (369 เรื่อง)	-
17. พ.ศ. 2534 24-26 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาทรัพยากรภาคเหนือ	คณะวิทยาศาสตร์ มหาวิทยาลัยขอนแก่น	ศ.ดร.วิชัย ริ้วตระกูล (349 เรื่อง)	-
18. พ.ศ. 2535 27-29 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาประเทศ	คณะวิทยาศาสตร์ มหาวิทยาลัยเกษตรศาสตร์ ณ ศูนย์การประชุมแห่งชาติสิริกิติ์	ศ.ดร.สุชาติ อุปถัมภ์ (297 เรื่อง)	-
19. พ.ศ. 2536 27-29 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาชายฝั่ง	คณะวิทยาศาสตร์ มหาวิทยาลัยสงขลานครินทร์ ณ โรงแรมดุสิต เจ.บี.หาดใหญ่	ศ.ดร.สุชาติ อุปถัมภ์ (438 เรื่อง)	-
20. พ.ศ. 2537 19-21 ตุลาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาเศรษฐกิจ สังคม และสิ่งแวดล้อม	คณะวิทยาศาสตร์และเทคโนโลยี มหาวิทยาลัยธรรมศาสตร์ ณ เซ็นทรัลพลาซ่า	ศ.ดร.สมศักดิ์ พันธุวัฒนา (252 เรื่อง)	นายกรัฐมนตรี (นายชวน หลีกภัย)
21. พ.ศ. 2538 25-27 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาอุตสาหกรรม	คณะวิทยาศาสตร์ มหาวิทยาลัยบูรพา ณ โรงแรมแอมบาสซาเอร์ซิตี้ จอมเทียน ชลบุรี	ศ.ดร.สมศักดิ์ พันธุวัฒนา (354 เรื่อง)	นายกสภามหาวิทยาลัยบูรพา (นายเกษม จาติกวณิช)
22. พ.ศ. 2539 16-18 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อพัฒนาทรัพยากรมนุษย์	คณะวิทยาศาสตร์ มหาวิทยาลัยรามคำแหง ณ บางกอกคอนเวนชั่นเซ็นเตอร์ เซ็นทรัลพลาซา ลาดพร้าว	รศ.ดร.พิณทิพ รื่นวงษา (333 เรื่อง)	ผู้ว่าราชการกรุงเทพมหานคร (ดร.พิจิตต รัตตกุล)
23. พ.ศ. 2540 20-22 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อพัฒนาคุณภาพชีวิตในภูมิภาค	คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่ ณ โรงแรมโลตัส ปางสวนแก้ว	รศ.ดร.พิณทิพ รื่นวงษา (495 เรื่อง)	รัฐมนตรีว่าการกระทรวงวิทยาศาสตร์เทคโนโลยีและสิ่งแวดล้อม (นายยิ่งพันธ์ มนะสิการ)
24. พ.ศ. 2541 19-21 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาเศรษฐกิจที่มั่นคง	คณะวิทยาศาสตร์ มหาวิทยาลัยมหิดล ณ ศูนย์การประชุมแห่งชาติสิริกิติ์	ผศ.ดร.ทิพาพร ลิมปเสนีย์ (463 เรื่อง)	นายกรัฐมนตรี (นายชวน หลีกภัย)
25. พ.ศ. 2542 20-22 ตุลาคม	วิทยาศาสตร์และเทคโนโลยี เพื่อการพัฒนาทรัพยากรท้องถิ่น	คณะวิทยาศาสตร์ มหาวิทยาลัยนเรศวร ณ โรงแรมอมรินทร์ลากูน พิษณุโลก	ผศ.ดร.ทิพาพร ลิมปเสนีย์ (581 เรื่อง)	รัฐมนตรีว่าการกระทรวงวิทยาศาสตร์เทคโนโลยีและสิ่งแวดล้อม (ดร.อาทิตย์ อุไรรัตน์)
26. พ.ศ. 2543 18-20 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีสู่สหัสวรรษใหม่	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ณ ศูนย์การประชุมแห่งชาติสิริกิติ์	รศ.ดร.ศุภวรรณ ตันตยานนท์ (739 เรื่อง)	-
27. พ.ศ. 2544 16-18 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการฟื้นฟูเศรษฐกิจไทย	มหาวิทยาลัยสงขลานครินทร์ โรงแรม ลี การ์เดนส์ พลาซ่า	รศ.ดร.ศุภวรรณ ตันตยานนท์ (921 เรื่อง)	ผู้ว่าราชการจังหวัดสงขลา
28. พ.ศ. 2545 24-26 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาเศรษฐกิจที่ยั่งยืน	คณะวิทยาศาสตร์ประยุกต์ สถาบันเทคโนโลยีพระจอมเกล้าพระนครเหนือ ณ ศูนย์การประชุมแห่งชาติสิริกิติ์	รศ.ดร.สุรินทร์ เหล่าสุขสถิตย์ (834 เรื่อง)	สมเด็จพระเจ้าพี่นางเธอเจ้าฟ้ากัลยาณิวัฒนา กรมหลวงนราธิวาสราชนครินทร์

ครั้งที่ ปี / วันที่ เดือน	ชื่อการประชุม	สถาบันเจ้าภาพร่วม	ประธาน (จำนวนผลงานวิจัย)	ประธานในพิธีเปิด
29. พ.ศ. 2546 20-22 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาท้องถิ่น	คณะวิทยาศาสตร์ มหาวิทยาลัยขอนแก่น ณ ศูนย์ประชุมอเนกประสงค์กาญจนาภิเษก	รศ.ดร.สุรินทร์ เหล่าสุขสถิตย์ (1039 เรื่อง)	รองนายกรัฐมนตรี (นายสุวิทย์ คุณกิตติ)
30. พ.ศ. 2547 19-21 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อสังคมและเศรษฐกิจฐานความรู้	คณะวิทยาศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ ณ ศูนย์แสดงสินค้าและการประชุมอิมแพ็ค เมืองทองธานี	รศ.ดร.สุรินทร์ เหล่าสุขสถิตย์ (854 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
31. พ.ศ. 2548 18-20 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการพัฒนาที่ยั่งยืน	เทคโนธานี มหาวิทยาลัยเทคโนโลยีสุรนารี	รศ.ดร.สุรินทร์ เหล่าสุขสถิตย์ (1021 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
32. พ.ศ. 2549 10-12 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อการเศรษฐกิจพอเพียง เฉลิมฉลองการครองสิริราชสมบัติ ครบ 60 ปี ของพระบาทสมเด็จพระเจ้าอยู่หัว	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ศูนย์การประชุมแห่งชาติสิริกิติ์	รศ.ดร.นภาวรรณ นพรัตนราภรณ์ (927 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
33. พ.ศ. 2550 18-20 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อโลกยั่งยืน เฉลิมฉลองมหามงคลเฉลิมพระชนมพรรษาครบ 80 พรรษาของพระบาทสมเด็จพระเจ้าอยู่หัว	มหาวิทยาลัยวลัยลักษณ์ จังหวัดนครศรีธรรมราช	รศ.ดร.นภาวรรณ นพรัตนราภรณ์ (802 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
34. พ.ศ. 2551 31 ตุลาคม - 2 พฤศจิกายน	วิทยาศาสตร์และเทคโนโลยีสำหรับโลกแห่งความท้าทาย	คณะวิทยาศาสตร์ สถาบันเทคโนโลยีพระจอมเกล้าเจ้าคุณทหารลาดกระบัง	รศ.ดร.นภาวรรณ นพรัตนราภรณ์ (777 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
35. พ.ศ. 2552 15-17 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่ออนาคตที่ดีขึ้น	คณะวิทยาศาสตร์ มหาวิทยาลัยบูรพา	รศ.ดร.นภาวรรณ นพรัตนราภรณ์ (854 เรื่อง)	ฯพณฯ องคมนตรี นายอำพล เสนาณรงค์
36. พ.ศ. 2553 26-28 ตุลาคม	วิทยาศาสตร์และเทคโนโลยีเพื่อสังคมที่ดีขึ้น	คณะวิทยาศาสตร์และเทคโนโลยี มหาวิทยาลัยธรรมศาสตร์	รศ.ดร.ธารารัตน์ ศุภศิริ (582 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
37. พ.ศ. 2554 10-12 ตุลาคม	วิทยาศาสตร์สร้างสรรค์ เพื่อสรรค์สร้างอนาคต	คณะวิทยาศาสตร์ มหาวิทยาลัยมหิดล	รศ.ดร.ธารารัตน์ ศุภศิริ (699 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
38. พ.ศ. 2555 17-19 ตุลาคม	วิทยาศาสตร์เพื่ออนาคตของมวลมนุษยชาติ	คณะวิทยาศาสตร์ มหาวิทยาลัยเชียงใหม่	รศ.ดร.ธารารัตน์ ศุภศิริ (690 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
39. พ.ศ. 2556 21-23 ตุลาคม	นวัตกรรมวิทยาศาสตร์ เพื่อชีวิตที่ดีขึ้น	คณะวิทยาศาสตร์ มหาวิทยาลัยเทคโนโลยีพระจอมเกล้าธนบุรี	รศ.ดร.ธารารัตน์ ศุภศิริ (495 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
40. พ.ศ. 2557 2-4 ธันวาคม	วิทยาศาสตร์และเทคโนโลยีสู่วิถีพัฒนาอาเซียน	คณะวิทยาศาสตร์ มหาวิทยาลัยขอนแก่น	ศ.ดร. เปี่ยมสุข พงษ์สวัสดิ์ (543 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
41. พ.ศ. 2558 6-8 พฤศจิกายน	ประตูสู่อาเซียนด้วยวิทยาศาสตร์และเทคโนโลยี	มหาวิทยาลัยเทคโนโลยีสุรนารี	ศ.ดร. เปี่ยมสุข พงษ์สวัสดิ์ (384 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
42. พ.ศ. 2559 30 พฤศจิกายน – 2 ธันวาคม	ศาสตร์แห่งแผ่นดิน สู่นวัตกรรมเพื่ออนาคตที่ยั่งยืน	คณะวิทยาศาสตร์ มหาวิทยาลัยเกษตรศาสตร์ ณ เซ็นทาราแกรนด์ แอท เซ็นทรัลพลาซา ลาดพร้าว	ศ.ดร. เปี่ยมสุข พงษ์สวัสดิ์ (290 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
43. พ.ศ. 2560 17-19 ตุลาคม	เข้าใจวิทยาศาสตร์ เข้าถึงเทคโนโลยี สร้างนวัตกรรม นำสังคมยั่งยืน	คณะวิทยาศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย ณ อาคารจามจุรี 10 จุฬาลงกรณ์มหาวิทยาลัย	ศ.ดร. เปี่ยมสุข พงษ์สวัสดิ์ (327 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
44. พ.ศ. 2561 29-31 ตุลาคม	วิทยาศาสตร์ และเทคโนโลยีในยุคพลิกผัน	สมาคมวิทยาศาสตร์แห่งประเทศไทยในพระบรมราชูปถัมภ์ ณ ศูนย์นิทรรศการและการประชุมไบเทค	รศ.ดร.สายวรุฬ ชัยวานิชศิริ (270 เรื่อง)	สมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
45. พ.ศ. 2562 7-9 ตุลาคม	ต้นกล้านวัตกรรมสู่การพัฒนาที่ยั่งยืน	สำนักวิชาวิทยาศาสตร์ มหาวิทยาลัยแม่ฟ้าหลวง	รศ.ดร.สายวรุฬ ชัยวานิชศิริ (338 เรื่อง)	สมเด็จพระกนิษฐาธิราชเจ้า กรมสมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
46. พ.ศ. 2563 5-7 ตุลาคม	Power of Science to Achieve SDGs	คณะวิทยาศาสตร์ มหาวิทยาลัยรามคำแหง	ศ.ดร.สมเกียรติ งามประเสริฐสิทธิ์ (426 เรื่อง)	สมเด็จพระกนิษฐาธิราชเจ้า กรมสมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี
47. พ.ศ. 2564 5-7 ตุลาคม	Sciences For SDGs: Challenges And Solutions	คณะศิลปศาสตร์และวิทยาศาสตร์ มหาวิทยาลัยเกษตรศาสตร์	ศ.ดร.สมเกียรติ งามประเสริฐสิทธิ์ (340 เรื่อง)	สมเด็จพระกนิษฐาธิราชเจ้า กรมสมเด็จพระเทพรัตนราชสุดา ฯ สยามบรมราชกุมารี

PROGRAM OVERVIEW

Code	Session/Symposium	November 29th, 2022			November 30th, 2022			December 1st, 2022
		AM	PM		AM	PM		AM
GO	Grand Opening Ceremony + Keynote Speaker	HUA TAPHAN MEETING ROOM 2ND FLOOR, ADMINISTRATION BUILDING, WALAILAK UNIVERSITY HOSPITAL, WALAILAK UNIVERSITY						
P	Poster Session	HALLWAY, LECTURE BUILDING 5 & 7		HALLWAY, LECTURE BUILDING 5 & 7				ROOM 5301, LECTURE BUILDING 5
PN	Plenary Speaker		ROOM 7217, LECTURE BUILDING 7 / ROOM 5201, LECTURE BUILDING 5		ROOM 5209, LECTURE BUILDING 5	ROOM 5301, LECTURE BUILDING 5		
	Oral Presentation Awarding Ceremony							ROOM 5301, LECTURE BUILDING 5
A	SESSION A-PHYSICS / APPLIED PHYSICS		ROOM 5201, LECTURE BUILDING 5 / ROOM 5216, LECTURE BUILDING 5		ROOM 5216, LECTURE BUILDING 5			
B	SESSION B-BIOLOGICAL SCIENCES		ROOM 5301, LECTURE BUILDING 5 / ROOM 5207, LECTURE BUILDING 5		ROOM 5301, LECTURE BUILDING 5 / ROOM 5207, LECTURE BUILDING 5	ROOM 5301, LECTURE BUILDING 5 / ROOM 5211, LECTURE BUILDING 5		
C	SESSION C-CHEMISTRY				ROOM 7201, LECTURE BUILDING 7 / ROOM 7217, LECTURE BUILDING 7 / ROOM 7207, LECTURE BUILDING 7	ROOM 7201, LECTURE BUILDING 7 / ROOM 7217, LECTURE BUILDING 7 / ROOM 7207, LECTURE BUILDING 7		
D	SESSION D-MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI		ROOM 5204, LECTURE BUILDING 5 / ROOM 5206, LECTURE BUILDING 5		ROOM 5204, LECTURE BUILDING 5 / ROOM 5206, LECTURE BUILDING 5	ROOM 5204, LECTURE BUILDING 5		
E	SESSION E-ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE		ROOM 5209, LECTURE BUILDING 5 / ROOM 5211, LECTURE BUILDING 5		ROOM 5209, LECTURE BUILDING 5 / ROOM 5211, LECTURE BUILDING 5 / ROOM 5217, LECTURE BUILDING 5	ROOM 5217, LECTURE BUILDING 5		
F	SESSION F-FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION AND SAFETY AND PACKAGING		ROOM 5217, LECTURE BUILDING 5					
SP1	SP1-HATYAI FOOD SAFETY AND PACKAGING		ROOM 7201, LECTURE BUILDING 7					
SP2	SP2-SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA		ROOM 5310, LECTURE BUILDING 5		ROOM 5310, LECTURE BUILDING 5			
SP3	SP3-X-RAY CRYSTALLOGRAPHY		ROOM 7202, LECTURE BUILDING 7		ROOM 7202, LECTURE BUILDING 7			
SP4	SP4-CONSERVATION FOR SUSTAINABILITY IN THE DISRUPTIVE ERA		ROOM 7202, LECTURE BUILDING 7					
SP5	SP5-YOUNG RISING STARS OF SCIENCE 2022 (YRSS) & JUNIOR YOUNG RISING STARS OF SCIENCE AWARD 2022 (JYRSS)					HALLWAY, LECTURE BUILDING 5		ROOM 5204 / ROOM 5206 / ROOM 5207 / ROOM 5211 / ROOM 5216, LECTURE BUILDING 5 / ROOM 5310, LECTURE BUILDING 5
SP6	SP6-KRATOM AND CANNABIS		ROOM 7217, LECTURE BUILDING 7		ROOM 5201, LECTURE BUILDING 5	ROOM 5201, LECTURE BUILDING 5		
SP7	SP7-RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY				ROOM 7209, LECTURE BUILDING 7			
SP8	SP8-FOOD SYSTEM TRANSFORMATION AND SDGS							ROOM 5201, LECTURE BUILDING 5
SP9	SP9-HIGH FIELD MAGNETS AS KEY TECHNOLOGY FOR ADVANCED SCIENCES					ROOM 5207, LECTURE BUILDING 5		
	Annual Meeting of the SCSOC							
	Meeting of the ST149 Committee					ROOM 5207, LECTURE BUILDING 5		
	Head of Department Meeting (Chemistry)		ROOM 7209, LECTURE BUILDING 7					
	Head of Department Meeting (Math&Comp)		ROOM 7211, LECTURE BUILDING 7					
	Meeting of the Women in Science and Engineering Committee (WISE), Association of Academies and Societies of Science in Asia (AASSA)		ROOM 7204, LECTURE BUILDING 7					
	Science Deans & Chair & invited Speaker Reception & Plenary Speaker		TWIN LOTUS HOTEL			WALAILAK UNIVERSITY		
	ST148 Congress Banquet							

NOTE SCISOC BOARDROOM ROOM 5202, LECTURE BUILDING 5

ZOOM MEETING QR CODE

SYMPOSIUM 1

SYMPOSIUM 2

SYMPOSIUM 3

SYMPOSIUM 4

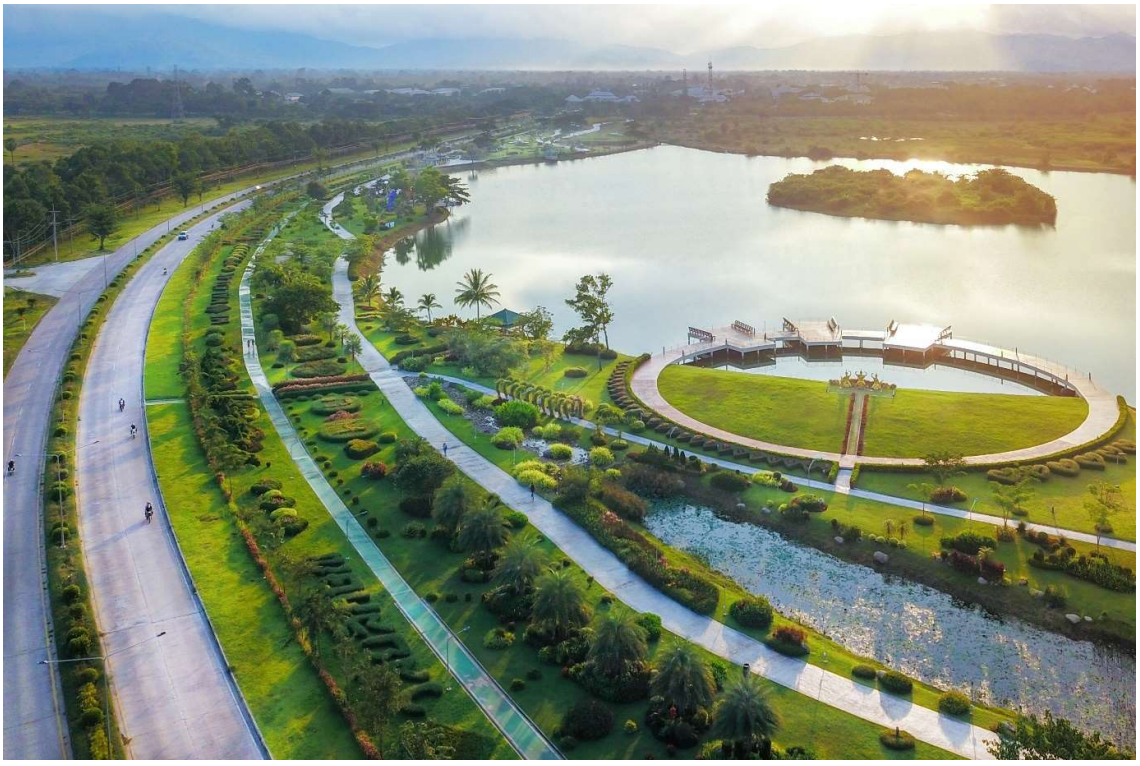
SYMPOSIUM 6

SYMPOSIUM 7

SYMPOSIUM 8

SYMPOSIUM 9

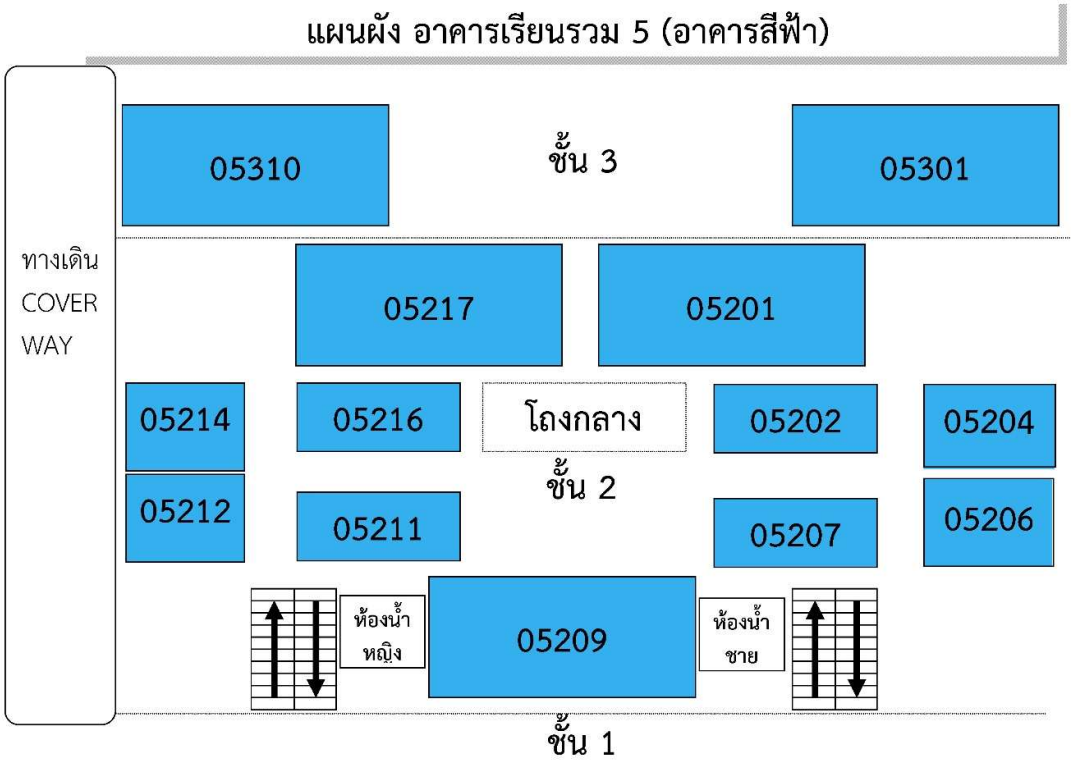
SCHOOL OF SCIENCE, WALAILAK UNIVERSITY



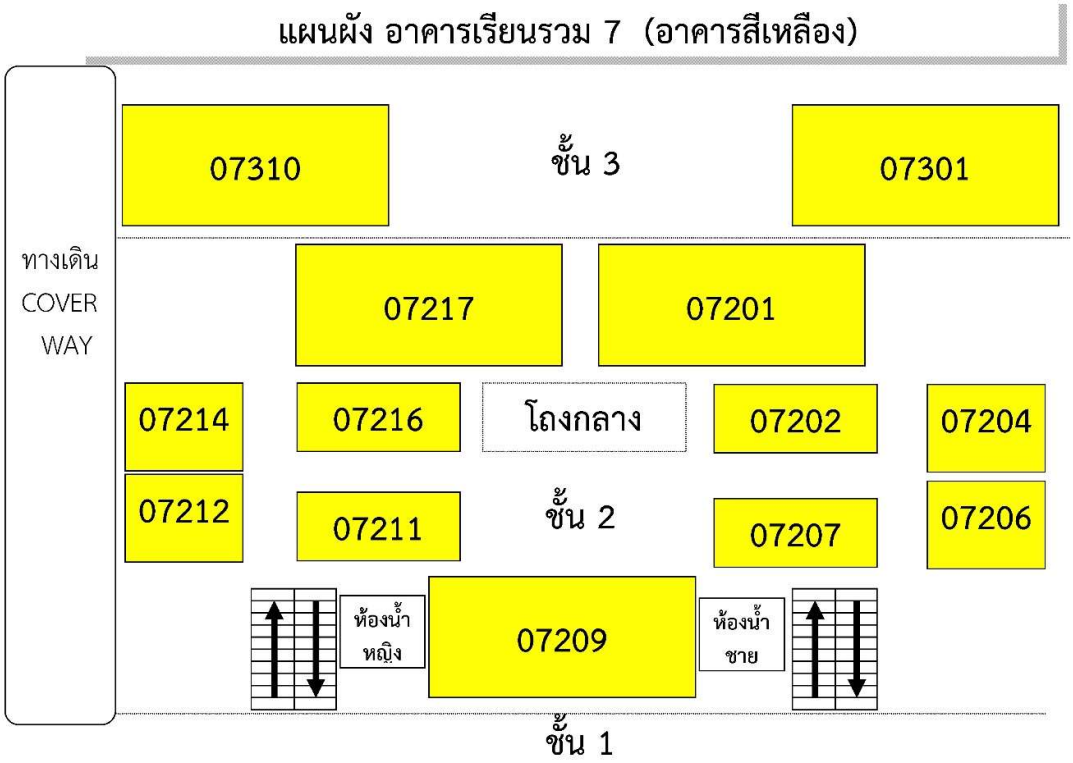
CONFERENCE ACCESS

Hua Taphan Meeting Room, 3rd floor, Administration Building, Walailak University Hospital

Thaiburi Building



Lecture Building 5



Lecture Building 7


มหาวิทยาลัยวลัยลักษณ์
222 ตำบลไทยบุรี อำเภอท่าศาลา จังหวัดนครศรีธรรมราช 80160
โทร.0 7567 3000 แฟกซ์. 0 7567 3708
ผลิตโดยส่วนสื่อสารองค์กร มหาวิทยาลัยวลัยลักษณ์
dcc.wu.ac.th

WALAILAK UNIVERSITY, 222 THAIBURI, THA SALA DISTRICT, NAKHON SI THAMMARAT 80160 THAILAND
TEL.+66-7567-3000,+66-7538-4000 FAX.+667567-3708

PROGRAM FOR GRAND OPENING CEREMONY OF STT48

NOVEMBER 29th, 2022

HUA TAPHAN MEETING ROOM, 3RD FLOOR, ADMINISTRATION BUILDING,
WALAILAK UNIVERSITY HOSPITAL,
WALAILAK UNIVERSITY, NAKORN SI THAMMARAT, THAILAND

[5301, 5310, LECTURE BUILDING 5 (Live)]

Time	Events
8:30	All guests are seated in the Walailak Medical Center Auditorium, Walailak University
9:30	- Arrival of **Her Royal Highness Princess Maha Chakri Sirindhorn** - Presentation of Program Book and Souvenirs from Associate Professor Dr. Thanuttkhul Mongkolaussavarat (President of The Science Society of Thailand under the Patronage of His Majesty the King), Professor Dr.Sombat Thamrongthanyawong (President of Walailak University) and Associate Professor Dr.Onruthai Pinyakong (Chairperson of Academic Affairs of STT48) - Report on STT48 by Professor Dr.Pranut Potiyaraj (Chairperson of STT48) - **Her Royal Highness Princess Maha Chakri Sirindhorn** graciously presents plaques to the Keynote Speaker, 2022 Senior Scientists, 2022 Thailand Outstanding Scientist, 2022 Outstanding Technologist, 2022 Young Scientists, 2022 Outstanding Science Teachers, Winners of 2021 National Science Projects Competition, and STT48 Premium Sponsors - Grand Opening Address by **Her Royal Highness Princess Maha Chakri Sirindhorn**
09:50	- Brief introduction of the Keynote Speaker, Professor Randy W. Schekman, 2013 Nobel Laureate in Physiology or Medicine by Associate Professor Dr. Thanuttkhul Mongkolaussavarat (President of The Science Society of Thailand under the Patronage of His Majesty the King) - Online Keynote Lecture: "TRAFFIC OF CAS9-gRNA BETWEEN CULTURED HUMAN CELLS MEDIATED BY CELL-CELL CONTACT" by Professor Randy W. Schekman
10:10	- Brief introduction of the Keynote Speaker, Professor Emeritus Roland Von Bothmer, Senior Advisor to The Svalbard Global Seed Vault by Professor Dr.Sombat Thamrongthanyawong (President of Walailak University) - Keynote Lecture: "SCIENCE AND BIODIVERSITY – USE AND CONSERVATION OF GENETIC RESOURCES FOR THE FUTURE" by Professor Emeritus Roland Von Bothmer
10:30	- Brief introduction of the Keynote Speaker, Professor Dr.Vip Viprakasit, 2022 Thailand Outstanding Scientist by Associate Professor Dr. Mullica Jaroensutasinee (Dean of School of Science, Walailak University) - Keynote Lecture: "BRINGING GENOMIC MEDICINE TO THE REAL-WORLD SETTING" by Professor Dr.Vip Viprakasit
10.45	**Her Royal Highness Princess Maha Chakri Sirindhorn** visits Wailailak University Exhibition and Students' Science Projects
11.45	- **Her Royal Highness Princess Maha Chakri Sirindhorn** presides at photo sessions with - Administrative Committee of the Science Society of Thailand under the Patronage of His Majesty the King - The Council of Science Dean of Thailand - Administrative and STT48 Organizing Committees of Walailak University
12.00	**Her Royal Highness Princess Maha Chakri Sirindhorn** departs from Walailak University

KEYNOTE SPEAKER: Prof. Randy W. Schekman

TRAFFIC OF CAS9-gRNA BETWEEN CULTURED HUMAN CELLS MEDIATED BY CELL-CELL CONTACT

Congyan Zhang and Randy Schekman*
(2013 Nobel Laureate in Physiology/Medicine)

Department of Molecular and Cell Biology
Howard Hughes Medical Institute
University of California, Berkeley
*e-mail: schekman@berkeley.edu

Abstract:
A challenge in genome editing in vivo is to devise an efficient means of delivering editing functions, preferably by a vehicle that evades immune detection. We sought a means to deliver Cas9 and a gRNA enclosed within an natural extracellular vesicle as a vehicle for efficient and targeted gene editing. Cas9 was expressed in a donor cell tethered noncovalently to an integral membrane protein, CD63, enriched in exosomes. Exosomes highly enriched in Cas9 and a gRNA were isolated by buoyant density. Isolated exosomes were incubated with reporter cells containing an integrated copy of N-luciferase behind a site which when edited would allow the expression of luciferase. In a control experiment, expression of the Cas9/gRNA construct directly in the reporter cell elicited a 60-70 fold increase in luciferase expression. Exosomes containing a similar level of Cas9 elicited no more than a 50% increase above the background of luciferase. The same was true of conditioned medium containing Cas9-exosomes and even of donor and acceptor cells incubated together separated by a vesicle-permeable membrane in a transwell chamber. In contrast, donor and acceptor cells cocultured to near confluence showed a 60-fold increase in luciferase expression. Transfer of Cas9 appears to be mediated by open-end membrane tubular connections, likely dependent on membrane fusion at the point of junction between a tubule from one cell and the target. A molecular dissection for the requirements for this transfer may permit the development of an efficient means for targeted delivery of Cas9/gRNA.

Dr. Randy Schekman is a Professor in the Department of Molecular and Cell Biology, University of California, Berkeley, and an Investigator of the Howard Hughes Medical Institute. He studied the enzymology of DNA replication as a graduate student with Arthur Kornberg at Stanford University. His current interest in cellular membranes developed during a postdoctoral period with S. J. Singer at the University of California, San Diego. Schekman's laboratory investigates the mechanism of membrane protein traffic in the secretory pathway in eukaryotic cells. In recent years his lab has turned to aspects of vesicular traffic in human cells, most recently on the biogenesis and sorting of small RNAs into extracellular vesicles.

Among his awards are the Gairdner International Award, the Albert Lasker Award in Basic Medical Research and the Nobel Prize in Physiology or Medicine, which he shared with James Rothman and Thomas Südhof. From 2006 - 2011 he served as Editor-in-Chief of the Proceedings of the NAS. In 2011, he founded and until 2019 served as the Editor-in-Chief of the Open Access journal, eLife, sponsored by the HHMI, Wellcome Trust and the Max Planck Society. Beginning in 2018, Schekman assumed a leadership role in an effort supported by the Sergey Brin Family Foundation to identify and support basic research on the mechanisms of Parkinson's Disease initiation and progression (https://parkinsonsroadmap.org).

KEYNOTE SPEAKER: Prof. Emeritus Roland von Bothmer

SCIENCE AND BIODIVERSITY – USE AND CONSERVATION OF GENETIC RESOURCES FOR THE FUTURE

Roland von Bothmer*

Swedish University of Agricultural Sciences and The Nordic Genetic Resources Center
*e-mail: Roland.von.Bothmer@slu.se

Abstract:
Some 10 millennia ago a biological revolution took place. Man invented agriculture, learned to cultivate plants and to keep domestic animals. The first farmers were also the first plant breeders who selected the best variants and radically changed the genetic set up of the wild plants to fit the new agroecological conditions – leading to crop domestication. What was earlier a perfect adaptation to natural conditions was changed into an irreversible rapid evolutionary process which also changed the social life of mankind forever. The spread of agriculture together with the crops over the world lead to adaptations to new environmental conditions.
When modern plant breeding was initiated more than a century ago it was based on the older, local landraces. Breeding has since been in the front line of science and each decade has seen new techniques be developed, closely linked to the current scientific progress. Up to the present days when biotechnology has entered the scene with genomics, phenomics and gene editing techniques. New cultivars with improved traits are regularly released, hopefully leading to a more sustainable agriculture with better qualities and better biotic and abiotic tolerance. In contrast to many other applied sciences older techniques in plant breeding are usually not replaced by new ones – it just adds another tool in the tool box. Old fashioned selection and combination breeding developed 100 years ago are still cornerstones in the improvement process. The new gene technology is powerful but should be used with caution.
Over the centuries a rich, domesticated diversity has been created which is the basis for future progress. Small scale farming with local breeding in remote areas with "simple" breeding methods are as important as multinational companies breeding for big markets with sophisticated gene technology. However, in later years a great challenge for the future survival has become a reality – genetic erosion, i.e. the loss of genetic diversity. Valuable genetic material must be further collected and preserved. But a gene bank is not a museum and the material should be used! The more knowledge we have about each seed sample the more valuable it is for the future. With modern scientific methods a wealth of information can be obtained from each sample. An efficient worldwide system of gene banks promoting conservation and utilization of PGR is an assurance for the future of a sustainable agriculture system – be it small or large.

Professor Roland von Bothmer was born in Mariestad, Sweden, 1943. He received a PhD at Lund University in systematic botany 1973. After two years in Germany he moved to Copenhagen University 1976 as senior scientist leading an international research team with studies on the phylogeny of the genus *Hordeum*, which included collection expeditions in many countries. He returned to Sweden and got a professorship in genetics and plant breeding at The Swedish University of Agricultural Sciences in 1986, where he also later became Dean of Faculty and deputy Vice Chancellor. In 1997/98 he was guest professor att Okayama University, Japan. In the years 2008–2018 he worked as coordinator for the Svalbard Global Seedvault and after that he has returned to the university. The main research interest is the domestication process, relationships among crops and their wild relatives and conservation of plant genetic resources. Main target groups are barley, wheat and *Brassica*. He is the author of some 400 publications and he is a fellow of The Royal Swedish Academy of Sciences and The Royal Danish Academy of Sciences.

KEYNOTE SPEAKER: Prof. Dr. Vip Viprakasit

BRINGING GENOMIC MEDICINE TO THE REAL-WORLD SETTING

Vip Viprakasit*

Department of Pediatrics & Thalassemia Center, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkoknoi, Bangkok, THAILAND
*e-mail: vip.vip@mahidol.edu

Abstract:
After two decades of intensive research internationally on human genome sequencing, the first draft of the human genome was launched in 2002. During the past 20 years, we have utilized the benefit of this 'human blueprint' to interpret and understand the complexity of the human genomes and gene-gene or gene-environment interactions. With the recent development of Next Generation Sequencing (NGS), we can now perform Whole Genome Sequencing (WGS) and Whole Exome Sequencing (WES) in a much faster fashion with a more affordable cost. Numerous genomic services have flourished globally from a solid scientific-driven applications such as clinical WES and WGS analyses, pre-implantation genomic analysis for embryos, and evaluation of cancer genomes both germline and somatic mutations to a more 'consumer' appealed products such as genius genes or genomics for lifestyles tailoring. Thailand embarked on this global trend by starting the National program, "Genomics Thailand" in 2018. Having our own "Thai" database promise a more precise interpretation and evidence-based application for our people as the representative of Southeast Asia. However, understanding the complexity of genomic medicine is a rate-limiting step hurdle in bringing this latest medical technology to routine clinical practice. Our group has started to perform in-depth medical research using molecular genetics and genomic technology since 2005. Besides establishing the fundamental research on disease pathophysiology using 'thalassemia", the most common genetic disease in man as a model, we also study several red blood cell disorders such as hereditary membranopathy, congenital red cell enzymopathy, and bone marrow failure. Our work led to the discovery of "KLF-1 disease", a new inherited genetic disease-causing anemia. In addition, we also developed a wide range of clinical applications based on genomic medicine including software to analyze WES and WGS, a robust system for pre-implantation genetic analysis for aneuploidy and single gene disorders, circulating cell-free DNA for cancer genomics and identify genetic risks for cancer and other common diseases such as Alzheimer's disease. Applying basic science to a real-world setting would bring true benefit to mankind and improve the lives of our people for better health, and better quality.

Professor Vip Viprakasit was born in Bangkok, Thailand in 1970. He received a medical degree with first-class honors from Mahidol University, Thailand in 1994. Then he trained as a pediatrician at Chiang Mai University and clinical fellowship in pediatric hematology at Siriraj Hospital. He received D. Phil. In Molecular Medicine and a post-doctoral fellowship in Molecular Hematology in 2002 and 2004, respectively from the University of Oxford, UK. From 2004 to the present, he worked at the Department of Pediatrics & Thalassemia Center, Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand. His research interests in molecular hematology focus on thalassemia and other red blood cell disorders. He discovered a new hemolytic disease in man in 2014 leading to his recognition as the Outstanding Researcher of the year (2021) and the Outstanding Scientist of the year (2022).

KEYNOTE SPEAKER: Prof. Dr. John C. Warner

GREEN CHEMISTRY: THE MISSING ELEMENTS

John C. Warner*

The Warner Babcock Institute for Green Chemistry
*e-mail: john@johnwarner.org

Abstract:
Imagine a world where all segments of society demanded environmentally benign climate neutral products! Imagine if all consumers, all retailers and all manufacturers insisted on buying and selling only non-toxic truly sustainable materials! The unfortunate reality is that, even if this situation were to occur, our knowledge of materials science and chemistry would allow us to provide only a small fraction of the necessary products and materials that our economy is based upon. Unfortunately, the way we learn and teach chemistry and materials science in academia is for the most part void of any information regarding mechanisms of toxicity and environmental harm. Green Chemistry is a science that seeks to reduce or eliminate the use of hazardous materials at the design stage of a materials process. It has been demonstrated that materials and products CAN be designed with negligible impact on human health and the environment while still being economically competitive and successful in the marketplace. This presentation will describe the history and background of Green Chemistry and discuss the opportunities for the next generation of materials designers to create a safer and more sustainable future.

John received his BS in Chemistry from UMASS Boston, and his PhD in Chemistry from Princeton University. After working at the Polaroid Corporation for nearly a decade, he then served as tenured full professor at UMASS Boston and Lowell (Chemistry and Plastics Engineering). In 2007 he founded the Warner Babcock Institute for Green Chemistry, with Jim Babcock (a research organization developing green chemistry technologies), and Beyond Benign with Amy Cannon (a non-profit dedicated to sustainability and green chemistry education). He now advises several international organizations.

PLENARY SPEAKER: Prof. Dr. Urs Klötzli

PALEOCLIMATIC RECONSTRUCTIONS OF THE LAST GLACIAL MAXIMUM BY FINGERPRINTING OF DUST FROM GREENLAND ICE CORES

Urs Klötzli*

Laboratory for Geochronology, Department of Lithospheric Research, University of Vienna
Josef-Holaubek-Platz 2, A-1090 Vienna, Austria
*e-mail: urs.kloetzli@univie.ac.at

Abstract:
Abrupt climate change (ACC) represents an existential threat to modern civilization. On the other hand, ACCs are known to have occurred since at least 1'000 million years. So the study of ancient ACCs can potentially better out understanding of the present and future ACC events. However, the processes and feedback loops that modulate these abrupt environmental changes in the past are poorly understood, thus severely undermining our understanding and our ability to predict future ACC events.
Greenland ice core records from the Last Glacial Maximum (LGM, ca. 33'000 - 20'000 years) show that ACC events seemingly are coupled to changes in the abundance of atmospheric mineral dust. But how exactly mineral dust provenance, emission, transport, and deposition impacts ACC is unclear, as the underlying processes and their interactions are elusive. Causes for this are a) major uncertainties in our knowledge of the provenance of mineral dust, b) discrepancies in methodological aspects and data interpretation of the different isotopic systems (Sr-Nd-Hf-Pb) commonly used for fingerprinting, and c) very small samples sizes (< 10 mg) making necessary the application of high-sensitivity micro-chemical techniques.
Here we apply multiple novel tracers of dust provenance as well as regional dust cycle modeling to address these uncertainties. We show that the dominant model of mixed East Asian and Pacific volcanic sources to Greenland mineral dust is not supported. Instead, multiple other source scenarios are plausible, demonstrating far more uncertainty in dust climate feedbacks than previously understood.

Urs Klötzli was born in Berne (Switzerland). He received a masters degree in mineralogy from the University of Berne in 1986 and a PhD degree in isotope geochemistry in 1991 also from the University of Berne. Since 1991 he is working as isotope geochemist at the Department of Lithospheric Research at the University of Vienna (Austria) where he was promoted professor in 2001.
Urs Klötzli has a major interest in the application of isotope systematics to Earth sciences, particularly addressing petrochronological problems. His main focus is thereby to improve analytical techniques used to investigate radiogenic isotope systems, specifically micro-chemical sampling and mass spectrometry.

PLENARY SPEAKER: Prof. em. Kesara Anamthawat-Jónsson

PLANT SPECIES DIVERSITY AND MIGRATION DUE TO FACILITATED INTRODUCTION AND CLIMATE WARMING

Kesara Anamthawat-Jónsson*

Institute of Life and Environmental Sciences, University of Iceland, Reykjavík 102, Iceland
*e-mail: kesara@hi.is

Abstract:
Plant species diversity changes naturally over time, but in the present era we are witnessing rapid changes due to human activities, such as deforestation, land use, transport and so on. Climate change is referred to long-term shifts in temperatures and weather patterns. I plan to present three case studies of vegetation history in different time scales with an aim to understand past events that affected plant species diversity. I. Plant colonization on Surtsey, the 59 years old volcanic island off the southern coast of Iceland. The first vascular plant species that colonized the barren island included sea bluebell (**Fig. 1a**) and sea sandwort. Our population genetic analysis of sea sandwort using nuclear-base markers showed multiple colonization events, rapid expansion and substantial gene flow on the island. II. Migration of European lymegrass across the Atlantic to Greenland. We used the method of molecular cytogenetics to differentiate chromosomes of the N-American and the European lymegrass species. In this way we confirmed the presence of hybrids (**Fig. 1b**). The European species was most likely introduced, unintentionally, since the settlement of Greenland by Vikings from Iceland in the tenth century. III. Holocene birch hybridization in Iceland. We examined sub-fossil pollen in samples from peat sediments using pollen abnormality as marker of hybridization. Normal birch pollen is "triporate" with three pores through its pollen wall (**Fig. 1c**), but hybrids produce non-triporate pollen with four or more pores. We compared the periods of elevated proportions of abnormal pollen with climate data from the Greenland Ice Core Project, and the results showed that peaks of hybridization coincided the warming periods of the Holocene. With the on-going climate warming of our current period, new hybridization wave has begun. The tree line moves northwards and higher up the mountains.

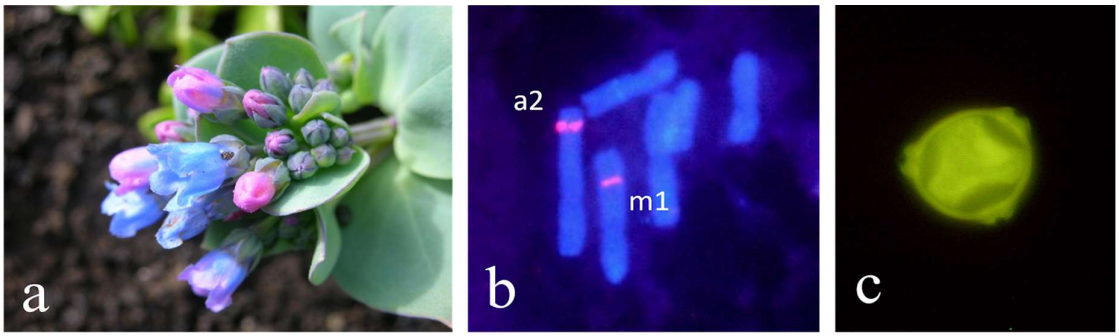


Figure 1. Sea bluebell (a). Ribosomal mapping of the lymegrass hybrid (b). Birch triporate pollen (c).

