

Appendix 4.2

Innovation of photonic and electrochemical biosensors for cholangiocarcinoma diagnosis

Workshop on Innovation of photonic and electrochemical biosensors for cholangiocarcinoma diagnosis, Mission plan in CMU, Thailand on February 18-19, 2025.

This symposium is the output of the ASEAN IVO (http://www.nict.go.jp/en/asean_ivo/index.html) project, [Innovation of photonic and electrochemical biosensors for cholangiocarcinoma diagnosis], and financially supported by NICT (<http://www.nict.go.jp/en/index.html>).

I. Organizer:

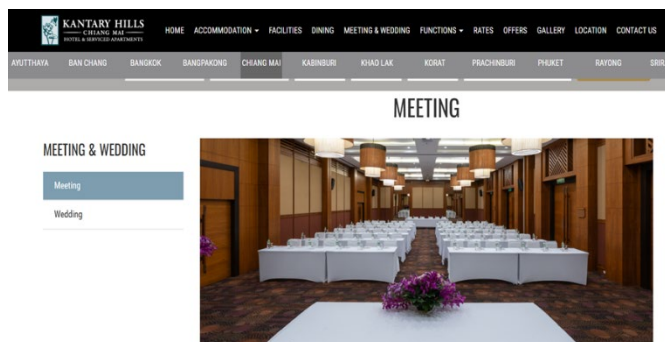
Name:	Ukrit Mankong
Position:	Associate Professor
Institution:	Biomedical Engineering Institute, Chiang Mai University, Thailand

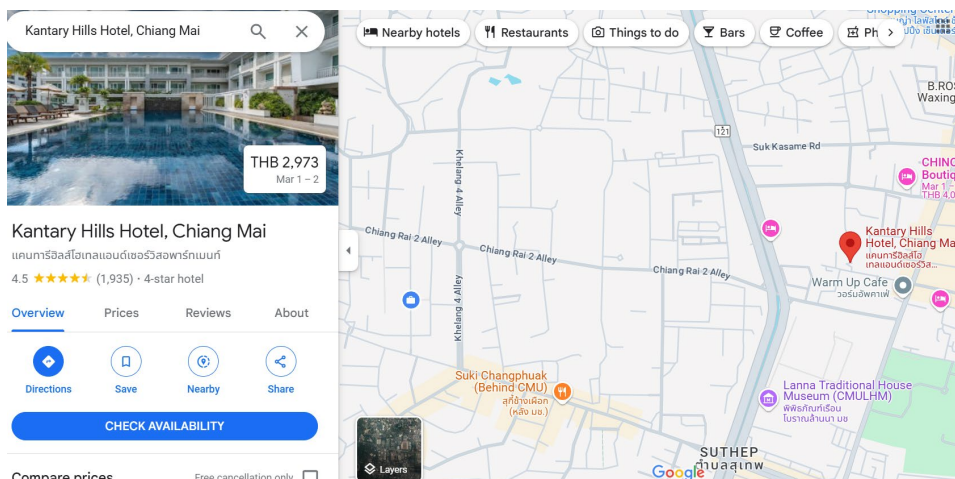
II. Program agenda:

Date: 18th-19th February 2025 Total (1.5 days)

Venue:

- Conference room at Kantary Hills Hotel, Chiang Mai
44, 44/1-4 Nimmanhaemin Road, Soi 12, Suthep, Muang, Chiang Mai 50200, Thailand.
<https://www.kantaryhills-chiangmai.com/>
<https://maps.app.goo.gl/HS5GnAnS3x6za4GY9>

