

Report:
**VISTEC-Kyoto University Joint Symposium: Recent Advances in Chemistry
and Smart Materials**

November 2023
International Strategy Office, Kyoto University

The VISTEC-Kyoto University Joint Symposium: Recent Advances in Chemistry and Smart Materials was held at the Vidyasirimedhi Institute of Science and Technology (VISTEC) in Rayong province, Thailand. The symposium was organized as both a FY 2023 On-site Laboratory (OSL) Symposium and as the 3rd joint symposium by VISTEC and Kyoto University's Institute for Integrated Cell-Material Sciences (iCeMS).

The two-day event was held on November 27 and 28, 2023. The first day featured lectures by speakers from both institutions and invited speakers, and a tour of VISTEC and the Eastern Economic Corridor of Innovation (EECi). The second day of the symposium featured presentations on cutting-edge research outcomes in the fields of chemistry and smart materials by researchers from VISTEC and Kyoto University (KU), as well as other domestic and international institutions. The symposium was conducted in a hybrid format (onsite and online), and attracted approximately 130 participants, including from Thailand, Japan, Singapore, the Philippines, and the United Kingdom. The participants from KU included Prof. Norihiro Tokitoh (executive vice-president for research and evaluation), Prof. Yasuyuki Kono (vice-president for international strategy), Prof. Susumu Kitagawa (distinguished professor, iCeMS), and Prof. Eiji Nawata (director, ASEAN Center).

VISTEC was founded in 2015 and has promoted international joint research with KU, exemplified by the collaboration with the Smart Materials Research Center, an OSL that was established in 2018. Such activities have contributed to VISTEC's rapid ascent to becoming one of Thailand's top-ranked research institutions in the field of materials science. The center was honored by a visit from Her Royal Highness Princess Maha Chakri Sirindhorn of the Kingdom of Thailand to mark the first time since its establishment that one of its student's was awarded a master's degree. The symposium was planned to build on the center's successes, and further promote its facilitation of international joint research and the dissemination of research results. Kyoto University's International Strategy Office, ASEAN Center, and International Affairs Division assisted with holding the symposium and with related public relations activities. As 2023 marked the 50th Year of ASEAN-Japan Friendship and Cooperation, the symposium was certified as an official commemorative event by Japan's Ministry of Foreign Affairs, and it was actively publicized to researchers, students, and companies through the ASEAN Center's network in Thailand and through the university's domestic and international networks.

The first day of the symposium was opened with remarks from Dr. Pailin Chuchottaworn, founder of VISTEC and former CEO and president of PTT Public Company Limited. Dr. Chuchottaworn delivered a lecture titled “Science and Education 4.0.” During the lecture, Dr. Chuchottaworn spoke about the importance, in the current era of advanced technological innovation, which is often referred to as the 4th industrial revolution, of fostering students’ ability to understand and solve problems by themselves, with an emphasis on exploration and creativity that is unrestricted by boundaries, such as the boundaries between academic disciplines and national borders.

Ms. Toshie Fukuda, vice-director of the Bangkok Research Liaison Center of the Japan Society for the Promotion of Science (JSPS), then gave a lecture titled “Introduction of JSPS Activities in Thailand/ASEAN.” In addition to an overview of the mission and activities of JSPS and the liaison center, she introduced the liaison center’s five international programs that take advantage of the liaison center’s location in the heart of Southeast Asia to promote researcher mobility to foster academic exchange between Japan and the entire ASEAN region.

A welcome speech was delivered by President Pimchai Chaiyen of VISTEC, who was appointed in August 2023. President Chaiyen is a researcher with close ties to KU, having served as a visiting professor at iCeMS in 2018. She provided an overview of academic exchange activities by VISTEC and KU, and of the cutting-edge research featured at the symposium. She also expressed her hope that the symposium will further strengthen academic collaboration between VISTEC and KU, and also further expand the network of researchers in Thailand and beyond.

Executive Vice-President Norihiro Tokitoh was the first to deliver a speech on behalf of KU, describing the history of academic collaboration between VISTEC and KU, the promotion of joint research through the establishment of the Smart Materials Research Center, and the research outcomes produced through those endeavors. He also spoke of his hope that the symposium will serve as a platform for sharing state-of-the-art research results and an opportunity for researchers to strengthen their networks and deepen their friendships.

Vice-President Yasuyuki Kono gave an overview of KU and its international collaboration activities, including an overview of the OSL initiative and activities of the ASEAN Center. In response to a question raised by Dr. Pailin Chuchottaworn at the beginning of the symposium, Vice-President Kono proposed to step up the collaboration to the new phase of sharing the resources, talent and facilities.