Kesara Anamthawat-Jónsson is Professor Emerita of University of Iceland. Her fields of research include botany, plant genetics, molecular cytogenetics, phylogeography and microscopy. She has published more than 200 peer-reviewed research papers and reviews in scientific journals and books (hi-index 33; i-10 index 72) and has graduated research students from Iceland, Scandinavia, and Thailand. Kesara has served as president of the Nordic Microscopy Society (SCANDEM) since 2014.

PLENARY SPEAKER: Mr. Pornchai Padmindra

OPERATING MODEL FOR MEDICAL CANNABIS & KRATOM

Pornchai Padmindra*

Founder & CEO, Dr CBD Co., Ltd
President, Thai Industrial Hemp Trade Association
*e-mail: pornchai@drcbdgroup.com

Abstract:
Following key direction from government on regional medical hub and the enactment of Thailand's Narcotics Code, effective December 10th, 2021, signified a major milestone in promoting the commercial applications of cannabis (both marijuana and hemp) and kratom as economic plants for Thailand. However, this is still a very new area for all local operators in Thailand - from cultivators all the way to product manufacturers. This session will discuss business operating model, how industry should be developed jointly between relevant ministries, regulators and private sectors, business value-chain, potentials & opportunities including industry competitive landscape.

Mr. Pornchai Padmindra was born in Bangkok, Thailand in 1972. He received his bachelor of business administration degree from Kasetsart University in 1993. A career investment & wholesale banker with 28 years of experience in ASEAN, he made a career change from banking to formally form Dr. CBD Group in 2021 where medical R&D project with a team of botanists, scientists & chemists commenced their work in 2019. Dr. CBD is an integrated healthcare & nutraceutical company involving cultivation, extraction, products manufacturing, and processing of Medical Grade Cannabis, Kratom and other various Thai herbs. We have a clear aim to become a regional leading innovative Healthcare & Nutraceutical company, combining knowledge of western cannabis science with Asian herbal formulation to create something unique in healthcare market. We do supply high-quality medical grade products and are determined to promote Thailand to become a hub of medical & industrial hemp, cannabis and Kratom.

PLENARY SPEAKER: Assoc. Prof. Dr. Thawatchai Onjun

THAILAND FUSION ENERGY PROGRAM: THE NEXT 5-YEAR OUTLOOK

Thawatchai Onjun, Nopporn Poolyarat, Somsak Dangtip*, and CPaF collaboration

Thailand Institute of Nuclear Technology (TINT), Ongkarak, Nakornnayok, Thailand
*e-mail: somsakd@tint.or.th

Abstract:
Fusion reactions is being considered as an alternative energy source for future use with gigawatt scale capacity and no greenhouse gases emission. Its utilization will help the country stabilizing an electricity generation sector. Thailand Institute of Nuclear Technology (TINT) has played quite a central role in this initiative. We have established division on plasma and nuclear fusion to promote the fusion technology in the country and to bridge TINT and other twenty-three Thai academic and research institutes (CPaF) together. The long-term roadmap was drafted with key areas identified and milestones set. The first tokamak or TT-1, one of important infrastructure was reconstructed using core components from HT-6M of ASIPP. The first plasma by TT-1 was already achieved. A commission of the tokamak in Thailand is scheduled in April, 2023. R&D in the area such as plasma heating, plasma diagnostics, high-field magnets, high-speed data acquisition for plasma control, advanced materials, and prediction of plasma behavior under various tokamak operating regimes are already underway or planned. Another major area is on human resource development programs, e.g., ASEAN School for Plasma and Nuclear Fusion (ASPNF), which link students in ASEAN to experts in fusion from around the world. The first school started in 2015 and runs annually since then. All these facilities will not only help support Thai scientists and engineers but would also be a hub accessible to ASEAN and global fusion community. In this contribution, we will present the fusion energy program from TINT perspective and key activities in the coming five year.

The first Thailand Tokamak

Tokamak Facility under construction

Associate Professor Thawatchai Onjun was born in Songkhla, Thailand in 1974. He received the bachelor's degree in Physics from University of Rochester, USA in 1998. He was awarded his M.Sc. and Ph.D. also in Physics from Lehigh University, USA in 1999, and 2003, respectively. He started his academic career at Sirindhorn International Institute of Technology, Thammasat University. Since 2016, he has joined TINT as vice Executive Director and later promoted as Director in 2021. His research interests are Plasma behaviors in Tokamak, Modelling of Fusion Reactor and Plasma Focus Performance, Development and Planning for Fusion infrastructure.

PROGRAM FOR SESSIONS, SYMPOSIUMS AND MEETINGS

November 29th, 2022

AFTERNOON PROGRAM

Session:	POSTER PRESENTATION		
Room:	HALLWAY, LECTURE BUILDING 5 & 7		
Time	ID	Speaker	Title
11:00-12:30	-	-	Poster Presentation
15:30-17:00	-	-	Poster Presentation

Session:	PLENARY SPEAKER		
Room:	ROOM 7217, LECTURE BUILDING 7		
Chair person:	Ms. Janejira Phumduang		
Time	ID	Speaker	Title
13:15-14:00	-	Pornchai Padmindra	OPERATING MODEL FOR MEDICAL CANNABIS & KRATOM

Session:	PLENARY SPEAKER		
Room:	ROOM 5201, LECTURE BUILDING 5		
Chair person:	Dr. Suparerk Aukkaravittayapun		
Time	ID	Speaker	Title
13:15-14:00	-	Thawatchai Onjun	THAILAND FUSION ENERGY PROGRAM: THE NEXT 5-YEAR OUTLOOK

Session:	SESSION A – PHYSICS (PHYSICS)		
Room:	ROOM 5201, LECTURE BUILDING 5		
Chair person:	Dr. Suparerk Aukkaravittayapun		
Time	ID	Speaker	Title
14:00-14:30	A_INV01	Phongpichit Channuie	TRAVERSABLE WORMHOLES: A THEORETICAL PERSPECTIVE
14:30-15:00	A_INV02	Srubabati Goswami	THE CURIOUS CASE OF THE STERILE NEUTRINO
15:00-15:15	A_001	Omsap Jaroonrak	ANALYSIS OF CHARMED LAMBDA PRODUCTION IN pp COLLISIONS AT √s=13 TeV IN ALICE AT LHC
15:15-15:30	A_002	Thiranat Bumnedpan	MODIFICATION OF HADRON MULTIPLICITY RATIOS AT THE CHIRAL PHASE TRANSITION
BREAK			
Chair person:	Assoc. Prof. Dr. Phongpichit Channuie		
15:45-16:00	A_003	Asma Samoh	THE SIMULATION OF THE BAND STOP 2.45 GHz FREQUENCY SELECTIVE SURFACE FOR A MICROWAVE OVEN APPLICATION
16:00-16:15	A_004	Sirapat Lookrak	THE ELECTRIC POTENTIAL AND ELECTRIC FIELD ON CONDUCTING SPACE DEBRIS
16:15-16:30	A_005	Thanapon Aiamsai	OBSERVED CONVERSION OF ELECTROMAGNETIC ENERGY TO PLASMA PARTICLE ENERGY AS A FUNCTION OF FREQUENCY IN KELVIN-HELMHOLTZ WAVES AT EARTH'S MAGNETOPAUSE
16:30-16:45	A_006	Udomphan Nacksriphod	AN ATTENUATION OF SOLAR RADIATION BY DIFFERENT CLOUD TYPES AT NAKHON PATHOM
16:45-17:00	A_007	Grace Adagba	THE EFFECTS OF SOLAR ACTIVITY ON FOOD AVAILABILTY IN NIGERIA

Session:	SESSION A – PHYSICS (INSTRUMENTATION AND SOLID STATE PHYSICS)		
Room:	ROOM 5216, LECTURE BUILDING 5		
Chair person:	Dr. Sampart Cheedket		
Time	ID	Speaker	Title
14:00-14:15	A_008	Panyalak Detrattanawichai	THEORETICAL STUDY OF SPIN CROSSOVER MATERIALS ON 2D MATERIALS
14:15-14:30	A_009	Napoom Thooppanom	QUANTUM DIAMOND SPECTROMETER FOR MAGNETIC FIELD SENSING
14:30-14:45	A_010	Sasithon Santikulthani	SYSTEMATIC INVESTIGATION AND CORRECTION OF THE MAGNETIC HYSTERESIS OBTAINED BY VIBRATING SAMPLE MAGNETOMETRY
14:45-15:00	A_011	Sirawit Tripia	DESIGNING OF ONE-DIMENSIONAL MICROPHONE ARRAYS FOR AN ACOUSTIC CAMERA BY USING MACHINE LEARNING
15:00-15:15	A_012	Chittanon Buranachai	DNA-BASED FLUORESCENT SENSORS AND PORTABLE DEVICES FOR FLUORESCENCE DETECTION
15:15-15:30	A_013	Nuchjira Dejang	THE INVESTIGATED BAND GAP OF NiCu COATING PREPARING BY ELECTROPLATING WITH VARY $CuSO_4$ CONTENTS
15:30-16:45	A_014	Nutthanun Moolsradoo	STUDY ON CORROSION RESISTANCE OF DLC FILM COATED ON THE TENSIONED TITANIUM SUBSTRATE

Session:	SESSION B1 – BIOLOGICAL SCIENCES		
Room:	ROOM 5301, LECTURE BUILDING 5		
Chairperson:	Prof. Dr. Tavan Janvilisri		
Time	ID	Speaker	Title
14:00-14:30	B_INV01	Rietie Venter	COMBATTING BACTERIAL ANTIMICROBIAL RESISTANCE THROUGH NEW ANTIBIOTICS THAT TARGET MULTIDRUG RESISTANT MICROBES [Online live via Zoom]
14:30-14:45	B_001	Kankawi Satsantitham	ANTIBACTERIAL ACTIVITY OF ALOICIN AGAINST PATHOGENS CAUSING BACTERIAL MENINGITIS
14:45-15:00	B_002	Rubsadej Suwansang	CHARACTERIZATION OF BACTERIAL CYTOLOGICAL PROFILE OF ANTIBIOTIC RESISTANT *Acinetobacter baumannii*
15:00-15:15	B_003	Thi Hai Au La	COMPARATIVE GENOMIC ANALYSIS OF ACUTE HEPATOPANCREATIC NECROSIS DISEASE-CAUSING *Vibrio parahaemolyticus* ISOLATES
15:15-15:30	B_004	Azra Khanum	DEVELOPMENT OF DNA VACCINE AGAINST TUBERCULOSIS
BREAK			
16:00-17:00	POSTER PRESENTATION		

Session:	SESSION B2 – BIOLOGICAL SCIENCES		
Room:	ROOM 5207, LECTURE BUILDING 5		
Chairperson:	Asst. Prof. Dr. Phitchayapak Wintachai		
Time	ID	Speaker	Title
14:00-14:30	B_INV02	Boonsatien Boonsoong	MAYFLY LARVAE IN THAILAND: DIVERSITY AND APPLICATION
14:30-14:45	B_005	Wissarut Seangpripun	BIODEGRADATION OF PLASTIC WASTE BY YELLOW MEALWORMS (*Tenebrio molitor* larvae)
14:45-15:00	B_006	Kanitta Keeratipattarakarn	THE EXISTENCE OF *Platerodrilus* BEETLES IN NAKHON SI THAMMARAT PROVINCE, SOUTHERN THAILAND
15:00-15:15	B_007	Kittiya Inchoetchai	DEVELOPMENT OF MICROSATELLITE MARKERS AND SCREENING IN TWO-SPOTTED CRICKETS (*Gryllus bimaculatus* De Geer, 1773)
15:15-15:30	B_008	Dawn Cook	INSULAR HERPETOFAUNA DIVERSITY OF KO TAO, KO PHA-NGAN, KO SAMUI AND MAINLAND AREA OF SURAT THANI PROVINCE, THAILAND
BREAK			
16:00-17:00	POSTER PRESENTATION		

Session:	SESSION D1 – MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI		
Room:	ROOM 5204, LECTURE BUILDING 5		
Chairperson:	Assoc. Prof. Dr. Sanae Rujivan		
Time	ID	Speaker	Title
14:00-14:30	D_INV01	Santi Tasena	FROM COPULAS TO SUBCOPULAS – A MATHEMATICS OVERVIEW
14:30-14:45	D_001	Bui Mỹ	A MODIFICATION TO LOGISTIC REGRESSION WITH IMBALANCED DATA: F-MEASURE-ORIENTED LASSO-LOGISTIC REGRESSION
14:45-15:00	D_002	Yukari Ito	CREPANT RESOLUTION OF QUOTIENT SINGULARITIES AND THE MCKAY CORRESPONDENCE
15:00-15:15	D_003	Thawatchai Thianthong	A METHOD FOR OUTLIER DETECTION IN UNIVARIATE CIRCULAR DATA USING PARTITIONING DATA
BREAK			
15:30-15:45	D_004	Theeraphat Thanwiset	AN ALTERNATIVE METHOD TO DETECT OUTLIERS IN MULTIVARIATE DATA
15:45-16:00	D_005	Kusuman Pongpaew	WEIBULL–EXPONENTIAL DISTRIBUTION AND ITS PROPERTIES

Session:	SESSION D2 – MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI		
Room:	ROOM 5206, LECTURE BUILDING 5		
Chairperson:	Asst. Prof. Dr. Phichet Jitjankarn		
Time	ID	Speaker	Title
14:00-14:15	D_006	Pitiwat Lueangwitchajaroen	AFFINE RATIONAL TRANSFORMATIONS OF COPULAS AND QUASI-COPULAS
14:15-14:30	D_007	Apisara Comchiang Rachanonphos Thananonthasawat	GEOMETRICAL PROPERTIES OF LEAF APEX AND ITS EFFECT ON WATER DRAINAGE ABILITY
14:30-14:45	D_008	Patcharapa Srichok	LEVITIN-POLYAK WELL-POSEDNESS FOR GENERALIZED (η, g, ϕ)-MIXED VECTOR VARIATIONAL-TYPE INEQUALITY PROBLEM
14:45-15:00	D_009	Adisak Karnbanjong	ON THE DIOPHANTINE EQUATION a^x+b^y+c^z=w^2
15:00-15:15	D_010	Asama Jampeepan	SEMI-ANALYTICAL SOLUTION AND NUMERICAL SOLUTION OF SEIR MODEL
BREAK			
15:30-15:45	D_011	Teerapong Chaochanglek	SOME RESULTS IN BIPOLAR QUANTUM LINEAR ALGEBRA
15:45-16:00	D_012	Visarut Huayshelake	SUM OF PRODUCTS OF TWO CONSECUTIVE PRIMES
16.00-16:15	D_013	Nattapol Rachpira	ON FIXED POINT THEOREMS FOR KANNAN AND CHATTERJEA TYPE MAPPINGS

Session:	SESSION E – ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE (Materials)		
Room:	ROOM 5209, LECTURE BUILDING 5		
Chair person:	Prof. Dr. Suttichai Assabumrungrat		
Time	ID	Speaker	Title
14.00-14.30	E_INV01	Tetsuya Kida	GRAPHENE OXIDE NANOSHEETS FOR SELECTIVE SEPARATION AND CAPTURE OF HYDROGEN
14:30-14:45	E_001	Wongsathorn Kaewraung	LOW-COST SUSTAINABLE ELECTROCATALYSTS OF ALLOY/CARBON-BASED NANOMATERIALS AND THEIR APPLICATION FOR Li-ION BATTERIES
14:45-15:00	E_002	Yusuke Inomata	ENANTIOSELECTIVE CRYSTALLIZATION OF $CsCuCl_3$ AND FABRICATION OF CHIRAL GAS SENSORS
15:00-15:15	E_003	Kanatip Kumproa	MODIFICATION OF CHARCOAL KILN VERTICAL TYPE FOR CHARCOAL PRODUCTION FROM BAMBOO WASTE
15:15-15:30	E_004	Charlita Sinmak	SYNTHESIS AND CHARACTERIZATION OF ELECTRON BEAM IRRADIATED GLUTINOUS RICE HUSK-DERIVED BIOCHAR AND ACTIVATED CARBON
BREAK			
15:45-16:00	E_005	Md. Kamrul Islam	LIGNIN FRACTIONATION TOWARDS VALUE-ADDED PRODUCTS
16:00-16:15	E_006	Pornpong Siriratsakul	DETERIORATION OF PALM-BASED BIOTRANSFORMER UNDER THERMAL AGING
16:15-16:30	E_007	Thanaporn Chaihard	REMOVAL OF NITROGEN AND PHOSPHORUS FROM SYNTHETIC URINE WASTEWATER BY BIOCHAR AND ZEOLITE ADSORPTION
16:30-16:45	E_008	Mona Emad Abdelkarim	EXPRESSION OF MHETase ENZYME BY RECOMBINANT BACTERIA FOR POLYETHYLENE TEREPHTHALATE (PET) PLASTIC DEGRADATION
16:45-17:00	E_009	Poonsub Threepopnatkul	EFFECTS OF ADDITIVES ON PROPERTIES OF PVA FILM FOR AGRICULTURAL APPLICATION

Session:	SESSION E – ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE (Energy)		
Room:	ROOM 5211, LECTURE BUILDING 5		
Chair person:	Asssoc. Prof. Dr. Chanatip Samart		
Time	ID	Speaker	Title
14.00-14.30	E_INV02	Tetsuya Shishido	CATALYTIC SYNTHESIS OF α-AMINO ACIDS: SELECTIVE CONVERSION OF GLYCERIC ACID TO ALANINE OVER BIFUNCITIONAL Ru/TiO_2 CATSLYSTS [Online live via Zoom]
14:30-15:00	E_INV03	Haibo Zhang	REALIZING ULTRA HIGH ENERGY DENSITY IN POLYMER DIELECTRIC FILM BY INTERMOLECULAR STRUCTURE DESIGN
15:00-15:15	E_010	Arif Priyangga	THE EFFECTS OF PLASTICIZER AGENT IN CHITOSAN MEMBRANE MODIFIED MESOPOROUS PHOSPHOTUNGSTIC ACID AND ITS PERFORMANCES FOR DIRECT METHANOL FUEL CELL APPLICATION
15:15-15:30	E_011	Golnaz heidari	EPOXIDATION OF PALM OIL WITH H_2O_2 ON SULFONATED CARBON CATALYST, AND AMBERLITE IR120
BREAK			
15:45-16:00	E_012	Sahar Heidari	OPTIMIZE THE SYNTHESIS OF ISOAMYL ACETATE FROM FUSEL OIL BY UTILIZING SEVERAL TYPES OF ZEOLITES CATALYST
16:00-16:15	E_013	Worachita Wongtawee	FACILE PREPARATION OF g-C_3N_4/$MgAl_2O_4$ NANOCOMPOSITE PHOTOCATALYST AND ENHANCED PHOTOCATALYTIC DEGRADATION

Session:	SESSION F – FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION/FOOD SAFETY AND PACKAGING		
Room:	ROOM 5217, LECTURE BUILDING 5		
Chairperson:	Assoc. Prof. Dr. Chaleeda Borompichaichartkul		
Time	ID	Speaker	Title
12:30-13:00	-	-	REGISTRATION
13:00-13:15	-	-	OPENING CEREMONY
13:15-13:45	F_INV01	Soottawat Benjakul	COLD PLASMA: AN EMERGING TECHNOLOGY FOR PRESERVATION AND PROCESSING OF FISH AND FISH PRODUCTS [Online live via Zoom]
13:45-14:15	F_INV02	Anet Rezek Jambrak	NONTHERMAL AND ADVANCE THERMAL TECHNOLOGIES & INDUSTRY 4.0 IN ADVANCING TOWARDS SDGs [VDO pre-recording]
14:15-14:45	F_INV03	Juan Manuel Castagnini	LACTIC ACID BACTERIA FOR IMPROVING THE SUSTAINABILITY OF THE FOOD CHAIN: A CASE STUDY IN SEA BASS SIDE STREAMS [Online live via Zoom]
BREAK			

Session:	SESSION F – FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION/FOOD SAFETY AND PACKAGING		
Room:	ROOM 5217, LECTURE BUILDING 5		
Chairperson:	Assoc. Prof. Dr. Kitipong Assatarakul Co-chair: Dr. Sorawit Powtongsook		
Time	ID	Speaker	Title
15:00-15:10	F_001	Kunlaya Somboonwiwat	EFFECTS OF ALFPm3 ADMINISTRATION ON INTESTINAL MICROBIOTA AND DISEASE RESISTANCE AGAINST INFECTION OF *Vibrio parahaemolyticus* CAUSING EARLY MORTALITY SYNDROME IN SHRIMP
15:10-15:20	F_002	Jutikan Uttamoth	STUDIES OF TIME PERIODS OF POLLEN TUBE GROWTH IN STYLE EFFECTED ON FRUIT SET IN DURIAN (*Durio zibethinus* murr.) *cv*. 'MONTHONG'
15:20-15:30	F_003	Siriporn Butseekhot	EVALUATION OF PROTEIN CONCENTRATED AND THEIR FUNCTIONAL PROPERTIES OBTAINED FROM *Pleurotus pulmonarius* AND Schizophyllum commune MUSHROOM
15:30-15:40	F_004	Ulil Afidah	EFFECT OF ESSENTIAL OILS ON QUALITY AND VOLATILE COMPOSITION OF STERILIZED SMOKED MEAT (SE'I SAPI)
15:40-15:50	F_005	Nurul Hasniah	EFFECT OF PECTIN AS WALL MATERIAL ON THE PROBIOTIC SURVIVAL OF MICROENCAPSULATED *Lactobacillus plantarum*
15:50-16:00	F_006	Aung Pyae	TOTAL PHENOLIC AND ANTHOCYANIN CONTENTS OF BLACK RICE WINE FERMENTED WITH *Saccharomyces cerevisiae* SC90 AND M30
16:00-16:10	F_007	Suratwadee Sriwarom	MICRONEEDLES FOR BORAX TESTING IN FOOD
16:10-16:40	-	-	AWARD/END

Session:	SYMPOSIUM SP1 – Wood and Bio-based Materials		
Room:	ROOM 7201, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/97174918999?pwd=MVlvK3hwaE1xVkxNQWV0UTN1d1lCdz09		
Chair person:	Assoc. Prof. Dr. Nirundorn Matan Co-chair: Assoc. Prof. Dr. Suthon Srivaro		
Time	ID	Speaker	Title
14:00-14:15	-	-	OPENING CEREMONY
14:15-15:00	SP1_INV01	Hathaikarn Manuspiya	BACTERIAL CELLULOSE "LIGHT THE WAY WITH SUSTAINABLE MATERIALS"
15:00-15:30	SP1_INV02	Zoltán Pásztory	WOOD BUILDINGS FOR CARBON NEUTRAL BUILDING SECTOR [Online live via Zoom]
15:30-16:00	SP1_INV03	Steve Riley	STUDIES IN WATER TENSION COLLAPSE IN WOOD DRYING [Online live via Zoom]
16:00-16:15	SP1_001	Choosak Rittiphet	PREVENTION OF DRYING COLLAPSE IN PALM WOOD USING PRE-FREEZING TECHNIQUE
16:15-16:30	SP1_002	Peeraya Settapong	MECHANISMS OF DRYING COLLAPSE OF INTERCONNECTED PARENCHYMA CELLS IN PALM WOOD
16:30-16:45	SP1_003	Sataporn Jantawee	STRESSWOOD METER: AN INNOVATIVE ASSESSMENT OF INTERNAL STRESS IN WOOD
16:45-17:00	SP1_004	Satjapan Leelatanon	THEORETICAL INTERPRETATION OF INTERNAL STRESS IN WOOD USING THE RESTORING FORCE TECHNIQUE

Exhibition is arranged by the Center of Excellence in Wood and Biomaterials, Walailak University
at the conference venue from 8:30 to 16:00

Session:	SYMPOSIUM SP2 – SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA		
Room:	ROOM 5310, LECTURE BUILDING 5		
Link ZOOM:	https://wu-ac-th.zoom.us/j/94962319154?pwd=TTJtWlRNNmRSZk0rNjVzTyt3TE1Ldz09		
Chair person:	Assoc. Prof. Dr. Punnama Siriphannon Co-Chair: Assoc. Prof. Dr. Mullica Jaroensutasinee		
Time	ID	Speaker	Title
14:00-15:00	SP2_SPL01	Panelist : Satachanan Yoothong Tanasak Charerenthum Surapot Buokiaw Keayoon Preechatiwong Sasithorn Kiewkor	“การสอนวิทยาศาสตร์ยุคใหม่สร้างเยาวชนพร้อมเผชิญ VUCA WORLD”จากครูวิทยาศาสตร์ดีเด่นประจำปี 2565 (THAI SESSION)
15:00-15:15	SP2_SPL02	Thanit Praneenararat	“How did I deal with abrupt change to teaching 500 students online?” (THAI SESSION)
15:15-15:30	SP2_SPL03	Puey Ounjai	"บทบาทของครูในการสร้างสังคมแห่งการเรียนรู้ในยุค VUCA" (THAI SESSION)

Session:	SYMPOSIUM SP3 – X-Ray Crystallography		
Room:	ROOM 7202, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/92981358178?pwd=OE55OXk3ZlRiVHExdGQ1WUpkWVpoUT09		
Chair person:	Assoc. Prof. Dr. Kittipong Chainok & Assoc. Prof. Dr. Kuakarun Krusong		
Time	ID	Speaker	Title
14:00-14:30	SP3_INV01	Min Fey Chek	INSIGHTS INTO THE CATALYTIC MECHANISM OF PHA SYNTHASE, A BIODEGRADABLE PLASTIC-SYNTHESIZING ENZYME
14:30-15:00	SP3_INV02	Rogerio R. Sotelo-Mundo	CAN A BLOOD TEST PREDICT THE RISK FOR RICKETTSIA INFECTION? TICK ANTIGENIC PROTEINS AS POTENTIAL MARKERS FOR VECTOR EXPOSURE AND ADDRESSING A GLOBAL NEGLECTED HEALTH PROBLEM
15:00-15:15	SP3_001	Peerapon Deetanya	X-RAY CRYSTALLOGRAPHIC STRUCTURE OF A DURIAN TRYPSIN INHIBITOR
15:15-15:30	SP3_002	Songwuit Chanthee	HALOGEN SUBSTITUTED BIS-BIDENTATE SCHIFF BASE LIGANDS EFFECTED STRUCTURAL FORMATION OF $\{[Ag(TP\text{-}XA)(NO_3)]\}_n$ (X =F, Cl, Br, I) COMPLEXES
BREAK			
15:45-16:00	SP3_INV03	Bunyarat Rungtaweevoranit	METAL-ORGANIC FRAMEWORK CATALYSTS FOR THE CATALYTIC CONVERSION OF D-XYLOSE TO LACTIC ACID AND ON-STREAM OXIDATION OF METHANE TO METHANOL
16:00-16:15	SP3_003	Raul Díaz Torres	A NOVEL METAL-ORGANIC FRAMEWORK BASED ON 1,3,5-TRIS(4-CARBOXYPHENL)BENZENE ACID WITH TWO TYPES OF SBUS
16:15-16:30	SP3_004	Kenika Khodchasanthong	CRYSTAL ENGINEERING OF ULTRAMICROPOROUS LANTHANIDE OXALATE FRAMEWORKS WITH DIAMOND-LIKE TOPOLOGY
16:30-16:45	SP3_005	Kunlanit Jeanjan	THREE NOVEL THREE-DIMENSIONAL BIMETALLIC CADMIUM(II)/CALCIUM(II)-BASED ANIONIC METAL-ORGANIC FRAMEWORKS ENCAPSULATING DIFFERENT CATIONIC GUEST MOLECULES
16:45-17:00	SP3_006	Pisit Phayatcharoenkun	CRYSTAL STRUCTURES OF TWO 3D COPPER(II) BASED METAL ORGANIC FRAMEWORKS BEARING MIXED DICARBOXYLATE LINKERS

Session:	SYMPOSIUM SP4 – CONSERVATION FOR SUSTAINABILITY IN THE DISRUPTIVE ERA		
Room:	ROOM 7207, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/94606237783?pwd=dVN0bG1JQTNVU3VHYXRra2xjREJwUT09		
Chair person:	Prof. Dr. Suchana Chavanich Co-Chair: Asst. Prof. Dr. Nontivich Tandavanitj		
Time	ID	Speaker	Title
14:00-14:30	SP4_INV01	Yannick Kuehl	NATIONAL GEOGRAPHIC SOCIETY AND CONSERVATION FOR SUSTAINABILITY
14:30-15:00	SP4_INV02	Boripat Siriaroonrat	EMERGING DISEASE THREATS TO WILDLIFE CONSERVATION, LIVESTOCK PRODUCTION, ECONOMY AND SUSTAINABILITY: A THAILAND LESSON
BREAK			

Session:	SESSION SP6 – KRATOM AND CANNABISB (THAI SESSION)		
Room:	ROOM 7217, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/96728890253?pwd=azdjRFVQTkhNM05UWGVEMzFxZHd6UT09		
Chair person:	Assoc. Prof. Dr. Potjamarn Suraninpong		
Time	ID	Speaker	Title
14:00-14:30	SP6_INV01	Rossukhon Thanatheerabunjong	CANNABIS AND KRATOM LAWS
14:30-15:00	SP6_INV02	Mudtorlep Nisoa	DEVELOPMENT OF MICROWAVE TECHNOLOGY FOR DRYING OF AGRICULTURAL PRODUCTS
15.00-15.30	SP6_INV03	Sakan Warinhomhoun	SAFETY & EFFICACY OF KRATOM FOR METABOLIC DISORDER
15.30-16.30	-	Panelist : Panaranch Phonphadee Damrongsak Kaewamphai Jittakorn Youngchuay Potjamarn Suraninpong	CANNABIS & KRATOM : CULTIVATION, MARKET AND THAI TRADITIONAL MEDICINE RECIPE

Session:	HEAD OF DEPARTMENT MEETING (CHEMISTRY)		
Room:	ROOM 7209, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/96492737457?pwd=MjE1d2dOOHpIK2l6WmpkRTVnK3lPQT09		
Time	ID	Speaker	Title
14:00-16:00	-	-	MEETING

Session:	HEAD OF DEPARTMENT MEETING (MATHEMATICS & COMPUTER)		
Room:	ROOM 7211, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/92179535708?pwd=UkhwS284VHVYRnJPWjVzMXJpNXA5QT09		
Time	ID	Speaker	Title
14:00-16:00	-	-	MEETING

Session:	MEETING OF THE WOMEN IN SCIENCE AND ENGINEERING COMMITTEE (WISE), ASSOCIATION OF ACADEMIES AND SOCIETIES OF SCIENCE IN ASIA (AASSA)		
Room:	ROOM 7204, LECTURE BUILDING 7		
Time	ID	Speaker	Title
14:00-17:00	-	-	MEETING

Session:	SCIENCE DEANS & CHAIR & INVITED SPEAKER RECEPTION		
Room:	@ TWIN LOTUS HOTEL		
Time	ID	Speaker	Title
18:15-18:35	-	John C. Warner	GREEN CHEMISTRY: THE MISSING ELEMENTS
18:40-18:55	-	CDR Aaron Lee	REGIONAL DIRECTOR OFFICE OF NAVAL RESEARCH GLOBAL, TOKYO
18:55-20:30	-	-	RECEPTION

NOVEMBER 30th, 2022

MORNING PROGRAM

Session:	PLENARY SPEAKER		
Room:	ROOM 5209, LECTURE BUILDING 5		
Chair person:	Prof. Dr. Pitsanupong Kanjanapayon		
Time	ID	Speaker	Title
8:45-9:30	-	Urs Klötzli	PALEOCLIMATIC RECONSTRUCTIONS OF THE LAST GLACIAL MAXIMUM BY FINGERPRINTING OF DUST FROM GREENLAND ICE CORES

Session:	SESSION A – PHYSICS (NUCLEAR PHYSICS)		
Room:	ROOM 5216, LECTURE BUILDING 5		
Chair person:	Assoc. Prof. Dr. Mudtorlep Nisoa		
Time	ID	Speaker	Title
10:45-11:15	A_INV03	Somsak Dangtip	STATUS AND PROGRESS OF THE FIRST TOKAMAK IN THAILAND
11:15-11:30	A_015	Onwanya Suwannahong	GAMMA-RAY SHIELDING PROPERTIES OF NATURAL RUBBER/$BaSO_4$ COMPOSITES AND RUBBER COMPOUND/$BaSO_4$ COMPOSITES
11:30-11:45	A_016	Kanisorn Kaewsrithong	THE INVESTIGATION OF UNSATURATED POLYESTER RESIN CONTAINING BORON CARBIDE FOR USE AS NEUTRON SHIELDING

Session:	SESSION B3 – BIOLOGICAL SCIENCES		
Room:	ROOM 5301, LECTURE BUILDING 5		
Chairperson:	Asst. Prof. Dr. Puey Ounjai		
Time	ID	Speaker	Title
09:30-10:00	B_INV03	Duncan R. Smith	INVESTIGATIONS INTO VITAMIN D AS AN ANTI-FLAVIVIRUS AGENT
10:00-10:15	B_009	Kitipong Angsujinda	DEVELOPMENT AND PRODUCTION OF *Penaeus stylirostris* DENSOVIRUS-LIKE PARTICLE LINKED DOUBLE STRANDED RNA SPECIFIC TO *RR2* GENE OF WHITE SPOT SYNDROME VIRUS
10:15-10:30	B_010	Theerapat Tangsupatawat	EXPRESSION, PURIFICATION AND CHARACTERIZATION OF QUINONE REDUCTASE FROM *Leishmania orientalis*
BREAK			
10:45-11:00	B_011	Kallayanee Naloka	A SYNTROPHIC METABOLISM OF THE DESIRED BACTERIAL CONSORTIUM ENHANCES PETROLIUM OIL REMOVAL FROM THE SIMULATED FRESHWATER ENVIRONMENT
11:00-11:15	B_012	Parichaya Tiralerdpanich	BACTERIAL IMMOBILIZATION OF RUBBER WASTE BIOCHAR FOR DIESEL REMOVAL
11:15-11:30	B_013	Wichanat Khongkliang	CHARACTERIZATION OF RUBBER DEGRADATION BY *Actinomycetes* ISOLATED FROM RUBBER PLANTATION SOIL

Session:	SESSION B4 – BIOLOGICAL SCIENCES		
Room:	ROOM 5207, LECTURE BUILDING 5		
Chairperson:	Asst. Prof. Dr. Witsanu Saisorn		
Time	ID	Speaker	Title
09:30-10:00	B_INV04	Somran Sudddee	MARVELOUS PLANTS OF DOI HUA MOT, UMPHANG DISTRICT, TAK PROVINCE
10:00-10:15	B_014	Oratai Thakom	PHYLOGENETIC ANALYSIS AND ORTHOLOG PREDICTION OF THE LEGUME NAC TRANSCRIPTION FACTORS
10:15-10:30	B_015	Wah Wha Min	SUSTAINABLE MANGROVE ENVIRONMENT AND BIODIVERSITY OF GASTROPODS AND CRABS: A CASE STUDY ON THE EFFECT OF MANGROVE REPLANTATION UNDER ECOTOURISM AND RESTORATION IN KO LIBONG, TRANG, THAILAND
BREAK			
10:45-11:00	B_016	Daran Prongjit	NOVEL ANIMAL-LIKE RAW STARCH DEGRADING A-AMYLASE FROM *Roseateles terrae* HL11 AS POTENTIAL BIOCATALYST FOR APPLICATION IN CASSAVA PULP SACCHARIFICATION
11:00-11:15	B_017	Sirapong Papan	EXTRACTION AND CHARACTERIZATION OF HYDROPHOBINS CLASS I AND CLASS II FROM MUSHROOMS AND MACROFUNGI IN THAILAND
11:15-11:30	B_018	Ararat Jaiaree	INHIBITORY EFFECT OF *Carissa carandas* Linn. EXTRACT ON ADIPOGENESIS AND LIPID ACCUMULATION OF 3T3-L1 ADIPOCYTE

Session:	SESSION C – ANALYTICAL CHEMISTRY		
Room:	ROOM 7201, LECTURE BUILDING 7		
Chair person:	Dr. Litavadee Chuaboon Dr. Fonthip Makkliang		
Time	ID	Speaker	Title
9:30-10:00	C_AC_INV01 [C_INV01]	Chongdee Thammakhet-Buranachai	MINIATURIZED EXTRACTION TECHNIQUES: DEVELOPMENT AND APPLICATION FOR FOOD SAFETY APPLICATIONS
10:00-10:15	C_AC_001	Naruesorn Samanpong	LIGANDLESS SOLIDIFIED FLOATING ORGANIC DROP MICROEXTRACTION (SFODME) FOR LEAD DETERMINATION IN WATER SAMPLES BY ELECTROTHERMAL ATOMIC ABSORPTION SPECTROMETRY (ETAAS)
10:15-10:30	C_AC_002	Sophanat Khenthaphak	METHANOL DETECTION BY DIGITAL-IMAGE COLORIMETRY USING OPTICAL NANOMATERIAL WITH N-METHYLPOLYPYRROLE
BREAK			
11:00-11:15	C_AC_003	Wipaporn Thananchai	DETERMINATION OF MAGNESIUM USING PAPER-BASED ANALYTICAL DEVICE
11:15-11:30	C_AC_004	Preenapa Saengaroon	SKIN CARE TEST KIT FOR RETINOIC ACID BY NAKED EYE DETECTION
11:30-11:45	C_AC_005	Phurin Surachotimongkol	THE DEVELOPMENT OF AN ELECTROCHEMICAL SENSOR FOR SILVER IONS AND SILVER NANOPARTICLES DETECTION

Session:	SESSION C – ORGANIC & MEDICINAL CHEMISTRY		
Room:	ROOM 7217, LECTURE BUILDING 7		
Chair person:	Assoc. Prof. Dr. Surat Laphookhieo Prof. Dr. Vatcharin Rukachaisirikul		
Time	ID	Speaker	Title
9:30-10:00	C_OMC_INV01 [C_INV07]	Surat Laphookhieo	PHYTOCHEMICAL INVESTIGATION AND BIOLOGICAL ACTIVITIES OF ANNONACEAE
10:00-10:15	C_OMC_001	Hoa Tai Xuan Hang	CYCLOARTANE-TYPE TRITERPENOIDS FROM THE LEAVES OF *Sandoricum koetjape* AND THE EFFICACY ON α-GLUCOSIDASE INHIBITION ACTIVITY
10:15-10:30	C_OMC_002	Daychaton Siravarang	SYNTHESIS OF COUMARIN DERIVATIVES AND THEIR ANTI-INFLUENZA ACTIVITY
BREAK			
10:45-11:00	C_OMC_003	Thi-Hong-Truc Phan	SYNTHESIS OF BISCOUMARIN DERIVATIVES AS α-GLUCOSIDASE INHIBITIORS
11:00-11:15	C_OMC_004	Prapassara Muangsopa	CYANINE/METHOTREXATE NANOPARTICLES FOR SYNERGISTIC PDT/CHEMOTHERAPY OF BREAST CANCER
11:15-11:30	C_OMC_005	Kanta Pranweerapaiboon	MOLECULAR DOCKING AND MOLECULAR DYNAMICS SIMULATION STUDY OF THE INTERACTIONS OF *Holothuria scabra* TRITERPENE GLYCOSIDES AND THEIR METABOLITES ON ANDROGEN RECEPTOR ALLOSTERIC SITES
11:30-11:45	C_OMC_006	Anawat Tailangka	SYNTHESIS TOWARDS KUSUNOKININ DERIVATIVES: MODIFICATION OF SUBSTITUENT ON PHENYL RING

Session:	SESSION C – PHYSICAL AND THEORETICAL CHEMISTRY		
Room:	ROOM 7207, LECTURE BUILDING 7		
Chair person:	Asst. Prof. Dr. Apirak Payaka Assoc. Prof. Dr. Thanyada Rungrotmongkol Dr. Warayuth Sajomsang		
Time	ID	Speaker	Title
09:30-10:00	C_PC_INV01 [C_INV08]	Thanyada Rungrotmongkol	SCREENING OF POTENTIAL COMPOUNDS TO COMBAT COVID-19
10:00-10:30	C_PC_INV02 [C_INV09]	Warayuth Sajomsang	CHEMICAL MODIFICATION OF MEMBRANE SURFACE FOR WATER PURIFICATION
BREAK			
10:45-11:00	C_PC_001	Chidapha Kusinram	A MULTISCALE MOLECULAR SIMULATION OF AMORPHOUS POLY(VINYL ALCOHOL)
11:00-11:15	C_PC_002	Poomipat Tamdee	MOLECULAR DOCKING STUDIES OF THE 2,5-DIKETOPIPERAZINE DERIVATIVES AS POTENTIAL ANTI-SARS-CoV2 ACTIVITY
11:15-11:30	C_PC_003	Passapan Sanguanchua	STUDYING THE INTERFACIAL EFFECT OF NANOSCALE TiO_2-Cu_2O HETEROJUNCTION ON THE PHOTOACTIVITY OF METHYLENE BLUE DEGRADATION USING CATALYTIC MODEL SYSTEMS OF Cu_2O NANOPARTICLE ON TiO_2 PLANAR SUPPORT

Session:	SESSION D3 – MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI		
Room:	ROOM 5204, LECTURE BUILDING 5		
Chairperson:	Assoc. Prof. Dr. Chartchai Leenawong		
Time	ID	Speaker	Title
9:30-10:00	D_INV02	Olarik Surinta	STRATEGIES FOR TRAINING DEEP LEARNING
10:00-10:15	D_014	Patitta Suksomboon	COMPARISION OF PERFORMANCE OF DATA CLASSIFICATION USING DECISION TREE AND RANDOM FOREST TECHNIQUES
10:15-10:30	D_015	Amarita Ritthipakdee	THE INFLUENCED DESTINATION CULTURAL ATTRACTION USING DECISION TREE METHOD
BREAK			
10:45-11:15	D_INV03	Waralee Rattanakijsuntorn	FUZZY ANALYTICAL HIERARCHY PROCESS IN ELECTRONIC COMMERCE PLATFORM DECISION MAKING
11:15-11:30	D_016	Sathit Prasomphan	SOCIAL DISTANCING DETECTOR IN LECTURE CLASSROOM FROM REAL TIME VIDEO
11:30-11:45	D_017	Suchada Cheerapatiyut	APPLICATION OF IMAGE PROCESSING AND MACHINE LEARNING FOR ABNORMAL VERTEBRAE CLASSIFICATION
11:45-12:00	D_018	Chairote Yaiprasert	ARTIFICIAL INTELLIGENCE FOR INTERNATIONAL CLASSIFICATION OF DISEASES

Session:	SESSION D4 – MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI		
Room:	ROOM 5206, LECTURE BUILDING 5		
Chairperson:	Asst. Prof. Dr. Nopporn Thamrongrat		
Time	ID	Speaker	Title
9:30-9:45	D_019	Kong Kanjanasopon	A DATA-DRIVEN APPROACH FOR MANAGING INVESTMENT RISK IN STOCK MARKETS AND ITS APPLICATION IN THE STOCK EXCHANGE OF THAILAND
9:45-10:00	D_020	Jiratpol Techavutichai Polawat Poowarattanakul	QUANTITATIVE STUDY OF THE EFFECT OF LEAF HARVESTING TIME ON ITS EDGE CURVATURE
10:00-10:15	D_021	Pat Vatiwutipong	TIME SERIES CLUSTERING USING FREQUENCY DISTRIBUTIONS OF FIRST-ORDER DIFFERENCES
10:15-10:30	D_022	Phachara Chanosot	STABILITY ANALYSIS OF UNEMPLOYMENT MODEL IN THAILAND AFTER THE COVID-19 OUTBREAK
BREAK			
10:45-11:00	D_023	Pornnapat Yamphram	OPTIONS PORTFOLIO SELECTION UNDER MEAN-VARIANCE UTILITY WITH FINITE LIQUIDITY
11:00-11:15	D_024	Kamonrut Koobubpha	THE MAXWELL – BURR III DISTRIBUTION: ITS PROPERTIES AND APPLICATION TO THE NEW COPD PATIENT RATE IN KHON KAEN, THAILAND
11:15-11:30	D_025	Chotipon Pakdeethammasakul	DISTRIBUTED REPRESENTATIONS OF WIFI FINGERPRINTS FROM WORD-EMBEDDING TECHNIQUES WITH APPLICATIONS IN CROWDSOURCE-BASED
11:30-11:45	D_026	Porawat Visutsak	EXPLOITATION OF ONTOLOGY IN SEMANTIC WEB: A CASE STUDY FOR TRANSFERRING THAILAND LICHENS DATA INTO DOMAIN ONTOLOGIES
11.45-12.00	D_027	Otsuka Yuno	TIME REDUCTION METHOD FOR HEURISTIC ALGORITHMS USING LOCAL TEMPORAL MEMORY