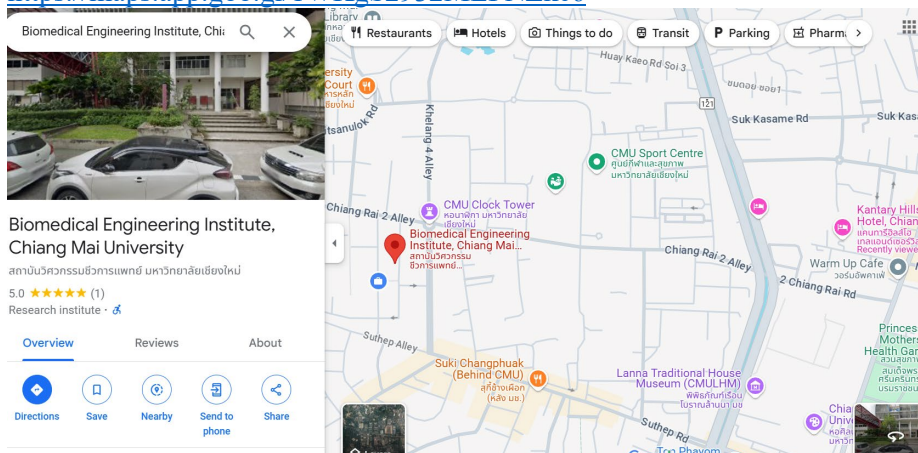




2. Biomedical Engineering Institute, Chiang Mai University

3rd Floor Research and Technology Transfer Building, Faculty of Engineering, Chiang Mai University 239 Huay Kaew Road, Suthep Subdistrict, Mueang Chiang Mai District Chiang Mai Province 50200 Thailand

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Day 1 (18 February 2025)

Location: Conference room at Kantary Hills Hotel, Chiang Mai

Time	Activities	Speaker	Remark
18 February 2025			
8.00-8.30	Registration / Moderator / MC	Miss Chavisa phivnil	
8.30-9.00	Open Remarks	1. CMU Executive Assoc Prof Dr. Sansanee Auephanwiriyaikul (Deputy Director of Biomedical Engineering Institute)	

		2. Dr. Hiroaki Harai (Director General, Network Research Institute, NICT) 3. Dr. Kazuyuki Nagata (Executive Director, Global Alliance Department, NICT)	
Photo session			
9:00-9.30	Keynote Speech: AI in Biomedical Engineering	Assoc Prof Dr. Sansanee Auephanwiriyaikul Chiang Mai University	
9:30-10.00	Overall summary of Innovation of photonic and electrochemical biosensors for cholangiocarcinoma diagnosis Project	Prof. Somchai Pinlaor Khon Kaen University	
10.00-10.30	Human samples collection activities in Laos	Dr. Champadeng Vongdala Cancer Center, Laos (former Mitthaphab Hospital)	
Break			
10.45-11.15	Development of a SERS-Based Sensor for CCA Diagnosis	Dr. Pitak Eiamchai NECTEC	
11.15-11.45	Peptidoproteomics in Medical and Veterinary Research	Dr. Sittiruk Roytrakul BIOTEC	
11.45-12.15	Early-Stage Cholangiocarcinoma Detection Using □ Surface-Enhanced Raman Spectroscopy and 1D/2D □ CNN with Discrete Wavelet Transform	Dr. Chavis Srichan/ Dr. Pobporn Danvirutai KKU	
Lunch			
13.30-14.00	Development of biosensing platform based on silicon photonic sensors and CCA diagnosis application.	Dr. Ukrit Mankong CMU	
14.00-14.30	Low-cost fabrication of silicon photonic sensors	Dr. Nithi Atthi TMEC (Invited speaker)	
14.30-15.00	Recent activity of Optical access laboratory/NICT	Dr. Yoshinari Awaji NICT	
Break			
15.15-17.45	Report of outcomes from each team - Report from MD KKU - Report from EN KKU - Report from CMU - Report from NSTDA (NECTEC/BIOTEC) - Report from Laos Discussion regarding future research directions	For project members, CMU & NICT Student and unrelated attendees will not attend	
17.45-18.00	Closing remarks		

Note: the presentation titles have been updated

Day 2 (19 February 2025)

Location: Biomedical Engineering Institute, CMU

Time	Activities	Speaker	Remark
19-February 2025			
8.30-10.00	Visit Biomedical Engineering Institute, CMU -Introduction of BMEI, CMU by CMU professors -Lab visit	Dr. Sarawut Kumphune Dr. Pathinan Paengnakorn Dr. Phornsawat Baipaywad	
10.00-12.00	Demonstration of Photonic biosensing prototype	Dr. Suruk Udomsom	
Lunch			

III. Participants:

Total participants: Day 1 = 40 people, Day 2 = 40 people.

IV. Summary of the activities corresponding to the objectives.

This two-day workshop, with a budget of 105,700 THB (support by NICT), aims to provide a comprehensive update on cholangiocarcinoma (CCA) research and the latest developments in electrochemical and photonic biosensors. It also serves as a 2-year progress review for the ASEAN IVO project's onsite mission, facilitating team formation and strategic planning to achieve the project's goals. The workshop also received additional sponsored by IRCT Co. Ltd., Yokogawa Thailand Co. Ltd., and Waseda University.