Prof. Susumu Kitagawa provided an overview of the history of the collaborative relationship between VISTEC and KU. He described how the partnership was founded on a personal connection between Prof. Kitagawa and VISTEC’s former president, Prof. Jumras Limtrakul, and the ways in which the jointly established Smart Materials Research Center has promoted

research exchange. Prof. Satoshi Horike, professor in the Graduate School of Science and adjunct PI at iCeMS, who also serves as a PI at the center, and who organized the symposium in collaboration with faculty from VISTEC, also gave a detailed presentation on the center's activities.

The next speaker was Assistant Prof. Nawatch Surinkul from the Kyoto University On-site Laboratory at Mahidol University for Educational and Research Collaboration in Environmental Studies, another OSL established in Thailand. Prof. Surinkul provided a detailed overview of the lab, including the background to its establishment and its activities, such as its role in conducting a double degree program that promotes mobility between KU and Mahidol University.

The first day's program ended in a very relaxed atmosphere with a commemorative photo of the participants and an exchange of commemorative gifts. In the afternoon, the participants were invited to tour VISTEC's major research facilities, including the Smart Materials Research Center, and the government-promoted Eastern Economic Corridor of Innovation (EECi).

On the second day, in addition to researchers from VISTEC and KU, researchers from Thai universities, a researcher from the Green Porous Materials Laboratory, an OSL established in Singapore, and a representative from a startup company presented cutting-edge research outcomes in the fields of chemistry and smart materials.

At the beginning of the session, Assoc. Prof. Khamphree Phomphrai, dean of the School of Molecular Science and Engineering (MSE) at VISTEC, explained the overall program and its structure (four sessions). Each session featured presentations of the latest research results and a lively Q&A session among the participants, which included VISTEC students and early career researchers. During his closing remarks, Prof. Satoshi Horike, head of the Smart Materials Research Center, talked about the importance of the utilization and application of research results, and expressed his appreciation for those involved in organizing the symposium.

International joint research activities promoted under the collaboration agreement between VISTEC and iCeMS have progressed through the establishment of the Smart Materials Research Center, holding joint symposiums, and other initiatives. The symposium reconfirmed the expansion of research collaboration and exchange between the two institutions. In addition to research exchange, the development of new international collaborative research projects in the same fields is also anticipated in the future.

Symposium Program

Day 1: November 27, 2023 (Mon.)



Time	Programme
09.00-10.00	Registration (VISTEC Auditorium, K Building, VISTEC)
10.00-10.40	Opening Remark and plenary talk by Dr. Pailin Chuchottaworn, Chairperson of VISTEC Council
10.40-11.05	Introduction of JSPS activities in Thailand/ASEAN by Ms. Toshie Fukuda, Vice-Director, JSPS Bangkok Office
11.05-11.15	Welcome Speech by Professor Pimchai Chaiyen, President of VISTEC
11.15-11.20	Speech by Professor Norihiro Tokitoh, Executive Vice-President for Research and Evaluation of KU
11.20-11.25	Speech by Professor Yasuyuki Kono, Vice-President for International Strategy of KU
11.25-11.35	Overview of KU-VISTEC relationship and history by Professor Susumu Kitagawa, Distinguished Professor of KU
11.35-11.55	Overview of KU-Mahidol University on-site laboratory by Dr. Nawatch Surinkul, Assistant Professor of Mahidol University
11.55-12.00	Photo Session
-- Lunch --	
13.15-14.00	Visit VISTEC-Kyoto University Smart Materials Research Center (3rd floor, M Bldg.)
14.00-16.30	VISTEC and EECi Tour
16:30 onward	Enjoy Loy Krathong Festival and dinner at V Building

Day 2: November 28, 2023 (Thu.)

Time	Programme
9.00-9.25	Registration
9.25-9.30	Opening Remark by Associate Professor Khamphee Phomphrai, Dean of MSE, VISTEC
9.30-10.00	Creation of a new selective separation mechanism using the dynamic framework of PCP/MOF -From gas mixtures to water isotopologues Professor Susumu Kitagawa, Distinguished Professor of KU
10.00-10.30	Pyrrolidinyl Peptide Nucleic Acids and Its Combination with Nanomaterials for Nucleic Acid Sensing Applications Professor Tirayut Vilaivan, Chulalongkorn University
-- 15 minutes break --	
10.45-11.15	Materials Science for Efficient Perovskite Solar Cells Professor Atsushi Wakamiya, KU
11.15-11.45	Towards the Electrified Future: The Rise of Advanced Rechargeable Energy Storage Associate Professor Montree Sawangphruk, VISTEC
-- Lunch --	
13.00-13.30	Drug discovery from Thai fungi at Prince of Songkla University Professor Vatcharin Rukachaisirikul, Prince of Songkla University
13.30-14.00	What Happens When We Mix Many Elements within a Nanoparticle? Associate Professor Kohei Kusada, KU
14.00-14.30	Metal-organic chalcogenolates – An emerging family of low-dimensional hybrid semiconductors Dr. Watcharaphol Paritmongkol, VISTEC
-- 15 minutes break --	
14.45-15.15	Developing green porous materials through defect engineering and composite formation with thermogels using metal-organic frameworks Dr. Tristan T. Y. Tan, A*STAR, Singapore
15.15-15.45	Accelerating the development of next-generation applications using porous coordination polymers Mr. Dai Kataoka, Chief Operating Officer of ATOMIS
15.45-16.00	Closing Remark by Professor Satoshi Horike, KU