Session:	SESSION E – ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE (Materials)		
Room:	ROOM 5211, LECTURE BUILDING 5		
Chair person:	Dr. Mati Horprathum		
Time	ID	Speaker	Title
9:30-10.00	E_INV04	Gang Meng	TOWARD TRACE VOC MOLECULE RECOGNITION BY METAL OXIDE SENSORS [Online live via Zoom]
10:00-10:30	E_INV05	George W. Huber	CHEMICAL UPCYCLING OF WASTE PLASTICS
BREAK			
10:45-11:00	E_014	Kritanan Junthod	HYDRAZINE AND HYDRAZONE FUNCTIONALIZED HYPER-CROSSLINKED COPOLYMERS FOR REMOVAL OF IODINE FROM NUCLEAR WASTE
11:00-11:15	E_015	Siwat Lawanwadeekul	COMBINED EFFECTS OF CORN COBS MIXED WITH WASTE GLASS REDUCE FIRING TEMPERATURE IN THERMAL INSULATION CLAY BRICK.
11:15-11:30	E_016	Amporn Wiengmoon	EFFECT OF ANNEALING AND DESTABILIZATION HEAT TREATMENT ON MICROSTRUCTURE AND HARDNESS OF HIGH CHROMIUM CAST IRON
11:30-11:45	E_017	Chuleeporn Paa-rai	WEAR BEHAVIOUR OF ARC THERMAL SPRAY COATINGS ON BASE-CUTTER BLADES IN SUGARCANE HARVESTERS

Session:	SESSION E – ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE (Earth Science)		
Room:	ROOM 5209, LECTURE BUILDING 5		
Chair person:	Prof. Dr. Pitsanupong Kanjanapayon		
Time	ID	Speaker	Title
9:30-9:45	E_018	Chaw Su Thin	WASTEWATER SURVEILLANCE OF SARS-CoV-2 FROM THE AIRCRAFT AND WASTEWATER TREATMENT PLANTS AT DOMESTIC AND INTERNATIONAL AIRPORTS, THAILAND
9:45-10:00	E_019	Min Thura Mon	APPLICATION OF SEASONAL AUTOREGRESSIVE INTEGRATED MOVING AVERAGE MODEL IN FORECASTING THE SALINITY OF BANG PAKONG RIVER, THAILAND
10:00-10:15	E_020	Pansa Pholsonda	ANALYSIS OF THE 2019 EARTHQUAKE SEQUENCE, XAYABOURY, LAO PDR.
10:15-10.30	E_021	Sarawut Buranrom	PRELIMINARY STUDY ON PETROCHEMISTRY OF BANG THA CHAM GRANITOID, CHONBURI PROVINCE, CENTRAL GRANITE BELT, THAILAND
BREAK			
10:45-11:00	E_022	Nannapat Kummoo	GEOCHEMISTRY OF GRANITOIDS AT NONG BUA DISTRICT, NAKHON SAWAN PROVINCE, THAILAND.
11:00-11:15	E_023	Watta Wongkham	ELECTRUM RELATED TO PYRITE, ARSENOPYRITE AND GALENA AT THE HUAI YUAK GOLD DEPOSIT, SUKHOTHAI PROVINCE, THAILAND
11:15-11:30	E_024	Bussayawan Sukbunjong	OCCURRENCE OF RARE EARTH ELEMENTS IN GREISENIZATION AND SKARN TIN DEPOSITS AT BAN KHAO AREA, KANCHANABURI PROVINCE, THAILAND

Session:	SESSION E – ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE (Energy)		
Room:	ROOM 5217, LECTURE BUILDING 5		
Chair person:	Asst. Prof. Dr. Uraiwan Intatha		
Time	ID	Speaker	Title
9:30-10:00	E_INV06	Surachai Karnjanakom	APPLICATION OF ACTIVE CATALYST WITH OXYGEN ENVIRONMENT FOR FACILE SYNTHESIS OF VALUE-ADDED CHEMICALS
10:00-10:15	E_025	Thanyarat Pakaew	SYNTHESIS OF METAL LOADING/ TITANIUM SILICATE CATALYSTS FOR HIGHLY SELECTIVE PALM OIL EPOXIDATION
10:15-10.30	E_026	Trinh Tan Khanh Le	LIQUID PHASE OXIDATION OF 5-HYDROXYMETHYLFURFURAL WITH BIMETALLIC Co-Cu SUPPORTED ON ACTIVATED CARBON CATALYST

Session:	SYMPOSIUM SP2 – SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA		
Room:	ROOM 5310, LECTURE BUILDING 5		
Link ZOOM:	https://wu-ac-th.zoom.us/j/94962319154?pwd=TTJtWlRNNmRSZk0rNjVzTyt3TE1Ldz09		
Chair person:	Assoc. Prof. Dr. Punnama Siriphannon Co-Chair: Assoc. Prof. Dr. Mullica Jaroensutasinee		
Time	ID	Speaker	Title
9:30-10:00	SP2_INV01	Amy S. Cannon	GREEN CHEMISTRY EDUCATION: AN UPSTREAM APPROACH TO ADDRESSING SUSTAINABLE DEVELOPMENT GOALS
10:00-10:15	SP2_001	Sukanya Jankhunthod	ELECTROCHEMICAL AND STRUCTURAL INVESTIGATIONS OF COPPER HEXACYANOFERRATE FOR APPLICATION IN HYDROGEN PEROXIDE DETECTION
10:15-10:30	SP2_002	Suchunya Wongprasod	ELECTROSPUN CARBON NANOFIBERS DECORATED BY TiO_2 HOLLOW NANOSPHERES FOR HIGH PERFORMANCE FLEXIBLE SUPERCAPACITOR ELECTRODE
BREAK			
10:45-11:00	SP2_003	Rapeephat Yodsungnoen	OPTICALLY DETECTED ELECTRON SPIN RESONANCE IN DIAMOND FOR VECTOR MAGNETOMETRY
11:00-11:15	SP2_004	Kritsana Saego	SINGLE-PHOTON SOURCE FROM SPONTANEOUS PARAMETRIC DOWN-CONVERSION
11:15-11:30	SP2_005	Theethach Phiranram	STRUCTURAL INTERPRETATION OF SOUTHERN THAILAND AREA BY USING GOCE DATA
11:30-11:45	SP2_006	Chakrit Samarnrak	DETECTION OF ELECTROMAGNETIC WAVES BY A HOMEMADE HERTZ EXPERIMENT KIT
11.45-12.00	SP2_007	Punsiri Dam-o	LIFT AND DRAG FORCES LESSONS ON SMARTPHONE APPLICATION AND STUDENTS' LEARNING OUTCOMES

Session:	SYMPOSIUM SP3 – X-Ray Crystallography		
Room:	ROOM 7202, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/92981358178?pwd=OE55OXk3ZlRiVHExdGQ1WUpkWVpoUT09		
Chair person:	Prof. Dr. Nongnuj Muangsin & Assoc. Prof. Dr. Kittipong Chainok		
Time	ID	Speaker	Title
9:30-10:30	SP3_INV04	Horst Puschmann	OLEX2: SMALL-MOLECULE CRYSTALLOGRAPHY FOR EVERYONE (1)
BREAK			
10:45-12:00	SP3_INV04	Horst Puschmann	OLEX2: SMALL-MOLECULE CRYSTALLOGRAPHY FOR EVERYONE (2)

Session:	SYMPOSIUM SP7 – RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY		
Room:	ROOM 5201, LECTURE BUILDING 5		
Link ZOOM:	https://wu-ac-th.zoom.us/j/98281508334?pwd=clFiTkMwT1AxMjBkdzBjWlVjcm1hZz09		
Chair person:	Dr. Yutthana Tumnoi		
Time	ID	Speaker	Title
09:30-10:15	SP7_ INV01	Prasong Kessaratikoon	RADIOACTIVITY MONITORING IN THE ENVIRONMENT
BREAK			
10:45-11:00	SP7_001	Saroh Niyomdecha	THE STUDY OF NATURAL RADIONUCLIDE AND STABLE CAESIUM CYCLING IN RICE PADDY ECOSYSTEM OF THAI FRAGRANT RICE (ORYZA SATIVA L. SSP. INDICA CV. PATHUM THANI 1)
11:00-11:15	SP7_002	Thawatchai Itthipoonthanakorn	MODELLING ^{210}Pb FOR DATING OF FOREST SOIL PROFILES
11:15-11:30	SP7_003	Dumrongsak Rodphothong	ASSESSMENT OF TERRESTRIAL GAMMA RADIATION DOSE IN GEOLOGICAL TOURIST ATTRACTIONS IN RATCHABURI PROVINCE, THAILAND
11:30-11:45	SP7_004	Wipada Ngansom	CHARACTERISTICS OF GEOTHERMAL RESERVOIR AND RADON LEVEL IN GEOTHERMAL SPRING GROUNDWATER, SOUTHERN THAILAND

Session:	SYMPOSIUM 8 – FOOD SYSTEM TRANSFORMATION AND SDGs		
Room:	ROOM 7209, LECTURE BUILDING 7		
Link ZOOM:	https://wu-ac-th.zoom.us/j/96384376782?pwd=ejRHTnlleUhsekVLU3ZGZlFpbkx5Zz09		
Chair person:	Prof. Dr. Supawan Tantayanon Co-Chairs: Prof. Azra Khanum Co-Chairs: Prof. Yukari Ito Co-Chairs: Dr. Aura C. Matias		
Time	ID	Speaker	Title
9:30-10:10	SP8_KEY01	Vania G. Zuin Zeidler	SUSTAINABLE CHEMISTRY AND CIRCULARITY IN THE CONTEXT OF THE "FROM FARM TO FORK" STRATEGY
10:10-10:30	SP8_INV02	Lalana Thiranusornkij	PRESENT AND FUTURE FOOD BASED ON CPF'S AGRO-INDUSTRIAL BUSINESS
BREAK			
10:45-11:00	SP8_001	Azra Khanum	CURRENT ENVIRONMENTAL CALAMITY IN PAKISTAN TOTALLY SHAKEN THE FOOD SYSTEMS TRANSFORMATION AND SDGs
11:00-11:15	SP8_002	Yunli Bai	EMPOWERING WOMEN IN INTRA-HOUSEHOLD DECISION-MAKING TO IMPROVE CROP DIVERSITY AND HOUSEHOLD DIETARY DIVERSITY: EVIDENCE FROM FIVE DEVELOPING COUNTRIES IN ASIA
11:15-11:30	SP8_003	Elena Grigorieva	FOOD-ENERGY-WATER NEXUS AND CLIMATE CHANGE: RISKS AND SOCIAL VULNERABILITY
11:30-12:00	-	-	ROUND TABLE DISCUSSION

Note: Co-organized by
The Committee of Women in Science and Engineering (WISE)
Association of Academies and Societies of Science in Asia (AASSA)

AFTERNOON PROGRAM

Session:	PLENARY SPEAKER		
Room:	ROOM 5301, LECTURE BUILDING 5		
Chairperson:	Assoc. Prof. Dr. Chatchai Kanlayanapaphon		
Time	ID	Speaker	Title
13:15-14.00	-	Kesara Anamthawat-Jónsson	PLANT SPECIES DIVERSITY AND MIGRATION DUE TO FACILITATED INTRODUCTION AND CLIMATE WARMING

Session:	SESSION B5 – BIOLOGICAL SCIENCES		
Room:	ROOM 5301, LECTURE BUILDING 5		
Chairperson:	Prof. Dr. Duncan R. Smith		
Time	ID	Speaker	Title
14:00-14:30	B_INV05	Puey Ounjai	RECENT REVOLUTION IN STRUCTURAL SYSTEMS BIOLOGY
14:30-14:45	B_019	Pornprol Surakul	POSTNATAL EXERCISE INDUCES THE DISTINCTIVE ROLES OF INFLAMMATORY CYTOKINE TO AMELIORATE THE EFFECTS OF MATERNAL RESTRAINT STRESS-INDUCED SPATIAL MEMORY IMPAIRMENT IN THE RAT OFFSPRING
14:45-15:00	B_020	Nawapol Upatcha	CORDYCEPS EXTRACT-LOADED NANOPARTICLES PROMOTES COLLAGEN SYNTHESIS AND ENHANCES WOUND HEALING
15:00-15:15	B_021	Ponlaphatr Theerawanon	RECOMBINANT HUMAN SECRETORY LEUKOCYTE PROTEASE INHIBITOR COATED TITANIUM MATERIAL ENHANCED OSTEOBLAST ADHESION
15:15-15:30	B_022	Pimchanok Phankeaw	ROLE OF DNA METHYLTRANSFERASES ON TSHR EXPRESSION AND ORBITAL FIBROBLASTS ACTIVATION

Session:	SESSION B6 – BIOLOGICAL SCIENCES		
Room:	ROOM 5211, LECTURE BUILDING 5		
Chairperson:	Assoc. Prof. Boonsatien Boonsoong		
Time	ID	Speaker	Title
14:00-14:30	B_INV06	Sutthirat Sitthisak	BACTERIOPHAGES AND PHAGE ENZYMES IN THE ERA OF ANTIBIOTIC RESISTANCE CRISIS
14:30-14:45	B_023	Phitchayapak Wintachai	APPLICATIONS OF BACTERIOPHAGE PHI-SY AGAINST INTRACELLULAR *Acinetobacter baumannii*
14:45-15:00	B_024	Atitaya Wayupat	LEPTIN ENHANCES INFLAMMATORY EFFECT OF INTERLEUKIN-1-BETA IN HUMAN SYNOVIOCYTES VIA NF-KB AND STAT SIGNALING
15:00-15:15	B_025	Wanatsanan Chulrik	PROTECTIVE ANTI-INFLAMMATORY EFFECT OF OXOCREBANINE FROM *Stephania pierrei* TUBER AGAINST ACUTE LUNG INJURY
15:15-15:30	B_026	Pratchayanon Soddaen	EFFECT OF BIOACTIVE COMPOUNDS FROM *Eurycoma longifolia* Jack. ON ANTI-INVASIVE ACTIVITY IN HUMAN NON-SMALL CELL LUNG CANCER CELLS

Session:	SESSION C – ANALYTICAL CHEMISTRY		
Room:	ROOM 7201, LECTURE BUILDING 7		
Chair person:	Asst. Prof. Dr. Parawee Rattanakit Asst. Prof. Dr. Piyaluk Nurerk		
Time	ID	Speaker	Title
14:00-14:30	C_AC_INV02 [C_INV02]	Kamonwad Ngamchuea	THE DEVELOPMENT OF ELECTROCHEMICAL SENSORS VIA BOTTOM-UP APPROACHES
14:30-14.45	C_AC_006	Jeerakit Thangphatthanarungruang	A NEW POLYMERIC L-GLUTAMIC ACID-BASED ELECTROCHEMICAL SENSOR FOR 1-HYDROXYPYRENE DETECTION
14:45-15:00	C_AC_007	Yada Thayawutthikun	ELECTROANALYTICAL DETECTION OF SALICYLIC ACID
15:00-15:15	C_AC_008	Sittipong Kaewmorakot	ELECTRODEPOSITION SYNTHESIS OF COBALT SELENIDE AS ELECTROCATALYST FOR OVERALL WATER SPLITTING
BREAK			
15:45-16:15	C_AC_INV03 [C_INV03]	Susana Campuzano Ruiz	CUTTING-EDGE BIOELECTROANALYTICAL TOOLS: A GATEWAY TO PRECISION MEDICINE
16:00-16:15	C_AC_009	Natchaya Malarat	ELECTROCHEMICAL DETECTION OF PARABEN BASED ON PENCIL GRAPHITE ELECTRODE MODIFIED WITH GOLD-ACTIVATED CARBON NANOMATERIAL COMPOSITES
16:15-16:30	C_AC_010	Kantima Kaewjua	SCREEN-PRINTED GRAPHENE ELECTRODE DECORATED WITH POLY(L-HISTIDINE) AS AN EFFECTIVE ELECTROCHEMICAL SENSING FOR TYRAMINE DETECTION
16:30-16:45	C_AC_011	Natcha Rasitanon	NON-ENZYMATIC ELECTROCHEMICAL SENSOR FOR CREATININE DETECTION BASED ON POROUS COPPER FOAM AND GRAPHENE OXIDE MODIFIED ELECTRODE

Session:	SESSION C – ORGANIC & MEDICINAL CHEMISTRY		
Room:	ROOM 7217, LECTURE BUILDING 7		
Chair person:	Asst. Prof. Dr. Chanokbhorn Phaosiri Prof. Dr.Vatcharin Rukachaisirikul		
Time	ID	Speaker	Title
14:00-14:30	C_OMC_INV02 [C_INV06]	Chanokbhorn Phaosiri	SUSTAINABLE EXTRACTION OF CURCUMINOIDS FROM TURMERIC (*Curcuma longa*) AS HISTONE DEACETYLASE INHIBITORS
14:30-14:45	C_OMC_007	Nattasiri Phaisarn	DEUTERATION OF ORGANIC COMPOUNDS BY HYDROTHERMAL PROCESS
14:45-15:00	C_OMC_008	Thanawit Thippong	REVELATION OF PARAMETERS INFLUENCING THE SYNTHESIS OF THE 7-AZAINDOLES VIA THE LAROCK HETEROANNULATION REACTION
15:00-15:15	C_OMC_009	Saringkan Sriprom	DEVELOPMENT OF ALCOHOL OXIDATION BY VANADIUM CHLOROPEROXIDASE

Session:	SESSION C – INORGANIC CHEMISTRY		
Room:	ROOM 7207, LECTURE BUILDING 7		
Chair person:	Assoc. Prof. Dr. David J. Harding		
Time	ID	Speaker	Title
14:00-14:30	C_IC_INV01 [C_INV04]	Colette Boskovic	SWITCHABLE METAL COMPLEXES AS MOLECULAR MATERIALS
14:30-15:00	C_IC_INV02 [C_INV05]	Saranphong Yimklan	ROLE OF ANIONS IN THE FORMATION AND STRUCTURAL TRANSFORMATION OF COORDINATION POLYMERS
15:00-15:15	C_IC_001	Naritsara Kornkanlaya	SYNTHESIS AND CHARACTERIZATION OF NI(II) AND ZN(II) COMPLEXES USING BENZOTHIAZOLE SCHIFF BASE LIGANDS
15:15-15:30	C_IC_002	Nadia Natputree	MAGNETIC AND STRUCTURAL STUDIES OF $[Fe(SAREN\text{-}4\text{-}OMe)_2]Y$ COMPLEXES
BREAK			
Chair person:	Assoc. Prof. Dr. Phimphaka Harding		
15:45-16:00	C_IC_003	Filip Kielar	DEVELOPMENT OF ENZYME RESPONSIVE TRIS-CYCLOMETALATED IRIDIUM COMPLEXES
16:00-16:15	C_IC_004	Purinat Trisirimongkol	DRUG DELIVERY SYSTEM USING POROUS SILICA-MANNAN NANOCOMPOSITES
16:15-16:30	C_IC_005	Thana Anusanti	IMPROVEMENT OF C-H OXIDATION REACTIVITY THROUGH SUBSTRATE RECOGNITION BY IRON PINCER COMPLEX
16:30-16:45	C_IC_006	Sirawit Kamnoedmanee	MORPHOLOGY STUDY OF FLUORAPATITE BY HYDROTHERMAL AND PRECIPITATION METHODS
16:45-17:00	C_IC_007	Phurinat Lorwongkamol	WATER-SOLUBLE POLYMER DOTS FOR POTENTIAL AEROBIC OXIDATION IN AQUEOUS MEDIA

Session:	SESSION D5 – MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI		
Room:	ROOM 5204, LECTURE BUILDING 5		
Chairperson:	Asst. Prof. Dr. Phichet Jitjankarn		
Time	ID	Speaker	Title
14:00-14:15	D_028	Nopporn Thamrongrat	AN APPLICATION OF SOLUTIONS OF LINEAR DIFFERENCE EQUATIONS FOR OBTAINING THE CONDITIONAL MOMENTS OF THE TRENDING ORNSTEIN-UHLENBECK PROCESSES
14:15-14:30	D_029	Charawi Detphumi	HAMILTONIAN CYCLES IN CAYLEY GRAPHS OF GYROGROUPS
14:30-14:45	D_030	Jirapha Limbupasiriporn	HULLS OF CODES FROM COMPLETE MULTIPARTITE GRAPHS
14:45-15:00	D_031	Kamonwan Konghom	STUDYING THE SHORTEST HAMILTON PATH FOR SIGHTSEEING IN CHAIYAPHUM PROVINCE
15:00-15:15	D_032	Annob Jobpan	THE EQUITABLE CHROMATIC NUMBERS OF CARTESIAN PRODUCTS OF SOME GRAPHS
15:15-15:30	D_033	Bui Hung	APPLICATION OF THE CORRELATIVE EQUATIONS TO “FILL UP” A MONITORING WATER QUALITY DATA TO SUPPORT THE ASSESSMENT OF WATER QUALITY AND SELF-CLEANING CAPACITY.

Session:	SESSION E – ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE (Earth Science)		
Room:	ROOM 5217, LECTURE BUILDING 5		
Chair person:	Assoc. Prof. Dr. Krissanadej Jaroensutasinee		
Time	ID	Speaker	Title
14:00-14:15	E_027	Chupphavich Tiatrakul	ALGAL-BACTERIAL SYNERGY IN TREATMENT OF SYNTHETIC BREWERY WASTEWATER
14:15-14:30	E_028	Satawat Roekouansri	THE EFFECT OF ENSO ON VARIABILITY OF RAINFALL AT NAKHON SI THAMMARAT MOUNTAINS, NAKHON SI THAMMARAT PROVINCE
14:30-14:45	E_029	Orranan Chuachart	THE RELATIONSHIP BETWEEN LAND SURFACE TEMPERATURE AND VEGETATION ACROSS UNIVERSITY OF TOLEDO CAMPUS AND SURROUNDING NEIGHBORHOODS
14:45-15:00	E_030	Sinlapachat Pungpa	ESTIMATION OF ABOVEGROUND BIOMASS AND CARBON STOCK USING REMOTE SENSING DATA IN SAKAERAT ENVIRONMENTAL RESEARCH STATION, NAKHON RATCHASIMA, THAILAND
15:00-15:15	E_031	Bui Hung	ASSESSMENT AND ZONING OF SELF-CLEANING ABILITY OF NHIEU LOC-THI NGHE CANAL'S WATER IN HO CHI MINH CITY

Session:	SYMPOSIUM SP5 – POSTER PRESENTATION – YRSS / JYRSS		
Room:	HALLWAY, LECTURE BUILDING 5		
Time	ID	Speaker	Title
13:00-17:00	-	-	POSTER PRESENTATION (YRSS / JYRSS)

Session:	SYMPOSIUM SP7 – RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY		
Room:	ROOM 5201, LECTURE BUILDING 5		
Link ZOOM:	https://wu-ac-th.zoom.us/j/98281508334?pwd=clFiTkMwT1AxMjBkdzBjWlVjcm1hZz09		
Chair person:	Dr. Yutthana Tumnoi		
Time	ID	Speaker	Title
14:00-15:00	-	-	FUTURE OF RESEARCH ON RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY IN THAILAND

Session:	ANNUAL MEETING OF THE SCIENCE SOCIETY OF THAILAND UNDER THE PATRONAGE OF HIS MAJESTY THE KING		
Room:	ROOM 5207, LECTURE BUILDING 5		
Link ZOOM:	https://wu-ac-th.zoom.us/j/99178746874?pwd=N1cvaUcvT2pFc3FNc0h6NzlraWNydz09		
Time	ID	Speaker	Title
12:00-14:00	-	-	MEETING

Session:	MEETING OF THE STT49 COMMITTEE		
Room:	ROOM 5207, LECTURE BUILDING 5		
Time	ID	Speaker	Title
14:00-16:30	-	-	MEETING

Session:	STT48 CONGRESS BANQUET		
Room:	@ WALAILAK UNIVERSITY		
Time	ID	Speaker	Title
16:30-18:30	-	-	BANQUET

DECEMBER 1st, 2022

MORNING PROGRAM

Session:	AWARDING CEREMONY – BEST ORAL & POSTER PRESENTATIONS		
Room:	ROOM 5301, LECTURE BUILDING 5		
Time	ID	Speaker	Title
10:30-11.00	-	-	AWARDING CEREMONY – BEST ORAL & POSTER PRESENTATIONS

Session:	SYMPOSIUM SP5 – PITCHING PRESENTATION – YRSS		
Room 1:	Bio > ROOM 5211, LECTURE BUILDING 5		
Room 2:	Chem > ROOM 5216, LECTURE BUILDING 5		
Room 3:	Math > Com > ROOM 5204, LECTURE BUILDING 5		
Room 4:	Phy > Env > ROOM 5206, LECTURE BUILDING 5		
Room 5:	Mat > Food > ROOM 5207, LECTURE BUILDING 5		
Time	ID	Speaker	Title
9:00-10:30	-	-	PITCHING PRESENTATION – YRSS
BREAK			
Room:	ROOM 5310, LECTURE BUILDING 5		
11:00-12:00	-	-	YRSS/JYRSS AWARDING SESSION

Session:	SYMPOSIUM SP9 – HIGH FIELD MAGNETS AS KEY TECHNOLOGY FOR ADVANCED SCIENCES		
Room:	ROOM 5201, LECTURE BUILDING 5		
Link ZOOM:	https://wu-ac-th.zoom.us/j/99202753006?pwd=SWF1NHZmYlVVeWpOUHNqMU93TEk0QT09		
Chair person:	Assoc. Prof. Dr. Somsak Dangtip		
Time	ID	Speaker	Title
8:50-9:00	-	-	REGISTRATION
9:00-9:10	-	Thawatchai Onjun	OPENING SPEECH
9:10-9:50	SP9_INV01	Somsak Dangtip	HIGH FIELD MAGNETS AS KEY TECHNOLOGY FOR ADVANCED SCIENCES > INTRODUCTION TO PROJECT: "FEASIBILITY STUDY OF SUPERCONDUCTING MAGNET FOR INTEGRATED ADVANCED ENGINEERING AND TECHNOLOGY"
9:50-10:10	SP9_001	Thitipong Kruaehong	SYNTHESIS AND CHARACTERIZATION OF YBCO SUPERCONDUCTOR
10:10-10:30	SP9_002	Atikorn Wongsatanawarid	SUPERCONDUCTING MAGNETIC DRUG DELIVERY SYSTEM
BREAK			
10:40-11:00	SP9_003	Prapaiwan Sunwong	DESIGN AND UTILIZATION OF SUPERCONDUCTING MAGNET AT SLRI
11:00-11:20	SP9_004	Naron Penprom Supachai Prawanta	MANUFACTURING HIGH FIELD MAGNET FOR ADVANCED SCIENCES
11:20-12:00	SP9_005	-	DISCUSSION ON "OPPORTUNITY AND POTENTIAL OF SUPERCONDUCTING MAGNETS FOR FRONTIER SCIENCES IN THAI RESEARCH DEVELOPMENT AND INNOVATION COMMUNITY"

SESSION A - PHYSICS / APPLIED PHYSICS

PHYSICS / APPLIED PHYSICS
Nuclear Fusion / Cosmology

Chair: Dr. Suparerk Aukkaravittayapun
Co-Chair: Assoc. Prof. Dr. Phongpichit Channuie
Co-Chair: Assoc. Prof. Dr. Chitnarong Sirisathitkul

Physics is a very early and fundamental Science which enable us to understand natures starting from very small scale (atoms for example) to very large scale (like galaxies). Moreover, Physics has been applied in many ways for improving our quality of life expectedly and unexpectedly. Even though, nowadays, Physics become less popular in term of choice for students to study at higher education level due to the new skills set needed in the modern market and industry, the importance of Physics for new or breakthrough technology development or innovation remains unchanged. This session welcomes presentations from a wide range of Physics and Applied Physics which may lead to better understanding of natures or improving towards Sustainable Development Goals–SDGs.

Invited Speakers

Prof. Dr. Srubabati Goswami

Assoc. Prof. Dr. Phongpichit Channuie

Assoc. Prof. Dr. Somsak Dangtip

SESSION B - BIOLOGICAL SCIENCES

BIOLOGICAL SCIENCES
Biochemistry / Biotechnology / Microbiology / Molecular biology / Biomedical science / Biodiversity

Chair: Prof. Dr. Tavan Janvilisri
Co-Chair: Prof. Dr. Alissara Reungsang
Co-Chair: Assoc. Prof. Dr. Anchana Prathep
Co-Chair: Assoc. Prof. Dr. Sehanat Prasongsuk
Co-Chair: Asst. Prof. Dr. Phitchayapak Wintachai
Co-Chair: Asst. Prof. Dr. Witsanu Saisorn
Co-Chair: Dr. Torranis Ruttanaphan

Biological sciences for advancing towards sustainable development goals (SDGs)

The sustainable development goals (SDGs) are an important component of all sustainability initiatives at both national and international levels. Biological sciences pose as one of the basic disciplines for advancing towards SDGs. Substantial efforts in biological research have been made and endless initiatives have been devoted to meeting the SDGs. This session seeks to promote crosstalk across the areas of biological sciences and provide an opportunity for researchers to explore and discover potentially unrecognized common interests towards SDGs. Researchers in all disciplines of life sciences are welcome to share your recent data in this session of the STT48 conference. The session will cover a wide range of life sciences including biochemistry, biotechnology, microbiology, molecular biology, biomedical science, and biodiversity.

Invited Speakers

Prof. Duncan R. Smith

Assoc. Prof. Dr. Henrietta Venter

Assoc. Prof. Dr. Sutthirat Sitthisak

Assoc. Prof. Dr. Boonsatien Boonsoong

Asst. Prof. Dr. Puey Ounjai

Dr. Somran Suddee

SESSION C - CHEMISTRY

CHEMISTRY
Analytical Chemistry / Inorganic Chemistry / Organic & Medicinal Chemistry / Physical & Theoretical Chemistry

Chair: Prof. Dr. Vatcharin Rukachaisirikul
Co-Chair: Assoc. Prof. Dr. Phimphaka Harding
Co-Chair: Asst. Prof. Dr. Sujittra Poorahong
Co-Chair: Asst. Prof. Dr. Apirak Payaka

Chemistry is a broad, diverse and multidisciplinary field. It is involved in every other science as a foundation. Accordingly, chemistry has a unique role to play in achieving sustainable development goals (SDGs). This session aims to bring together academic scientists, researchers and research scholars to exchange and share their experiences and research results on all aspects of chemistry and related fields. There are four sub-sessions of chemistry, each of which is widely spread into many areas of study.

Analytical chemistry > Analytical chemistry has expanded as a multidisciplinary field crossing borders between chemistry, materials science and biology. The enormous challenges in securing our future needs for food safety, protecting human safety and health, the environment, and clinical diagnostics requires us to rethink and optimize processes. The rapid development of analytical methods and instrumentation enables diverse applications. Therefore, this sub-session welcomes presentations from fundamental to applied research related to sample preparation, chromatographic methods, environmental chemistry, spectroscopic analysis, electro-analytical chemistry, chemical- and bio-sensors, and modern analytical techniques.

Inorganic Chemistry > To celebrate the International Year of Basic Science for Sustainable Development (IYBSSD2022), “Basic sciences are the sine qua non for sustainable development”. In this sub-session we will showcase the breadth of Inorganic Chemistry, with a particular focus on how advances in fundamental inorganic chemistry (from synthesis to characterization to computational) enhance the impact of innovations for real world applications. The scope for this sub-session will include catalysis, bioinorganic chemistry, supramolecular chemistry, coordination polymers, magnetic and luminescent complexes to clusters and nanoparticles.

Organic & Medicinal Chemistry > Organic and medicinal chemistry has been defined collectively as a hybrid discipline of many other subjects, particularly biology, chemistry, medicine and pharmacy. Contributions should be related to natural product chemistry, medicinal chemistry, chemical biology, chemical synthesis, synthetic organic chemistry, computational chemistry and drug design.

Physical & Theoretical Chemistry > Nowadays, numerous physical and theoretical chemistry research can support and drive the achievement of the Sustainable Development Goals (SDGs). Hence, the physical and theoretical chemistry sub-session would like to share new knowledge, ideas, technologies, innovations, and applications for sustainable development from research areas of physical chemistry, theoretical chemistry, physical transformations, electrochemistry, quantum chemistry, computational chemistry, spectroscopy, photochemistry, chemical physics, biophysical chemistry, surface chemistry, colloids, and chemical kinetics.

Invited Speakers > Analytical chemistry

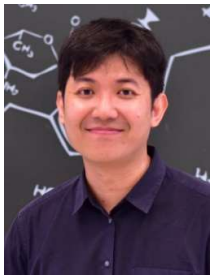
Prof. Dr. Susana Campuzano Ruiz

Assoc. Prof. Dr. Chongdee Thammakhet-Buranachai

Asst. Prof. Dr. Kamonwad Ngamchuea

Invited Speakers > Inorganic Chemistry

Prof. Dr. Colette Boskovic



Asst. Prof. Dr. Saranphong Yimklan

Invited Speakers > Organic & Medicinal Chemistry

Asst. Prof. Dr. Chanokbhorn Phaosiri

Assoc. Prof. Dr. Surat Laphookhieo

Invited Speakers > Physical & Theoretical Chemistry

Assoc. Prof. Dr. Thanyada Rungrotmongkol

Dr. Warayuth Sajomsang

SESSION D - MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI

MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI

Chair: Assoc. Prof. Dr. Chartchai leenawong
Co-Chair: Assoc. Prof. Dr. Sanae Rujivan
Co-Chair: Asst. Prof. Dr. Phichet Jitjankarn

This session welcomes all researchers in Mathematics, Statistics, Computer Science, Data Science, Artificial Intelligence, and other related fields to present and exchange their academic views on the latest and novel research findings. The session's theme is, but not limited to, using the aforementioned fields to, hopefully, serve as sustainable solutions for advancing towards the 17 Sustainable Development Goals set by the United Nations.

Invited Speakers

Assoc. Prof. Dr.Santi Tasena

Asst. Prof. Dr. Olarik Surinta

Dr. Waralee Rattanakijsuntorn

SESSION E - ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE

ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE / SPIN CROSSOVER

Chair: Prof. Dr. Suttichai Assabumrungrat
Co-Chair: Prof. Dr. Pitsanupong Kanjanapayon
Co-Chair: Assoc. Prof. Dr. Chitnarong Sirisathitkul
Co-Chair: Assoc. Prof. Dr. Chanatip Samart
Co-Chair: Asst. Prof. Dr. Uraiwan Intatha
Co-Chair: Dr. Mati Horprathum

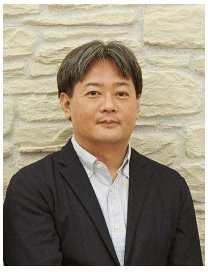
The purpose of this session is to bring together leading academic scientists, researchers and research scholars from all around the world to present research findings and innovation in ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE, and related fields. The session particularly focuses on energy technology, both renewable and non-renewable energy such as coal, natural gas, biomass, solar, geothermal, and wind energies, as well as energy materials for energy generation and storage including dielectric, piezoelectric, and triboelectric materials. Beside the sustainable energy, the pioneer research in environmental fields related with waste treatment, upcycling, and pollution control especially carbon dioxide capture and utilization are encouraged for submission. The session is expected to be an interdisciplinary forum for scientists, engineers, and practitioners to exchange and share their experiences, ideas, developments, and applications of the technologies which make advancement towards the sustainable development goals (SDGs).

Invited Speakers

Prof. Dr. Gang Meng

Prof. Dr. George Willis Huber

Prof. Dr. Tetsuya Kida



Prof. Dr. Tetsuya Shishido

Prof. Dr. Haibo Zhang

Asst. Prof. Dr. Surachai Karnjanakom

SESSION F - FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION/FOOD SAFETY AND PACKAGING

FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION/FOOD SAFETY AND PACKAGING

Chair: Assoc. Prof. Dr. Chaleeda Borompichaichartkul
Co-Chair: Assoc. Prof. Dr. Yuthana Phimolsiripol
Co-Chair: Assoc. Prof. Dr. Narumol Matan
Co-Chair: Dr. Sorawit Powtongsook

Sustainable Innovation Development in Agri-Food Systems

The occurrence of coronavirus disease (COVID-19) pandemic leads to changes of lifestyle and working system, moreover it causes a high impact on a falling of world economy. Along with the occurrence of pandemic, according to WHO, about 690 million people were undernourished at the end of 2019 and absent rapid interventions, the COVID-19 pandemic could force an additional 130 million people into chronic hunger. Poor nutrition causes 45 per cent of deaths in children under five – 3.1 million children each year. Limitation of transportation during pandemic leads to food losses. Each year, an estimated one third of all food produced ends up rotting in the bins of consumers and retailers, or spoiling due to poor transportation and harvesting practices. Innovation development in agri-food system should be raised in attention markedly due to impact of COVID-19. Sustainable innovation development in agri-food systems would support adequate nutrition, which helps people of all ages to achieve good health. Rebuilding our agri-food systems to make them more sustainable, productive and resilient is essential--for solving long-term hunger challenges and managing acute shocks, like disease outbreaks and climate extremes. Sustainable agri-food systems reduce waste and spoilage, and empower consumers to make smart choices in their food shopping and other innovations, sustainable food systems can deliver widespread benefits to people and plane. This session of "Sustainable Innovation Development in Agri-Food Systems" opens for these following areas.

Agri-Food cultivation and postharvest
Agri-Food processing and engineering
Food packaging and quality control
Seafood Innovation
Zero waste in Agri-Food System

Invited Speakers

Prof. Dr. Anet Rezek Jambrak

Prof. Dr. Soottawat Benjakul

Distinguished Researcher Dr. Juan Manuel Castagnini

SP1 - WOOD AND BIO-BASED MATERIALS

WOOD AND BIO-BASED MATERIALS

Chair: Assoc. Prof. Dr. Nirundorn Matan
Co-Chair: Assoc. Prof. Dr. Suthon Srivaro

Converting wood and lignocellulose wastes into high-valued bio-based products is not only beneficial to the economy but also helps to reduce CO_2 emissions from the decomposed or burned biomass. This symposium session covers a range of research from basic science to industrial applications related to wood and its hierarchical structure from macro to nano scales. The topics includes wood processing, wood composites, wood preservation and degradation, wood in building and construction, nano-wood materials and sustainability of wood.

Invited Speakers

Prof. Dr. Hathaikarn Manuspiya

Dr. Zoltán Pásztory

Mr. Steve Riley

SP2 - SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA

SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA

Chair: Assoc. Prof. Dr. Punnama Siriphannon
Co-Chair: Assoc. Prof. Dr. Mullica Jaroensutasinee

Since the beginning of the twenty-first century, the world's population has been subjected to disruptive changes as a result of technological breakthroughs, rapid population growth, climate change, and geopolitical trends, resulting in volatile, uncertain, complex, and ambiguous world situations known as the VUCA era. The emergence of the COVID-19 pandemic in early 2020 rapidly increases the global impact, indicating that this ongoing global phenomenon clearly represents VUCA. The COVID-19 pandemic had a significant impact on education, forcing entire schools and universities to switch to online teaching and learning, ushering in a "new normal" in education. Science education aspires to develop scientific literacy, problem-solving abilities, and critical thinking skills; thus, learners should have personal learning-by-doing experiences through scientific experiments, discovering and connecting new findings and existing knowledge. During unpredictable pandemic and VUCA situations, science teachers are challenged to develop better pedagogies and interesting scientific activities that are effective in creating an online learning experience for students. This session aims to bring together academic scientists, researchers, practitioners, educators and research scholars to exchange and share findings, expertise, experiences and innovations about “new-normal” science teaching and learning methodologies in and beyond the VUCA era. This session of “SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA” opens for these following areas.

STEM and STEAM based education
New normal pedagogy in science education
Innovative science teaching, learning and assessment methodologies
New perspectives in science education
Other science education related topics

Invited Speakers

Dr. Amy S. Cannon

SP3 - X-RAY CRYSTALLOGRAPHY

X-RAY CRYSTALLOGRAPHY

Chair: Prof. Dr. Nongnuj Muangsin
Co-Chair: Assoc. Prof. Dr. Kuakarun Krusong
Co-Chair: Assoc. Prof. Dr. Kittipong Chainok

X-ray crystallography is the experimental science and is by far the most powerful method to determine the arrangement of atoms of a crystalline solid in three-dimensional space. This method has been used in structural chemistry and biological macromolecules for over a century. In the biological crystallography, three-dimensional structures of molecules such as proteins and nucleic acids are determined at atomic level. This helps us to understand the basic mechanisms of biomolecules, as well as aid in novel drug discovery. Apart from macromolecular crystallography, the determination of crystal structures of organic, organometallic and coordination compounds (i.e. coordination polymers and metal-organic frameworks), known as small molecule or chemical crystallography, is of great importance and highly valuable for understanding the structure-property relationship as well as supramolecular interactions (such as hydrogen bonds, halogen bonds, and π–π stacking) of the crystalline solids. Notably, it also brings about crystal engineering for better structural design and achievement of desired functionalities.

Invited Speakers

Prof. Dr. Rogerio R. Sotelo-Mundo

Dr. Bunyarat Rungtaweevoranit

Dr. Min Fey Chek

Prof. Dr. Horst Puschmann

SP4 - CONSERVATION FOR SUSTAINABILITY IN THE DISRUPTIVE ERA

CONSERVATION FOR SUSTAINABILITY IN THE DISRUPTIVE ERA

Chair: Prof. Dr. Suchana Chavanich
Co-Chair: Asst. Prof. Dr. Nontivich Tandavanitj

Conservation and sustainability development is the important way of thinking in natural resource management and policy. They share a vision of a future where people live with respect for the earth's natural systems and each other. Sustainability derives from a commitment to policies and practices that ensure social, economic, and environmental endurance. However, disruptive era can significantly contribute to the sustainability of conservation. How can we have an era of sustainability for all ? What are the key knowledge gaps that must be urgently addressed for a better conservation for sustainability? What are the challenges for sustainability in the disruptive era ? This session welcomes presentations on both basic and advanced research topics related to conservation for sustainability including but not limited to novel ideas, tools and technological innovations, successful approaches and insightful lessons, and transdisciplinary collaborations to help safeguard the options for future generations.

Invited Speakers

Dr. Yannick Kuehl

Dr. Boripat Siriaroonrat

SP5 - YOUNG RISING STARS OF SCIENCE 2022 (YRSS) & JUNIOR YOUNG RISING STARS OF SCIENCE AWARD 2022 (JYRSS)

YOUNG RISING STARS OF SCIENCE 2022 (YRSS) & JUNIOR YOUNG RISING STARS OF SCIENCE AWARD 2022 (JYRSS)

Chair: Assoc. Prof. Dr. Kitipong Assatarakul
Co-Chair: Asst. Prof. Dr. Anurak Thungtong

The Science Society of Thailand under the patronage of His Majesty the King (SCISOC) recognizes the need of training new scientist and technologist to advance to the position of highly skilled scientists and technologists in the country. This leads to a boost in research and development, which is critical for the country's long-term economic and social development in Thailand's Science Society. Accordingly, SCISOC establishes the Young Rising Stars of Science (YRSS) awards for high-school science research projects with remarkable performances under the supervision of the Faculty of Science in Thailand's universities each year since 2020. In addition to honoring these students, it also inspires interest among them in pursuing a graduate degree in science. It is expected that these youths will continue to be highly competent scientists or technologists at national and international levels.

SP6 - KRATOM AND CANNABIS

KRATOM AND CANNABIS

Chair: Assoc. Prof. Dr. Potjamarn Suraninpong

Last year, the newly amended Narcotics Code, which went into effect on December 9, lists neither cannabis (marijuana and hemp) nor kratom (Mitragyna speciosa) as illicit drugs. These herbs are now being touted for their huge potential in helping both patients and the Thai economy. Currently, all parts except the buds and flowers of cannabis are legal, but the herb can only be used in medicine and certain products such as food and cosmetics. However, recreational cannabis is still illegal. Whereas, the decriminalization of kratom, which involved removing the drug from the official list of controlled narcotics, is the country's latest move to liberalize its drug laws. The move would not only help reduce costs in the legal system but also allow the drug to be used as a low-cost substitute for expensive painkillers such as morphine. Additionally, it creates income for people cultivating the plant, which is mostly grown as alternative crop in the south of Thailand. As the Narcotics Laws are difficult to understand for preparing of the permission documents for the growers, together with the limitation of growing system and farm management. This session will present the laws that related to the permission for cultivation of marijuana, hemp and kratom. Cultivars, planting systems, fertilization, disease and insect pet management, harvesting, extraction, products development and marketing in Thailand and the world market will be shared for the progress of value and novel technology-based innovation. This session welcomes diverse presentations, both oral and poster presentations, to share and stimulate ideas for the progress of marijuana, hemp and kratom management and production in all aspect.