Key objectives and activities include:

1. Knowledge Exchange:

Presentations by renowned experts in CCA and biosensor technology

2. Project Progress Review:

Teams from MD-KKU, EN-KKU, CMU, NECTEC, BIOTEC, TMEC and Lao PDR. will present their 2-year activities and the final project outputs.

3. Collaborative Planning:

Discussions on future activities to ensure project objectives are met.

NICT team to provide guidance on project management and technical approaches.

All teams discuss the possibility of next ASEAN IVO project activities submitted earlier in January, 2025

4. Practical Experience and Networking:

- Site visit to Biomedical Engineering Institute, CMU to learn more about the activities
- See the demonstration of the photonic biosensing prototype developed by CMU in the project.
- Networking opportunities with biomedical industry, Manica-Thai Corp. Co.Ltd, K.Bioscience Co.Ltd., Yokogawa Thailand (as a sponsor) and IRCT Thailand (as a sponsor).

5. Skill Development:

Participants will gain insights into emerging trends and advancements in biosensor technology, with a focus on improving diagnostic accuracy and patient care.

6. Team Building:









Activities designed to build trust, confidence, and showcase achievements among research teams.

The workshop structure ensures a balance between theoretical knowledge, practical applications, and strategic planning. By bringing together experts and project teams, it fosters an environment conducive to knowledge sharing, collaboration, and innovation in the fields of CCA research and biosensor technology. This comprehensive approach aims to accelerate progress towards the project's ultimate goals of improving CCA diagnosis and treatment through advanced biosensor applications.


V. Others

(I) Picture of the activities.

Announcement of the workshop

**18
FEB
2025**




8:30 – 15:00
THAILAND TIME

WORKSHOP FOR INNOVATION OF PHOTONIC & ELECTROCHEMICAL BIOSENSORS FOR CHOLANGIOCARCINOMA DIAGNOSIS

The workshop provides a comprehensive update on cholangiocarcinoma (CCA) research and the latest developments in electrochemical and photonic biosensors. It also serves as the conclusions of the ASEAN IVO project. The ICT Virtual Organization of ASEAN Institutes and NICT (ASEAN IVO) stand as a global alliance of ICT R&D institutes and the universities across the ASEAN region and Japan.

SPEAKERS

Scan for Schedule and Titles



<https://cmu.ti/ivoworkshopview>

ASSOC. PROF. SANSANEE AUEPHANWIRIYAKUL
CHIANG MAI UNIVERSITY

PROF. SOMCHAI PINLAOR
KHON KAEN UNIVERSITY

DR. CHAMPADENG VONGDALA
CANCER CENTER, LAOS

DR. PITAK EIAMCHAI
NATIONAL ELECTRONICS AND COMPUTER TECHNOLOGY CENTER


DR. SITTIRUK ROYTRAKUL
NATIONAL CENTER FOR GENETIC ENGINEERING AND BIOTECHNOLOGY

DR. CHAVIS SRICHAN
KHON KAEN UNIVERSITY



DR. UKRIT MANKONG
CHIANG MAI UNIVERSITY

DR. NITHI ATTHI
THAI MICROELECTRONICS CENTER (INVITED SPEAKER)

DR. YOSHINARI AWAJI
NATIONAL INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY




Sponsored by





REGISTRATION IS FREE AND OPEN ONLINE.
 ONSITE ATTENDANCE IS BY INVITATION.