Day 1: November 27, 2023 (Mon.)



(Left) Opening remarks and keynote speech by Dr. Pailin Chuchottaworn



(Right) Overview of JSPS activities by Ms. Toshie Fukuda (Vice-Director, JSPS Bangkok Office)



(Left) Welcome speech by President Pimchai Chaiyen



(Right) Speech by Executive Vice-President Norihiro Tokitoh



(Left) Overview of KU and OSL by Vice-President Yasuyuki Kono



(Right) Overview of KU–VISTEC relationships by Prof. Susumu Kitagawa



Overview of Smart Material Research Center by Prof. Satoshi Horike



Overview of Kyoto University On-site Laboratory at Mahidol University for Educational and Research Collaboration in Environmental Studies by Assistant Prof. Nawatch Surinkul



Group photo

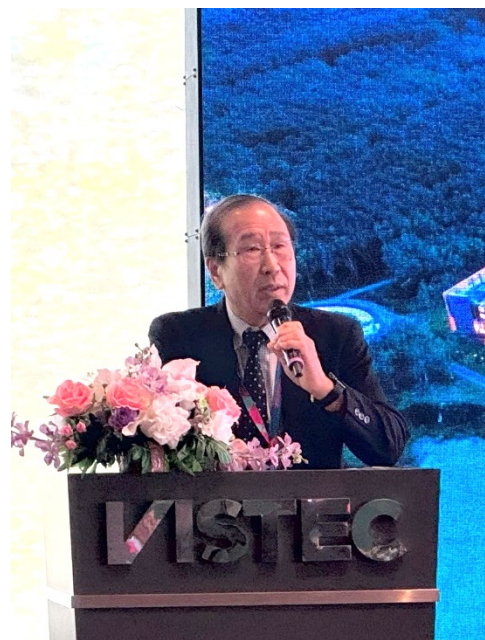


Tour of the Eastern Economic Corridor of Innovation (EECi)

Day 2: November 28, 2023 (Thu.)



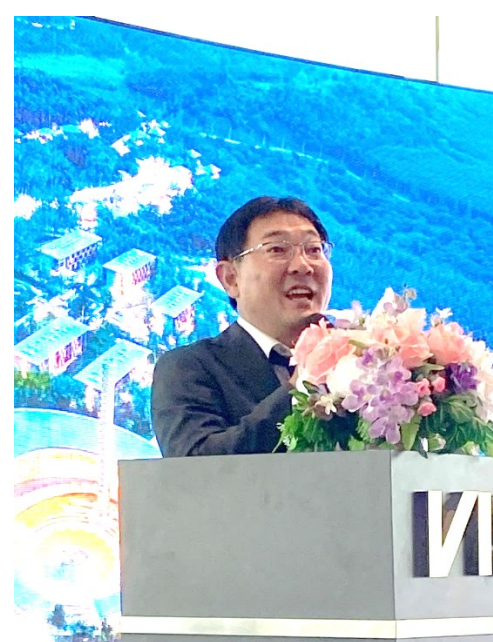
(Left) Opening remarks by Assoc. Prof. Khamphree Phomphrai



(Right) Lecture by Prof. Susumu Kitagawa



(Left) Lecture by Prof. Tirayut Vilaivan



(Right) Lecture by Prof. Atsushi Wakamiya



(Left) Lecture by Assoc. Prof. Montree Sawangphruk



(Right) Lecture by Prof. Vatcharin Rukachaisirikul



(Left) Lecture by Prof. Kohei Kusada



(Right) Lecture by Dr. Watcharaphol Paritmongkol



(Left) Lecture by Dr. Tristan T. Y. Tan



(Right) Lecture by Mr. Dai Kataoka (COO, Atomis Inc.)



(Left) Closing remarks by Prof. Satoshi Horike



(Right) (from left to right) Assoc. Prof. Khamphree Phomphrai, Prof. Susumu Kitagawa, Dr. Pailin Chuchottaworn, Former President Prof. Jumras Limtrakul



The symposium venue



The VISTEC campus