Invited Speakers

Assoc. Prof. Dr. Mudtorlep Nisoa

Dr. Sakan Warinhomhoun

Ms. Rossukhon Thanatheerabunjong

SP7 - RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY

RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY

Chair: Dr. Yutthana Tumnoi
Co-Chair: Dr. Wipada Ngansom

Radioecology is a multidisciplinary scientific concerning the presence/concentration of both natural (e.g., ^{238}U, ^{232}Th, ^{226}Ra, ^{40}K, ^{7}Be, ^{14}C, and others) and artificial (e.g., ^{90}Sr, ^{134}Cs, ^{137}Cs, and others) radionuclides in the environment, the complexity of their transfer processes within and between ecosystems, and the effects of ionizing radiation on human and non-human biota. Investigations in radioecology consist of field samplings and experiments, controlled-lab experiments, and laboratory procedures including radiochemistry and radioactivity measurement. Radiological studies normally focus on three main environments in the biosphere: marine environment, freshwater environment, and land environment. They could provide necessary data for radiation dose estimation and radiological risk assessment on human and the environmental health using predictive models. Interest and studies in the area of radioecology, environmental radioactivity, and utilization of radiotracers to reveal biogeochemical and ecological processes have significantly increased to ascertain and manage radiological risks associated with both routine and accidental releases from the historical nuclear testing, the nuclear accidents/facilities, and non-nuclear facilities. This session welcomes presentations on both basic and advanced research programmes on radioecology, environmental radioactivity, and related disciplines in order to promote and advance the science of environmental radioactivity research, and to enhance the radiological protection of humans and the environment.

Invited Speakers

Asst. Prof. Dr. Prasong Kessaratikoon

SP8 - FOOD SYSTEM TRANSFORMATION AND SDGs

FOOD SYSTEM TRANSFORMATION AND SDGs

Chair: Professor Dr. Supawan Tantayanon
Co-chair: Professor Dr. Azra Khanum
Co-chair: Professor Dr. Aura C. Matias
Co-chair: Professor Dr. Yukari Ito

Food systems contribute about 30% of greenhouse gas emissions, 80% of biodiversity loss, and account for up to 70% of all freshwater use and 80% of all deforestation. Many of these environmental problems have exceeded the planetary boundaries. There are other challenges in the food system, such as hundreds of millions of people around the world still lack access to adequate food nutrition, and about one-third of food is wasted in supply chains and consumption. Meanwhile, the Covid-19 pandemic and the Ukraine war have seriously affected food production, distribution and consumption, pushing up the cost of food production and distribution, further affecting the safe supply and equitable distribution of food, and exacerbating nutrition and health problems. In the face of increasingly serious nutrition, health and environmental problems, the transformation of food systems is imperative. Coordinated solutions within and outside the food system, science and innovations etc. are fundamental for food system transformation and achieving the SDGs. The symposium aims to identify various pathways on addressing food system challenges and transforming food system towards a more resilient and sustainable one.

Note: This is the first WISE symposium organized by the Women in Science and Engineering committee, The Association of Academies and Societies of Sciences in Asia, under the support of the Science Society of Thailand and Walailak University, Thailand.

Keynote Speaker

Prof. Dr. Vania G. Zuin Zeidler

Invited Speaker

Dr. Lalana Thiranusornkij

SP9 - HIGH FIELD MAGNETS AS KEY TECHNOLOGY FOR ADVANCED SCIENCES

HIGH FIELD MAGNETS AS KEY TECHNOLOGY FOR ADVANCED SCIENCES

Chair: Assoc. Prof. Dr. Somsak Dangtip

High Field Magnets as Key Technology for Advanced Sciences High field magnet plays important roles in various national projects. The first Thailand tokamak (TT-1) and Siam photon source (SPS-I) are two good examples. High magnetic field also enhances plasma sources to higher density such as in the case of a mA helicon-wave plasma source and enable certain models of a propulsion system for space exploration. MRI, NMR, and some magnetic drug delivery systems have high field magnets as their essential components. High field magnet has also been listed as one of the key technologies for frontier research such as in high energy physics and plasma program with very high priority. How high field the Thai research community is expecting? Shall further higher field magnet advances Thai scientific community to higher ground or new level? Would low temperature superconducting magnets be a natural alternative to electromagnets? Will the high temperature magnets be mature enough for our community in seven years? Is our industrials ready for manufacturing this key engineering technology in Thailand? This symposium shall shed some light one these very questions.

ABSTRACTS FOR INVITED SPEAKERS

INVITED SPEAKER: A_INV01

TRAVERSABLE WORMHOLES: A THEORETICAL PERSPECTIVE

Phongpichit Channuie,[1,2]*

[1] School of Science, Walailak University, Thasala, Nakhon Si Thammarat, 80160, Thailand
[2] College of Graduate Studies, Walailak University, Thasala, Nakhon Si Thammarat, 80160, Thailand
*e-mail: channuie@gmail.com

Abstract:
The search for a theory of exotic objects through Einstein's general theory of relativity has been receiving a lot of interest in the literature. In 1935, Einstein and Rosen used the theory of general relativity to propose the existence of "conduits" through space-time. These tunnels connect two different points in space-time enable to create a shortcut called Einstein-Rosen bridges, or wormholes. In this talk, we begin with a short recap of a history of wormholes from the beginning of the field to (only) some recent developments. Then we will mathematically demonstrate how to build traversable wormholes. Finally, if time permits, some consequences will be worth mentioning.

Phongpichit Channuie received his Ph.D. in physics from University of Southern Denmark in 2012. He then moved to Walailak University, where he is now an associate professor in theoretical physics. His research discipline mainly focuses on a formulation of the consistent alternative to Einstein gravity to resolve the fundamental puzzle of modern cosmology. In fact, with the collaborators, he proposed the first theory of cosmic inflation in which the inflaton emerges as a composite field of a four dimensional, strongly interacting, and non-supersymmetric gauge theory. His current research interests focus on issues in theoretical cosmology and high energy physics, including those with implications for early universe cosmology, e.g., Wormholes, Neutron stars, and Cosmic Inflation.

INVITED SPEAKER: A_INV02

THE CURIOUS CASE OF THE STERILE NEUTRINO

Srubabati Goswami*

Physical Research Laboratory, Navrangpura, Ahmedabad 380058, Gujarat, India
*e-mail: sruba.goswami@gmail.com

Abstract:

Neutrinos are the second most abundant particle in the Universe. The existence of three different types of neutrinos is well established. It has also been observed that the three neutrino species can transform among themselves — a phenomenon known as neutrino oscillation. This has been observed with neutrinos coming from the Sun, generated in the atmosphere, as well as from man made sources like accelerators and reactors. This is an important discovery since oscillations require neutrinos to have mass. However, the standard notions are neutrinos are massless. Thus this discovery compels one to explore beyond the standard knowledge. Because of the importance of this, Nobel Prize of 2015 was awarded for discovery of neutrino oscillations.
Question arises if there are only three types of neutrinos or there can be more. Various experiments suggest the existence of an additional neutrino species with mass around eV scale. These neutrinos do not have the standard interactions and their presence can be felt through their mixing with ordinary neutrinos. This can change the oscillation picture. We discuss a theoretical framework to accommodate such neutrinos and present the implications for generation of the observed baryon asymmetry of the Universe in this scenario.

Dr. Srubabati Goswami is a senior Professor in Physical Research Laboratory. She did her. PhD in University of Calcutta and then carried out post-doctoral research post-doctoral fellow in PhysicalResearch Laboratory and Saha Institute of Nuclear Physics. She joined Harish Chandra Research Institute, Allahabad in 2002 as a member of faculty and shifted to PRL in 2008. Her research area is High Energy Physics phenomenology with a special emphasis on neutrino physics. She has published over 100 papers in peer reviewed journals and is a well reputed International expert in neutrino physics, She is a member of the India-based neutrino observatory collaboration. She has received several awards including Humboldt fellowship from Alexander-von-Humboldt foundation. P. Sheel memorial lecture award for women scientists and most recently the J.C. Bose National fellowship of SERB, India. She is an elected fellow of all the three science academies (NASI, Indian Academy of Sciences and Indian National Science Academy) in India and also of The World Academy of Sciences (TWAS).

INVITED SPEAKER: A_INV03

STATUS AND PROGRESS OF THE FIRST TOKAMAK IN THAILAND

Somsak Dangtip[1,*], Thawatchai Onjun[1], Nopporn Poolyarat[1], Arlee Tamman[1], Pasit Wonghabot[1], Kamtorn Saidarasamoot[1], Kewalee Nilgumhang[1], Jiraporn Promping[1], Suebsak Suksaengpanomrung[1], and Matinon Maitreeborirak[2]

[1] Thailand Institute of Nuclear Technology (TINT), Ongkarak, Nakornnayok, Thailand
[2] Electricity Generation Authority of Thailand (EGAT), Bang Kruai, Nonthaburi, Thailand
*e-mail: somsakd@tint.or.th

Abstract:
After a team from TINT and EGAT was allowed to visit ASIPP in Hefei since June 2022, the first Thailand tokamak (TT-1) is gaining very rapid pace for its reconstruction. Five subsystems, i.e., power supply, vacuum, diagnostic, plasma control, and data acquisition were quickly installed and integrated to core parts of the ex-HT-6M tokamak. An integration was completed by June, 2022. We have already seen the first plasma with low plasma current in the beginning of July, 2022. The Thai-team has been able to operate on their own and run the tokamak to generate the first plasma with current of 30 kA and to last about 80 ms on July 27th, 2022. Since then, the team was able to discharge to much higher plasma current and longer pulse, reaching 67% and 85% of its maximum performance, respectively. By the end of September after twelve weeks in technology transfer trainings, workshops and lectures, the tokamak will be disassembled and packed for shipping to TINT headquarter at Ongkharak. The tokamak will arrive and ready to install in Ongkharak by the end of the year 2022. The full commission is expected in the second quarter of 2023. In this talk, we will present the development in chronology and with further research and development plan.

Associate Professor Dr. Somsak Dangtip was born in Chiang Mai, Thailand in 1970. He received the bachelor's degree in Physics from Department of Physics, Faculty of Science, Chiang Mai University in 1992. He continued and awarded his Ph.D, in Applied Neutron Physics in 2000 from Uppsala University, Sweden. From 2000, he worked at Fast Neutron Research Facility, Department of Physics, Faculty of Science, Chiang Mai University, before joining Mahidol University in 2003. From 2019, he has moved again to work for Thailand Institute of Nuclear Technology as a manager of Center of Advanced Engineering and Nuclear Technology. His research interests in Radiation Interaction with Matters, Plasma Technology and Applications and Fusion Energy.

INVITED SPEAKER: B_INV01

COMBATTING BACTERIAL ANTIMICROBIAL RESISTANCE THROUGH NEW ANTIBIOTICS THAT TARGET MULTIDRUG RESISTANT MICROBES

Henrietta Venter* ,Susan J Semple, Matthew J Sykes, Lily A Pisoni, Wern C Chai, Yu Wang, Steven W Polyak, Sylvia A. Sapula

Clinical and Health Sciences, University of South Australia, Adelaide 5000, Australia
*e-mail: rietie.venter@unisa.edu.au

Abstract:
Antimicrobial resistance poses a serious and worsening threat to human health. Urgent action is needed to reverse the current trend and prevent the annual death toll due to resistant infections to spiral to >10M million by 2050. Yet, antibiotic drug discovery and development has all but ground to a halt and demand now far outpaces provision.
To address this issue, we have developed a bespoke pre-clinical drug discovery pipeline for antimicrobials that is specifically targeted at the most critical priority of resistant pathogens according to the World Health Organization. We directly target the resistance mechanisms in these pathogens and develop therapies to be used in combination with 'obsolete antibiotics". The ability to restore the activity of this immense source of antibiotics would have a significant influence on treatment options for intractable antimicrobial-resistant infections.
A brief overview of our current work on three protein targets namely, (i) antibiotic efflux pumps, (ii) the cell division protein FtsZ, and (iii) carbapenemases that are metallo-beta-lactamases from the notorious subclass B1 will be provided. This will be followed by a deeper dive into our most recent results on the development of efflux pump inhibitors. A case study of an efflux pump inhibitor that not only reduces resistance in *Pseudomonas aeruginosa* but also inhibits infection by this organism will be presented.

A/Prof Rietie Venter currently leads the Antimicrobial Resistance group in Clinical and Health Sciences at UniSA. Her research focuses on antimicrobial resistance in microbes - one of the most serious threats in healthcare today. The Venter group works on projects targeted at understanding and preventing the development and dissemination of antimicrobial resistance. Rietie is also heading an antimicrobial drug discovery program aimed at finding new therapeutics against drug resistant pathogens.
Rietie obtained her BSc(Hons) and Master's degrees with distinction from the University of the Free State in South Africa before securing a scholarship to do a PhD in the UK. After completing her PhD at the University of Leeds in the beautiful Yorkshire Dales, she moved to Cambridge, where she spent twelve years doing research on multidrug transporters, first as a post-doc and later running her own research group as a Royal Society Dorothy Hodgkin Fellow in the Department of Pharmacology. Not content with moving continents once in a lifetime, she left the ancient buildings and immaculate college lawns of Cambridge for sun and sea in Australia after sixteen years in the UK.

MAYFLY LARVAE IN THAILAND: DIVERSITY AND APPLICATION

Boonsatien Boonsoong[1,2]

[1] Animal Systematics and Ecology Speciality Research Unit (ASESRU), Department of Zoology, Faculty of Science, Kasetsart University, Bangkok 10900, Thailand
[2] Biodiversity Center Kasetsart University (BDCKU), Bangkok 10900, Thailand
*e-mail: fscibtb@ku.ac.th

Abstract:
Mayflies (Ephemeroptera) are one of the most common components of aquatic assemblages in freshwater environments and contribute to ecosystem services. They have been widely used as indicators of water quality and are frequently an important component of biomonitoring protocols. In a series of the taxonomic studies of Thai mayflies, nineteen families, 73 genera, and approximately 165 species of mayfly larvae were reported from Thailand. The families Baetidae and Heptageniidae are the most diverse and widespread groups of Thai mayflies, respectively. Knowledge about the diversity of Thai mayflies has steadily increased in the present decade. New genera (*Cymbalcloeon*, *Elatosara*, *Megabranchiella, Mekongellina*, *Sangpradubina* and *Thainis*), new species and new record of mayflies were continuously discovered in Thailand. Nevertheless, the number of genera and species seems to be lower than the species diversity estimation. There are still several undescribed genera and species. Studies on systematics and ecology of mayflies are increasing in recent years. DNA barcoding can provide a powerful supplement to the traditional morphological approach to species delimitation. The book entitled “Mayfly Larvae in Thailand” (Thai version) and the boardgame “Thai Mayflies” were developed for environmental science communication. Further efforts to assess the conservation status of mayfly species are required. Thus, mayflies diversity and ecological requirements data could be used as tools to evaluate environmental impacts on water resources and drive future research for biodiversity conservation management strategies.

Figure 1. Mayfly families (number of genera) in Thailand (left), book and board game (right).

Associate Professor Boonsatien Boonsoong was born in Yasothon, Thailand in 1976. He received the bachelor’s degree in Biology (1st Hons.), master’s degree and Ph.D. in Biology from Department of Biology, Faculty of Science, Khon Kaen University, Thailand in 1999, 2001 and 2007, respectively. From 2007 to present, he worked at Department of Zoology, Faculty of Science, Kasetsart University, Thailand. His research interests in rapid bioassessment using freshwater benthic macroinvertebrates, taxonomy and systematics of aquatic insects, especially mayflies (Ephemeroptera) and Odonata.

INVITED SPEAKER: B_INV03

INVESTIGATIONS INTO VITAMIN D AS AN ANTI-FLAVIVIRUS AGENT

Duncan R. Smith*

Institute of Molecular Biosciences, Mahidol University, Thailand
*e-mail: duncan.smi@mahidol.ac.th

Abstract:
Vitamin D is a secosteroid hormone generated by UVB exposure of the skin and from some dietary sources. The classic vitamin D function involves regulating calcium and phosphate homeostasis, which is mediated through activation of the vitamin D receptor (VDR) resulting in the expression of numerous genes. However, VDR and VDR-related enzymes can be found in many non-calcium regulating cells such as fibroblasts, keratocytes, cardiovascular cells, and immune cells, and vitamin D and VDR have been shown to modulate a number of other essential biological processes, including cell growth/ proliferation, immunomodulation, as well as having anti-cancer and antiviral activity, including activity against dengue virus (DENV). However, how vitamin D exerts its antiviral activity and whether VDR plays a role in this process remains unknown. To investigate this, VDR was successively overexpressed, knocked down and retargeted through mutation of the nuclear localization signal. In no case was an effect seen on the level of the antiviral activity induced by the vitamin D agonist EB1089, strongly indicating that the antiviral activity of EB1089 is not exerted through VDR. To further explore the antiviral activity of EB1089 in a more biologically relevant system, human neural progenitor cells were differentiated from induced pluripotent stem cells, and infected with Zika virus (ZIKV). EB1089 exerted a significant antiviral effect, reducing virus titers by some $2Log_{10}$. In support of the results seen with DENV, no expression of VDR at the protein level was observed. Collectively, these results show that the vitamin D agonist EB1089 exerts its antiviral activity independently of VDR. Finally, screening a number of fused bicyclic derivatives of 1H-pyrrolo[1,2]imidazol-1-one with known vitamin D receptor (VDR) agonist activity identified five compounds with significant anti-DENV activity with the potential for future development as anti-viral agents.

Professor Duncan R. Smith received his doctoral degree in Biomolecular Science from Portsmouth Polytechnic, United Kingdom in 1987. He started his professional career in Singapore at the Institute of Molecular and Cell Biology, National University of Singapore. After working in Singapore for nearly 15 years on molecular mechanisms of cancer, he moved to Thailand in 2000. He is currently a Professor at the Institute of Molecular Biosciences, Mahidol University. He is the author of over 250 research papers and book chapters and is an Editor of the Journal of Virological Methods. His research interests include emerging infectious diseases, mosquito transmitted viruses, drug development, virology and viral methodology.

INVITED SPEAKER: B_INV04

MARVELOUS PLANTS OF DOI HUA MOT, UMPHANG DISTRICT, TAK PROVINCE

Somran Suddee*

The Forest Herbarium (BKF), Department of National Parks, Wildlife and Plant Conservation, Chatuchak, Bangkok 10900, Thailand
*e-mail: somrans@hotmail.com

Abstract:
Doi Hua Mot is a group of degraded limestone hills situated near Umphang town on the way to Thung Yai Wildlife Sanctuary. It is carpeted by blossoming wild flowers, stretching for several kilometers in the rainy season, and is recognized as a botanically rich area with a lot of rare and endemic species. More than twenty new species have been described from the area. The first botanical expedition was made by an Irish medical doctor and botanist, A.F.G. Kerr, in June 1922. He made a journey through Me Wong in Kamphaeng Phet, crossed the watershed to the Me Klong River, Me Lamung, and Umphang. Kerr spent two days collecting at Doi Hua Mot and mentioned that "These hills well deserved their name of 'Bald-Headed', for their tops in marked contrast to the surrounding well-wooded peaks, are almost devoid of trees, being covered instead with short grass and herbs". Kerr numbers *6118—6134* were collected. Hom Doi Hua Mot, *Strobilanthes graminea* J.B. Imlay (Acanthaceae) and Thian Pik Phi Suea, *Impatiens patula* Craib, were among the new species collected at that time. Two species of a genus with three species, *Sirindhornia* (Orchidaceae), Ueang Si Prachim, *Sirindhornia mirabilis* H. A. Pedersen & Suksathan, a new species, and Ueang Si A Khane, *Sirindhornia monophylla* (Collett & Hemsl.) H.A. Pedersen & Suksathan, a rare species, also occur in this area. The generic name "*Sirindhornia*" was named after H.R.H. Princess Maha Chakri Sirindhorn. Thep Mas, *Flemingia sirindhorniae* Mattpha, Chantar. & Suddee (Fabaceae) and Chong Chao Pha, *Buxus sirindhorniana* W.K. Soh, von Sternb., Hodk. & J. Parn. (Buxaceae), new species described a few years ago, are also found in this area.
This unique and botanically rich area should be well looked after by the authorities. These 'bald-headed' hills with no large trees should not be regarded as degraded forest areas, and reforestation projects should not be introduced.

Somran Sudddee was born in Surin, Thailand. He received a BSc (Forestry) from Kasetsart University, an MSc (Botany) from Chulalongkorn University, and a PhD (Plant Taxonomy) from Trinity College, University of Dublin (collaborated with the Royal Botanic Gardens, Kew, London). Currently, he is a senior researcher at the Forest Herbarium (BKF), Bangkok, responsible for doing research on plant taxonomy and related fields. He also collaborates with overseas visitors in fieldwork in Thailand, gives lectures on plant taxonomy to forest officers in the Department of National Parks, Wildlife and Plant Conservation and to students in universities in Thailand, co-supervises MSc and PhD students in universities in Thailand and abroad, and is a plant taxonomy committee member at the Office of the Thai Royal Institute.

INVITED SPEAKER: B_INV05

RECENT REVOLUTION IN STRUCTURAL SYSTEMS BIOLOGY

Puey Ounjai*

Department of Biology, Faculty of Science, Mahidol University, Bangkok, Thailand 10400
*e-mail: puey.oun@mahidol.edu

Abstract:
Recent revolutions in structural biology including single particle cryogenic electron microscopy (cryoEM), artificial intelligence and mass spectrometry have dramatically changed the way we study biological systems and their molecular architectures. With aid of artificial intelligence, atomic structures of almost all the known proteins and enzymes can be predicted with unprecedented accuracy which lead us to the new era of post-structural genomics where we can start to design the novel folds ourselves. Moreover, single particle cryoEM and mass spectroscopy also provide experimental insights on the structural dynamic and composition of larger biological assemblies. Such information is necessary for building a complete picture of the complex metabolic networks of the cell at the system level. Furthermore, the direct quantitation and localization of large molecular complexes in Situ have recently laid a foundation for a more comprehensive understanding of the design principle underlying the building of the cell and thus facilitate the re-design/reengineering of novel synthetic cells from scratch.

Our research is centered around the structures of macromolecular machines, in particular to understand their mechanism of action. Our immediate focus is on cilia, bacteriophages, viruses, and other molecular machinery involved in cellular locomotion. We are also on establishing a new model for characterizing the drug action for tropical and neglected diseases. Moreover, we are as well interested in developing a platform for exploiting plankton and other microorganisms in biotechnological application.
As a scientific communicator, we have a deep interest in promoting scientific education and realization in the society. Hence, we are working with magazines and media to try to use novel technology for mass communication. Our team are also interested in designing pedagogical method to improve student engagement in the classroom and in the lab setting. We also make scientific toys for the lab and share them with school teachers & educators with the hope to help establish a real “citizen scientist concept” in Thailand.

INVITED SPEAKER: B_INV06

BACTERIOPHAGES AND PHAGE ENZYMES IN THE ERA OF ANTIBIOTIC RESISTANCE CRISIS

Sutthirat Sitthisak*

Department of Microbiology and Parasitology, Faculty of Medical Science, Naresuan University, Phitsanulok, Thailand
*e-mail: sutthirats@nu.ac.th

Abstract:
Extensively drug resistant (XDR) pathogens are of growing concern, with many clinical isolates proving to be resistant to last resort as well as front line antibiotic treatments. The commercial or therapeutic use of bacteriophages is an attractive alternative to controlling and treating these emerging pathogens. We isolated *A. baumannii* bacteriophages from wastewater treatment plants in Thailand. Transmission electron microscopy showed our bacteriophages belonged to the *Podoviridae* and *Myoviridae* family. We investigated 230 *A. baumannii* strains using 17 lytic *A. baumannii* phages and the phage susceptibility was 46.5% and phage susceptibility strains were also associated with resistance to numerous antibiotics.[2] We also characterized five bacteriophages and explored their killing efficacy against multidrug resistant (MDR) and XDR clinical isolates. Five bacteriophages, vB_AbaM_PhT2 (vPhT2) showed 28.00% host range specificity against 150 drug resistant *A. baumannii* isolates. Purified vPhT2 samples had endotoxin levels below those recommended for preclinical trials and were not shown to be directly cytotoxic to human cell lines *in vitro*. Findings also revealed there is synergy between vPhT2 and the end line antibiotic colistin. A limitation in using bacteriophage-based applications is their narrow host range. Thus, interest in bacteriophage lytic enzymes or endolysins as antimicrobial agents have gained increasing attention compared to using phage virions. Endolysin (LysABP-01) from *A. baumannii* bacteriophage vB_AbaP_PhT01 (vPhT01) was cloned, overexpressed and characterized. The lytic activity of the recombinant endolysin protein was determined and LysABP-01 can degrade the crude cell wall of *A. baumannii* strains, *Escherichia coli*, and *Pseudomonas aeruginosa* but not of *Staphylococcus aureus*. LysABP-01 can prevent the growth of AB1589 with a MIC of 20 µM. The antibacterial activity of LysABP-01 and its synergism with various antibiotics were tested. The *in vitro* combination of colistin with LysABP-01 in this study revealed a synergistic interaction against multidrug-resistant *A. baumannii* (MDRAB). In addition, recombinant endolysin (lysAB- vT2) and hydrophobic fusion endolysin (lysAB-vT2-fusion) from vPhT2 were expressed and purified.[5] The minimum inhibitory concentration (MIC) against *A. baumannii* strains of lysAB-vT2 was higher than 400 µM and MIC of lysAB- vT2-fusion was 100 µM. Antibacterial activity of lysAB-vT2-fusion plus colistin or $CuCl_2$ revealed that it can inhibit *E. coli*, *K. pneumoniae*, various strains of extremely drug-resistant *A. baumannii* (XDRAB), and phage resistant *A. baumannii*. The lysAB- vT2-fusion still retained antibacterial activity after incubating the enzyme at 4°C, 20°C and 60°C for 30 mins. The lysAB-vT2-fusion could inhibit the mature biofilm and incubation of lysAB-vT2-fusion with T24 human cells infected *A. baumannii* led to a partial reduction of LDH release from T24 cells. In summary, our study highlights the antimicrobial ability of bacteriophages and phage enzymes, which can be applied for the control of *A. baumannii* infection.

Assoc.Prof.Dr.Sutthirat Sitthisak received a Bachelor's degree in Nursing from the Faculty of Nursing, Chiang Mai University, Thailand. She received a Master's degree in Microbiology from Chiang Mai University, Thailand and she received a degree of Doctor of Philosophy in Biological Sciences from Illinois State University, USA. She works in the Department of Microbiology and Parasitology, Faculty of Medical Science, Naresuan University, Phitsanulok, Thailand. Her research interests in Microbiology, Molecular Biology, and Biotechnology.

INVITED SPEAKER: C_INV01

MINIATURIZED EXTRACTION TECHNIQUES: DEVELOPMENT AND APPLICATION FOR FOOD SAFETY APPLICATIONS

Chongdee Thammakhet-Buranachai[1,2,3]*, Myo Myint Zaw[1,2,3], Phennapha Kaakewichaporn[1,2,3], Sonam Choden[1,2,3], Suwatchanee Maneeratanachot[1,2,3], Nussana Lehman[4], Ekwipoo Kalkornsurapranee[4], Sujittra Poorahong[5], Panote Thavarungkul[1,2,3], Proespichaya Kanatharana[1,2,3]

[1] Division of Physical Science, Faculty of Science, Prince of Songkla University, Hat Yai, 90110, Thailand
[2] Center of Excellence for Trace Analysis and Biosensor, Faculty of Science, Prince of Songkla University, Hat Yai, 90110, Thailand
[3] Center of Excellence for Innovation in Chemistry, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla 90110, Thailand
[4] Rubber Product and Innovation Development Unit, Faculty of Science, Prince of Songkla University, Hat Yai, Songkhla 90110, Thailand
[5] Functional Materials and Nanotechnology Center of Excellence, Faculty of Science, Walailak University, Nakhon Si Thammarat 80160, Thailand
*e-mail: chongdee.t@psu.ac.th

Abstract:
Miniaturized extraction techniques are gaining much attention because they are more environmentally friendly when compared with conventional approaches. They not only use small volume of sample and organic solvent, but also are cost effective since they require only a small amount of sorbent and inexpensive devices. Three different developed platforms will be discussed in this presentation. First, a simple yet efficient gelatin tablet aerogel bio-sorbent was synthesized and used for the extraction of polycyclic aromatic hydrocarbons (PAHs) in tea samples. A vortex assisted extraction was used to facilitate the mass transfer of the analyte to the sorbent. The second platform is the application of polypyrrole coated natural rubber foam bar for the extraction of fipronil and fipronil sulfone in tea samples as well. The extraction was carried out using a magnetic stirrer. The last example is a polyphenylenediamine-zinc composited film coated on a propeller made from a rigid PVC foam (also known as Plaswood) as an extraction device. It was applied for the extraction of PAHs in coffee drink samples using a lab-built overhead stirrer. The preparation procedure, optimization, analytical performance and the validation of the methods will be discussed.

Associate Professor Chongdee Buranachai was born in Pattani, Thailand in 1978. She received the bachelor's degree in Science in 2000 and a Ph.D. in Analytical Chemistry in 2007 from Department of Chemistry, Faculty of Science, Prince of Songkla University, Thailand. Her research interests in the development of simple to use and low-cost sample preparation method for trace analysis of organic compounds in food and environmental samples.

INVITED SPEAKER: C_INV02

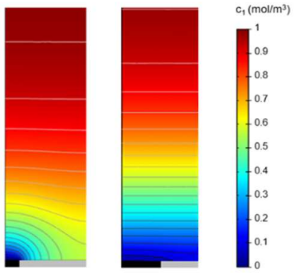
THE DEVELOPMENT OF ELECTROCHEMICAL SENSORS VIA BOTTOM-UP APPROACHES

Kamonwad Ngamchuea*

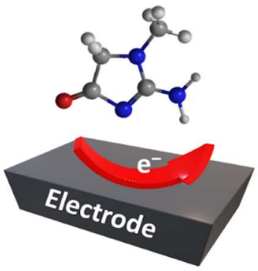
School of Chemistry, Institute of Science, Suranaree University of Technology, Nakhon Ratchasima, Thailand
*e-mail: kamonwad@sut.ac.th

Abstract:
Understanding electrochemical reactions is key to developing state-of-the-art electrode materials for electrochemical applications. We use a combination of computational studies and advanced experimental techniques to gain physicochemical insights into the mass transport effects and redox reaction mechanisms of the electrode materials and the target analytes. For example, in the development of microelectrode arrays for hydrogen peroxide (H_2O_2) detection, we have performed mass transport modeling using COMSOL Multiphysics® and explored the effects of microelectrode designs on the analytical performances. The effects of electrode length, width, band-to-band separation, and the height of the connection strip towards the electrochemical responses were investigated in detail. As a result, a fast, simple, one-step sensor was developed for the analysis of H_2O_2 in complex samples such as milk, drinking water, tap water, and synthetic urine. In another example, we investigated the structures and electrochemical properties of copper-creatinine complexes by computational and experimental approaches. The formation of complexes between copper and creatinine plays important roles in the metabolism and chemistry in biological systems. Importantly, creatinine itself is a biomarker for kidney diseases. We have thus further developed a fast and facile method for creatinine detection via the formation of copper-creatinine complexes.

Computational Simulation



Concentration Profiles



Electrochemical Sensors

Assistant Professor Dr. Kamonwad Ngamchuea graduated with a Master of Chemistry degree (First Class Honours) from University of Oxford, UK, in 2015. She graduated with a Doctor of Philosophy (D.Phil.) in Physical and Theoretical Chemistry from University of Oxford, UK, in 2018. She has been working as a lecturer at School of Chemistry, Suranaree University of Technology, Thailand, since 2018. Dr. Kamonwad received Young Scientist Award from the Foundation for the Promotion of Science and Technology under the Patronage of H.M. the King in 2022, Ronald Belcher Award from the Royal Society of Chemistry, UK, in 2018, and Educational Award for Excellence (Science) from the Anglo-Thai Society in 2017. Her research interest lies in electroanalysis, nano-electrochemistry, and fundamental electrochemistry.

INVITED SPEAKER: C_INV03

CUTTING-EDGE BIOELECTROANALYTICAL TOOLS: A GATEWAY TO PRECISION MEDICINE

Susana Campuzano[1,*], Rodrigo Barderas[2], Eloy Povedano[1], Rebeca M. Torrente-Rodríguez[1], Ana Montero-Calle[2], Guillermo Solís-Fernández[2], Maria Gamella[1], Víctor Ruiz-Valdepeñas Montiel[1], Alejandro Valverde[1], Beatriz Arévalo[1], Verónica Serafín[1], María Pedrero[1], José M. Pingarrón[1]

[1] Departamento de Química Analítica, Facultad de CC. Químicas, Universidad Complutense de Madrid, E-28040 Madrid, Spain
[2] Chronic Disease Programme, UFIEC, Instituto de Salud Carlos III, 28220 Majadahonda, Madrid, Spain
*e-mail: susanacr@quim.ucm.es

Abstract:
Since the evolution of human diseases involves a highly dynamic and interactive system of multiple layers of molecular markers, the simultaneous analysis of biomarkers of different molecular levels contributes decisively to the early detection and prognosis of multiple diseases and to reveal key mechanisms for their personalized management, resistance to treatment and risk of recurrence. Indeed, the possibility of identifying patients through molecular "biomarkers", preferably present in minimally invasive samples, that reflect biological alterations with prognostic or predictive value to provide treatments adapted and effective to the attributes and/or stage of their disease, both in type and dose, known as personalized precision medicine, is an unprecedented challenge.
On the other hand, the SARS-CoV-2 pandemic, in addition to being the direct cause of millions of deaths, will also be to some extent responsible for those resulting from other chronic illnesses, such as cancer and neurodegenerative diseases, due to delays in access to diagnosis resulting from the collapse of healthcare systems. Therefore, the need for strategies that allow reliable diagnosis and follow-up of these patients, even independently of healthcare institutions, is more evident than ever.
In this regard, the features offered by electrochemical detection bioplatforms, compared to conventional and state-of-the-art omics technologies, such as versatility to profile multi-omic biomarkers at the point-of-care, successful coupling with novel bioreceptors produced by cutting-edge technologies, such as HaloTag and Phage Display, simplicity, affordable cost, and significantly shorter analysis time and sample throughput for analysis, make them suitable tools to pave the way towards sustainable and "accessible to all" personalized diagnostics.
Along with the unimaginable COVID-19, cancer and neurodegenerative diseases are among the greatest challenges facing medicine and society today due to their high heterogeneity and increasing prevalence, since they are closely related to the progressive aging of the population, and because of the high burden they place on both, patients' families and healthcare systems.
With all this in mind, this invited lecture will critically present and discuss the most remarkable attributes and opportunities offered by selected electroanalytical biotools, recently proposed by our research group and collaborators, which have shown pioneering applications to decisively assist in cancer, Alzheimer, and COVID-19 personalized medicine by targeting dysregulated miRNAs, methylation events in nucleic acids and (auto)antibodies that also meet the stringent demands of today's clinic.

Susana Campuzano (ORCID 0000-0002-9928-6613) works as Assistant Professor at the Analytical Chemistry Department of the Chemistry Faculty of the Universidad Complutense de Madrid (Spain) where she is currently Head of the "Electroanalysis and Electrochemical (Bio)Sensors" (GEBE) research group. Her areas of interest include the development of affinity-based electrochemical bioplatforms with potential for multiplexed and/or multi-omics determinations in clinical and food safety. She is Associate Editor of the Journal Electroanalysis (Wiley-VCH).

INVITED SPEAKER: C_INV04

SWITCHABLE METAL COMPLEXES AS MOLECULAR MATERIALS

Colette Boskovic*

School of Chemistry, University of Melbourne, Parkville, VIC 3010, Australia
*e-mail: c.boskovic@unimelb.edu.au

Abstract:
Molecular materials that can be switched between distinguishable forms by application of an external stimulus are of interest for future applications in display devices, high-density data storage and molecular spintronics. Promising examples include spin crossover complexes that can be interconverted between low and high spin states of the metal centre and valence tautomeric (VT) complexes, which undergo a stimulated intramolecular electron transfer between the metal centre and a redox-active ligand. For cobalt-dioxolene systems, the most common type of VT complexes, a spin transition at the cobalt centre accompanies the electron transfer.
Our work in this field has spanned investigation of discrete mono- and dinuclear complexes up to coordination polymers. We have focused on determining the molecular requirements for VT interconversions and have developed a density functional theory approach to predicting valence tautomeric species and their interconversion temperature. Our studies of dinuclear bis(dioxolene)-bridged complexes (Figure 1) have allowed elucidation of the origin of two-step VT transitions towards 3-state molecular switches. Parameters based on the degree of electronic communication in the bis(dioxolene) ligand and, the matching of cobalt and dioxolene redox potentials, provide direct control over two-step switching. The ability to computationally screen for candidate VT compounds and chemically tune the VT characteristics confers great promise for future applications.

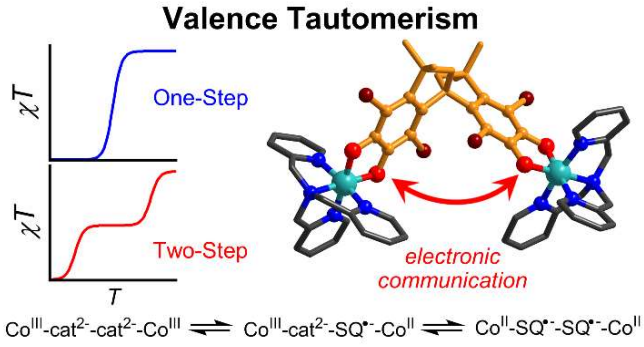


Figure 1. Bis(dioxolene)-bridged Co complex and possible 1- or 2-step VT interconversions.

Professor Colette Boskovic graduated from the University of Melbourne with BSc(Hons) and then PhD degrees. After postdoctoral stints at Indiana University, USA, and the University of Berne, Switzerland, she returned to the School of Chemistry in 2004 and was promoted to full Professor in 2022. She was awarded the 2004 Selby Research Award from the University of Melbourne, the 2013 Alan Sargeson Lectureship from the Royal Australian Chemical Institute (RACI) Inorganic Chemistry Division and the 2014 Dean's Award for Excellence in Research (Teaching and Research) from the Faculty of Science, University of Melbourne. She received an ARC Future fellowship in 2019. Colette was elected a Fellow of the RACI in 2020. She is presently the Chair-Elect of the RACI Inorganic Chemistry Division Committee. Her research interests include switchable metal complexes, redox-active ligands, f-element chemistry and molecular magnetism.

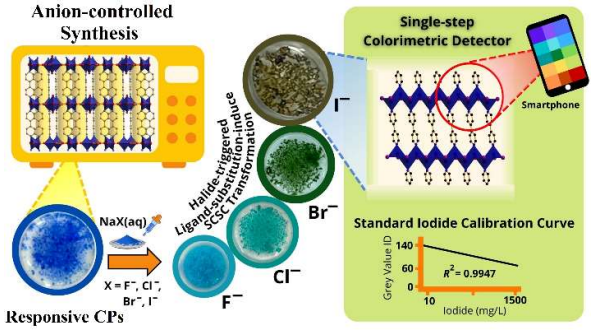
INVITED SPEAKER: C_INV05

ROLE OF ANIONS IN THE FORMATION AND STRUCTURAL TRANSFORMATION OF COORDINATION POLYMERS

Saranphong Yimklan[1,*], Nippich Kaeosamut[1,2], Nithiwat Sammawipawekul[1], Yothin Chimupala[3]

[1] Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand
[2] Department of Chemistry, The University of Manchester, Manchester, United Kingdom
[3] Department of Industrial Chemistry, Faculty of Science, Chiang Mai University, Thailand
*e-mail: Saranphong.Yimklan@cmu.ac.th

Abstract:
Stimuli responsiveness, as found in natural organisms like plants and animals, as well as in artificial smart materials is fascinating for materials designers that put their heroic efforts to mimic the exotic behaviours into their desired materials. Among these responsive materials, a class of crystalline frameworks such as coordination polymers (CPs) and metal-organic frameworks (MOFs) have become more attractive over those conventional intelligent materials because of their functional-led designability and/or tunability in both crystalline architecture and physicochemical properties. Since the first phenomenon of structural transformation in CPs was reported, numerous examples of responsive CPs and MOFs that can undergo single-crystal to single-crystal (SCSC) transformation have been explored. The phenomena can be triggered by chemical and physical stimuli trough many ways, such as removal of guest molecules and solvents, changes in temperature, photochemical reaction, and ligand substitutions. The rapid SCSC transformation can sometimes introduce fascinating physicochemical properties and could open possible utilities in a quick-response sensor, especially in a smartphone-based detection. Herein, we report the role of anions in the formation and structural transformations of CPs and MOFs towards potential applications.



Assistant Professor Saranphong Yimklan was born in Chiang Rai, Thailand in 1985. He received the bachelor's and the master's degrees in Science (Chemistry) from Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand in 2007 and 2010, respectively. In 2016, he obtained his PhD in Chemistry under the supervision of Matthew J. Rosseinsky at the University of Liverpool, United Kingdom. From 2016 to present, he worked at Department of Chemistry, Faculty of Science, Chiang Mai University, Thailand. His research interests in the structural transformations in coordination polymers and metal-organic frameworks.

INVITED SPEAKER: C_INV06

SUSTAINABLE EXTRACTION OF CURCUMINOIDS FROM TURMERIC (*Curcuma longa*) AS HISTONE DEACETYLASE INHIBITORS

Chanokbhorn Phaosiri*

Department of Chemistry, Faculty of Science, Khon Kaen University, Khon Kaen, Thailand
*e-mail: chapha@kku.ac.th

Abstract:
After thirty years of histone-deacetylase (HDAC) inhibitor discovery, five HDAC inhibitors have gained approval for cancer chemotherapy. This molecular target still draws a lot of attention in clinical development for oncology and other therapeutic indications. Exploring inhibitors with low toxicity and HDAC isoform selectivity is required to improve the cancer treatment. Natural derived compounds such as curcuminoids from turmeric (*Curcuma longa*) and their derivatives show micromolar-range inhibitory activity against HDAC with partial isoform selectivity. Due to this potential activity, more isolation and derivatization of curcuminoids are needed. Sustainable solvents including ethanol, Cyrene and deep eutectic solvent (DES) provide good extraction yields of curcuminoids under ultrasonication.

Figure 1. Green solvents for sustainable extraction of curcuminoids and the interaction mode of curcuminoid derivative in the active site of HDAC2.

Assistant Professor Chanokbhorn Phaosiri was born in Roi-et, Thailand in 1974. She received the Bachelor's degree in Chemistry from Department of Chemistry, Faculty of Science, Khon Kaen University, Thailand in 1996. She received the Master of Science degree in Organic Chemistry and Doctor of Philosophy in the field of Pharmacy, in 1999 and 2004, respectively from Oregon State University, USA. From 2004 to present, she worked at Department of Chemistry, Faculty of Science, Khon Kaen University, Thailand. She also currently serves as the head of Chemistry Department. Her research interests in enzyme inhibitors and alternative extraction of natural products from Thai medicinal plants.

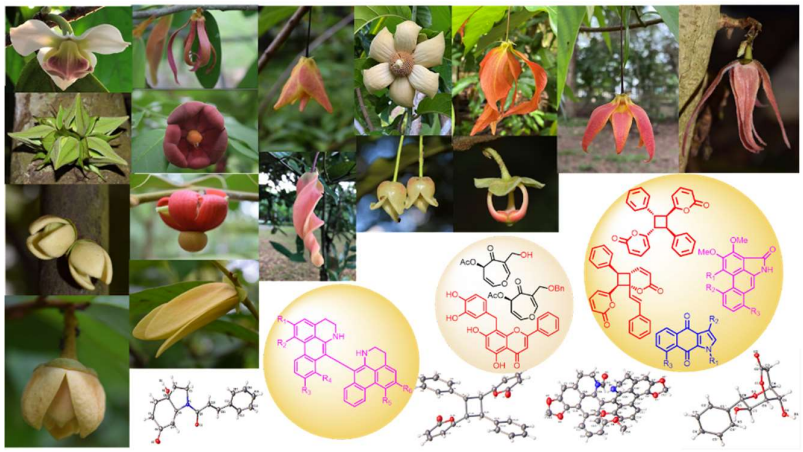
INVITED SPEAKER: C_INV07

PHYTOCHEMICAL INVESTIGATION AND BIOLOGICAL ACTIVITIES OF ANNONACEAE

Surat Laphookhieo[1,2,*]

[1] Center of Chemical Innovation for Sustainability (CIS) and School of Science, Mae Fah Luang University, Chiang Rai 57100, Thailand
[2] Medicinal Plant Innovation Center of Mae Fah Luang University, Chiang Rai 57100, Thailand
*e-mail: surat.lap@mfu.ac.th

Abstract:
Plants have been a part of human life, and many of them have been well recognized and documented for their medicinal uses for a long time. They have proven to be an excellent source of bioactive natural products providing access to lead compounds with unique and structurally diverse secondary metabolites that play an essential role in the pharmaceutical, cosmetic, and agrochemical industries. This research aims to provide information on chemical constituents and their biological activities from selected Annonaceae plants. Two hundred and fifty-five (255) compounds were isolated and identified from selected 15 species of Annonaceae. Of these, 70 compounds were isolated as new compounds. Most isolated compounds were evaluated for their biological activities, especially α-glucosidase inhibitory activity. Many displayed α-glucosidase inhibitory activity with the IC_{50} values in the range of 0.2-71.1 µM, which is better than standard compound control.



Associate Professor Surat Laphookhieo was born in Nong Khai, Thailand, in 1974. He received B.Sc. in Chemistry from the Faculty of Science and Technology, Surat Thani Rajabhat Institute, Thailand, in 1999. He received his M.Sc. and Ph.D. in Organic Chemistry (Natural Products Chemistry) in 2002 and 2005, respectively, from the Department of Chemistry, Faculty of Science, Prince of Songkla University, Thailand. After graduation, he joined the School of Science, Mae Fah Luang University, Thailand. His interests focus on discovering bioactive molecules from plants, and now he is the group leader of the natural products chemistry team at Mae Fah Luang University

INVITED SPEAKER: C_INV08

SCREENING OF POTENTIAL COMPOUNDS TO COMBAT COVID-19

Piyatida Pojtanadithee[1], Kamonpan Sanachai[2], Supot Hannongbua[3], Thanyada Rungrotmongkol[1,4,*]

[1] Program in Bioinformatics and Computational Biology, Graduate School, Chulalongkorn University, Bangkok 10330, Thailand
[2] Department of Biochemistry, Faculty of Science, Khon Kaen University, Khon Kaen 40002, Thailand
[3] Center of Excellence in Computational Chemistry (CECC), Department of Chemistry, Chulalongkorn University, Bangkok 10330, Thailand
[4] Center of Excellence in Structural and Computational Biology, Department of Biochemistry, Faculty of Science, Chulalongkorn University, Bangkok 10330, Thailand
*e-mail: thanyada.r@chula.ac.th

Abstract:
The COVID-19 pandemic caused by a novel coronavirus, known as SARS-CoV-2, has exposed flaws in global health systems. An appealing target for drug discovery is its 3C-like protease ($3CL^{pro}$), a specific viral enzyme that plays an essential role in viral replication and pathogenesis. In this study, we aimed to identify effective compounds against the $3CL^{pro}$ activity from DrugBank and our in-house database using computational and experimental approaches (Figure 1). By pharmacophore-based virtual screening and/or molecular docking, three drugs and three compounds were selected using the binding energy criteria and subsequently performed the 3CL pro inhibition by enzyme-based assay. Among these compounds, lapatinib and all three compounds from in-house database showed high efficiency of $3CL^{pro}$ inhibition. From molecular dynamics study, they could well bind within $3CL^{pro}$ active site. Our discovery provides an effective repurposed drug and synthetic compounds to inhibit SARS-CoV-2 $3CL^{pro}$. Besides, biochemical and cell-based assays tested the screened compounds from other natural products and synthetic analogs.

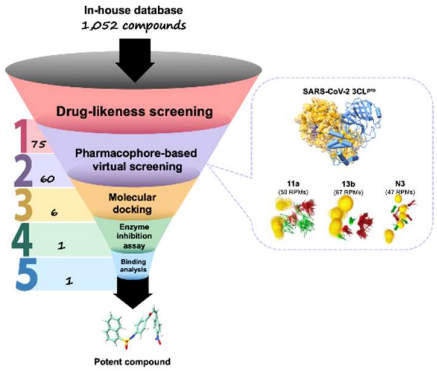


Figure 1. In silico and in vitro screening of potent compounds against SARS-CoV-2 $3CL^{pro}$

Assoc. Prof. Thanyada Rungrotmongkol has joined Department of Biochemistry, Faculty of Science, Chulalongkorn University since 2011. Her research career has been devoted to the potential of uniquely detailed, atomic-level insight into biological processes of molecular recognition, structural and dynamics properties of proteins. She received several awards such as the Bernd Rode Award Laureates from ASEA-UNINET (2017), Jisnuson Svasti-BMB Award from the Science Society of Thailand (2018), Jisnuson Svasti-Young Protein Scientist of Thailand Award from the Protein Society of Thailand (2018), and distinguished Lectureship Award from the Chemical Society of Japan (2022). To date, she has contributed to ~200 international publications with h-index of 29.

INVITED SPEAKER: C_INV09

CHEMICAL MODIFICATION OF MEMBRANE SURFACE FOR WATER PURIFICATION

Warayuth Sajomsang*, Sudkaneung Singto, Chalita Ratanatawanate, Sineenat Thaiboonrod, Pattarapond Gonil

National Nanotechnology Center, National Science and Technology Development Agency (NSTDA), 111 Innovation Cluster 2 (INC2 Building), Thailand Science Park Paholyothin Road., Khlong Nueng, Khlong Luang, Pathum Thani 12120, Thailand
*e-mail: warayuth@nanotec.or.th

Abstract:
Increasing water demand follows population growth, economic development and changing consumption patterns, leading to clean water scarcity. To develop the sustainable technology for the generation of freshwater, membrane technology is one such sustainable technology, which can be used in desalination to produce clean water. Despite its advantages, membranes suffer from fouling and low stability during the separation process. Several studies, including surface modification, have been carried out by researchers to improve the membranes properties. In this talk, chemical modification of membrane surface will be proposed by coating to improve membrane pore size and its properties. To enhance membrane filtration, novel flexible and hydrophilic co-polyamide (Co-PA) thin film composite (TFC) membranes was presented. The fabrication process was carried out by dip coating method to create three TFC membranes. The first layer is tannin, and the second layer is 3-aminopropyltriethoxysilane which is followed by Co-PA as a final selective layer. The Co-PA TFC membrane, which reaction took place by combination between various short chain aliphatic diamines and conventional aromatic diamine with trimesoyl choloride, was prepared through interfacial polymerization. All coating layers and total diamine concentrations into Co-PA TFC membrane were investigated in terms of physicochemical and mechanical property, morphology, surface thickness and roughness, water contact angle, surface charge and nanofiltration (NF) performance. Compared with the conventional PA TFC membrane, the best Co-PA TFC membranes, which diamine containing four carbon atoms, achieved a significant improvement in NF membrane performance and selectivity (the pure water flux in the range of 15.6-35.9 L m^{-2} h^{-1}, and salts and dye rejection in the range of 46.2-99.2%). This Co-PA TFC membrane can be considered to be a promising membrane for high flexibility, hydrophilicity as well as selectivity of NF membrane.

Dr.Warayuth Sajomsang was born in Samut Sakhon, Thailand in 1975. He received the bachelor's degree in Chemistry from Department of Chemistry, Faculty of Science, Rajabhat Kanchanaburi University, Thailand in 1999. He received the master's degree and Doctorate in Organic Chemistry, in 2002 and 2008 from Chiang Mai University and Chulalongkorn University, Thailand respectively. From 2008 to present, he worked at National Nanotechnology Center, National Science and Technology Development Agency, Thailand. His research interests in Polymer Science &Nanotechnology, Ionic Disinfectant technology, Chelation technology and Membrane technology. Dr. Warayuth was listed the World's Top 2% Scientists by Stanford University 2020-2021 in the field of Polymer. He published over 80 international journal articles (from scopus.com), and 50 pending Thai Patents and Thai Pretty patents.

INVITED SPEAKER: D_INV01

FROM COPULAS TO SUBCOPULAS – A MATHEMATICS OVERVIEW

Santi Tasena*

Department of Mathematics, Faculty of Sciences, Chiang Mai University, Thailand, 50200
*e-mail: santi.tasena@cmu.ac.th

Abstract:
In the last two decades, (sub)copula theory have been widely spread in multivariate analysis. In this talk, we will review Sklar's theorem which is the cornerstone of copula method when dealing with continuous (random) variables. We will also discuss its deficiency in noncontinuous setting which suggest the use of subcopulas instead. This approach, however, is difficult due to the complexity of subcopula structure leading to the lack of topological structure in which estimation and approximation can be done. We hope that our recent work will shed a light into this problem. These results will be share along with some future research idea to further improve on the situation.

Associate Professor Santi Tasena was born in Chiang Rai, Thailand in 1981. He received the bachelor's degree in Science from Department of Mathematics, Faculty of Science, Chiang Mai University, Thailand in 2003. He received the master's degree in Mathematics from New Mexico State University, USA in 2006 and the PhD in Mathematics from Cornell University, USA in 2011. From 2011 to present, he worked at Department of Mathematics, Faculty of Science, Chiang Mai University, Thailand. His work includes heat kernel analysis on metric spaces, (sub)copulas and measures of dependence, and construction of aggregations and related functions.

INVITED SPEAKER: D_INV02

STRATEGIES FOR TRAINING DEEP LEARNING

Olarik Surinta*

Department of Information Technology, Faculty of Informatics, Mahasarakham University, Thailand
*e-mail: olarik.s@msu.ac.th

Abstract:
There are many methods to improve the performance of deep learning models, such as tuning the hyperparameters (learning rate, optimization algorithms), increasing the number of training data, generating new data based on existing data, etc. The main objective of these methods is aimed to optimize the necessary parameters and minimize the value of training loss during the training scheme. However, the deep learning model will face the overfitting problem that it always obtains high accuracy performance and worsens when used in the real world. It has various techniques to reach the aim and solve the overfitting problem, such as using a learning rate schedule and changing the training strategy. With these simple methods, deep learning models can achieve higher efficiency.

Olarik Surinta grew up in Chiang Mai, Thailand and received his BBA from Rajamangala Institute of Technology and his MSc from King Mongkut's Institute of Technology North Bangkok. He started his career in 2004 as a lecturer at the department of information technology in the faculty of informatics, Mahasarakham University. In 2016, he graduated Ph.D. in Artificial Intelligence at University of Groningen, Institute of Artificial Intelligence and Cognitive Engineering (ALICE), The Netherlands. From 2004 to present, he worked at Multi-agent Intelligent Simulation Laboratory (MISL), Department of Information Technology, Faculty of Informatics, Mahasarakham University, Thailand. His research interests in deep learning, machine learning, handwritten recognition, and image and video recognition

INVITED SPEAKER: D_INV03

FUZZY ANALYTICAL HIERARCHY PROCESS IN ELECTRONIC COMMERCE PLATFORM DECISION MAKING

Waralee Rattanakijsuntorn[1]*

[1] International Academic of Aviation Industry
*e-mail: waralee.pe@kmilt.ac.th

Abstract:
As electronics and telecommunication technology progress with changing lifestyle of residents in urban and suburban area, consumers opt for more convenience ways of living including online purchases range from household products to ready-to-eat meals, especially during the time of COVID-19 outbreak when home lock down was strictly enforced. This research aimed to identify the compelling factors influencing the consumer in choosing the electronic commerce platform based on four service aspects: offering technology, service physical evidence, service people, and service process, by using analytical hierarchy process (AHP) with fuzzy application. After the pairwise comparison questionnaires were collected, normalized pairwise comparison matrix were constructed to yield AHP priority weights as well as consistency ratio. Fuzzy scales were carefully determined and used to convert figures from the normalized pairwise comparison matrix into priority vectors. By computing the value of fuzzy synthetic extent, applying the degree of possibility, calculating the weight vectors and normalizing the weight vectors, local weights were finalized. The quantitative results reveal the key decision factors, regardless the product's price, the delivery service fee, the product's quality and the delivery time window. The fuzzy AHP strengthens the AHP results, enlarging the higher local weight values and lowering the small local weight values which provide better clear-cut quantitative results for decision making.

Dr. Waralee Rattanakijsuntorn was born in Bangkok, Thailand in 1985. She received Bachelor of Science in Management Technology from Sirindhorn International Institute of Technology, Thammasat University in 2007, also earned Bhumibol Scholarship Award upon graduation. She was granted the Royal Thai Government Scholarship to study master's degree in Business Logistics Engineering at Fisher College of Business, the Ohio State University, where she received the degree in 2010. She received her Ph.D. in Logistics Management from the Graduated School, Chulalongkorn University in 2016. She has been working at International Academy of Aviation Industry, King Mongkut's Institute of Technology Ladkrabang since 2017. Her research areas in logistics and transport include multi-criteria decision analysis, air-rail intermodality and logistics service design.

INVITED SPEAKER: E_INV01

GRAPHENE OXIDE NANOSHEETS FOR SELECTIVE SEPARATION AND CAPTURE OF HYDROGEN

Tetsuya Kida[1]* and Armando Quitain[2]

[1] Faculty of Advanced Science and Technology, Kumamoto University, Kumamoto, 860-8555, Japan
[2] Centor for International Education, Kumamoto University, Kumamoto, 860-8555, Japan
*e-mail: tetsuya@kumamoto-u.ac.jp

Abstract:
The development of a cost-effective hydrogen separation technology is important for the purification of hydrogen gas mixtures. We found that Pt/C catalyst-coated, dense, and micrometer-thick membranes made by stacking graphene oxide (GO) nanosheets with Ce ions are permeable to only hydrogen at room temperature. The hydrogen permeation occurs on the basis of the mixed conducting mechanism, in which hydrogen is first dissociated into protons and electrons at the feed side, they diffuse in the membrane bulk, and recombine to produce hydrogen at the permeate side. The diffusion of other molecules such as helium and carbon dioxide can be blocked, allowing for super-selective separation. We demonstrate that the developed membrane technology can be applied to hydrogen capture and deuterium gas production from heavy water.

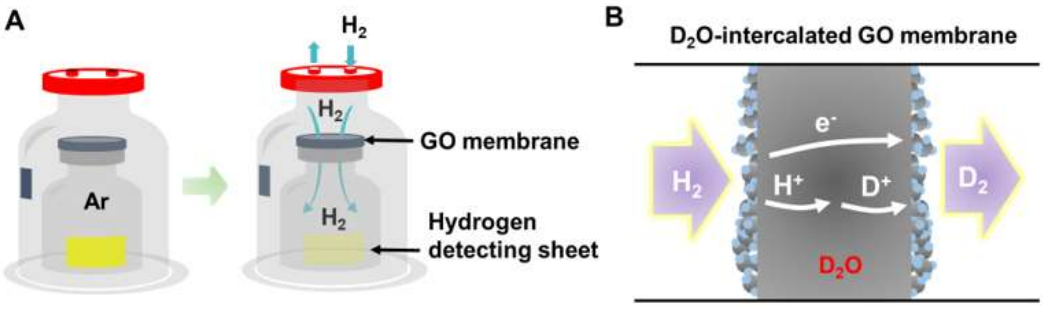


Figure 1. (A) Schematic of hydrogen capture using a GO nanosheet membrane. (B) Deuterium gas production using a GO membrane intercalated with heavy water.

Professor Tetsuya Kida was born in Oita, Japan in 1971. He received his bachelor's degree in Applied Chemistry from Kyushu University, Japan in 1994. He received his MS degree and Dr. Eng. degree in Materials Science from Kyushu University in 1996 and 2001, respectively. He has been a full professor at Kumamoto University, Japan since 2013. His current research interests include the synthesis and applications of semiconductor nanocrystals, gas sensing with metal oxides, and applications of graphene oxide for energy applications.

INVITED SPEAKER: E_INV02

CATALYTIC SYNTHESIS OF A-AMINO ACIDS: SELECTIVE CONVERSION OF GLYCERIC ACID TO ALANINE OVER BIFUNCITIONAL Ru/TiO_2 CATSLYSTS

Shiro Saito[1], Shixiang Feng[1], Hiroki Miura[1,2,3], and Tetsuya Shishido[1,2,3,*]

[1] Department of Applied Chemistry, Graduate School of Urban Environmental Sciences, Tokyo Metropolitan University, 1-1 Minami-Osawa, Hachioji, Tokyo 192-0397, Japan
[2] Research Center for Hydrogen Energy-Based Society, Tokyo Metropolitan University, 1-1 Minami-Osawa, Hachioji, Tokyo 192-0397, Japan
[3] Elements Strategy Initiative for Catalysts & Batteries, Kyoto University, Goryo, Nishikyo-ku, Kyoto 615-8520, Japan
*e-mail: shishido-tetsuya@tmu.ac.jp

Abstract:
The amino acids have extensive applications, and their chemical synthesis from renewable sources such as biomass-derived feedstocks is attractive and an alternative route to the current processes based on fermentation. The direct transforms of lignocellulosic biomass-derived α-hydroxyl acids and ammonia in the presence of ruthenium nanoparticles supported on anatase TiO_2 (Ru/TiO_2-A) proceeded efficiently to give the corresponding α-amino acids, including alanine, leucine, valine, and phenylalanine in high yields. Control experiments corroborated that the reaction follows a dehydration-reductive amination pathway, with dehydration as the rate-determining step. Characterization of the catalysts revealed that the dehydration of α-hydroxyl acid proceeded on TiO_2-A efficiently even in the presence of NH_3 by a concerted catalysis by Lewis acid-base pairs with moderate strengths on TiO_2-A (OH^- abstraction by Lewis acid sites and α-H abstraction by base sites. The dehydrated intermediate was converted to α-amino acid smoothly on ruthenium nanoparticles via redcutive amination.

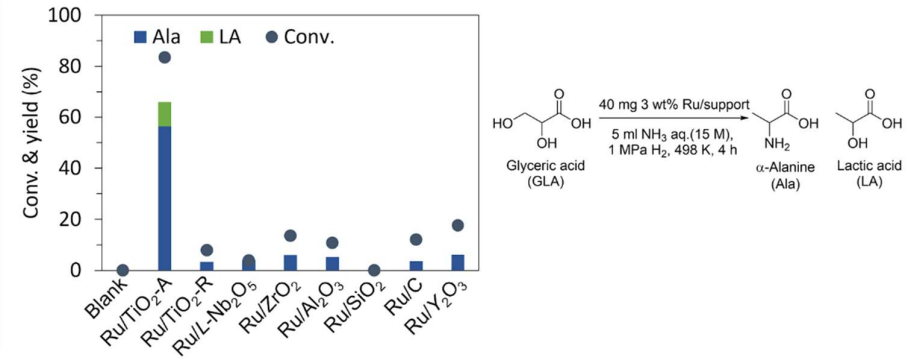


Figure 1. Catalytic conversion of GLA over Ru/support.

Professor Tetsuya Shishido was born in Yokohama, Japan in 1970. He received his PhD at Hokkaido Univ. in 1997 for fundamental research on acid-base catalysis. He began his career as an Assistant Professor at Hiroshima Univ. in 1997, then moved to the Kyoto Univ. in 2005. In 2013, he was promoted to full Professor at Tokyo Metropolitan Univ. His research targets include solid acid-base catalysts, photocatalysts, and highly functionalized metal and alloy catalysts. He also works on in situ spectroscopic methods to elucidate the reaction mechanism on heterogeneous catalysts at the molecular level. He published more than 250 publications (H-index 60). He is the director of Research Center for Hydrogen Energy-based Society and the fellow of Royal Society of Chemistry (FRSC).

INVITED SPEAKER: E_INV03

REALIZING ULTRAHIGH ENERRGY DENSITY IN POLYMER DIELECTRIC FILM BY INTERMOLECULAR STRUCTURE DESIGN

Haibo Zhang,[1,2,3,*] and Chanatip Samart[2]

[1] School of Materials Science and Engineering, State Key Laboratory of Material Processing and Die & Mould Technology, Huazhong University of Science and Technology, Wuhan, 430074, P. R. China
[2] Department of Chemistry, Faculty of Science and Technology, Thammasat University, Pathumthani 12120, Thailand
[3] Faculty of Chemical Engineering, Industrial University of Ho Chi Minh City, Ho Chi Minh City 71420, Viet Nam
*e-mail: hbzhang@hust.edu.cn

Abstract:
To achieve carbon-neutrality, there is an urgent need to develop green, renewable, and sustainable energy. The high-performance energy storage devices, therefore, are essential to the effective implementation of the electricity generated from environment-friendly and low-cost renewable energies. Dielectric capacitors, due to their excellent insulation, nearly unlimited cycle lifetime, and ultrafast discharge speed, have long been regarded as one of the most important energy storage devices such as electrical vehicles, medical equipment, and aerospace power electronics. Polymer nanocomposites have been extensively studied for dielectric energy storage applications, however, the relatively low breakdown strength due to inevitable defects and voids limits themselves in the development of the high energy density capacitors while large-scale manufacturing. Herein, we propose a facile strategy to improve the breakdown strength and thus energy density by synergistically designing the intermolecular structure in a ternary polymer blend composed of poly(methyl methacrylate), poly(vinylidene fluoride), and poly(vinylidene fluoride-hexafluoropropylene). We show that the appropriate quenching temperature can decrease crystal size and increase the fraction of the amorphous phase. Meanwhile, by designing the mass ratio of the ferroelectric poly(vinylidene fluoride), and poly(vinylidene fluoride-hexafluoropropylene), it will successfully introduce the intermolecular interaction, which stabilizes the γ-phase and leads to dense chain packing. All the phenomena contribute to the ultrahigh breakdown strength (850 MV/m) and the optimized blend exhibits a record high discharged energy density of 30 J/cm^3. Of particular importance is that a large-area dielectric film with high property uniformity can be fabricated, demonstrating that the proposed design approach can be used as a general technology for mass production.

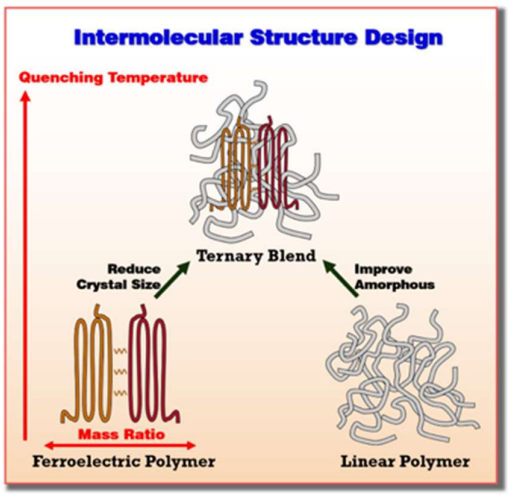


Figure 1. The schematic diagram of the synergistic strategy.

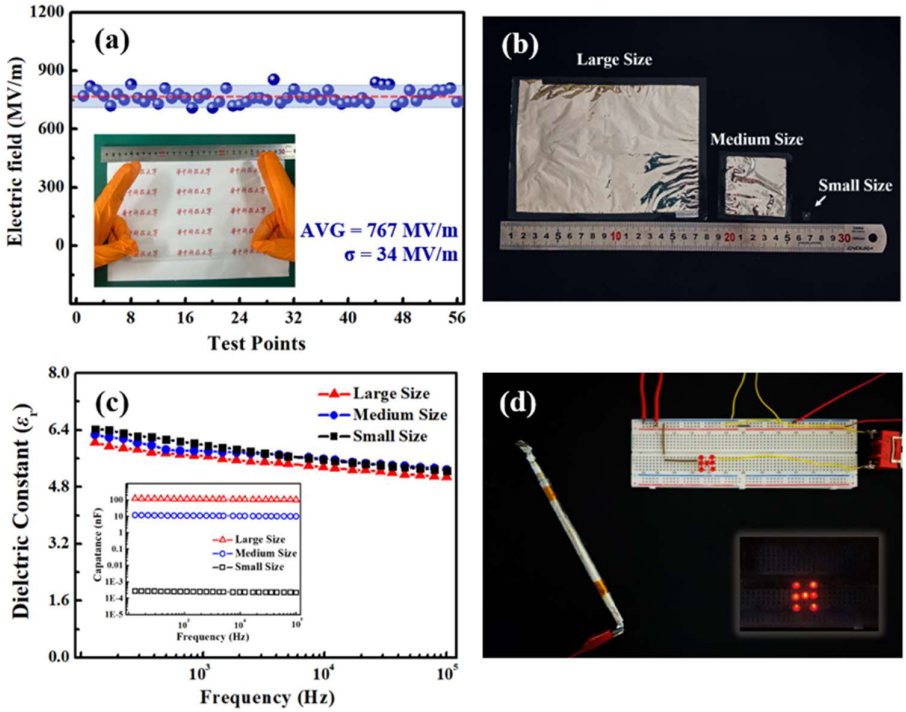


Figure 2. Reliability and uniformity for large-area films and capacitors. (a) Dielectric breakdown properties at different test points of the large-area dielectric film (as shown in the inset). The results of the average value and standard deviation were obtained from 56 points. (b) Three different sizes of metalized films, as well as the corresponding (c) capacitance values and dielectric constants (inset). (d) The capacitors assembled by amination and winding techniques and the circuit for charging and discharging. Inset is series and parallel LEDs on the printed circuit board lighted by the harvested energy of the capacitor.

Dr. Haibo Zhang is a full professor in School of materials science and Engineering at Huazhong University of Science and Technology, Wuhan China, Chair professor of Thammasat University, Thailand, and Guest professor of Industrial University of Ho Chi Minh City, Vietnam.

He received his bachelor's degree in Microelectronics and Solid State Electronics from Huazhong University of Science and Technology in 2003. He obtained his Ph.D. degree from Huazhong University of Science and Technology in 2008 concerning the preparation and characterization of BNT based lead free piezoelectric thick films. He joined the Research Laboratory of Hydrothermal Chemistry, Faculty of Science, Kochi University, Japan in 2008, and has been a postdoctoral researcher for two and a half years in Kochi University Japan. Zhang got a faculty position in School of Materials Science and Engineering at Huazhong University of Science and Technology in 2011. From 2012 to 2014, he worked as a Humboldt Research Fellow with Professor Jürgen Rödel in Institute of materials science at Technique University of Darmstadt, Germany.

Since 2014 he works as a professor in School of materials science and Engineering at Huazhong University of Science and Technology, Wuhan China. He has published over 100 peer-reviewed SCI research papers and had 20 Chinese patents. Zhang's research interests include (i) lead-free piezo- and ferroelectrics materials, (ii) dielectric composite materials for energy storage, (iii) Precision molding technology of advanced ceramics

INVITED SPEAKER: E_INV04

TOWARD TRACE VOC MOLECULE RECOGNITION BY METAL OXIDE SENSORS

Gang Meng,[1,2,*]

[1] Anhui Provincial Key Laboratory of Photonic Devices and Materials, Anhui Institute of Optics and Fine Mechanics, Chinese Academy of Sciences, Hefei 230031, China
[2] Key Lab of Photovoltaic and Energy Conservation Materials, Chinese Academy of Sciences, Hefei 230031, China
*e-mail: menggang@aiofm.ac.cn

Abstract:
Since trace volatile organic compounds (VOCs) molecules in the exhaled breath and/or ambient gas carry important messages on the environment and human health, VOCs molecule detection is of utmost importance. In comparison with optical and mass spectroscopy, metal oxide semiconductor (MOS) gas sensors possess small dimension, low power consumption and good compatibility with silicon chip, whereas insufficient response and poor selectivity hinders their promising applications in the era of internet of things (IoT). Herein, we reported our recent progress on these issues, promoting electrical response toward trace VOCs molecules via defect control strategies, and realizing VOCs molecule recognition by extracting concealed molecule features via temperature modulation.

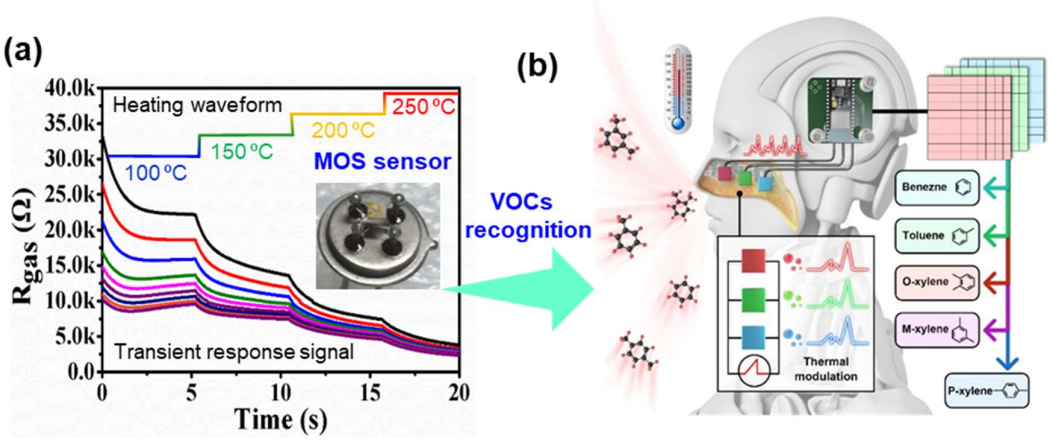


Figure 1. (a) Transient VOCs response signals of a temperature modulated MOS sensor. (b) VOCs molecules recognition by feature extraction.

Gang Meng received his Ph.D. degree from Chinese Academy of Sciences (CAS) in 2010. Then he worked in Osaka University (2010-2015) as postdoctor and Kyushu University (2015-2016) as assistant professor, respectively. In 2016, he has been promoted to be a full professor in Hefei Institutes of Physical Science (HFIPS) by the "Hundred Talents Program of Chinese Academy of Sciences". He is now the principal investigator of Smart Sensing Materials & Devices Lab, and vice director of Anhui Provincial Key Laboratory of Photonic Devices and Materials. Focusing on sensing modules for IoT environmental monitoring, his research interests involve smart sensing semiconductor materials and devices, including high-performance oxide gas sensors and (visual-UV-X-γ-ray) photodetectors for environmental and health monitoring.

INVITED SPEAKER: E_INV05

CHEMICAL UPCYCLING OF WASTE PLASTICS

George W. Huber[1,*], Houqian Li[1], Xianglan Bai[3], Gregg T. Beckham[2], Robert C. Brown[3], Marco Antonio Sanchez Castillo[4], Victor S. Cecon[4], Julia B. Curley[3], Greg W. Curtzwiler[3], Son Dong[1], John Estela Garcia[1], Ive Hermans[1], Min Soo Kim[1], Jiaze Ma[1], Lesli O. Mark[1], Manos Mavrikakis[1], Olumide O. Olafasakin[3], Tim A. Osswald[1], Kostas G. Papanikolaou[1], Kevin L. Sánchez-Rivera[1], Khairun N. Tum[3], Reid C. Van Lehn[1], Keith L. Vorst[3], Mark M. Wright[3]. Jiayang Wu[1], Victor M. Zavala[1], Panzheng Zhou[1]

[1] University of Wisconsin-Madison, Madison, WI, 53706, USA
[2] National Renewable Energy Laboratory, Golden, CO, 80401, USA
[3] Iowa State University, Ames, IA, 50011, USA
[4] Facultad de Ciencias Químicas, Universidad Autónoma de San Luis Potosí, San Luis Potosí 78210, Mexico
*e-mail: gwhuber@wisc.edu

Abstract:
In this talk I will discuss the recently funded US Department of Energy multi-university center on Chemical Upcycling of Waste Plastics (CUWP, www.cuwp.org). The objective of CUWP is to develop the scientific and engineering principles that will enable the circular upcycling of plastic wastes into virgin plastic resins using chemical technology. The center is analyzing the supply-chain, infrastructure, capital costs, total economic costs, and environmental impacts of different chemical recycling technology options. CUWP focuses on two primary plastic waste streams 1) post-consumer waste (PCW) streams and 2) post-industrial waste (PIW) streams. CUWP focuses on two main approaches to chemically recycle waste plastics: 1) thermal depolymerization of mixed plastic wastes followed by either catalytic upgrading or steam cracking and 2) solvent-targeted recovery and precipitation (STRAP) processing of waste plastic films. We are also developing catalytic approaches to convert the plastic-derived oils and waxes produced by thermal depolymerization into aromatics and olefins.
Many plastic packaging materials manufactured today are composites made of distinct polymer layers (*i.e.,* multilayer films). Billions of pounds of these multilayer films are produced annually, but manufacturing inefficiencies result in large post-industrial waste streams. Though relatively clean (as opposed to municipal wastes) and of near-constant composition, no commercially practiced technologies exist to fully deconstruct post-industrial multilayer film wastes into pure, recyclable polymers. STRAP can deconstruct the multilayer films into their constituent resins using a series of solvent washes that are guided by thermodynamic calculations of polymer solubility with near 100% material efficiency. STRAP can also be applied to flexible packaging materials, face masks, rigid packages and a host of other plastic packaging materials.

George Willis Huber is the Richard Antoine Professor of Chemical Engineering at University of Wisconsin-Madison. His research focus is the design of disruptive technologies for the conversion of biomass, waste plastics and other waste resources into renewable fuels and chemicals. He is co-founder of Anellotech (www.anellotech.com) and Pyran (www.pyranco.com). He is the director of the $12.5 million Center on Chemical Upcycling of Waste Plastics (CUWP) which was funded in 2021 (https://cuwp.org/). George did a post-doctoral stay with Avelino Corma at the Technical Chemical Institute at the Polytechnical University of Valencia, Spain (UPV-CSIC). He obtained his Ph.D. in Chemical Engineering from University of Wisconsin-Madison (2005). He obtained his B.S. (1999) and M.S. (2000) degrees in Chemical Engineering from Brigham Young University.

INVITED SPEAKER: E_INV06

APPLICATION OF ACTIVE CATALYST WITH OXYGEN ENVIRONMENT FOR FACILE SYNTHESIS OF VALUE-ADDED CHEMICALS

Surachai Karnjanakom*

Department of Chemistry, Faculty of Science, Rangsit University, Pathumthani 12000, Thailand
*e-mail: surachai.ka@rsu.ac.th

Abstract:
The utilization of renewable carbon resource has been attracted a lot of attention due to the drastic decrease of fossil fuels in the past few years. Biomass-based furfural is a good candidate which can be possibly converted into bio-fuels and value-added chemicals. In this research, we focused to synthesize the ethyl levulinate (EL) product via simultaneous integration of oxygen environment/porous active catalyst in the presence of ethanol as a hydrogen donor. The critical roles of catalyst acidity, ultrasonic irradiation, O_2 and N_2 existences and humins deposition were systematically investigated. The results found that a maximum EL yield of 93% is achieved at mild conditions, while the humins formation in solution and on catalyst surface are well suppressed under oxygen environment, resulting from oxidative degradation process. This research is expected to provide a new way for facile production of value-added chemicals.

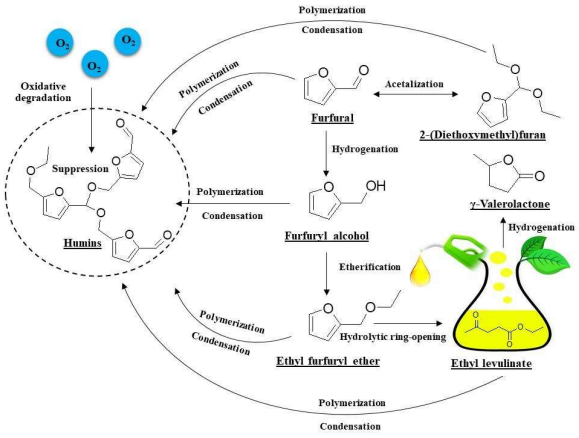


Figure 1. Reaction pathways for selective conversion of furfural into value-added chemicals.

Assistant Professor Dr. Surachai Karnjanakom was born in Bangkok, Thailand in 1989. He received the bachelor's degree in Applied Chemistry from Department of Chemistry, Faculty of Science, Rangsit University, Thailand in 2011. He received the master's degree in Chemistry from Department of Chemistry, Faculty of Science and Technology, Thammasat University, Thailand in 2014. He received the Doctor of Engineering in Safety Science and Technology from Graduate School of Science and Technology, Hirosaki University, Japan in 2018. From 2018 to present, he worked at the Department of Chemistry, Faculty of Science, Rangsit University, Thailand. His research interests in synthesis/development of novel heterogeneous catalysts and their applications in biomass conversion to renewable energy and/or valuable chemicals.

INVITED SPEAKER: F_INV01

COLD PLASMA: AN EMERGING TECHNOLOGY FOR PRESERVATION AND PROCESSING OF FISH AND FISH PRODUCTS

Soottawat Benjakul*

International Center of Excellence in Seafood Science and Innovation
Faculty of Agro-Industry, Prince of Songkla University
Hat Yai, Songkhla, 90110, Thailand
*e-mail: soottawat.b@psu.ac.th

Abstract:

Cold plasma is a novel nonthermal food processing technology, which can be an alternative preservation method of foods with the negligible changes in quality attributes. Basically, carrier gases including air, oxygen, nitrogen or argon, etc. are converted to be active species having the antimicrobial activity. The primary modes of action are associated with reactive chemical products generated from cold plasma ionization process. The dielectric barrier discharge (DBD) consists of two flat metal electrodes that are covered with insulating material (barrier). In-bag dielectric barrier discharge (DBD) plasma is strongly recommended for treatment of fish and fish products. This technique can prevent post-contamination from environment or poor handling. Although CP can inhibit the growth of several microorganisms, mainly via DNA damage or rupture of cell wall, etc., it can induce the oxidation of lipids, thus causing the off-odor or off-flavor as well as loss in nutritive value. Thus, the use of antioxidants, especially natural antioxidant such as plant extract can alleviate or lower undesirable deterioration. The use of plant extracts possessing antimicrobial activity exhibits the combined effect with CP on retardation of microbial growth. In addition, the oxidation of both lipid and proteins is impeded in a dose depending manner. To enhance the efficiency in shelf-life extension, the use of modified atmosphere rich in CO_2 can be another promising means to maintain the quality of fish or fish products. Since the proteins are modified by CP, an appropriate treatment of fish muscle protein by CP can improve the gelation as indicated by increased gel strength and rheological properties. Therefore, CP can be an emerging effective preservation and processing technology for seafoods and their products.

Prof. Dr. Soottawat Benjakul is a professor in Food Science and Technology and a director of International Center of Excellence in Seafood Science and innovation, Faculty of Agro-Industry, Prince of Songkla University, Hat Yai, Songkhla, Thailand. He received his Ph.D. (Food Science and Technology) from Oregon State University, USA in 1997 under the support from the Fulbright scholarship. He has published more than 940 research articles in peer-review international journal indexed by Scopus with H-index of 92. He has been listed as the top 1% of researchers for most cited documents in the field of Agricultural Sciences by Clarivate Analytics for 6 consecutive years.

INVITED SPEAKER: F_INV02

NONTHERMAL AND ADVANCE THERMAL TECHNOLOGIES & INDUSTRY 4.0 IN ADVANCING TOWARDS SDGs

Anet Režek Jambrak*

Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia
*e-mail: anet.rezek.jambrak@pbf.unizg.hr

Abstract:
United Nations (UN) Agenda 2030. Document, issued in 2015. is focusing on Sustainable Development Goals (SDGs). There are 17 of those goals, more than 100 multipurpose indicators and the idea is to make better world for us, without compromising the ability of future generations to meet their own needs.
The idea of Sustainable Development Goal 12, titled "responsible consumption and production", is one of the 17 Goals. The official wording of SDG 12 is "Ensure sustainable consumption and production patterns". It is our responsibility and need to establish sustainable production and food supply chain, assuring food safety, reducing impact to the environment. There is need to set food production with technologies that are using less energy, lower CO_2 emission to the environment and are economical. There is also needed to include elements of Circular economy, Life Cycle Assessment (LCA), recycle, reduce and reuse of waste (by-product and wastewaters) and waste management for its re-usage. In the end Total quality index (TQI) and Quality function deployment (QFD).
There is opportunity to address innovation in food production by implementing nonthermal and advanced thermal processing technologies, and to combine with element of Industry 4.0 (additive technologies, Internet of Things (IoT), Industrial internet of things (IIoT) with the idea of optimization of processing, shorter treatment time, digitalization of production and lower energy consumption and therefore lower CO_2 emission. Therefore, it is necessary to have in mind and to work along Sustainable Development Goal, that is about "industry, innovation and infrastructure". SDG 9 aims to build resilient infrastructure, promote sustainable industrialization, and foster innovation.
There is urged to work in line with SDG 17, Partnership for the Goals, in areas: Finance, Technology, Capacity building, Trade and Systemic issues.

Professor Anet Režek Jambrak PhD., Faculty of Food Technology and Biotechnology of the University of Zagreb, Croatia. She is at position of full professor (from 2018.) and scientific advisor (permanent title) from 2017 in food engineering (biotechnical sciences). From 2019. she is head of Laboratory for sustainable development. She obtained PhD, in 2008. Thesis: Ultrasonic effect on physical and functional properties of whey proteins. She was trained abroad at Coventry University, UK and at the University of Avignon, France. Her field of research is nonthermal processing, advanced thermal processing, sustainability, food processing, Industry 4.0, digitalization, food chemistry, food physics etc. In the period from 2007. Anet Režek Jambrak has published over 100 significant scientific papers with citation more than 4650, (h-index 34) and author of book chapters in recognized scientific publishers like Wiley, Elsevier, Springer etc. She received many prizes and awards: for the year 2019. she was titles Highly Cited Researcher, among 0.1% world scientists (powered by Web of Science https://publons.com/awards/highly-cited/2019). She serves as Editor in many international Journals such as Trends in Food Science and Technology, Elsevier; Journal of Food Processing and Preservation, Wiley; Food Engineering Reviews, Springer Nature; Processes, MDPI; and Journal of Food Quality, Hindawi. She is teaching courses related to nonthermal and advanced thermal processing, food engineering, physical properties of foods, sustainability, Industry 4.0 in biotechnical sciences etc. She is member of Global Young Academy (GYA), European Union of Food Science and Technology (EFFoST) and International Academy of Food Science and Technology (IAFoST).

INVITED SPEAKER: F_INV03

LACTIC ACID BACTERIA FOR IMPROVING THE SUSTAINABILITY OF THE FOOD CHAIN: A CASE STUDY IN SEA BASS SIDE STREAMS

Francisco Juan Martí-Quijal, Juan Manuel Castagnini*, Francisco José Barba

Preventive Medicine and Public Health, Food Science, Toxicology and Forensic Medicine Department, Faculty of Pharmacy, Universitat de València, Avda. Vicent Andrés Estellés, s/n, 46100 Burjassot, Valencia, Spain
*e-mail: juan.castagnini@uv.es

Abstract:
Different innovative approaches have been studied to valorise fish by-products due to the environmental problem they represent. The application of green extraction technologies such as ultrasound-assisted extraction, pulsed electric fields, and supercritical fluid extraction applied to fish by-products allows to obtain different extracts rich in bioactive compounds. However, another interesting technique not so frequently used for valorisation purposes is fermentation. Through this process is possible to obtain high added-value compounds from fish side streams like bioactive peptides, high-quality oils, or protein hydrolysates, as well as many others compounds that can be interesting ingredients or products for food, pharmaceutical or cosmetic industries. The use of lactic acid bacteria (LAB) in the fermentation of sea bass side streams to produce antioxidant compounds. Seven strains of LAB were isolated from sea bass stomach, colon and intestine and two broths were obtained, one from fish meat and another from fish side streams. As a result of the fermentation, the antioxidant capacity of the broth was improved and two polyphenols, DL-3-phenyl-lactic acid and benzoic acid, were identified as responsible of this antioxidant capacity. The fermented broths obtained has shown the relevance of fermentation as a useful tool to valorise fish side streams, giving them an added economic value and reducing their environmental impact.

Distinguished Researcher Castagnini was born in Concordia, Argentina in 1985. He received a bachelor's degree in food engineering at the National University of Entre Rios, Argentina, in 2010. He received a PhD in Food Science, Technology and Management from the Polytechnic University of Valencia, Spain, in 2014 under the direction of Prof. Pedro Fito and Noelia Betoret. Nowadays he is working at the University of Valencia in the group of Prof. Francisco Barba. His research interests are in non-thermal treatments for extraction and valorisation of side streams from the food industry, fermentation processing and alternative sources of proteins, lipids and bioactive compounds.

INVITED SPEAKER: SP1_INV01

BACTERIAL CELLULOSE "LIGHT THE WAY WITH SUSTAINABLE MATERIALS"

Hathaikarn Manuspiya[1,2]*

[1] The Petroleum and Petrochemical College, Chulalongkorn University, Bangkok, Thailand
[2] Center of Excellence on Petrochemical and Materials Technology (PETROMAT), Bangkok, Thailand
*e-mail: hathaikarn.m@chula.ac.th

Abstract:
Cellulose is one of the most plentiful biopolymers on earth, representing about 1.5 trillion tons of the total annual biomass production. Cellulose can be abundantly obtained from plant-based materials such as cotton, wood, and hemp. Cellulose can also be synthesized from algae, tunicates and some bacteria. Bacterial cellulose (BC) is a purified form of cellulose that is free of lignin and hemicellulose. The BC can be produced by several types of bacterial species that mainly belong to the genus Acetobacter. The BC has microfibrils that are arranged in a 3D web-shaped structure, providing a porous geometry and high mechanical strength. Compared to plant cellulose, the BC has considerably higher crystallinity (80–90%), water absorption capacity, and degree of polymerization (up to 8000). The preparation of BC offers an opportunity to provide control of product properties in-situ, via specific BC production methods and culture conditions. There is a growing body of work on the production of BCs and bacterial cellulose nanocrystals (BCNCs) from BC fibers. This review describes developments in BC and BCNCs production methods and factors affecting their yield and physical characteristics. The BC, alone or in combination with different components (e.g., biopolymers and nanoparticles), can be used for a wide range of applications, such as medical products, electrical devices, sensor packaging and food ingredients. The latest uses of BC in the electronic, food, and biomedical fields are discussed with additional applications in composites. BCNCs and bacterial cellulose acetate (BCA) extracted from nata de coco waste were used as bio-fillers to improve the PEBAX membranes' thermal stability, wettability, and porosity. Meanwhile, using a solution plasma process, BCA was synthesized by acetylation. Increased BCNCs and BCA content improved wettability, ionic conductivity, electrochemical stability, and thermal stability in a high-performance separator. On the other hand, acid hydrolysis of BC under controlled conditions would produce BCNCs with specific characteristics such as morphology, particle size, surface charge, crystallinity, crystallite size, and thermal stability; hence, the resulting BCNCs will have different characteristics useful in various applications. For sensory applications, BCNCs can be modified with metallic nanoparticles, i.e. silver nanoparticles (AgNPs) and alginate-molybdenum trioxide nanoparticles (MoO_3NPs). The BCNCs hybrid metallic nanocomposites were developed for hydrogen sulfide (H_2S) gas optical sensor in food packaging applications where MoO_3NPs provide the metal oxide source that are readily reduced to a colored sub-oxide by the atomic hydrogen produced by the H_2S gas, and AgNPs are used as the H_2S reactive metal. For biomedical applications, BCNCs with suitable properties can be selected for further cationic surface modification by the physical adsorption with amines and amine-containing polymers such as methacrylamide to form complexation with siRNA. The resulting complexation would potentially be used in gene delivery nanocarriers.

Professor Dr. Hathaikarn Manuspiya graduated with a bachelor's degree in Materials from Chulalongkorn University. She later received an academic scholarship from the National Petrochemical Public Co. Ltd. to continue her master's degree in Polymer Science at the Petroleum and Petrochemcial College, Chulalongkorn University. In 1997, she received a scholarship from the Royal Thai Government to pursue her Ph. D. in Materials Engineering at the Pennsylvania State University, USA. Currently, she is a Professor and the Director of Center of Excellence on Petrochemical and Materials Technology (PETEOMAT) since 2020. Her area of expertise is in nanocomposites, biomaterials, materials for energy harvesting and bioplastics. She was received many grants from government and industry including the most prestigious award for a scientist, the "L'Oréal Thailand For Women in Science Fellowships in Material Science Research in 2011.

INVITED SPEAKER: SP1_INV02

WOOD BUILDINGS FOR CARBON NEUTRAL BUILDING SECTOR

Zoltán Pásztory[1]*

[1] University of Sopron, Faculty of Wood Engineering and Creative Industries, 4. Bajcsy Zs. str. 9400 Sopron, Hungary
*e-mail: pasztoryzoltan@gmail.com

Abstract:
One of the main goal of humankind is the reduction of greenhouse gas emission for providing the survey of the humanity. The building sector is responsible for more than one third of all carbon dioxide emission including the manufacturing of building materials and the operation of the buildings. By photosynthesis produced wood, and other lignocellulose materials mostly built up from the CO_2 content of the atmosphere and it is stored until burning or natural decay of the material. Wood buildings sequester significant amount of wood for longer time and the amount in cubic meter and the carbon dioxide equivalence was examined. Wood content of 80 log homes were investigated and the average of 35.28 m^3 was found. The average stored carbon dioxide of log homes was 31 tons, and there is slight difference between one and two storied buildings 0.213 and 0.284 tons of equivalent carbon dioxide per square meter respectively.

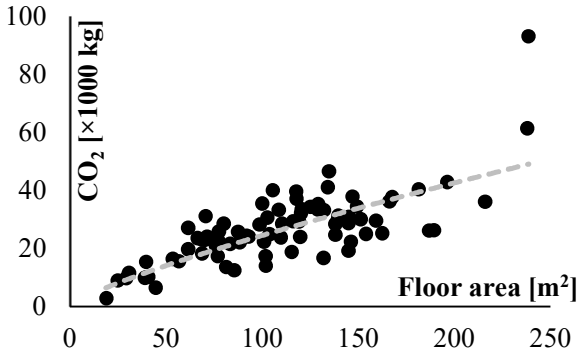


Figure 1.
The amount of CO_2 sequestered in the examined wooden houses as a function of the floor area

The higher the ratio of natural based building materials the higher the environment protection effect of the building. From this reason, the increasing utilization of cellulose based materials such as rubber wood, palm tree banana fiber or any other renewable building materials reduce the harm of the environment. There is needed a higher activity of researches focusing the utilization forest and agricultural materials for manufacturing building materials even in structural or insulation, and surface siding purposes by substituting artificial rawmaterials. There were successful researches at the University of Sopron for using tree bark for thermal insulation. The heat conductivity was comparable than that of polystyrene and rock wool materials. The research group at the Faculty of Wood Engineering and Creative industries committed itself to going on the path of develop new innovative solutions with the cooperation of other institutions.

Dr. Zoltán Pásztory was born in Budapest Hungary and working as a wood scientist for 25 years at the University of Sopron. The main research areas in his carrier are the development of wood building materials and the improvement of energy efficiency of buildings. He led more research project focusing to the material development e.g. a new insulation material made of recycled paper, and tree bark or agricultural fiber waste. He was supervisor of five PhD candidate and still supervise additional five PhD research program. He is the inventor of several patents; wrote more than 50 scientific publication; 5 book chapter. Recently he is working as a vice dean at the Faculty of Wood Engineering and Creative Industries

INVITED SPEAKER: SP1_INV03

STUDIES IN WATER TENSION COLLAPSE IN WOOD DRYING

Steve Riley, Rosie Sargent, Jonathan Harrington

Authors all work at Scion Rotorua New Zealand with many years combined experience in scientific research in the fields of wood science, wood processing and technology, concentrating on drying and wood-water interactions.
*e-mail:
steve.riley@scionresearch.com
rosie.sargent@scionresearchcom
jonathan.harrington@scionresearch.com

Abstract:

Capillary water tension is a known significant problem in both hardwood and softwood drying and despite being studied for a long time, little progress has been made in addressing it. Excessive water tension manifests as collapse, honeycomb checking and abnormal shrinkage during first part of drying and causes much wastage, limiting the utilization of some species. Scion has a small program re-examining this issue from the perspective of looking its driving force (water tension due to capillary forces) rather than traditional perspective of concentrating on wood properties and behavior. This presentation presents a brief summary of observed water tension phenomena and reports on efforts and progress in:

- Quantifying and defining water tension effects
- Attempts at reducing water tension effects, including acoustic methods, very low temperature drying and oscillatory drying
- Attempts at correlation of water tension effects with measurable wood properties with a view to material segregation
- Measuring water tension using surface strain measurements
    - Differences between hardwood and softwood
- Direct measurement of water tension
    - Modifying an in-kiln stress measuring tool to measure water tension stress directly
    - Proposed uses of water tension stress tool.

The results show progress made in this difficult area that should inform researchers interested improving the art of wood drying.

TBA

INVITED SPEAKER: SP2_INV01

GREEN CHEMISTRY EDUCATION: AN UPSTREAM APPROACH TO ADDRESSING SUSTAINABLE DEVELOPMENT GOALS

Amy S. Cannon*

Beyond Benign, Wilmington, MA, USA
*e-mail: Amy_Cannon@beyondbenign.org

Abstract:
The field of chemistry, providing the molecular building blocks of materials and products used throughout society, has a critical and foundational role in addressing the Sustainable Development Goals outlined by the United Nations. Green chemistry provides chemists with principles and a framework to design chemical products and processes that reduce or eliminate hazards and impacts. Chemists, with green chemistry skills, have made significant positive impacts on society through the design of sustainable chemistry technologies. For example, the use of biobased solvents can result in a 97% reduction in greenhouse gas emissions in an industrial setting, while break-through green chemistry technologies can reduce the inherent Global Warming Potential of a chemical products, enabling chemists to take the urgent action needed to address climate change (U.N. SDG #13). Unfortunately, our current global education systems do not properly prepare most scientists to select and design sustainable chemicals, processes, materials and products. Green chemistry education addresses sustainability at the earliest stages of the value chain, maximizing impacts. Undergraduate and graduate level training is an essential stage in the training of scientists and professionals that are prepared with the skills to address hazards and mitigate impacts at the design stage of a product lifecycle.
This presentation will provide an overview of the tremendous opportunities that green chemistry provides for college and university faculty to better prepare students with 21st century skills to address sustainability through chemistry. Beyond Benign, a U.S.-based non-profit organization dedicated to green chemistry education, programs will be highlighted, including the Green Chemistry Commitment, a consortium program for university chemistry departments to adopt green chemistry in their teaching practices. Academic models for adopting green chemistry in education and research will be included. The new Green Chemistry Teaching and Learning Community (GCTLC) will also be discussed, an open-source, on-line platform set to launch in 2023 for the global green chemistry community to share resources, collaborate and network to improve their teaching and practice of green chemistry.

D r. Amy Cannon holds the world's first Ph.D. in Green Chemistry from the University of Massachusetts Boston where her research involved the environmentally benign synthesis of photoactive materials. She is the co-founder and executive director of Beyond Benign, a U.S. based non-profit organization dedicated to green chemistry education. She received her M.S. in chemistry from the University of Massachusetts Boston and her undergraduate degree in Chemistry from Saint Anselm College in Manchester, NH. Amy worked as an Assistant Professor of Green Chemistry and Director of Outreach and Community Education at the Center for Green Chemistry at the University of Massachusetts Lowell until September of 2007 when she left to co-found Beyond Benign. Amy has industrial experience working as an analytical chemist for the Gillette Company and as a scientist for Rohm and Haas Electronic Materials.

INVITED SPEAKER: SP3_INV01

INSIGHTS INTO THE CATALYTIC MECHANISM OF PHA SYNTHASE, A BIODEGRADABLE PLASTIC-SYNTHESIZING ENZYME

Min Fey Chek,* Sun-Yong Kim, Tomoyuki Mori, Toshio Hakoshima

Laboratory of Structural Biology and Protein Engineering, Nara Institute of Science and Technology, Nara, Japan
*e-mail: chek.min_fey.ce9@bs.naist.jp

Abstract:
As the pollution from single-use plastics worsened in recent days, polyhydroxyalkanoate (PHA) may serve as a promising alternative material to replace the conventional petrochemical plastics. PHA can be produced from renewable plant oils, being biodegradable, and possessed similar properties to the commodity plastics. PHA synthase (PhaC) is the key enzyme in the biosynthesis of PHA, by catalyzing the polymerization of the acyl moieties from the acyl-coenzyme A such as 3-hydroxybutyryl-CoA (3HB-CoA), into high molecular weight polymers with the concomitant release of CoA. The exact catalytic mechanism of PhaC remained elusive, which has hindered the progress of the production of practical polymers such as copolymer of 3-hydroxybutyrate and 3-hydroxyhexanoate [P(3HB-*co*-3HHx)]. Here, we report the crystal structures of PhaC in various conformations, including the open and closed conformations. By comparing the structures of PhaC from various bacteria, a highly dynamic region, called the LID region, which regulating the opening of the substrate entry pathway were identified. During catalysis, the LID region should be restructured to allow substrate entering into the catalytic site. Through structure-based protein engineering, potential beneficial mutation hot spots were identified and the catalytic activity of PhaC was improved. Our results established a fundamental understanding on PhaC catalytic machinery and demonstrated that the structure-based protein engineering of PhaC is an effective strategy in broadening its substrate specificity for the synthesis of practical biodegradable plastics, such as P(3HB-co-3HHx).

Dr. Min Fey Chek was born in Malacca, Malaysia in 1986. He received BSc. degree (Microbiology) and MSc. degree (Molecular Biology) from the School of Biological Sciences, Universiti Sains Malaysia, Penang, Malaysia in the year of 2006 and 2014, respectively. He completed his PhD (Structural Biology) at Graduate School of Biological Sciences, Nara Institute of Science and Technology (NAIST), Nara, Japan in 2017 under the MEXT scholarship offered by the Japanese government. After graduated, he continues to work on the structural studies of various enzymes in the Laboratory of Structural Biology and Protein Engineering, NAIST (lead by Prof. Toshio Hakoshima) as postdoctoral researcher (2017 – 2021) and assistant professor (2021 – present). His current research interests focus on the structural studies and enzyme engineering of a biodegradable plastic synthase – PHA synthase.

INVITED SPEAKER: SP3_INV02

CAN A BLOOD TEST PREDICT THE RISK FOR RICKETTSIA INFECTION? TICK ANTIGENIC PROTEINS AS POTENTIAL MARKERS FOR VECTOR EXPOSURE AND ADDRESSING A GLOBAL NEGLECTED HEALTH PROBLEM

Rogerio R. Sotelo-Mundo[1,*], Ana C. Gomez-Yanes[1], Julia E. Munguia-Nolan[2], Elena N. Moreno-Cordova[1], Karina D. Garcia-Orozco[1], Julio A. Garcia-Puga[2], Maria A. Islas-Osuna[1] ,Ramon E, Robles-Zepeda[2], Jesus G. Valenzuela[3]

[1] Centro de Investigación en Alimentación y Desarrollo, A.C. (CIAD), Carretera Gustavo Enrique Astiazarán Rosas núm. 46, Hermosillo, Sonora, 83304, Mexico
[2] Universidad de Sonora, Blvd Rosales y Bvd. Luis Encinas s/n. Hermosillo, Sonora, 83000. Mexico
[3] Vector Molecular Biology Section, Laboratory of Malaria and Vector Research, 5601 Fishers Ln, National Institute of Allergy and Infectious Diseases, National Institutes of Health, Rockville, MD, 20852 United States of America
*e-mail: rrs@ciad.mx

Abstract:
The WHO recognizes ticks among relevant vectors that carry viruses and bacteria, responsible agents for diseases such as Crimean-Congo haemorrhagic fever, relapsing fever (borreliosis), tick-borne encephalitis, tularaemia, Lyme disease and rickettsial diseases including spotted fever and Q fever. Molecular PCR-based diagnostic to detect pathogens is favored over immunological methods in many cases because it is fast and precise. Interestingly, there are fewer efforts to assess the exposure level to the vector in the population. The presence of the vector is measured using entomological tools including traps or flagging strategies, however, these tools do not provide the exposure of humans to these vectors. We propose to measure the exposure of humans to vectors, by estimating the humoral immune response of the host to vector salivary proteins. It is well established that humans produce antibodies to specific and antigenic arthropod vector salivary proteins. We propose to use a known antigenic protein in invertebrates, the arginine kinase (AK) from the dog tick (*Rhipicephalus sanguineous*). AK from shrimp (*Litopenaeus vannamei*) is a well-known allergen and develops strong response in sensitive persons. We will share our experiences in establishing a project in a vulnerable region. We plan to survey socioeconomical parameters at the study site to test if there is a correlation between living conditions and antibody levels in humans to tick recombinant protein using an ELISA test. We expect that this may generate a model where a systematic surveillance, including blood tests, would provide tools to support interventions and investment in improving living conditions in these areas.

Professor Sotelo-Mundo was born in Tijuana, Mexico in 1965. He received the bachelor's degree in chemical engineering at the Technological Institute of Chihuahua in 1983, and a M.Sc. in food and nutrition in 1993 from CIAD. He received a Ph.D. in Biochemistry from the University of Arizona (Tucson, USA) in 1999 under the direction of Prof. William R. Montfort. From 1999 to present, he works at CIAD as a principal investigator and professor at the graduate programs (M.Sc. and Ph.D.) His research interests are in protein structure and function from invertebrates, using biophysical techniques such as X-ray crystallography, spectroscopy combined with site-directed mutans. Current projects are focused to applications to health and diagnostics.

INVITED SPEAKER: SP3_INV03

METAL-ORGANIC FRAMEWORK CATALYSTS FOR THE CATALYTIC CONVERSION OF D-XYLOSE TO LACTIC ACID AND ON-STREAM OXIDATION OF METHANE TO METHANOL

Bunyarat Rungtaweevoranit*

National Nanotechnology Center (NANOTEC), National Science and Technology Development Agency (NSTDA), Pathum Thani 12120, Thailand
*e-mail: bunyarat.run@nanotec.or.th

Abstract:
Metal-organic frameworks (MOFs) are a class of porous crystalline materials made by the covalent assembly of organic and inorganic building blocks. Knowledge of the structure of this class of materials at the atomic level provided by X-ray crystallography enables rational design, synthesis and structure elucidation of the catalytic sites confined within the MOF structures. In the first example, the definitive structure of MOFs was utilized to identify important features for the effective conversion of D-xylose to lactic acid. Several MOFs were examined and we found that the combination of Lewis acid along with adjacent hydroxyl sites is the key to achieving high lactic acid yield. Such a hypothesis was verified experimentally by the modification of the MOF to increase the number of the reaction sites which results in an enhanced lactic acid yield and the investigation of the acidity using in situ Fourier transform infrared spectroscopy. The cooperative behavior of the reaction site is further confirmed by density functional theory calculations. In the second example, the understanding of the MOF structure was employed to prepare a single-atom Fe catalyst for on-stream methane oxidation of methane to methanol in the gas phase. Such reaction has long been an outstanding challenge in heterogeneous catalysis due to the high C–H bond dissociation energy of methane and the higher reactivity of the methanol product compared to its substrate. The catalyst exhibits sustained methane oxidation activity showing moderate methanol selectivity. Analysis of the catalyst using an array of spectroscopic characterizations coupled with density functional theory calculation identifies an electron-deficient single-atom Fe as the reaction site.

Dr. Bunyarat Rungtaweevoranit was born in Bangkok, Thailand and obtained his B.Sc. and M.Sc. from Mahidol University, Thailand with Assoc. Prof. Tienthong Thongpanchang. He then received his Ph.D. in chemistry from the University of California, Berkeley with Prof. Omar M. Yaghi. He is currently a researcher at the Nanocatalysis and Molecular Simulation Research Group (NCAS), National Nanotechnology Center, Thailand. His current research interests include development of metal-organic frameworks and related porous materials for gas adsorptions and heterogeneous catalysis, and operando characterizations of porous materials.

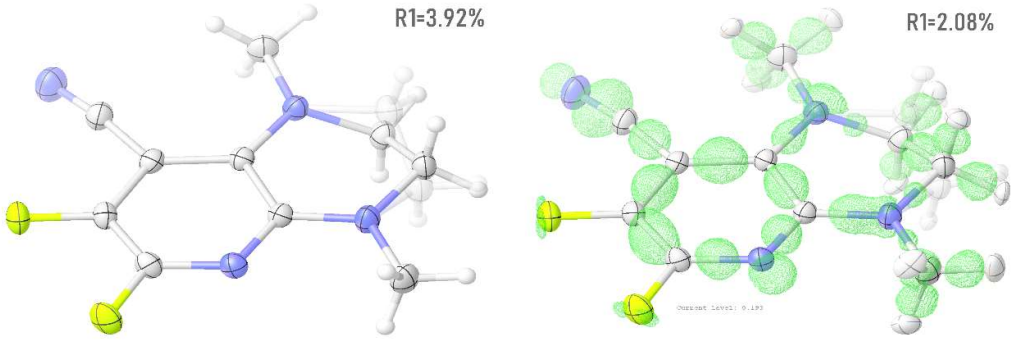
INVITED SPEAKER: SP3_INV04

OLEX2: SMALL-MOLECULE CRYSTALLOGRAPHY FOR EVERYONE

Horst Puschmann[1,2*], Oleg Dolovmanov[2]

[1] Durham University, Chemistry Department, Durham, UK
[2] OlexSys Ltd, Chemistry Department, Durham, UK
*e-mail: horst.puschmann@durham.ac.uk

Abstract:
Many chemists and crystallographers choose Olex2 when working small-molecule crystal structures. It is free, open-source and easy to use at any level: beginners and crystallographic experts appreciate the intuitive interaction with their structures.
We have continuously been developing the on-board refinement engine *olex2.refine*, and have included *NoSpherA2*, a Hirshfeld Atom Refinement method based on non-spherical form factors. Structures of much improved quality will now result. We can even determine the 'true' location of hydrogen atoms from routine X-ray data.



The Independent Atom Model (IAM, 'standard refinement') structure (left) *vs* the NoSpherA2 (HAR, non-spherical) deformation density (right). Here, all H atoms can be refined anisotropically and their positions correspond to the neutron diffraction positions.

In this workshop, we will first learn how to use Olex2 for simple structures and then move on to increasingly more complex situations, including disorder modelling and the 'clean' use of solvent masking. The final section of the workshop will be devoted to non-spherical form factors in routine structure refinements.
The workshop is suitable for all scientists with an interest in the molecular structure of small molecules -- no prior knowledge in crystallography is required.

Professor Horst Puschmann was born in Germany in 1966. He received a BA degree in chemistry at Oxford University, UK and then a PhD at Victoria University of Wellington, New Zealand. Back in the UK – while working on MRI contrast agents -- he converted from a user of X-ray crystallography to an active developer of the user-friendly Olex2 software, bringing crystallography to those who need it most: the chemist. He is involved in many aspects of crystallographic methods development in many international collaborations and, most recently, in quantum crystallography through the QuantumBox project.

INVITED SPEAKER: SP4_INV01

NATIONAL GEOGRAPHIC SOCIETY AND CONSERVATION FOR SUSTAINABILITY

Yannick Kuehl*

National Geographic Society
*e-mail: ykuehl@ngs.org

Abstract:
The National Geographic Society (BGS) uses the power of science, exploration, education, and storytelling to illuminate and protect the wonder of our world. Since 1888, NGS has awarded more than 15,000 grants. The recipients of these grants are called National Geographic Explorers. This presentation aims to outline NGS' mission and commitment to conservation and sustainability. National Geographic Explorers are advancing new knowledge and leading conservation programs with outsized impact to protect nature, wildlife, and historical places. They are documenting the wonder of our world—including its beauty, mystery, and the threats it faces—and inspiring people to care and act on behalf of our planet and its people. NGS drives impact through 5 focus areas – this presentation will focus on outlining the 3 which have the closest direct link to conservation, namely Ocean, Land and Wildlife. Then examples of Explorers who are doing relevant work in Asia will be highlighted. Finally, the current NGS grant opportunities will be introduced.

Dr. Yannick Kuehl, Executive Director, Asia-Pacific, the National Geographic Society.
Yannick is the lead programmatic representative for NGS in the Asia-Pacific region, based in Hong Kong. As such he is advancing strategic priorities in the region. Previous to NGS, Yannick worked as Regional Director, East Asia, of TRAFFIC, an alliance of WWF and IUCN. Before that, he was based in Beijing as a Forest and Climate Change Expert for the International Network for Bamboo and Rattan (INBAR) and the German Development Cooperation (GIZ). Yannick obtained his BSc at Humboldt University - with a short stint at the University of Mauritius, his MSc and PhD in agricultural economics at the University of Hohenheim and the China Agricultural University - where he also worked as an Agricultural Economist. He recently completed the Kellogg-Hong Kong University of Science and Technology Executive MBA program.

INVITED SPEAKER: SP4_INV02

EMERGING DISEASE THREATS TO WILDLIFE CONSERVATION, LIVESTOCK PRODUCTION, ECONOMY AND SUSTAINABILITY: A THAILAND LESSON

Boripat Siriaroonrat[1,*], Wanlaya Tipkatha[2], Prateep Duangkae[3]

[1] Faculty of Environment and Resource Studies, Mahidol University, Nakhon Pathom, Thailand
[2] The Zoological Park Organization of Thailand, Bangkok, Thailand
[3] Department of Forestry, Kasetsart University, Bangkok, Thailand
*e-mail: boripat.sir@mahidol.ac.th

Abstract:
World population trend shows that human population will reach 10 billion in 2050. Increasing population poses risk to planetary health that in return affected humanities physically and mentally. Triple Planetary Crisis is a concept endorsed by UNEP, refering to climate crisis, waste & pollution crisis, and biodiversity crisis. Living Planet Report (2020) by WWF highlighted that nature is declining; human is the cause; we need nature; and we can restore nature. The unusual rate of human-driven extinction of plants and animals has been proposed as 'Anthropocene extinction' or 'the sixth mass extinction'. In addition, impacts of human-caused climate change is added stressor to the global biodiversity. Climate change is a long-term shift in temperatures and weather patterns that will alter the ecosystems service, fitness of wild populations of plant and animals that support life on the planet. The linkage between climate change, biodiversity and health has been studied with results showing clear evidence such as rising temperature and extreme weather impacting lives on earth, altered organismal biology, impacting disease transmission ecology, driving disease emergence and extinction of species. Marine and terrestrial species are affected by flood, drought, wildfires, sea level rise through microhabitat and microclimate changes affecting insects, amphibians, reptiles, birds and mammals through several mechanisms. Thailand has been affected by 3 emerging animal diseases (African Horse Sickness, Lumpy Skin disease, and African Swine Fever), all of which involving wildlife species. Although non-zoonotic, they have damaged economy, food security, and harming captive and natural wildlife species and conservation of genetic resources. Managing these diseases across multi-sectors requires multidisciplinary cooperation, effective coordination, communication and joint leadership from livestock-wildlife and public health sectors and communities. It requires 'Systems Thinking' and 'One Health Governance' to implement disease control, prevention/management to mitigate threats to human and ecosystems. Conservation & restoration of natural ecosystems (montane, terrestrial, wetlands, river/lakes, coastal and marine) are critical for human health and well-being, and ultimately for wildlife conservation.

Dr. Boripat Siriaroonrat is a researcher at the Faculty of Environment and Resource Studies, Mahidol University. Boripat received his DVM from Chulalongkorn University in 1994 and MS in Zoology in 1998 and PhD in Environmental Science and Policy from George Mason University in 2006. He was a research fellow at the Smithsonian's National Zoological Park and Smithsonian Conservation Biology Institute, USA. He has been active advocate for One Health linking wildlife health activities and conducted training courses for veterinarians, medical doctors and wildlife biologists on One Health with wildlife emphasis. He is currently a Co-chair of IUCN/SSC Animal Conservation and Biobanking Specialist Group.

INVITED SPEAKER: SP6_INV01

CANNABIS AND KRATOM LAWS

Rossukhon Thanatheerabunjong*

Building 1 , 4th Floor, Office of the minister, Ministry of Public Health, Tiwanon Road, Nonthaburi, 11000, Thailand
*e-mail: rossmt9@gmail.com

Abstract:
Currently, Thailand's drug laws are enforced to apply "the Narcotics Code, B.E. 2521". Concerning types of narcotics and psychotropic substances in Section 29, narcotics are classified into 5 categories. Subsequently, a notification from the Ministry of Public Health was issued regarding the specific names of the narcotics of Category V, B.E. 2522, Article (3). The penalty in Category V, B.E. 2522, Article (3) is as follows: THC concentrations of less than 0.2% by weight are permitted only for extraction from domestically grown cannabis or hemp plants; and (b) extracts from seeds of domestically grown cannabis or hemp plants are not classified as Category V narcotics under the Narcotics Code. As for the current legal status of the marijuana plant, it is a controlled herb according to the Notification of the Ministry of Public Health; Controlled Herbs (Cannabis) B.E. 2522 Article (4). The importation of cannabis or hemp medicinal products, those that contain cannabis or hemp plant components, or extracts from hemp plants or hemp as an ingredient is prohibited. Kratom under the Narcotic Drugs Act (No. 8) B.E. 2564 has been removed from the Narcotics Category V. Thus, at present, people can occupy, consume, and utilize Kratom plants under the Narcotics Act, B.E.2565.

Ms. Rossukhon Thanatheerabunjong was born in Nan, Thailand in 1972. She earned her bachelor's degree in Science (Medical Technology) from the Faculty of Medical Technology, Rangsit University, Thailand and her Master of Science in Forensic Science from Silpakorn University, Thailand in 1999 and 2013, respectively. She continues her studies in Forensic Science and Criminal Justice at Silapakorn University as a Ph.D. candidate. From August 2002 to February 2020, she worked at the Princess Mother National Institute on Drug Abuse Treatment, Clinical Pathology and Medical Technology Section, Department of Medical Services, Ministry of Public Health. From March 2020 to December 2020, she worked at the Medical Cannabis Institute, Office of the Permanent Secretary, Ministry of Public Health. As of now, she is the Secretary of the Secretary to the Minister of Public Health, Office of the Minister, Ministry of Public Health. Her expertise deals with narcotic abuses and narcotic laws.

INVITED SPEAKER: SP6_INV02

DEVELOPMENT OF MICROWAVE TECHNOLOGY FOR DRYING OF AGRICULTURAL PRODUCTS

Mudtorlep Nisoa[1,2*], Suttirak Kaewawong[1], Karaket Wattansit[1] and Dhamanoon Srinoum[1]

[1] Functional Materials and Nanotechnology Center of Excellence, Walailak University, Nakhon Si Thammarat, 222 Taiburi, Tasala, Nakhon-si-thammarat, Thailand, 80161
[2] Division of Physics, School of Science, Walailak University, Nakhon Si Thammarat, Thailand, 80161
*e-mail: mnisoa@yahoo.com

Abstract:
The conventional method for drying agricultural products, such as fish, chili, coffee, fruits and herbs, in Southeast Asia counties is by hot air circulation. Normally, it will take long time and high energy consumption for finishing products. An alternative drying method by using microwave energy has been developed at Walailak university since 2004. Because of strong interaction between dielectric dipoles of water molecules and microwave field, the drying time of the agricultural products can be reduced drastically. We have developed a novel microwave heating system for the efficient drying of the products. The system utilizes a phase control high-voltage power supply so that the magnetron can generate a microwave field continuously, and its output power can be adjusted for each magnetron, making it very different to household microwave oven. The waveguide is designed for effective transmission of microwave fields into the multi-mode heating cavity. Door chokes have been carefully investigated by simulation and experiment for safety of microwave leakage. The experimental results reveal that heat produced by the microwave system causes evaporation of moisture from the products at low temperature, making it possible to produce high quality dried foods and herbs. The prototypes of various microwave drying systems for different agricultural products, such fishes, chili, fish's skin, have been developed and used by local industries and communities. These prototypes have high-potential for foods and herbs business in the future.

Assoc. Prof. Dr. Mudtorlep Nisoa received a bachelor's degree in Physics from Prince of Songkla University, Hat Yai Campus, Ms.C., and Ph.D. in Plasma Physics from Nagoya University, Japan. He has been working on the physics and engineering of microwave heating since 2003. During the last 15 years, he has developed various microwave heating technologies for drying and extracting herbs, fruit, oil palm, and vegetables. He has published more than 20 papers in journals and presented more than 50 papers at conferences on microwave heating and applications.

INVITED SPEAKER: SP6_INV03

SAFETY & EFFICACY OF KRATOM FOR METABOLIC DISORDER

Thanchanok Limcharoen[1,2], AktsarRoskiana Ahmad[6], Phisit Pouyfung[2,3], Ngamrayu Ngamdokmai[1,2], Aruna Prasopthum[4,5], Wisdawati Wisdawati[6], Woraanong Prugsakij[7] and Sakan Warinhomhoun[1,2,*]

[1] School of Medicine, Walailak University, Nakhon Si Thammarat 80160, Thailand
[2] Center of Excellent in Marijuana, Hemp, and Kratom, Walailak University, Nakhon Si Thammarat 80160, Thailand
[3] School of Public Health, Walailak University, Nakhon Si Thammarat 80160, Thailand
[4] School of Pharmacy, Walailak University, Nakhon Si Thammarat 80160, Thailand
[5] Biomass and Oil Palm Center of Excellent, Walailak University, Nakhon Si Thammarat 80160, Thailand
[6] Department of Pharmacognosy and Phytochemistry, Faculty of Pharmacy, Universitas of Muslim Indonesia, Makassar 90241, Indonesia
[7] Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok 10330, Thailand
*e-mail: sakan.wa@wu.ac.th

Abstract:
Kratom (*Mitragyna speciosa* (Korth.) Havil.) has been used to reduce blood sugar and lipid profiles in traditional medicine, and mitragynine is a major constituent in kratom leaves. Previous data on the blood sugar and lipid-altering effects of kratom are limited. In this study, phytochemical analyses of mitragynine, 7- hydroxymitragynine, quercetin, and rutin were performed in kratom extracts. The effects on α-glucosidase and pancreatic lipase activities were investigated in kratom extracts and mitragynine. The LC-MS/MS analysis showed that the mitragynine, quercetin, and rutin contents from kratom extracts were different. The ethanol extract exhibited the highest total phenolic content (TPC), total flavonoid content (TFC), and total alkaloid content (TAC). Additionally, compared to methanol and aqueous extracts, the ethanol extract showed the strongest inhibition activity against α-glucosidase and pancreatic lipase. Compared with the anti-diabetic agent acarbose, mitragynine showed the most potent α-glucosidase inhibition, with less potent activity of pancreatic lipase inhibition. Analysis of α-glucosidase and pancreatic lipase kinetics revealed that mitragynine inhibited noncompetitive and competitive effects, respectively. Combining mitragynine with acarbose resulted in a synergistic interaction with α-glucosidase inhibition. These results have established the potential of mitragynine from kratom as a herbal supplement for the treatment and prevention of diabetes mellitus.

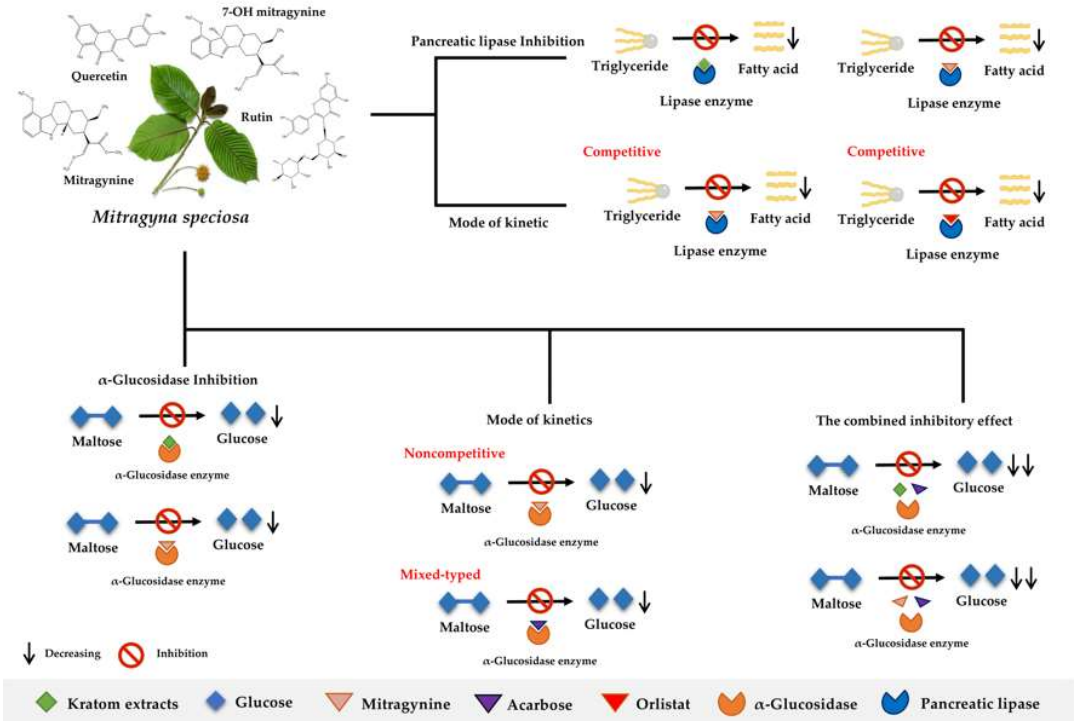


Figure 1. The effect of Kratom extracts on α-glucosidase and pancreatic lipase inhibition.

Sakan Warinhomhoun, Ph.D. was born in Bangkok, Thailand in 1990. He received the bachelor's degree in Applied Thai traditional medicine, Faculty of Abhaibhubejr Thai traditional medicine, Burapha University, Thailand in 2015. He received the M.S. in cosmetic science and Doctor of Philosophy in Pharmacognosy, in 2017 and 2022, respectively from Faculty of Pharmaceutical Sciences, Chulalongkorn University, Thailand. He currently works at School of medicine, Walailak University, Thailand. His research interests in Natural Product Chemistry via isolation and purification, pharmacological activities of herbal remedies and development of drug delivery systems.

INVITED SPEAKER: SP7_INV01

RADIOACTIVITY MONITORING IN THE ENVIRONMENT

Prasong Kessaratikoon[1,*], Ruthairat Boonkrongcheep[2], Nopparit Changkit[3], Udorn Youngchauy[3]

[1] Asst. Prof. Dr., Nuclear and Material Physics Research Unit (NuMPRU), Department of Basic Science and Mathematics, Faculty of Science, Thaksin University, Songkhla Campus, Muang, Songkhla, 90000, Thailand
[2] Research Assistant, Nuclear and Material Physics Research Unit (NuMPRU), Department of Basic Science and Mathematics, Faculty of Science, Thaksin University, Songkhla Campus, Muang, Songkhla, 90000, Thailand
[3] Nuclear Scientist, Thailand Institute of Nuclear Technology (Public Organization) (TINT) 9/9 Moo 7 Saimoon Sub-District, Ongkharak District, Nakhon Nayok, 26120, Thailand
*e-mail: prasong@tsu.ac.th

Abstract:
It is well known that human beings are constantly exposed to ionizing radiation from the environment every day. The radiation comes from two main sources: extraterrestrial and terrestrial sources. They also received additional doses of radiation from some human radiation activities, in particular, the use of radionuclides in industrial and nuclear power plants or used in the military business. The amount of radiation exposure in different regions on the Earth varies according to various parameters. Some areas were found to be areas with relatively high radiation exposure and most areas on the Earth's surface have radiation levels that are lower than recommended values. Nowadays, it can be noticed that scientists and researchers around the world are paying more attention to monitoring and measuring radiation in the environment. As a result of these actions it will be beneficial to help each other measure and collect baseline radiation levels around the world that can be used for reference to areas where excessive radiation is accumulated. Therefore, good management and implementation should be undertaken to design research, collect and prepare environmental samples in order to obtain accurate and suitable radiological baseline data for further use. For this reason, the monitoring and quantification of natural and anthropogenic radionuclides in environmental samples were presented in this presentation. The data and results obtained from careful measurements with internationally standardized instrument and methodology can also be used to assess the radiation dose that is harmful to human health. This presentation will briefly present the research method, including a preview of using the information obtained to analyze and assess the impact on human life. In addition, data on natural and anthropogenic radionuclides and associated hazard index values in food and herb samples in southern Thailand were also shown and presented. Sincerely hope that my presentation of the principles and methods of conducting research on this topic will be more or less beneficial to the participants.

Assistant Professor Dr. Prasong Kessaratikoon was born in Chantaburi, Thailand in 1961. He received the bachelor's degree in Education (Physics) from Faculty of Education, Srinakharinwirot University (Bangsaen), Thailand in 1984. He received the M.Sc. in Physics from Chulalongkorn University in 1987. He also received the M.S. and Doctorate in Physics, in 1999 and 2003, respectively from Old Dominion University, U.S.A. From 1987 to present, he worked at Nuclear and Material Physics Research Unit, Department of Basic Science and Mathematics, Faculty of Science, Thaksin University, Songkhla Campus, Thailand. His research interests in Nuclear physics and applications in environment, Plasma physics and Physics education.

KEYNOTE SPEAKER: SP8_KEY01

SUSTAINABLE CHEMISTRY AND CIRCULARITY IN THE CONTEXT OF THE "FROM FARM TO FORK" STRATEGY

Vania G. Zuin Zeidler*

Institute of Sustainable Chemistry, Leuphana University Lüneburg, Universitätsallee 1, 21335, Lüneburg, Germany
*e-mail: vania.zuin@leuphana.de

Abstract: Currently, the generation of more sustainable processes and materials – including analytical information – requires that green and sustainable analytical chemistry should be adapted to the circular economy. Thus, aiming at discussing what can and should be circulated and what can and should not be from a chemical point of view, some selected cases based on greener and more sustainable methods to obtain bioactive organic compounds from agro-industrial waste will be presented, emphasising the fundamental role of sustainable separation and, specially, the "From Farm to Fork" strategy (Green Deal). Such examples stand out due to having created an academic RD&I network that brings together industrial governmental sectors, as well as other institutions that adhere to collectively shared objectives, aiming at sustainable scientific, technological, social and economic development.

Vania Zuin Zeidler is a professor on Sustainable Chemistry of Renewable Organic Resources at the Institute of Sustainable Chemistry (INSC), Leuphana University Lüneburg (Germany). Her background is Green and Sustainable Analytical Chemistry and Green and Sustainable Chemistry Education, with major interests in developing analytical methods that are incipient to determine renewable high-value substances extracted from agro-industrial residues, focusing on sustainable separation science. She was also the Founding Director of the Field & Food Tech Hub, a multi-sector platform that promotes healthy and ethical living through green and sustainable products and processes at Federal University of São Carlos, São Paulo State, Brazil. Prof. Zuin Zeidler has established a well-structured network between industries, governmental and non-governmental sectors to improve research and application of Green and Sustainable Chemistry knowledge globally. She is author of several publications of high impact in the areas of her expertise (as Science, Cell, Nature Reviews Materials, Nature Reviews Chemistry), and has been invited to give several lectures in the academic and industrial sectors. As a participant of the Alexander von Humboldt Foundation research network started in2005, she was elected president of the Club Humboldt in Brazil in 2015, being its permanent honorary counsellor. Recent distinctions include the 52o and 57o National Literary Jabuti Awards, the title of Honorary Visiting Fellow at the University of York (UK), the IUPAC 2014 CHEMRAWN VII Prize for Atmospheric and Green Chemistry, the title of Fellow of the Royal Society of Chemistry (FRSC) in 2015, the ACS-CEI Award for Incorporating Sustainability into Chemistry Education, sponsored by the ACS in 2017 and Fellow of the Robert Bosch Foundation and Alexander von Humboldt Foundation at Leuphana (2020 and 2021). She is currently a visiting professor at the Green Chemistry Centre of Excellence (University of York, UK), working to improve green and sustainable separation techniques, involving industrial partners and all sectors. Having vast international experience, Prof. Zuin Zeidler works hard to advance diversity and inclusion in Science, also in emerging economies and regions under economic and political constraints.

INVITED SPEAKER: SP8_INV01

PRESENT AND FUTURE OF FOOD BASED ON CPF'S AGRO-INDUSTRIAL BUSINESS

Lalana Thiranusornkij*

CPF Research and development Center Co., Ltd.359 M.4, T. Lamsai, Amphoe Wang-Noi, Phranakhon Sri Ayutthaya, 13170, Thailand
*e-mail: lalana.thi@cpf.co.th

Abstract:
Climate change and a growing population has put increasing pressure on food production landscapes. Charoen Pokphand Foods Public Company Limited (CPF) leverages expertise in its agro-industrial business and food to expand businesses in the countries with growth opportunities to strengthen food security for the benefit of the country and their people. The vertically integrated businesses incorporate the manufacturing of animal feed, animal breeding, animal farming, meat processing, and food processing. This presentation will discuss the present and the future of food based on CPF's agro-industrial business, and the transformational changes for sustainable food systems.

Dr. Lalana Thiranusornkij received Bachelor Degree of Applied Science (Food Science), Victoria University of Technology, Australia, Master Degree in Management, International Business, and Ph.D. Degree in Technopreneurship and Innovation Management, Chulalongkorn University, Thailand. She is former Senior Vice President, KCG Excellence Center, KCG Corporation, the former Open Innovation Leader, Thai Union Foods PCL., and currently, Senior Vice President, Charoen Pokphand Foods Public Company Limited.

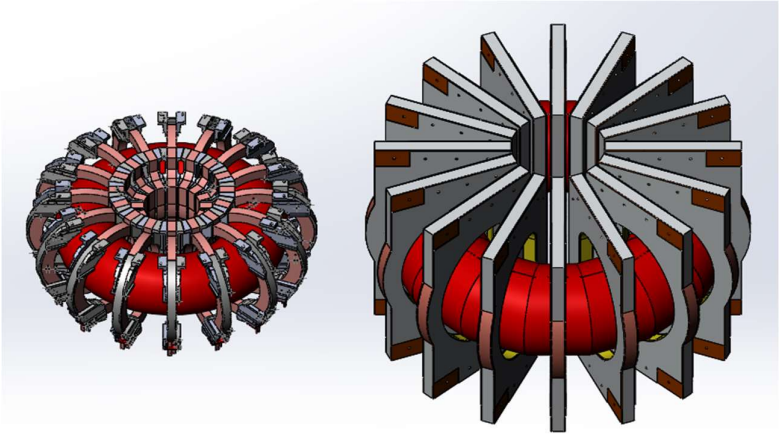
INVITED SPEAKER: SP9_INV01

HIGH FIELD MAGNETS AS KEY TECHNOLOGY FOR ADVANCED SCIENCES

Somsak Dangtip* and CPaF collaboration

Thailand Institute of Nuclear Technology (TINT), Ongkarak, Nakornnayok, Thailand
*e-mail: somsakd@tint.or.th

Abstract:
High field magnet plays important roles in various national projects. The first Thailand tokamak (TT-1) and Siam photon source (*SPS*-I) are two good examples. High magnetic field also enhances plasma sources to higher density such as in the case of a mA helicon-wave plasma source and enable certain models of a propulsion system for space exploration. MRI, NMR, and some magnetic drug delivery systems have high field magnets as their essential components. High field magnet has also been listed as one of the key technologies for frontier research such as in high energy physics and plasma program with very high priority. How high field the Thai research community is expecting? Shall further higher field magnet advances Thai scientific community to higher ground or new level? Would low temperature superconducting magnets be a natural alternative to electromagnets? Will the high temperature magnets be mature enough for our community in seven years? Is our industrial ready for manufacturing this key engineering technology in Thailand? This symposium shall shed some light on some of these very important questions.



High field magnets in Thailand Tokamaks (TT): (Left) As-built drawing of 1.5 T electro-magnets in TT-1 (Right) Conceptual design of 3.0-T superconducting magnets of TT-2

Associate Professor Dr. Somsak Dangtip received the bachelor's degree in Physics from Department of Physics, Faculty of Science, Chiang Mai University in 1992. He continued and awarded his Ph.D, in Applied Neutron Physics in 2000 from Uppsala University, Sweden. From 2000, he worked at Fast Neutron Research Facility, Department of Physics, Faculty of Science, Chiang Mai University, before joining Mahidol University in 2003. From 2019, he has moved again to work for Thailand Institute of Nuclear Technology as a manager of Center of Advanced Engineering and Nuclear Technology. His research interests in Radiation Interaction with Matters, Plasma Technology and Applications and Fusion Energy.

ORAL PRESENTATION SESSIONS

INFORMATION FOR ORAL PRESENTATION

Oral presentations are required to be made by PowerPoint, which should be controlled by the speaker. Embed font in PowerPoint or the use of PDF file is recommended for those who use special fonts or characters.

The oral presentation will be 12 to 15 min plus 3 to 5 min questions in English. There will be warning signals for the end of your presentation. Please strictly follow the schedule.

All speakers are required to load and check the files before the presentation.

A PC-compatible computer and a LCD projector will be provided.

POSTER PRESENTATION SESSIONS

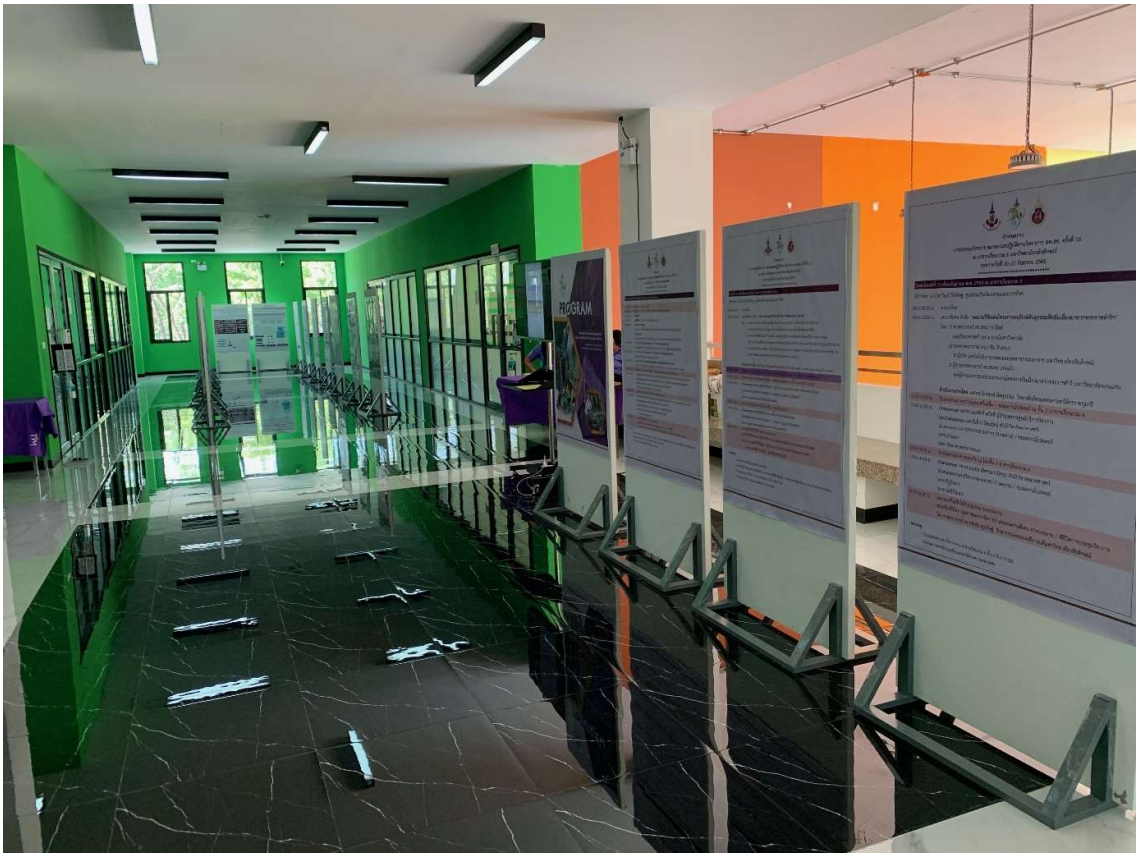
INFORMATION FOR POSTER PRESENTATION

The poster must be in English. The content of the poster should cover title, objectives, methodology, results, discussions and conclusions. The poster board size should not exceed 90 cm width x 120 cm height.

Accessories (like adhesive tape) for setting up the poster will be provided by the organizer.

Time for poster attachment will be specified according to presentation code and will be notified both in the congress website and at the congress site.

Poster presenters are expected to appear in front of their posters during their scheduled sessions.



PRESENTATION AWARDS

PRESENTATION AWARDS

We are pleased to announce that there are awards for best poster and oral presentations in the STT48.

Best Poster Presentation Awards will be given to the most outstanding poster presentation presented by a participant who has submitted an abstract or proceeding under poster presentation category of sessions A to F as a presenter. The winners will be selected from the presentation and Q&A of poster session by the committees of each academic session.

Best Oral Presentation Awards: The winners will be selected by the committees in each session.

Best Poster and Best Oral Presentation Awards will be announced in Awarding Ceremony Session on December 1st, 2022 (morning session).

SESSION A - PHYSICS / APPLIED PHYSICS

ID	Presenter	Title
A_001_P	Chitnarong Sirisathitkul	EFFECTS OF LIGHTING AND DISTANCE ON COLORIMETRIC MEASUREMENT BY SMARTPHONE
A_002_P	Thammarat Taengtang	COMPUTATIONAL SIMULATION OF THE DIFFERENCE IN THE REFRACTIVE INDEX OF THE VACUITY-SILICON OXIDE AND AIR-SILICON OXIDE PERIOD'S PHOTONIC CRYSTAL
A_003_P	Thammarat Taengtang	COMPUTATIONAL SIMULATION OF THE DIFFERENCE IN THE REFRACTIVE INDEX OF THE VACUITY-SILICON OXIDE AND AIR-SILICON OXIDE PERIOD'S PHOTONIC CRYSTAL
A_004_P	Chalad Yuenyao	CONVERSION OF CO_2 AND CH_4 BY DIELECTRIC BARRIER DISCHARGE PLASMA UNDER CATALYSTS
A_005_P	Noparit Jinuntuya	DIJKSTRA'S ALGORITHM AND SNELL'S LAW
A_006_P	Panupat Chaiworn	EFFECTS OF CONVECTION AND SEGREGATION GENERATED BY GRANULAR MATERIALS IN A PSEUDO-2D RECTANGULAR CONTAINER UNDER VERTICAL VIBRATION
A_007_P	Sarayut Deachapunya	EXTERNAL CAVITY DIODE LASER IN A CATEYE CONFIGURATION WITHOUT AN INTERFERENCE FILTER
A_008_P	Thammarong Eadkhong	VEHICLE SPEED ESTIMATION FROM TRACKER VIDEO ANALYSIS
A_009_P	Pipitton Sanseeha	PERSISTENCE EXPONENTS OF A PARTICULAR HEIGHT FLUCTUATION IN MOLECULAR BEAM EPITAXY MODEL
A_010_P	Sirikul Siriteerakul	NUMERICAL ANALYSIS OF COVID-19 SILVA DISPERSION IN AN AIR-CONDITIONED ROOM

SESSION B - BIOLOGICAL SCIENCES

ID	Presenter	Title
B_001_P	Supassara Klinsrisuk	A PROTEOMIC APPROACH FOR IDENTIFYING POTENTIAL DRUG'S MECHANISM OF ACTION IN *Clostridioides difficile*
B_002_P	Tamonwan Chotikorn	A STUDY OF DYS612 MUTATION IN THAI FATHER-SON PAIRS
B_003_P	Thawatchai Thoradit	AN ALTERNATIVE APPROACH FOR SCREENING MICROSATELLITE MARKERS FROM TRANSCRIPTOME OF ACHETA DOMESTICUS LINNAEUS, 1758
B_004_P	Shewin Attasat	APPLICATION OF THERMAL INSULATOR FOR HEAT STORAGE IN CATFISH PONDS
B_005_P	Maliha Sharmin	CHARACTERIZATION OF A NOVEL MIRNA IN DENGUE VIRUS SEROTYPE 2 INFECTED HEK293T CELLS
B_006_P	Suchera Thananimit	CHARACTERIZATION OF DISSOLVABLE MICROARRAY PATCHES BASED CARBOXYMETHYLCELLULOSE, POLYVINYLPYRROLIDONE AND CHITOSAN CROSS-LINKED WITH HYALURONIC ACID

ID	Presenter	Title
B_007_P	Thararat Yimcharoen	COMPARATIVE STUDY OF THE MORPHOLOGICAL AND METAPHASE CHROMOSOME NUMBER OF *Centella asiatica (Linn.)* URBAN FROM UTTARADIT, PHITSANULOK AND SOME PROVINCES IN THE NORTHEAST OF THAILAND
B_008_P	Sutida Chimasungkanun	DEVELOPMENT OF DNAZYME-BASED BIOSENSOR FOR CIRCULATING TUMOR DNA
B_009_P	Lalin Tunprasert	EFFECT OF MAGNETIC FIELD STIMULATION COMPARED WITH SALICYLIC ACID ELICITATION ON BACOSIDE A ACCUMULATION IN *Bacopa monnieri (L.) Wettst.*
B_010_P	Janjira Kanjanapipak	EFFECTS OF CANNABINOID RECEPTOR AGONISTS ON BREAST CANCER AND OSTEOBLAST INTERACTION
B_011_P	Peenalin Loyma	EXPLORING ANTIMICROBIAL ACTIVITIES OF NUCLEOSIDE ANALOGS AGAINST FOODBORNE PATHOGENS
B_012_P	Kultida Pantayak	GENE ISOLATION FROM MANGO RELATED *Colletotrichum gloeosporioides* INFECTION
B_013_P	Thapakorn Trirasspanich	GENERATION OF A CRISPR-Cas9 MUTAGENESIS SYSTEM FOR GENERATING LYTIC PHAGE VARIANTS FROM CLOSTRIDIOIDES DIFFICILE PROPHAGE
B_014_P	Jakkapath Puriteerangkul	IDENTIFICATION OF POTENTIAL DRUG CANDIDATES FOR CHOLANGIOCARCINOMA FROM A META-ANALYSIS OF TRANSCRIPTOMIC PROFILES
B_015_P	Thanayuth Jenpichitkulchai	INHIBITORY EFFECTS OF BREAST CANCER-DERIVED FACTOR(S) ON OSTEOBLAST SURVIVAL AND FUNCTION AND THE DEVELOPMENT OF GELATIN-BASED 3D SCAFFOLD FOR 3D BONE CELL CULTURE SYSTEM
B_016_P	Phatpimol Kitchanakan	OPTIMIZATION OF THE EXTRACELLULARLY EXPRESSED PETase EXPRESSION FROM *Escherichia coli* FOR PET PLASTIC DEGRADATION
B_017_P	Nopparat Anantaprayoon	PREDICTING SPECIES DISTRIBUTION USING MAXENT – CASE OF THE SIMPLE THALLOID LIVERWORT GENUS *Aneura Dumort.* IN THAILAND
B_018_P	Pimchanok Pimton	REDUCTION OF CISPLATIN RESISTANCE OF HUMAN ORAL SQUAMOUS CELL CARCINOMA CELL SPHEROIDS USING COLD ATMOSPHERIC PLASMA
B_019_P	Palarat Atsatit	SULFATED GALACTANS PROMOTE MIGRATION OF KERATINOCYTE
B_020_P	Chatcharee Lohanoot	THE DESIGN OF A PLATELET-DERIVED GROWTH FACTOR DECOY
B_021_P	Sukanya Phusing	THE EFFECT OF ACTINOMYCETE AND SELENIUM NANOPATICLE ON RICE AGAINST SALT STRESS
B_022_P	Mongkol Phaengphech	THE EFFECT OF AIR TEMPERATURE RISES INSIDE OPEN TOP CHAMBERS (OTCs) ON THE PHOTOSYNTHETIC ACTIVITY OF LICHEN *Heterodermia flabellata* AT DOI INTHANON, THAILAND
B_023_P	Pattamaporn Pumpong	TRANSCRIPTOME PROFILES OF *Streptomyces sp.* GKU 223 IN DIFFERENT GROWTH PHASE
B_024_P	Yanaphat Pleungtuk	ANTI-INFLAMMATORY EFFECT OF SECRETOME DERIVED FROM UCMSCS ON THP-1 MONOCYTES
B_025_P	Wannarat Chanket	ANTIBIOTICS RESISTANCE IN *Clostridioides difficile* MEDIATED BY SECONDARY ACTIVE TRANSPORTERS
B_026_P	Kunwadee Noonong	ANTIDIABETIC AND ANTIOXIDANT ACTIVITY OF PARKIA SPECIOSA HASSK EXTACT

ID	Presenter	Title
B_027_P	Puthip Singkeepong	ANTIOXIDATIVE ACTIVITY AND INHIBITION OF INTESTINAL GLUCOSE ABSORPTION BY SESBANIA JAVANICA MIQ EXTRACT
B_028_P	Thanaporn Wichai	AQUEOUS EXTRACTED SPENT COFFEE GROUNDS AS MUSHROOM STIMULATOR AND ANITIMICROBIAL AGENT
B_029_P	Wanlaya Klinthong	ASSESSING CORAL COMMUNITY STRUCTURE ON HIN ANG WANG, SURAT THANI PROVINCE, A DECADE AFTER THE 2010 CORAL BLEACHING EVENT
B_030_P	Chanokporn Muangchinda	ASSESSMENT OF LOW-DENSITY POLYETHYLENE BIODEGRADATION POTENTIAL OF THE PLASTISPHERE CONSORTIA FROM WASTE DISPOSAL SITE
B_031_P	Anima Shrestha	BACTERIOSPERMIA IN MEN AMONG INFERTILE COUPLES IN NEPALESE POPULATION
B_032_P	Watchapon Wuttiyan	CHARACTERIZATION OF BIOACTIVE COMPOUNDS ISOLATED BY A CORN SILK FERMENTATION
B_033_P	Athit Chaiwichien	CYTOTOXIC AND ANTI-MIGRATION EFFECTS OF ARTEMISIA LACTIFLORA EXTRACT AGAINST COLON CANCER CELLS USING IN VITRO STUDY
B_034_P	Nuttapong Khajitmathee	ECOLOGICAL AND POPULATION DENSITY OF WATER MONITORS (*Varanus salvator*) IN NAKHON PATHOM TOWN MUNICIPALITY, NAKHON PATHOM
B_035_P	Warapan Panchai	EFFECT OF MONOCLONAL ANTIBODY AGAINST HUMAN LDL CLONE hLDL-D4 ON FOAM CELL FORMATION AND MMP-9 EXPRESSION
B_036_P	Kristsanapong Didussakorn	ELUCIDATING THE CROSSTALK BETWEEN BLOOD AND LYMPHATIC ENDOTHELIAL CELLS
B_037_P	Pimchanok Pimton	EVALUATION OF THE INFLUENCE OF CELL CULTURE DENSITY ON THE CYTOTOXICITY OF HUMAN KERATINOCYTES INDUCED BY COLD ARGON PLASMA
B_038_P	Jinutda Engsuwan	EXPLORATORY AND DISCRIMINANT ANALYSIS OF UV-VIS SPECTRAL PROFILES OF *Oroxylum indicum* EXTRACTS AND SKIN IRRITATION EVALUATION OF THEIR EMULSION BEAD FORMULATION
B_039_P	Ifwa Wirasit	IDENTIFICATION AND FUNCTIONAL STUDY OF LONG NON-CODING RNA INVOLVED IN WHITE SPOT SYNDROME VIRUS INFECTION IN WHITE SHRIMP, *Litopenaeus vannamei*
B_040_P	Supawadee Osotprasit	IN VITRO ANTI-CANCER OF PIPER LONGUM EXTRACT ON COLON CANCER CELLS
B_041_P	Hataikarn Lekakarn	IN-DEPTH CHARACTERIZATION OF A NOVEL COLD-ACTIVE AMYLASE FROM *Priestia koreensis* FOR MALTOOLIGOSACCHARIDE PRODUCTION
B_042_P	Tepparit Samrit	IN-VITRO DETERMINATION OF ANTI-OBESITY ACTIVITY OF *Parkia speciosa* POD EXTRACT
B_043_P	Janistar Chiawitthayanan	INHIBITION OF ALPHA-GLUCOSIDASE FROM PIG BLOOD WITH ALPHA-GLUCOSYL TRIAZOLES AND RELATED COMPOUNDS
B_044_P	Chantaka Wongdontri	INTEGRATIVE ANALYSIS OF THE MIRNA–MRNA REGULATION NETWORK IN HEMOCYTES OF *Litopenaeus vannamei* FOLLOWING WHITE SPOT SYNDROME VIRUS INFECTION
B_045_P	Fahsai Thaion	ISOLATION AND CHARACTERIZATION OF A LYTIC BACTERIOPHAGE INFECTING *Escherichia coli*

ID	Presenter	Title
B_046_P	Ganyalak Chaimaha	ISOLATION AND CHARACTERIZATION OF A NOVEL BACTERIOPHAGE SPECIFIC MULTI-DRUG RESISTANT *Acinetobacter baumannii*
B_047_P	Nadira Karunaweera	LEISHMANIASIS IN SRI LANKA: THEN AND NOW
B_048_P	Jariya Roddee	MECHANISM OF NON-PREFERENCE RESISTANCE IN CASSAVA VARIETIES AGAINST WHITEFLY *Bemisia tabaci*
B_049_P	Sittiporn Pengsakun	MICRO-FRAGMENTATION AND CORAL COLONY FUSION TECHNIQUES FOR *Favites abdita* IN THE INNER GULF OF THAILAND
B_050_P	Panaya Kotchaplai	PALM OIL MILL EFFLUENT (POME) TREATMENT BY PHENOL-ADAPTED MICROBES: REMOVAL OF CHEMICAL OXYGEN DEMAND (COD) AND PHENOLIC COMPOUNDS
B_051_P	Nichanun Sirasunthorn	PAPAIN INHIBITORY ACTIVITIES APPLIED TO THE ON-FIELD DETERMINATION OF CYANTRANILIPROLE
B_052_P	Waraporn Boontakam	PHASE STABILITY AND STRUCTURES OF β-TRICALCIUM PHOSPHATE BIOMATERIAL SYNTHESIZED BY A SOLID-STATE REACTION TECHNIQUE
B_053_P	Songprat Detrattanawichai	POPULATION DENSITY AND MOUND DISTRIBUTION OF MUD LOBSTERS, *Thalassina spp.* iN KAMPUAN MANGROVE FOREST, RANONG PROVINCE
B_054_P	Ponsit Sathapondecha	POTENTIAL DNA MARKERS ASSOCIATED WITH ACUTE HEPATOPANCREATIC NECROSIS DISEASE TOLERANT WHITE SHRIMP
B_055_P	Kanchana Thinnabut	PREVALENCE AND RISK FACTORS OF TICK INFESTATION IN CATTLE UPPER- NORTHEASTERN THAILAND
B_056_P	Tawanya Kamthong	RAPID ONE-STEP SYNTHESIS OF SILVER NANOPARTICLES FROM TEA AND COFFEE WASTE
B_057_P	Wittaya Tawong	RESPONSE SURFACE OPTIMIZATION OF BIOMASS AND PHYCOERYTHRIN PRODUCTIONS FROM *Nostoc sp.* NUACC02
B_058_P	Pongsanat Pongcharoen	SCREENING AND GEOWTH CHARACTERIZATION OF YEAST *Candida tropicalis* ISOLATED FROM WASTEWATER THAILAND
B_059_P	Kangsadan Boonprab	SELECTION AND CHARACTERIZATION OF HIGH L-LACTIC ACID BACTERIA, *Lactobacillus farciminis* KUJ 25-S FROM FERMENTED FISH FOR BIO-POLYLACTIC ACID PRODUCTION
B_060_P	Atsinafe Oshido	SYNTHESIS AND CHARACTERIZATION OF NANOSILICA FROM SUGARCANE BAGASSE
B_061_P	Theera Thurakit	THE COMPARISON OF BIOMASS AND LUTEIN PRODUCTION BY NEWLY ISOLATE INDIGENOUS MICROALGAE *Desmodesmus spp.* IN THE AUTO-, HETERO- AND MIXOTROPHIC CULTIVATION
B_062_P	Sirin Saranyutanon	THE EFFECT OF NICOTINE ON IMMUNE SUPPRESION
B_063_P	Sariya Asawakarn	THE EFFECT OF TWO FOOD ADDITIVES SODIUM TETRABORATE AND POTASSIUM NITRATE TO HUMAN LUNG CARCINOMA EPITHELIAL CELL VIABILITY
B_064_P	Supanan Chansap	THE EFFICIENCY OF FLOWER FROM SESBANIA JAVANICA EXTRACT AGAINST FAT ACCUMULATION USING IN-VITRO STUDY
B_065_P	Werachon Cheukamud	THE STUDY OF PROTEASES/PEPTIDASES FROM *Opisthorchis viverrini* BY USING TRANSCRIPTOMIC ANALYSIS

SESSION C - CHEMISTRY

ID	Presenter	Title
C_PC_001_P	Panita Kongsune	EFFECT OF RICE HUSH BIOCHAR ON THE REMOVAL OF Pb^{2+} FROM AQUEOUS SOLUTION
C_PC_002_P	Satipat Suttayasorranakhom	MOLECULAR DYNAMICS SIMULATION STUDY OF NEWLY DESIGNED GELDANAMYCIN ANALOGUES FOR TARGETED CANCER-CAUSING Hsp90 INHIBITOR
C_PC_003_P	Jonas Karl Christopher Agutaya	THEORETICAL STUDY OF THE FORMATION OF HYDROXYL GROUPS ON Pt-DOPED ZnO(10-10) FROM THE HETEROLYSIS OF WATER
C_OMC_001_P	Angkana Doungsanit	ALPHA-GLUCOSIDASE INHIBITORY ACTIVITY OF CHEMICAL CONSTITUENTS FROM *Premna herbarcea Roxb.* ROOT EXTRACT
C_OMC_002_P	Trirath Sukthawee	BIOASSAY-GUIDED ISOLATION AND IDENTIFICATION OF BIOACTIVE COMPOUNDS FROM *Leonurus japonicus* HOUTT. EXTRACT
C_OMC_003_P	Thanyaporn Phongphankhum	BROMINATION OF 2-AMINOPYRAZINE: THE EXPERIENTAL AND COMPUTATIONAL STUDIES
C_OMC_004_P	Kavisara Srithadindang	IN VITRO FREE RADICAL SCAVENGING AND ALPHA-GLUCOSIDASE INHIBITORY ACTIVITY OF PHAENG PHUAI NAM
C_OMC_005_P	Natthapat Pitakwong	SYNTHESIS OF 5-ARYLBENZO[a]PHENAZINE DERIVATIVES AND THEIR PHOTOPHYSICAL PROPERTIES
C_OMC_006_P	Nhung Nguyen	SYNTHESIS OF ENAMINE DERIVATIVES OF USNIC ACID AS α-GLUCOSIDASE INHIBITORS
C_OMC_007_P	Duy Nguyen	DESIGN AND SYNTHESIS OF 9-O-BERBERINE BENZOATES AS α-GLUCOSIDASE INHIBITORS
C_OMC_008_P	Ubon Rerk-am	SECONDARY METABOLITES FROM INVERTEBRATE-PATHOGENIC FUNGUS *Gibellula scorpioides* MY05583 AND ANTI-INFLAMMATORY ACTIVITY
C_OMC_009_P	Nattaruja Raksasat	STUDIES TOWARD THE TOTAL SYNTHESIS OF WALTHERIONE C
C_OMC_010_P	Rita Hairani	SYNTHESIS OF CHRYSIN ALKYL ETHER DERIVATIVES FOR SUPPRESSING YEAST α-GLUCOSIDASE ACTIVITY
C_OMC_011_P	Punrada Thadatontichok	SYNTHESIS OF OXIME-FUNCTIONALIZED CARBAZOLE FOR CHLORPYRIFOS DETERMINATION
C_OMC_012_P	Artitaya Chaitem	SYNTHESIS TOWARDS PANDURATIN H, PANDURATIN A AND THEIR DERIVATIVES
C_OMC_013_P	Pakitta Kriangasame	THE DEVELOPMENT OF NOVEL COLORIMETRIC TEST KIT FOR DETECTION OF DNA AND RNA VIRUSES
C_OMC_014_P	Tunyawat Khrootkaew	THE EFFECT OF HEAVY ATOM ON INTERSYSTEM CROSSING IN BORON DIFLUORIDE FORMAZANATE COMPLEX-BASED PHOTOSENSITIZERS
C_OMC_015_P	Sirinuch Timun	ULTRASOUND-ASSISTED EXTRACTION OF PHENOLIC COMPOUNDS FROM BETA VULGARIS
C_OMC_016_P	Dung Le	α-GLUCOSIDASE AND α-AMYLASE INHIBITORS FROM THE STEMS OF *Knema globularia*

ID	Presenter	Title
C_AC_001_P	Phawida Yodthongchai	APPLICATION OF TWO-DIMENSIONAL THIN-LAYER CHROMATOGRAPHY FOR IMPROVED ANALYSIS OF AGARWOOD OIL
C_AC_002_P	Charles Oliver Avenido	DEVELOPMENT OF AN ENZYME-FREE HYDROGEN PEROXIDE SENSOR USING DUAL-SHAPED SILVER NANOPARTICLES
C_AC_003_P	Watchara Kaewsuwan	DEVELOPMENT OF METHOD AND SAMPLE PREPARATION FOR THE DETERMINATION OF ANDROGRAPHOLIDE IN ANDROGRAPHIS PANICULATA EXTRACT
C_AC_004_P	Rujirat Pumbua	DIFFERENTIATION OF ORIGINS OF THAI COFFEES BY CHEMOMETRIC ANALYSIS OF AROMA PROFILES FROM GAS CHROMATOGRAPHY – MASS SPECTROMETRY
C_AC_005_P	Sudarat Arunmongkon	IDENTIFICATION OF VOLATILE COMPOUNDS IN GREEN CURRY USING COMPREHENSIVE HEARTCUT TWO-DIMENTIONAL GAS CHROMATOGRAPHY-MASS SPECTROMETRY
C_AC_006_P	Siriwan Pongprueksapattana	METHOD VALIDATION OF THE DETERMINING PROTEIN IN LATEX GLOVES BY USING UV-Vis SPECTROPHOTOMETER
C_AC_007_P	Songpol Homutai	QUALITY CONTROL OF PROXIMATE ANALYSIS AND HEAT COMBUSTION IN PALM KERNEL SHELLS
C_AC_008_P	Nathawut Choengchan	BACTERIAL CELLULOSE NANOPAPER: PREPARATION, CHARACTERIZATION, AND ITS APPLICATIONS AS SENSING PLATFORMS
C_AC_009_P	Watcharaporn Seehun	COLORIMETRIC DETERMINATION OF ANDROGRAPHOLIDE FACILITATED BY MOLECULARLY IMPRINTED POLYMER
C_AC_010_P	Chookiat Khongsiri	DISPERSIVE LIQUID-LIQUID MICROEXTRACTION FOR DETERMINATION OF ACRYLAMIDE USING GAS CHROMATOGRAPHY MASS SPECTROMETRY
C_AC_011_P	Chanida Jakkrawhad	ELECTROCHEMICAL DETERMINATION OF DEXAMETHASONE IN COSMETICS BY USING COMPOSITE METAL ORGANIC FLAMEWORK-CARBON ELECTRODE
C_AC_012_P	Ananyaporn Anekrattanasap	FAST SYNTHESIZED PRUSSIAN BLUE NANOPARTICLES AS A RAPID COLORIMETRIC SENSING FOR DETERMINATION OF RIBOFLAVIN
C_AC_013_P	Adison Meoipun	GRAPHENE-BASED ELECTRODE APPLICATIONS IN THE JEWELRY INDUSTRY FOR GOLD SENSING
C_AC_014_P	Patcharanan Choto	GREEN EXTRACTION OF ARABICA COFFEE CHERRY HUSK USING A DEEP EUTECTIC SOLVENT (DES)
C_AC_015_P	Kanokwan Charoenkitamorn	STUDY ON THE ELECTROCHEMICAL EFFICIENCY OF POLYVINYL ALCOHOL, GELATIN, AND AGAR-BASED GEL-ELECTROLYTES FOR PORTABLE ELECTROCHEMICAL SENSOR
C_AC_016_P	Passavee Losripat	THE DEVELOPMENT OF FRUIT AND MICROGREENS SMOOTHIES FOR ELDERS BASED ON ANTIOXIDANT CAPACITY AND SENSORY EVALUATION
C_AC_017_P	Sumonmarn Chaneam	UTILIZATION OF ORCHID FLOWER EXTRACT AS SPECIFIC REAGENT FOR DETERMINATION OF COPPER USING A RAPID SEQUENTIAL INJECTION SYSTEM EQUIPPED WITH IN-HOUSE PEDD DETECTOR

SESSION D - MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI

ID	Presenter	Title
D_001_P	Worarat Srisurat	SOME CONTINUED FRACTIONS WITH PARTIAL QUOTIENTS 1 OR 2, AND RECURRENCE
D_002_P	Sirilak Intasaro	THE ENHANCEMENT OF TOURISM STAFF IN KHANOM FOR GOOGLE TRANSLATE APPPLICATION TO PROMOTE LOCAL TOURISM: NAKHON SI THAMMARAT

SESSION E - ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE

ID	Presenter	Title
E_001_P	Chuanchom Aumnate	3D PRINTABLE HYDROGEL ELECTROLYTE FOR ZINC-ION BATTERY
E_002_P	Duangkamol Tiarpattaradilok	DECARBOXYLATION OF FATTY ACID USING METAL/IONIC LIQUID CATALYST
E_003_P	Fuko Shiga	AZIDE-ALKYNE CYCLOADDITION AS A COUPLING METHOD IN THE SYNTHESIS OF QUANTUM DOT SUPERLATTICES
E_004_P	Saowaluk Chaleawlert-umpon	DEVELOPMENT OF A CAPACITIVE DEIONIZATION STACK FOR BRACKISH WATER DESALINATION
E_005_P	Tanabat Promjun	THE OXIDIZING OF H_2O AND H_2O_2 ON TETRAKIS(DIMETHYLAMINO) TITANIUM ADSORBED SILICON (100) SURFACE OF THE INITIAL SURFACE OF TiO_2 THIN FILM GROWN BY ATOMIC LAYER DEPOSITION PROCESS; A DFT STUDY
E_006_P	Thussanee Mananunsap	GREEN SYNTHESIS AND CHARACTERIZATION FROM STEM BARK OF *Oroxylum indicum* MEDIATED AgNPs and AuNPs FOR ANTIOXIDANT AND ANTIMICROBIAL ACTIVITIES
E_007_P	Thussanee Mananunsap	A FACILE ONE-POT HYDROTHERMAL PROCESS OF ACTIVE AND DURABLE GOLD, SILVER AND CERIUM NANOPARTICLES-LOADED MESOPOROUS SILICA SBA-15 FOR THEIR CATALYTIC PERFORMANCES
E_008_P	Thussanee Mananunsap	IN-SITU DEVELOPMENT OF BORON DOPED g-C3N4 SUPPORTED SBA-15 NANOCOMPOSITES FOR PHOTODEGRADATION OF TETRACYCLINE
E_009_P	Vasujin Wungpornpaiboon	OPTIMUM METHOD AND CHARACTERIZATION OF MODIFIED LEONARDITE WITH K_2CO_3-CARBON COMPOSITE FOR POST-COMBUSTION CO_2 CAPTURE
E_010_P	Wannisa Keawbankrud	EFFECTIVENESS ON THE STRATUM CORNEUM LAYER AFTER USING NANOEMULSIONS FROM HONEYSUCKLE FLOWERS ESSENTIAL OILS

ID	Presenter	Title
E_011_P	Wesarach Samoechip	CHEMICAL PRE-TREATMENT ON CARBONIZATION OF CORN COB AGRICULTURAL WASTE FOR SUPERCACACITOR ELECTRODE
E_012_P	Yuma Tano	ELECTROCHEMICAL CO_2 REDUCTION TO FORMIC ACID OVER TIN DECORATED GRAPHENE OXIDE
E_013_P	Yuri Ogasawara	APPLICATIONS OF GLYCEROL IN THE BIODIESEL MARKET
E_014_P	Amporn Wiengmoon	EFFECT OF HEAT TREATMENT ON MICROSTRUCTURE AND PROPERTIES OF PEARLITIC RAIL STEEL
E_015_P	Aphiwat Pongwisuthiruchte	SYNTHESIZED OF SILICONE URETHANE ACRYLATE POLYMERS AS 3D PRINTING MATERIALS
E_016_P	Archanai Yoksombat	TIME-TEMPERATURE INDICATOR FROM POLYDIACETYLENE AND LONG-CHAIN HYDROCARBONS
E_017_P	Kanyarat Kwansirikul	EXPERIMENTAL HEAT TREATING OF YELLOW JADEITE JADE FROM MYANMAR
E_018_P	Eknarin Thanayupong	SUPERHYDROPHOBIC COATING ON STAINLESS STEEL MESH FOR ANTI-BIOFOULING
E_019_P	Hiroki Doyama	PREPARATION AND GAS SENSING PROPERTY OF MULTI-METAL OXIDE NANOCRYSTALS
E_020_P	Jintapatee Inyai	FABRICATION AND CHARACTERIZATION OF 3D PRINTABLE LIGNIN-BASED HYDROGEL
E_021_P	Komkrich Chokprasombat	METAL-REDOX SYNTHESIS OF MnBi-BASED NANOPARTICLES
E_022_P	Korlid Thinkohkaew	RADIATION-INDUCED GRAFTING OF TITANIUM DIOXIDE NANOPARTICLES ONTO POLYPROPYLENE NONWOVEN FABRIC AS UV PROTECTION, AND ANTIBACTERIAL FABRIC
E_023_P	Kosuke Sonda	CARBON MONOXIDE DETECTION USING A PROTON-CONDUCTING GRAPHENE OXIDE MEMBRANE BASED SENSOR
E_024_P	Napat Tomano	THERMOPLASTIC VULCANIZATES BASED ON POLY(3-HYDROXYBUTYRATE-CO-3-HYDROXYVALERATE)/EPOXIDE NATURAL RUBBER (ENR-25, AND ENR-50) BLENDS
E_025_P	Nattapon Tanalue	CHARACTERIZATION OF POLYACRYLONITRILE/POLYURETHANE INCORPORATED MOF/MXENE MEMBRANES
E_026_P	Nichaphat Passornraprasit	POLY (ACRYLIC ACID)-BASED NANOCOMPOSITE HYDROGEL AS A UREA SENSING PATCH
E_027_P	Nutthapong Poompiew	POLYURETAHNE ACRYLATE/CARBON NANOTUBE COMPOSITES FOR STRAIN SENSOR APPLICATION VIA 3D PRINTING
E_028_P	Phatchada Nochit	STABLE CARBON ISOTOPE TECHNIQUE FOR ESTIMATING SOIL ORGANIC CARBON IN RICE-CORN ROTATION AND CORN MONOCROPPING
E_029_P	Saki Ueta	FABRICATION OF TWO-DIMENSIONNAL NANOSHEETS BY SELF-ASSEMBLY OF ALKYNES AND PHOSPHONIC ACIDS
E_030_P	Sumire Nakagawa	MILD TEMPERATURE OPERATION OF SnO_2-BASED VOC SENSORS UNDER LIGHT IRRADIATION
E_031_P	Warrayut Kanabenja	3D PRINTING OF PLASTICIZED POLYHYDROXYBUTYRATE/POLYLACTIC ACID/HYDROXYAPATITE
E_032_P	Yamasaki Yurino	IN-SITU DRIFTS ANALYSIS OF ACETONE DETECTION MECHANISM OF Pt-DOPED SnO_2
E_033_P	Yuki Shimada	IMPROVING THE CO SENSING PERFORMANCE OF SnO_2 AT MILD TEMPERATURES BY MODIFICATION WITH PALLADIUM

ID	Presenter	Title
E_034_P	Apichet Boonsoong	PETROGRAPHY OF XENOLITHS IN BASALT FROM THE CHANTHABURI-TRAT GEM FIELDS, THAILAND
E_035_P	Ladda Tangwattananukul	AN ANCIENT PETRIFIED WOOD TRUNG IN BAN NONRUNG, KHON KHEAN PROVINCE, NORTHERN THAILAND
E_036_P	Patcharin Kosuwan Jundee	GEOMORPHOLOGY AND LITHOLOGY OF THE PHU PHRA ANGKHAN CENOZOIC VOLCANO, BURIRAM PROVINCE, THAILAND
E_037_P	Pattharaporn Saelim	FACTORS AFFECTING BUDBURST DATE OF ALASKA BIRCH (BETULA NEOALASKANA) IN ALASKA
E_038_P	Piyaphong Chenrai	GEOLOGICAL CARBON STORAGE IN THE KHORAT PLATEAU, THAILAND
E_039_P	Vimoltip Singtuen	MINERALOGY AND GEOCHEMISTRY OF CENOZOIC BASALTS ALONG NATIONAL HIGHWAY NO. 225, WICHIAN BURI DISTRICT, PHETCHABUN PROVINCE
E_040_P	Wutthikrai Kulsawat	ASSESSMENT OF EARLY-STAGE OF SOIL EROSION: EVIDENCE FROM STABLE CARBON ISOTOPE AND PARTICLE SIZE DISTRIBUTION
E_041_P	Yupa Thasod	VERTEBRATE FOSSIL DIVERSITY FROM PHU WAT FOSSIL SITE, NONG BUA LAMPHU PROVINCE, NORTHEASTERN THAILAND
E_042_P	Taisei Nagamine	DEAMINATION OF BIO-OIL USING HYDROTHERMAL LIQUEFACTION INTENSIFIED WITH SUPERCRITICAL CARBON DIOXIDE

SESSION F - FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION/FOOD SAFETY AND PACKAGING

Chairperson: Assoc. Prof. Dr. Narumol Matan
Committee: Asst. Prof. Dr. Sumethee Songsamoe (Head)
Asst. Prof. Dr. Apsorn Sattayakhom
Asst. Prof. Dr. Watcharapong Mitsuwan
Assoc. Prof. Dr. Gorawit Yusakul

ID	Presenter	Title
F_001_P [15.00-15.10]	Banthot Chomsawan	DEVELOPMENT OF NAPIER GRASS SILAGE FORMULA FOR CATTLE FEED
F_002_P [15.10-15.20]	Kitipong Assatarakul	EFFECT OF MILK ADDITION ON ANTIOXIDANTS AND QUALITY OF DURIAN DRINK DURING COLD STORAGE
F_003_P [15.20-15.30]	Waraporn Sorndech	ENZYMES-ASSISTED EXTRACTION OF BIOACTIVE COMPOUNDS FROM NONI LEAVES (*Morinda citrifolia*)
F_004_P [15.30-15.40]	Akiraya Phaikhleaw	PROPERTIES OF SOY PROTEIN ISOLATE FILM INCORPORATED WITH EPIGALLOCATECHIN GALLATE AND GREEN TEA EXTRACT
F_005_P [15.40-15.50]	Suree Nanasombat	CONTROL OF POSTHARVEST FUNGAL DECAY IN PAPAYA FRUITS BY CHITOSAN-CARBOXYMETHYL CELLULOSE COATING INCORPORATED WITH ESSENTIAL OILS AND POTASSIUM SORBATE

ID	Presenter	Title
F_006_P [15.50-16.00]	Pun Sangchai	IDENTIFICATION OF *Litopenaeus Vannamei Mirnas* REGULATING THE WHITE SPOT SYNDROME VIRUS GENES
F_007_P [16.00-16.10]	Pithan Theeropas	UTILIZATION OF FOOD WASTE AND BIOMASS TO PRODUCE COMPOST
F_008_P [16.10-16.20]	Arreeya Rinkaew	EFFECT OF SUCROSE CONCENTRATION ON CHARACTERISTICS OF FERMENTED VINEGAR FROM CORN SILK
F_009_P [16.20-16.30]	Sujitra Thongkham	SOLID-STATE FERMENTATION OF HEALTHY VINEGAR FROM BLACK GLUTINOUS RICE AND CORN SILK

SP3 - X-RAY CRYSTALLOGRAPHY

ID	Presenter	Title
SP3_001_P	Yupa wattanakanjana	CRYSTAL STRUCTURE OF SILVER(I) BROMIDE COMPLEX CONTAINING 1,3-DIISOPROPYL-2-THIOUREA AND TRIPHENYLPHOSPHINE LIGANDS
SP3_002_P	Preawmai Khongdechsakda	CRYSTAL STRUCTURES STUDY OF A NEW DINUCLEAR DOUBLY-BRIDGED COPPER(II) COMPLEX CONTAINING 1,10-PHENANTHROLINE AND *M*-NITROBENZOATE LIGANDS
SP3_003_P	Wanasanan Chaisuriya	CRYSTAL STRUCTURES AND HIRSHFELD SURFACE ANALYSIS OF TWO NEW COPPER(II) COMPLEXES WITH 2,2′-DIPYRIDYLAMINE AND HYDROXYBENZOATE DERIVATIVES
SP3_004_P	Pasunee Laohawutthichai	CRYSTALLIZATION OF GLYCOGEN DEBRANCING ENZYME FROM CORYNEBACTERIUM GLUTAMICUM (CgGDE)
SP3_005_P	Pacharapon Jearanaiwiwat	DESIGN AND SYNTHESIS OF METAL-ORGANIC FRAMEWORKS BASED ON ALKALI METALS WITH CHLORANILATE LIGANDS FOR CARBON DIOXIDE CAPTURE
SP3_006_P	Nanphat Thamnimitchok	SYNTHESIS, CHARACTERIZATION AND CRYSTAL STRUCTURE OF A NEW MONONUCLEAR COPPER(II) COMPLEX CONTAINING BENZIMIDAZOLE LIGAND
SP3_007_P	Chanikarn Kummuang	SYNTHESIS, CHARACTERIZATION AND X-RAY STRUCTURAL STUDIES OF NEW TRANSITION METAL COORDINATION POLYMERS CONTAINING 1,4-BIS(IMIDAZOLE-1-METHYL)BENZENE LINKER

SP5 - YOUNG RISING STARS OF SCIENCE 2022 (YRSS) & JUNIOR YOUNG RISING STARS OF SCIENCE AWARD 2022 (JYRSS)

ID	Presenter	Title
Bio-01	Sudarat Pimkhonburee Nattawadee Charoen	MECHANISM OF NON-PREFERENCE IN CASSAVA VARIETIES AGAINST WHITEFLY *Bemisia tobaci* GENNADIUS
Bio-02	Jutikan Uttamoth	STUDIES OF TIME PERIODS OF POLLEN TUBE GROWTH IN STYLE EFFECTED ON FRUIT SET IN DURIAN (*Durio zibethinus Murr.*) CV. 'MONTHONG'
Bio-03	Satreerat Pramkasem	SPECIES DIVERSITY, MORPHOLOGY AND HABITAT UTILIZATION OF TADPOLES AT KHLONG SAENG WILDLIFE SANCTUARY AND KHAO SOK NATIONAL PARK, SURAT THANI PROVINCE
Bio-04	Godchakorn Srisuk	IMMUNOPROTEOMICS OF THAI WHITE-LIPPED PIT VIPER VENOM
Bio-05	Chaiwat Taweethai	VARIATION OF EFFECTOR PROTEIN SEQUENCES IN THE OOMYCETE PLANT PATHOGEN PHYTOPHTHORA
Bio-06	Nuttaporn Emthomya	PURIFICATION OF ANTICANCER COMPOUNDS FROM MARINE-DERIVED ACTINOMYCETES
Bio-07	Pongpat Chaisawasd	COMPUTATIONAL ANALYSIS OF THE NOVEL THAILAND-SPECIFIC MUTATIONS IN SARS-CoV-2 SPIKE GLYCOPROTEIN SEQUENCES COLLECTED UNTIL EARLY JANUARY 2022
Bio-08	Affan Waemong	INVESTIGATION OF THE ROLE OF 5-HT3 RECEPTORS IN STRUCTURAL AND FUNCTIONAL CHANGES IN COLON OF WATER AVOIDANCE STRESS-INDUCED MOUSE MODEL
Bio-09	Wasunan Charoenwattanaphokaew Phakkapon Thapjan	OPTIMIZATION OF WICKERHAMOMYES ANOMALUS MUTANT STRAIN PRODUCTION FOR ARABICA COFFEE FERMENTATION IN SHAKE FLASK
Bio-10	Panicha Thanachotkullapat	BIOACTIVE FIBERS FROM BACTERIAL CELLULOSE AND HYDROXYAPATITE FOR SCAFFOLDING APPLICATION IN BONE TISSUE ENGINEERING
Bio-11	Chotika Saelao Lakkhana Janthakhon	LAMINA AND STEM ANATOMY OF SUBTRIBE COLEOTRYPINAE (COMMELINACEAE) IN THAILAND
Bio-12	Suphaloek Kaeokula	DETERMINING THE TAXONOMIC STATUS OF SOME THAI ARTABOTRYS AND GONIOTHALAMUS (ANNONACEAE) USING MORPHOLOGY AND MOLECULAR PHYLOGENETICS
Bio-13	Tanva Thongkleang	CYTOTOXICITY STUDY OF DIRECT COLD ATMOSPHERIC PLASMA ON HUMAN ORAL CANCER CELLS AND NORMAL EPITHELIAL CELLS
Bio-14	Juthathip Khamsawat	COMPARING COMPOSITION AND ABUNDANCE OF MACROFAUNA ON CORAL REEFS IN THE GULF OF THAILAND AND THE ANDAMAN SEA
Bio-15	Pawarin Bonthong	BIOSYNTHESIS OF XYLITOL FROM XYLOSE BY OVEREXPRESSION OF XYLOSE REDUCTASE (CTXR) ISOLATED FROM CANDIDA TROPICALIS TBRC 14552 ADAPTIVE STRAIN IN YEAST CELL FACTORY

ID	Presenter	Title
Bio-16	Sureerat Thongsan Arthitiya Hianghom	KOMBUCHA PRODUCTION FOR YOUNG CONSUMER
Bio-17	Phurichaya Khunthong	SCREENING AND IDENTIFICATION OF MUSCA DOMESTICA PATHOGENIC MICROBES
Bio-18	Chanachon Chuchuea	TAXONOMY OF THE HUPERZIA SERRATA COMPLEX IN THAILAND
Bio-19	Lapasrada Wanish	EXPRESSION AND PURIFICATION OF RECOMBINANT MAJOR CAPSID PROTEIN OF INFECTIOUS SPLEEN AND KIDNEY NECROSIS VIRUS
Bio-20	Pongsakorn Sukonthamarn	ROLE OF HEMOCYTIN IN SHRIMP IMMUNE RESPONSE AGAINST ENTEOCYTOZOON HEPATOPENAEI (EHP)
Bio-21	Arnon Buntha	DEVELOPMENT OF ESTRADIOL-DETECTION SYSTEM BASED ON DNA APTAMER COUPLE WITH FLUORESCENT DYE
Bio-22	Songphon Sutthitthasakul	EVALUATION OF POTENTIAL ANTIVIRAL ACTIVITY OF ANTIMICROBIAL PEPTIDES AGAINST SARS-C0V-2 USING BIOINFORMATICS APPROACHES
Bio-23	Shirui Zhang	SEQUENCE ANALYSIS OF THREE TERPENE SYNTHASE GENES INVOLVED IN LIMONOID BIOSYNTHESIS OF COFFEE ARABICA VARIETIES IN THAILAND
Bio-24	Nisreen Dahlan	AQUATIC ANIMAL HEALTH FORM THE SEAGRASS MEADOWS, LIBONG ISLAND: CURRENT SITUATION AND FUTURE PROSPECT
Chem-01	Thunyathron Sanjailuk	PLATINUM AND PTNI NANOPARTICLE-SUPPORTED MULTIWALLED CARBON NANOTUBE ELECTROCATALYSTS PREPARED BY ONE-POT PYROLYTIC SYNTHESIS WITH AN LONIC LIQUID FOR DYE-SENSITIZED SOLAR CELLS SHARE TRAVEL EXPENSES MICRO - SERVICES PLATFORM
Chem-02	Kanyawee Kaewpradub	SYNTHESIS OF REDUCED GRAPHENE OXIDE FROM HUMIC ACID USING HYDROTHERMAL WITH MICROWAVE ASSISTED METHOD
Chem-03	Naphol Witayapaisitsan Thanapat Worakul	THE FRIEDEL-CRAFTS SILYLATION OF N- HETOARENES WITH THE TETHERED RU-S COMPLEX: A THEORETICAL STUDY
Chem-04	Natechanok Thinkumrob	QM/MM STUDY OF HYDROLYSIS AND TRANSGLYCOSYLATION REACTIONS CATALYZED BY A GLYCOSIDE HYDROLASE FAMILY 51 a-L-ARABINOFURANOSIDASE
Chem-05	Andaman Thomthong	A NEW DISPERSIVE LIQUID-LIQUID MICROEXTRACTION FOR QUANTITATION OF PESTICIDES USING GAS CHROMATOGRAPHY
Chem-06	Aunthiya Nedhivisanwatch Tanaphon Meesamphan Wannathip Saensimma	REVERSIBLE THERMOCHROMIC MATERIALS; PIGMENTS AND PLASTICS
Chem-07	Purinat Trisirimongkol	DRUG DELIVERY SYSTEM USING POROUS SILICA-MANNAN NANOCOMPOSITES
Chem-08	Khwanchai Pramoonsap Thitipat Siriaucharanon	DEVELOPMENT OF BIOSENSORS FROM NATURAL GREEN FLUORESCENT PROTEIN USING PROTEIN ENGINEERING APPROACH FOR HEAVY METAL DETECTION
Chem-09	Sopanant Datta	STERIC EFFECTS VS. ELECTRON DELOCALIZATION: A NEW LOOK INTO THE STABILITY OF DIASTEREOMERS, CONFORMERS AND CONSTITUTIONAL ISOMERS
Chem-10	Wanchalearm Manchan	PAPER-BASED TEST STRIP FOR PESTICIDE ANALYSIS

ID	Presenter	Title
Chem-11	Prapassara Muangsopa	HYBRID CYANINE/METHOTREXATE NANOPARTICLES FOR SYNERGISTIC PDT/CHEMOTHERAPY OF BREAST CANCER
Chem-12	Natthakarn Chanjamsri	DEVELOPMENT OF ELECTROCHEMICAL DETERMINATION OF PROMETHAZINE
Chem-13	Keeradara Hiruntrakool Athittaya Rasrichai Ornanong Opasmongkolchai	INSIGHTS INTO GLYPHOSATE ADSORPTION ON LEWIS ACIDIC ZEOLITES FROM THEORETICAL MODELLING
Chem-14	Usa Arithan Pemika Kengtrong Waraporn Taweesuk	BIO-OIL PRODUCTION BY PYROLYSIS FROM COCONUT SHELLS AND RATCHAPHRUEK PODS
Com-01	Papichaya Mahawannakit Phasit Thatuchirangku	PILL BOX FOR ELDERLY CARE WITH AUTOMATIC NOTIFICATION SYSTEM AND VOICE INPUT USING SPEECH RECOGNITION
Com-02	Watcharapon Wangwuttikorn Sorawich Khemthong	WEB APPLICATION FOR A BREAST NODULE ASSESSMENT WITH DEEP LEARNING
Com-03	Jarunchai Srisawat	A DIGITAL TWIN PROTOTYPE FOR SMART BUILDING MANAGEMENT
Com-04	Patirop Sombatkamrai	SYNTHESIS FACES FROM SKETCH AND SKETCH DESCRIPTIONS USING DEEP LEARNING TECHNIQUE
Com-05	Tanakorn Aphiwanphakdee Tammasorn Nackwoung	VOICE TO SIGN LANGUAGE
Com-06	Ornwara Sangthongnirundorn Thitare Nimanong	VINCENT MARY SCHOOL OF SCIENCE AND TECHNOLOGY
Com-07	Monchita Toopsuwan	DEEP LEARNING AND QUANTUM IMAGE PROCESSING IN OPTOMETRY
Food-01	Ampaka Mafu	WHOLE WHEAT BREAD ENRICHED WITH CRICKET POWDER AS AN ALTERNATIVE PROTEIN
Food-02	Meephor Saepha	NANOCOMPOSITE COATING BASED ON CHITOSAN AND ZnO NANOPARTICLES TO CONTROL ANTHRACNOSE IN MANGO FRUIT (CV.NAM DOK MAI NO.4)
Food-03	Jiraprapha Lab-aram Thanchanok Jaipian	THE IMPACT OF HYDROCOLLOIDS ON THE COOKING QUALITY OF GLUTEN-FREE RICE NOODLES (KUAI-JAB YUEN)
Food-04	Piyawan Dangarun Artidtaya Chanachan	CHARACTERIZATION OF ANTIMICROBIAL ACTIVITY OF FERMENTED SOYBEAN FOR APPLICATION IN FOOD INDUSTRY
Food-05	Atikan Luekitinan Passorn Lansai	DEVELOPMENT OF GLUTEN-FREE AND SOY-FREE PLANT-BASED CHICKEN MEAT FROM YOUNG JACKFRUIT
Food-06	Kelly Titaya Pinnimit	DEVELOPMENT OF TEXTURE MODIFIED CHICKEN MASSAMAN CURRY RICE
Food-07	Natdanai Ar-rub Thanaporn Rongsa-ard	DEVELOPMENT OF BREAD RECIPE USING CRICKET PROTEIN POWDER
Env-01	Passorn Ingudomnukul Nattanicha Yimphrai	MONITORING HOME RANGE OF BANTENG (BOS JAVANICUS) AFTER REINTRODUCTION IN SALAKPHRA WILDLIFE SANCTUARY, KANCHANABURI PROVINCE
Env-02	Chutiphorn Kodchawate Natthaphon Thongmee	BIOCONVERSION OF CRUDE OIL SLUDGE TO BIOSURFACTANT FOR APPLICATIONS IN THE PETROLEUM INDUSTRY

ID	Presenter	Title
Env-03	Wongwech Chowchuvech	A SPINOSAURID FROM THE EARLY CRETACEOUS KHOK KRUAT FORMATION (APTIAN-ALBIAN), KHON KAEN PROVINCE, NORTHEASTERN THAILAND
Env-04	Patcharamai Huajaipet	THE PHOTOCATALYTIC REACTION VIA NANO-TITANIUM DIOXIDE COATED ON THE POROUS GLASS BEADS FOR ENVIRONMENTAL APPLICATIONS
Env-05	Peeraphan Thongwilaiphan	CORAL REEF MAPPING BY USING GOOGLE EARTH ENGINE: A CASE STUDY OF RAWAI BEACH, PHUKET PROVINCE, THAILAND
Env-06	Mallika Ingrat Bonggodchakron Namhachai	THE EFFECT OF *Trichoderma spp.* ON PLANT DISEASE CONTROL IN STRAWBERRIES
Env-07	Chanya Kloysuwan Supitsara Raksaman	EFFECTS OF MICROPLASTIC ON DYE WASTEWATER TREATMENT VIA ADVANCED OXIDATION PROCESSES
Mat-01	Apiphu Chenwittayakhachon Bunyanuch Nakpalad Phanit Worrayotkovit	MACHINE LEARNING APPROACH TO UNDERSTAND THE ROLE OF N/S-DOPING, AND ITS SYNERGISTIC EFFECT ON ENHANCING CAPACITANCE OF GRAPHENE-BASED ELECTRODES
Mat-02	Thanapat Chomchatwarl	PREPARATION OF ORGANIC LUMINESCENCE ADDITIVES FROM BENZOXAZINE MONOMERS AND POLY(ACRYLIC ACID) VIA ESTERIFICATION
Mat-03	Nicharee Panyaporn Pannarot Kitpimonkul	ENHANCED ELECTROCHROMIC PROPERTIES IN POLYANILINE/TUNGSTEN TRIOXIDE FILM COMPOSITES AND ITS APPLICATION FOR SMART WINDOW
Mat-04	Korn Pongthiya Nunticha Wiratpruk	THE MICROSTRUCTURE AND CORROSION BEHAVIORS OF DOUBLE-LAYERED COATINGS: Ni-Cr AND WC-Co ON A356 ALUMINUM ALLOYS PRODUCED BY HIGH VELOCITY OXY-FUEL SPRAYING
Mat-05	Palawatr Na Rach	FALSE CEILING BOARD FROM END-OF-LIFE TEXTILES
Mat-06	Pinthira Jamjang Amonrada Taweesap	HYBRID ENERGY STORAGE SYSTEMS FOR RENEWABLE ENERGY APPLICATION
Mat-07	Khomsun Ruttananukul Kronravit daneim Jiradit Tongtavee	ASSESSMENT OF COMPRESSIVE STRENGTH OF CONCRETE MIXED CLAY BRICKS FOR THE CONSTRUCTION OF RETAINING WALLS
Mat-08	Chonlada Kanbua Thanakrit Sirichaibhinyo	GAMMA RADIATION-INDUCED CROSSLINKING OF Ca^{2+} LOADED POLY(ACRYLIC ACID) AND POLY(ETHYLENE GLYCOL) DIACRYLATE NETWORKS FOR POLYMER GEL ELECTROLYTES
Mat-09	Sainab Deng Afiyah Lambalee	PREPARATION OF TI-HYDROXYAPATITE COMPOSITED FROM BUDU WASTE AND FABRIC COATING APPLICATION
Mat-10	Worrathai Rabampho	SYNTHESIS OF $Ni(OH)_2$ BY A SIMPLE CO-PRECIPITATION METHOD TO BE USED AS THE ELECTRODE MATERIAL FOR SUPERCAPACITORS
Math-01	Patid Srikirinth	AN EXAMPLE OF ALIGNING THREE CONVEX FIGURES TO MINIMIZE AREA
Math-02	Passawut Lertmatayakul	CLUSTERING AND PORTFOLIO MANAGING WITH A MATHEMATICAL MODEL FOR CRYPTOCURRENCIES
Math-03	Paparb Hatnumsap	A GENERALIZATION OF THE EQUITABLE COLORING
Math-04	Suthad Phuttisen	A METHOD FOR DETECTION OF OUTLIERS IN MULTIVARIATE DATA BY ROBUST ESTIMATOR OF MEAN VECTOR AND VARIANCE COVARIANCE MATRIX IN MAHALANOBIS

ID	Presenter	Title
Math-05	Athipakon Nathomthong Sirirat Suwanit	STUDY AND FORECAST THE MOVEMENT AND INTENSITY OF STORMS IN THE NORTHEASTERN REGION OF THAILAND
Phy-01	Shiva Sethi Khobpong Weerawong Nathasit Yamsurn Sahasawan kongkungwanprai	VIRTUAL OUTDOOR CLOTH DRYING MACHINE
Phy-02	Thiti Aungcharoen	INVESTIGATION OF PLASMA TURBULENCE BEHAVIOR DURING AN EDGE TRANSPORT BARRIER FORMATION USING A THREE-FIELD BIFURCATION APPROACH
Phy-03	Thansuda Chulikorn	TRANSMISSION SPECTROSCOPY ANALYSIS OF WATER VAPOR FOR THE EXOPLANET ATMOSPHERES USING HUBBLE SPACE TELESCOPE DATABASE
Phy-04	Netipon Naree	THE EFFECT OF AGN FEEDBACK ON SHAPE OF DARK MATTER HALOES
Phy-05	Rapeephat Yodsungnoen	OPTICALLY DETECTED ELECTRON SPIN RESONANCE IN DIAMOND FOR VECTOR MAGNETROMETRY
Phy-06	Sorathan Tanprasert Chanida Kampeewichean	NON-SPHERICAL PARTICLE DRUG DELIVERY DESIGNING IN HUMAN AIRWAY USING COMPUTATIONAL FLUID DYNAMICS AND DISCRETE ELEMENT METHOD

ID	Presenter	Title
JYRSS-01	Duangchai Phonsutthitham Treethippayanipa Ya-i-ta	LIGAND-PROTEIN INTERACTIONS BETWEEN GBA2 INHIBITORS AND GH116 BETA-GLUCOSIDASE PROTEIN: AN ONIOM STUDY
JYRSS-02	Supakorn Katasai Phakaphong Kumtasin	THE STUDY AND DESIGN OF THE AIR PURIFIER BASED ON THE HIGH-INTENSITY ELECTRIC FIELD
JYRSS-03	Salinthip Kankasemsuk Chanita Tibmanoo	TOTAL PROTEIN CONTENT AND POLLEN SOURCE OF BEE BREAD IN *Apis cerana* AND *Tetragonula pegdeni*
JYRSS-04	Voraruthai Puengchanchaikul	DETECTION OF SUGAR IN TROPICAL PARASITOID WASPS FOR INTEGRATED PEST MANAGEMENT
JYRSS-05	Zuhairee Ramong Thanaporn Kaewmak	PRODUCTION OF LIQUID ORGANIC FERTILIZER FROM FISH MEAL FACTORY BY-PRODUCT AND STUDY ON ITS EFFICIENCY OF LETTUCE GROWTH
JYRSS-06	Phoenix Palaray Awera Ruampornpanu	DEVELOPING APPLICATION FOR PREDICTING COVID-19 INFECTION FROM CHEST X-RAY IMAGES USING DEEP LEARNING TECHNIQUES
JYRSS-07	Nihusna Nadaman Sasita Seh	EFFECT OF CHITIN-BINDING PROTEINS FROM PARA RUBBER SEEDS ON PHYTOPATHOGENIC FUNGI AND BIOACTIVITY ENHANCEMENT
JYRSS-08	Wisa Kunkuea	SYNTHESIS OF COPPER OXIDE NANOWIRES BY A THERMAL OXIDATION METHOD FOR ELECTROCHEMICAL GLUCOSE DETECTION
JYRSS-09	Teetouch Srakhao Jirapat Kongchuay	AUTOMATIC MEDICINE DISPENSER FOR ELDERLY BY FACE RECOGNITION
JYRSS-10	Suphitsara Nunainam Kornrawit Khoonthongchan	MULTIPLEX PCR DETECTION OF DISEASE RESISTANCE GENES IN RICE
JYRSS-11	Bunyarak Phiromkaew Kodchakorn Klongklaw Praeploy Kiatsuksri	MUSHROOM-DERIVED CARBON DOTS AS A PAPER-BASED FLUORESCENT SENSOR FOR IRON(III) ION DETECTION

ID	Presenter	Title
JYRSS-12	Prempavee Treevijitpaisan Nantanat Wongsamut Kewalee Thirasak	THE NEURODEVELOPMENT OF ATTENTION AND WORKING MEMORY
JYRSS-13	Ananya Aryucharoen Jakkarin Preeprem Siwamate Sooksa-ardvisit	DEVELOPMENT OF VENTILATION DEVICE FOR PPE SUIT USING THERMOELECTRIC PELTIER
JYRSS-14	Titivorada Rodsai Puntira Boonpen	CLASSIFICATION OF ECONOMICALLY IMPORTANT JASMINE CULTIVARS BY MORPHOLOGICAL CHARACTERS AND DNA BARCODING
JYRSS-15	Kulchalee Sirisangsawang	DIGITS PROPORTIONS IN LUCAS REPRESENTATIONS
JYRSS-16	Natnaree Ua-arak	CALCIUM CARBONATE PRECIPITATION IN SOIL BY BACILLUS SUBTILIS TISTR008 FOR CO_2 SEQUESTRATION
JYRSS-17	Lakkhika Sukphan Jidapa Theppanich	DEVELOPMENT OF BIOMASS PELLET FUEL USING TORREFIED OIL PALM FRONDS WITH USED BLEACHING EARTH FROM PALM OIL INDUSTRY
JYRSS-18	Yanisa Sanyapan Thitichaya Taluengjit	THE GEODESICS ON THE RANDERS CYLINDER OF REVOLUTION OF CONSTANT NAVIGATION DATA ALONG MERIDIAN
JYRSS-19	Pathitta Charoenrak Sunruthai Boonchuay	THE STUDY OF ANTIMICROBIAL ACTIVITY OF TURMERIC FOR THE MICROORGANISMS CAUSING DERMATITIS
JYRSS-20	Jinna Waiwattana Pakorn Saksirimontri Natha Pitakkultorn	SEARCH FOR BSM HIGGS BOSONS WITH MACHINE LEARNING TECHNIQUES
JYRSS-21	Patcharatida Wongwattanadara Ratchakrit Prasitthimee Phongsaphak Haemrattakul	NASAL CONGESTION CAPSULE FROM SHALLOT EXTRACT
JYRSS-22	Kanathip Thambancha Jirat Wannaruemol Pattarawee Pujanmuang	AN INNOVATION OF FOOD PACKAGING FROM COGON GRASS TISSUES COATED WITH CONDENSED TANNINS
JYRSS-23	Ratchapol Kamolthepprithoon Chayut Owatsakul Sudaluck Suriyayot	PROCESSED MEAT MIXED ANTHOCYANIN EXTRACTED FROM DRAGON BLOOD TEA APPLIED AS FOODS WITH ENHANCE NUTRITIONAL VALUE
JYRSS-24	Pachara Chongbunyatcharoen Pimnipa Rattanasing Wissuta Thawichsung	TBA
JYRSS-25	Kittisak Rotong Phunuwat Boonkeard	AUTOMATIC SWAB MACHINE FOR TESTING COVID-19
JYRSS-26	Kamolchat Jadyangtone Nutchaya Kaewdaeng	DEVELOPMENT OF A PV MONITORING SYSTEM BY USING IOT
JYRSS-27	Chonlada Mueangsong Rasita Soypetcasem	ANALYSIS OF AFLATOXIN B1 IN HERBS AND SPICES AND EXPOSURE ASSESSMENT
JYRSS-28	Worakorn Wongtanakarn Khwankhao Latthithawanit	MAGNETIC MOLECULARLY IMPRINTED NANOPARTICLES:SYNTHESIS AND APPLICATION
JYRSS-29	Saksorn Singhasenee	THE STUDY OF MECHANICAL PROPERTIES USING IMPACT FORCE TESTING LATEX FOAM AND NON-NEWTONIAN FLUID

ADVISORY BOARD

1. Prof. Dr. Sombat Thamrongthanyawong
2. Prof. Dr. Piamsook Pongsawasdi
3. Prof. Dr. Supawan Tantayanon
4. Prof. Dr. Tirayut Vilaivan
5. Assoc. Prof. Dr. Thanuttkhul Mongkolaussavarat
6. Assoc. Prof. Dr. Tipaporn Limpaseni
7. Assoc. Prof. Dr. Saiwarun Chaiwanichsiri
8. Dr. Wilaiporn Chetanachan
9. Mr. Phoosak Hirunyatrakul

COMMITTEES

INTERNATIONAL SCIENTIFIC COMMITTEE

1. Prof. Dr. Colette Boskovic (Australia)
2. Prof. Dr. Jörn Steuding (Germany)
3. Prof. Dr. Ekaterina Kostina (Germany)
4. Prof. Dr. Guoqing Guan (Japan)
5. Prof. Dr. Tomoo Mizugaki (Japan)
6. Prof. Dr. Mingyue Ding (China)
7. Prof. Dr. Armando Quitain (Japan)
8. Prof. Dr. Anet Rezek Jambrak (Croatia)
9. Prof. Dr. Ian D. Williams (Hong Kong)
10. Prof. Dr Jian Zhang (China)
11. Prof. Dr. Henrietta Venter (Australia)
12. Assoc. Prof. Dr. Vannajan Sanghiran Lee (Malaysia)
13. Asst. Prof. Dr. Wang Xiaonan (China)
14. Dr. George Srzednicki (Australia)
15. Dr. Abdi Wira Septama (Indonesia)

SCIENTIFIC COMMITTEE

1. Prof. Dr. Tavan Janvilisri
2. Prof. Dr. Vatcharin Rukachaisirikul
3. Prof. Dr. Supawan Tantayanon
4. Prof. Dr. Suttichai Assabumrungrat
5. Prof. Dr. Nongnuj Muangsin
6. Prof. Dr. Suchana Chavanich
7. Assoc. Prof. Dr. Chartchai Leenawong
8. Assoc. Prof. Dr. Chaleeda Borompichaichartkul
9. Assoc. Prof. Dr. Nirundorn Matan
10. Assoc. Prof. Dr. Punnama Siriphannon
11. Assoc. Prof. Dr. Kitipong Assatarakul
12. Assoc. Prof. Dr. Potjamarn Suraninpong
13. Dr. Suparerk Aukkaravittayapun
14. Dr. Yutthana Tumnoi

ORGANIZING COMMITTEE

1. Emeritus Professor Dr. Piamsook Pongsawasdi
2. Prof. Dr. Alissara Reungsang
3. Prof. Dr. Aura C. Matias
4. Prof. Dr. Azra Khanum
5. Prof. Dr. Nongnuj Muangsin
6. Prof. Dr. Pitsanupong Kanjanapayont
7. Prof. Dr. Pranut Potiyaraj
8. Prof. Dr. Sombat Thamrongthanyawong
9. Prof. Dr. Suchana Chavanich
10. Prof. Dr. Supawan Tantayanon
11. Prof. Dr. Suttichai Assabumrungrat
12. Prof. Dr. Tavan Janvilisri
13. Prof. Dr. Tirayut Vilaivan
14. Prof. Dr. Vatcharin Rukachaisirikul
15. Prof. Dr. Yukari Ito
16. Assoc. Prof. Dr. Anchana Prathep
17. Assoc. Prof. Dr. Benjapon Chalermsinsuwan
18. Assoc. Prof. Dr. Boonchoat Paosawatyanyong
19. Assoc. Prof. Dr. Chaleeda Borompichaichartkul
20. Assoc. Prof. Dr. Chanatip Samart
21. Assoc. Prof. Dr. Chartchai Leenawong
22. Assoc. Prof. Dr. Chitnarong Sirisathitkul
23. Assoc. Prof. Dr. Inthawoot Suppavorasatit
24. Assoc. Prof. Dr. Janyarak Tongsomporn
25. Assoc. Prof. Dr. Kitipong Assatarakul
26. Assoc. Prof. Dr. Kittipong Chainok
27. Assoc. Prof. Dr. Kuakarun Krusong
28. Assoc. Prof. Dr. Mullica Jaroensutasinee
29. Assoc. Prof. Dr. Narumol Matan
30. Assoc. Prof. Dr. Nirundorn Matan
31. Assoc. Prof. Dr. Onruthai Pinyakong
32. Assoc. Prof. Dr. Phimphaka Harding
33. Assoc. Prof. Dr. Phongpichit Channuie
34. Assoc. Prof. Dr. Potjamarn Suraninpong
35. Assoc. Prof. Dr. Punnama Siriphannon
36. Assoc. Prof. Dr. Rajalida Lipikorn
37. Assoc. Prof. Dr. Rudee Surarit
38. Assoc. Prof. Dr. Saiwarun Chaiwanichsiri
39. Assoc. Prof. Dr. Sanae Rujivan
40. Assoc. Prof. Dr. Sehanat Prasongsuk
41. Assoc. Prof. Dr. Somsak Dangtip
42. Assoc. Prof. Dr. Thanuttkhul Mongkolaussavarat
43. Assoc. Prof. Dr. Tipaporn Limpaseni

44. Assoc. Prof. Dr. Worawan Bhanthumnavin
45. Assoc. Prof. Dr. Yuthana Phimolsiripol
46. Assoc. Prof. Prayoon Songsiriritthigul
47. Asst. Prof. Dr. Anurak Thungtong
48. Asst. Prof. Dr. Apirak Payaka
49. Asst. Prof. Dr. Nontivich Tandavanitj
50. Asst. Prof. Dr. Phichet Jitjankarn
51. Asst. Prof. Dr. Phitchayapak Wintachai
52. Asst. Prof. Dr. Phuwadol Bangrak
53. Asst. Prof. Dr. Somporn Kamolsiripichaiporn
54. Asst. Prof. Dr. Sujittra Poorahong
55. Asst. Prof. Dr. Uraiwan Intatha
56. Asst. Prof. Dr. Warinthorn Chavasiri
57. Asst. Prof. Dr. Witsanu Saisorn
58. Asst. Prof. Jantira Rattanarat
59. Dr. Chanin Kulsetthanchalee
60. Dr. Ganigar Chen
61. Dr. Mati Horprathum
62. Dr. Ratchanon Piemjaiswang
63. Dr. Sorawit Powtongsook
64. Dr. Supagorn Rugmai
65. Dr. Suparerk Aukkaravittayapun
66. Dr. Torranis Ruttanaphan
67. Dr. Wilaiporn Chetanachan
68. Dr. Wipada Ngansom
69. Dr. Yutthana Tumnoi
70. Mr.Anan Chantaprateep
71. Mr.Phoosak Hirunyatrakul
72. Mr.Yuttapol Taragan
73. Mrs.Rudeemol Sawangtam
74. Ms.Kittima Saengow
75. Ms.Pattaraporn Phungam
76. Ms.Sirada Aromchuen

REVIEWER COMMITTEE

SESSION A - PHYSICS / APPLIED PHYSICS

1.	Assoc. Prof. Dr.	Anucha Watcharapasorn
2.	Assoc. Prof. Dr.	Chitnarong Sirisathitkul
3.	Assoc. Prof. Dr.	Mudtolep Nisoa
4.	Assoc. Prof. Dr.	Nikom Chusiri
5.	Assoc. Prof. Dr.	Pongpichit Channuie
6.	Assoc. Prof. Dr.	Pornrat Wattanakasiwich
7.	Assoc. Prof. Dr.	Prayoon Songsiriritthigul
8.	Assoc. Prof. Dr.	Sorasak Danworaphong
9.	Assoc. Prof. Dr.	Supab Choopun
10.	Assoc. Prof. Dr.	YutthanaTirawanichakul
11.	Assoc. Prof. Dr.	Chittanon Buranachai
12.	Assoc. Prof. Dr.	Nirundorn Matan
13.	Assoc. Prof. Dr.	Prasit Thongbai
14.	Assoc. Prof. Dr.	Supree Pinitsoontorn
15.	Asst. Prof. Dr.	Chakrit Pongkitivanichkul
16.	Asst. Prof. Dr.	Kittipitch Meesawat
17.	Asst. Prof. Dr.	Pansak Kerdtongmee
18.	Asst. Prof. Dr.	Parawee Rattanakit
19.	Asst. Prof. Dr.	Patipan Uttayarat
20.	Asst. Prof. Dr.	Pattara Aiyarak
21.	Asst. Prof. Dr.	Pongskorn Jantaratana
22.	Asst. Prof. Dr.	Punsiri Dam-O
23.	Asst. Prof. Dr.	Suwicha Wannawichian
24.	Asst. Prof. Dr.	Thanapong Phanthong
25.	Asst. Prof. Dr.	Waraporn Nuntiyakul
26.	Asst. Prof. Dr.	Watcharee Rattanasakulthong
27.	Dr.	Chirote Yaiprasert
28.	Dr.	Nawapong Unsuree
29.	Dr.	Sampart Cheedket
30.	Dr.	Suparerk Aukkaravittayapun
31.	Dr.	Thammarong Eadkhong

SESSION B - BIOLOGICAL SCIENCES

1.	Prof. Dr.	Alissara Reungsang
2.	Prof. Dr.	Pattana Laopaiboon
3.	Prof. Dr.	Tavan Janvilisri
4.	Assoc. Prof. Dr.	Jirawan Apiraksakorn
5.	Assoc. Prof. Dr.	Khundej Suriharn
6.	Assoc. Prof. Dr.	Mallika Kongkietkajorn
7.	Assoc. Prof. Dr.	Onrapak Reamtong
8.	Assoc. Prof. Dr.	Patompon Wongtrakoongate
9.	Assoc. Prof. Dr.	Pongtharin Lotrakul
10.	Assoc. Prof. Dr.	Pornthape Thanonkeo

11.	Assoc. Prof. Dr.	Prawit Kongjan
12.	Assoc. Prof. Dr.	Rachaneekorn Tammachote
13.	Assoc. Prof. Dr.	Ratchada Tangwongchai
14.	Assoc. Prof. Dr.	Sehanat Prasongsuk
15.	Assoc. Prof. Dr.	Sophon Boonlue
16.	Assoc. Prof. Dr.	Surang Chankhamhaengdecha
17.	Assoc. Prof. Dr.	Sureewan Sittijunda
18.	Asst. Prof. Dr.	Apilak Salakkam
19.	Asst. Prof. Dr.	Atcha Oraintara
20.	Asst. Prof. Dr.	Jariya Sakayaroj
21.	Asst. Prof. Dr.	Kanogwan Seraypheap
22.	Asst. Prof. Dr.	Kornkamon Lertsuwan
23.	Asst. Prof. Dr.	Pakpimol Ungcharoenwiwat
24.	Asst. Prof. Dr.	Pensri Plangklang
25.	Asst. Prof. Dr.	Phitchayapak Wintachai
26.	Asst. Prof. Dr.	Phurt Harnvoravongchai
27.	Asst. Prof. Dr.	Pichamon Kiatwuthinon
28.	Asst. Prof. Dr.	Preekamol Klanrit
29.	Asst. Prof. Dr.	Witsanu Saisorn
30.	Dr.	Chawalit Ngernsombat
31.	Dr.	Kanit Bhukhai
32.	Dr.	Matthew Phanchana
33.	Dr.	Methinee Pipatthana
34.	Dr.	Pimchanok Pimton
35.	Dr.	Sakuntala Ninkaew
36.	Dr.	Teerawat Srisuk
37.	Dr.	Torranis Ruttanaphan

SESSION C - CHEMISTRY (Analytical Chemistry)

1.	Assoc. Prof. Dr.	Apon Numnuam
2.	Assoc. Prof. Dr.	Chongdee Buranachai
3.	Assoc. Prof. Dr.	Opas Bunkoed
4.	Assoc. Prof. Dr.	Purim Jarujamrus
5.	Assoc. Prof. Dr.	Siriwan Teepoo
6.	Asst. Prof. Dr.	Apichai Phonchai
7.	Asst. Prof. Dr.	Parawee Rattanakit
8.	Asst. Prof. Dr.	Piyaluk Nurerk
9.	Asst. Prof. Dr.	Sujittra Poorahong
10.	Asst. Prof. Dr.	Jongjit Jantra
11.	Dr.	Fonthip Makkliang
12.	Dr.	Itthipon Jeerapan
13.	Dr.	Litavadee Chuaboon
14.	Dr.	Sasikarn Seetasang
15.	Dr.	Yanisa Thepchuay

SESSION C - CHEMISTRY (Inorganic Chemistry)

1.	Assoc. Prof. Dr.	David James Harding
2.	Assoc. Prof. Dr.	Phimphaka Harding
3.	Asst. Prof. Dr.	Nanthawat Wannarit
4.	Asst. Prof. Dr.	Saranphong Yimklan
5.	Dr.	Piyanut Pinyou

SESSION C - CHEMISTRY (Organic & Medicinal Chemistry)

1.	Prof. Dr.	Vatcharin Rukachaisirikul
2.	Prof. Dr.	Khanitha Pudhom
3.	Prof. Dr.	Preecha Phuwapraisirisan
4.	Prof. Dr.	Chutima Kuhakarn
5.	Assoc. Prof. Dr.	Darunee Soorukram
6.	Assoc. Prof.Dr.	Pitak Chuawong
7.	Assoc. Prof.Dr.	Pakorn Wattana-Amorn
8.	Assoc. Prof. Dr.	Prasat Kittakoop
9.	Assoc. Prof. Dr.	Rungnapha Saeeng
10.	Assoc. Prof. Dr.	Kongkiat Trisuwan
11.	Assoc. Prof. Dr.	Thunwadee Limtharakul
12.	Asst. Prof. Dr.	Chutima Jiarpinitnun
13.	Asst. Prof. Dr.	Nawaporn Vinayavekhin
14.	Dr.	Pattama Pittayakhajonwut

SESSION C - CHEMISTRY (Physical & Theoretical Chemistry)

1.	Assoc. Prof. Dr.	Nawee Kungwan
2.	Assoc. Prof. Dr.	Sompong Sansenya
3.	Asst. Prof. Dr.	Apirak Payaka
4.	Asst. Prof. Dr.	Chompoonoot Nanthamathee
5.	Asst. Prof. Dr.	Kessara Seneesrisakul
6.	Asst. Prof. Dr.	Montra Chairat
7.	Asst. Prof. Dr.	Prapaporn Chaniad
8.	Asst. Prof. Dr.	Rathawat Daengngern
9.	Asst. Prof. Dr.	Ratthaphat Bunkerd
10.	Asst. Prof. Dr.	Uthen Thubsuang
11.	Dr.	Chutima Septhum
12.	Dr.	Naparat Jiwalak

SESSION D - MATHEMATICS / STATISTICS / COMPUTER SCIENCE / DATA SCIENCE / AI

1.	Prof. Dr.	Rabian Wangkeeree
2.	Assoc. Prof. Dr.	Aniruth Phon-On
3.	Assoc. Prof. Dr.	Apichat Suratanee
4.	Assoc. Prof. Dr.	Areeyuth Sama-Ae
5.	Assoc. Prof. Dr.	Athassawat Kammanee
6.	Assoc. Prof. Dr.	Chartchai Leenawong
7.	Assoc. Prof. Dr.	Montri Maleewong
8.	Assoc. Prof. Dr.	Pawaton Kaemawichanurat
9.	Assoc. Prof. Dr.	Petarpa Boonserm
10.	Assoc. Prof. Dr.	Ponrudee Netisopakul

11.	Assoc. Prof. Dr.	Tuangrat Chaichana
12.	Asst. Prof. Dr.	Amarita Ritthipakdee
13.	Asst. Prof. Dr.	Areena Hazanee
14.	Asst. Prof. Dr.	Boonyarit Choopradit
15.	Asst. Prof. Dr.	Duangjai Jitkongchuen
16.	Asst. Prof. Dr.	Jinda Kongcharoen
17.	Asst. Prof. Dr.	Napat Rujeerapaiboon
18.	Asst. Prof. Dr.	Nathakhun Wiroonsri
19.	Asst. Prof. Dr.	Nifatamah Makaje
20.	Asst. Prof. Dr.	Nimit Nimana
21.	Asst. Prof. Dr.	Patcharee Wongsason
22.	Asst. Prof. Dr.	Sarawut Suwannaut
23.	Asst. Prof. Dr.	Tạ Quốc Bảo
24.	Asst. Prof. Dr.	Teeraphong Phongpattanacharoen
25.	Asst. Prof. Dr.	Thitarie Rungratgasame
26.	Asst. Prof. Dr.	Wanida Limmun
27.	Asst. Prof. Dr.	Witsarut Kraychang
28.	Asst. Prof. Dr.	Wongvisarut Khuangsatung
29.	Dr.	Sirithip Wasinrat
30.	Dr.	Teerasak Khoployklang

SESSION E - ENERGY / ENVIRONMENTAL & EARTH SCIENCE / MATERIALS SCIENCE

1.	Prof. Dr.	Anongnat Somwangthanaroj
2.	Prof. Dr.	Bunjerd Jongsomjit
3.	Prof. Dr.	Chakkaphan Sutthirat
4.	Prof. Dr.	Chavalit Ratanatamskul
5.	Prof. Dr.	Nuttha Thongchul
6.	Prof. Dr.	Pitsanupong Kanjanapayon
7.	Prof. Dr.	Sarawut Rimdusit
8.	Prof. Dr.	Siriporn Damrongsakkul
9.	Prof. Dr.	Supa Hannongbua
10.	Prof. Dr.	Suttichai Assabumrungrat
11.	Prof. Dr.	Vudhichai Parasuk
12.	Prof. Dr.	Wanida Jinsart
13.	Assoc. Prof. Dr.	Chanatip Samart
14.	Assoc. Prof. Dr.	Chitnarong Sirisathitkul
15.	Assoc. Prof. Dr.	Kasidit Nootong
16.	Assoc. Prof. Dr.	Kejvalee Pruksathorn
17.	Assoc. Prof. Dr.	Nantakan Muensit
18.	Assoc. Prof. Dr.	Niti Mankhemthong
19.	Assoc. Prof. Dr.	Pattaraporn Kim
20.	Assoc. Prof. Dr.	Pichayada Katemake
21.	Assoc. Prof. Dr.	Prasit Thongbai
22.	Assoc. Prof. Dr.	Soorathep Kheawhom
23.	Assoc. Prof. Dr.	Supree Pinitsoontorn
24.	Assoc. Prof. Dr.	Taweechai Amornsakchai

25.	Assoc. Prof. Dr.	Tripob Bhongsuwan
26.	Assoc. Prof. Dr.	Worapon Kiatkittipong
27.	Asst. Prof. Dr.	Montri Luengchavanon
28.	Asst. Prof. Dr.	Paravee Vas-Umnuay
29.	Asst. Prof. Dr.	Phannee Saengkaew
30.	Asst. Prof. Dr.	Pongtorn Charoensuppanimit
31.	Asst. Prof. Dr.	Rungthiwa Methaapanon
32.	Asst. Prof. Dr.	Sutassana Na Phattalung
33.	Asst. Prof. Dr.	Tidarut Vichaidid
34.	Asst. Prof. Dr.	Uraiwan Intatha
35.	Asst. Prof. Dr.	Uthen Thubsuang
36.	Dr.	Alongkot Fanka
37.	Dr.	Mati Horprathum
38.	Dr.	Pitaksit Ditbanjong
39.	Dr.	Thitiphan Assawincharoenkij

SESSION F - FOOD SCIENCE AND TECHNOLOGY/AGRICULTURAL SCIENCE/ (SEA) FOOD INNOVATION/FOOD SAFETY AND PACKAGING

1.	Assoc. Prof. Dr.	Chaleeda Borompichaichartkul
2.	Assoc. Prof. Dr.	Cheunjit Prakitchaiwatta
3.	Assoc. Prof. Dr.	Inthawoot Suppaworasatit
4.	Assoc. Prof. Dr.	Kitipong Assatarakul
5.	Assoc. Prof. Dr.	Naraporn Somboonna
6.	Assoc. Prof. Dr.	Narumon Matan
7.	Assoc. Prof. Dr.	Yuthana Pimolsiripol
8.	Asst. Prof. Dr.	Auemphon Mordmuang
9.	Asst. Prof. Dr.	Chantira Wongnen
10.	Asst. Prof. Dr.	Nisa Saelee
11.	Asst. Prof. Dr.	Sirima Puangprapan
12.	Asst. Prof. Dr.	Sumethee Songsamoe
13.	Asst. Prof. Dr.	Visaka Anantawat
14.	Asst. Prof. Dr.	Watcharapong Mitsuwan
15.	Asst. Prof. Dr.	Witsanu Saisorn
16.	Dr.	Krittika Kabploy
17.	Dr.	Sorawit Powtongsook
18.	Dr.	Thanet Khomphet

SP2 - SCIENCE EDUCATION: CHALLENGES TOWARDS VUCA ERA

1.	Assoc. Prof. Dr.	Punnama Siriphannon
2.	Assoc. Prof. Dr.	Mullica Jaroensutasinee
3.	Assoc. Prof. Dr.	Kitsakorn Locharoenrat
4.	Asst. Prof.Dr.	Prathan Buranasiri
5.	Asst. Prof. Dr.	Pitiporn Thanomgam
6.	Dr.	Lunchakorn Tannukij

SP3 - X-RAY CRYSTALLOGRAPHY

1.	Assoc. Prof. Dr.	Kuakarun Krusong
2.	Assoc. Prof. Dr.	Kittipong Chainok
3.	Asst. Prof. Dr.	Nanthawat Wannarit
4.	Asst. Prof. Dr.	Jaursup Boonmak
5.	Asst. Prof. Dr.	Saowanit Saithong
6.	Asst. Prof. Dr.	Puey Ounjai
7.	Dr.	Kittikhun Wangkanont

SP6 - KRATOM AND CANNABIS

1.	Assoc. Prof. Dr.	Potjamarn Suraninpong
2.	Asst. Prof. Dr.	Padungsak Suksa-Ard

SP7 - RADIOECOLOGY AND ENVIRONMENTAL RADIOACTIVITY

1.	Prof. Dr.	Supitcha Chanyotha
2.	Dr.	Rawiwan Kritsananuwat

SP8 - FOOD SYSTEM TRANSFORMATION AND SDGs

1.	Dr.	Aura Matias
2.	Dr.	Azra Khanum
3.	Dr.	Yukari Ito

STT48 SPONSORS ACKNOWLEDGEMENT

COLLABORATIONS

IYBSSD2022

International Year
of Basic Sciences
for Sustainable Development

สมาคมฟิสิกส์ไทย
THAI PHYSICS SOCIETY

SPONSORS

PLATINUM SPONSOR

GOLD SPONSOR

SILVER SPONSOR

PERDO
PETROMAT
ศูนย์ความเป็นเลิศด้านเทคโนโลยีปิโตรเคมีและวัสดุ
Center of Excellence on Petrochemical and Materials Technology

BRONZE SPONSOR

PUDITEC

BOOTHS

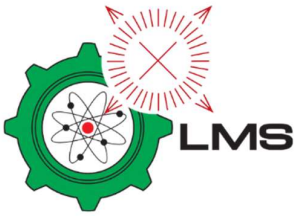

www.eofficeservice.com
e-Office Service
Your Instant e-Office Service


3BB
BROADBAND


GenePlus


BUCHI
SWITZERLAND


FACULTY OF SCIENCE
PRINCE OF SONGKLA UNIVERSITY


LMS


TPM

สมาคมวิทยาศาสตร์แห่งประเทศไทยในพระบรมราชูปถัมภ์
http://www.scicoc.or.th/stt/