Broadcast from
Kantary Hills Hotel, Chiang Mai


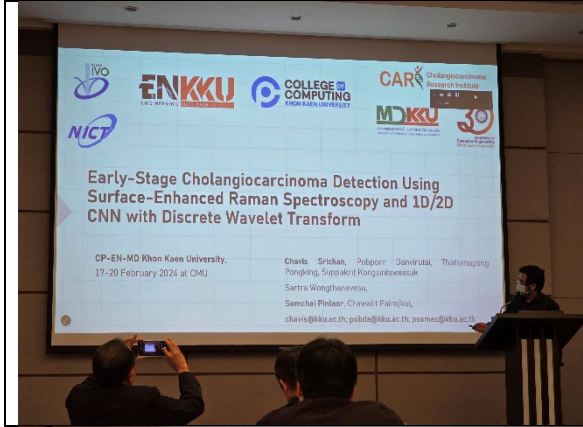
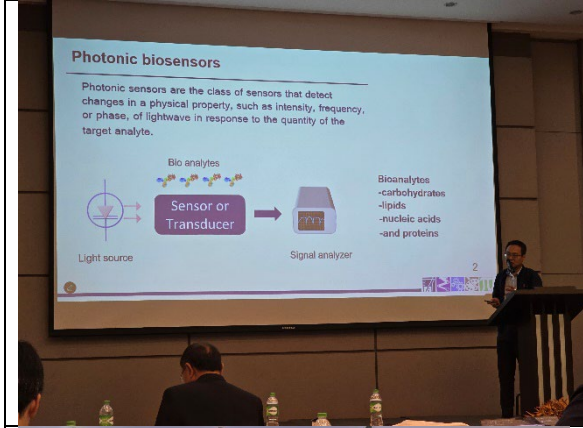




<https://forms.office.com/r/7HhCgkJi5D>
 Note: Online link will be sent by email



Picture(s) of the event	Picture description
	<p>Opening remark by Assoc Prof Dr. Sansanee Auephanwiriyaikul (Deputy Director of Biomedical Engineering Institute)</p>

	<p>Opening remark by Dr. Hiroaki Harai (Director General, Network Research Institute, NICT)</p>
	<p>Opening remark by Dr. Kazuyuki Nagata (Executive Director, Global Alliance Department, NICT)</p>
	<p>Group photos of participants</p>

	<p>Presentation photos</p> <p>Assoc Prof Dr. Sansanee Auephanwiriyaikul Chiang Mai University</p>
	<p>Presentation photos</p> <p>Prof. Somchai Pinlaor Khon Kaen University</p>
	<p>Presentation photos</p> <p>Dr. Champadeng Vongdala Cancer Center, Laos</p>
	<p>Presentation photos</p> <p>Dr. Pitak Eiamchai NECTEC</p>

	<p>Presentation photos</p> <p>Dr. Sittiruk Roytrakul BIOTEC</p>
	<p>Presentation photos</p> <p>Dr. Chavis Srichan / Dr. Pobporn Danvirutai Khon Kaen University</p>
	<p>Presentation photos</p> <p>Dr. Ukrit Mankong CMU</p>
	<p>Presentation photos</p> <p>Dr. Nithi Atthi TMEC</p>

	<p>Presentation photos</p> <p>Dr. Yoshinari Awaji NICT</p>
  	<p>Workshop photos on day 1</p>

	<p>Project discussion on day 1</p>
	<p>Biomedical Engineering Institute presentations on day 2</p>
	<p>Biomedical Engineering Institute visit and demo on day 2</p>

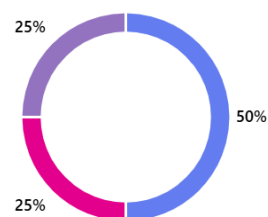


(II) Evaluation results

(1) Role of the evaluate persons.

1. Your role in this workshop and project (0 point)

- Researcher / Project investigator
- Member of NICT
- Company / Industry
- Student
- Other participants



(2) Meeting content evaluation.

● Very satisfied ● Somewhat satisfied ● neutral ● Somewhat dissatisfied ● Very dissatisfied

The content is useful and relevant

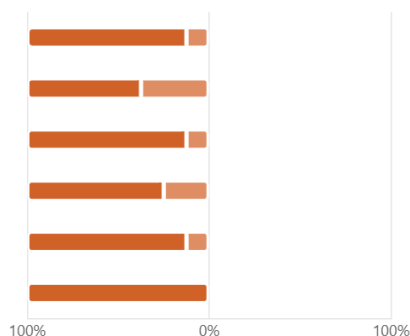
The speaker was clear and stimulating

I learned some new important information

I am more encouraged to continue my work

Time was properly allocated and enough for discussion

The venue and organization of the workshop



(3) Other comments

Modulator should improve for organization and announcement



ICT Virtual Organization of ASEAN Institutes and NICT (ASEAN IVO)

Project Leader: ____Prof. Somchai Pinlaor____

Institution of the Project Leader: ____Khon Kaen University____

Date: ____February 26th, 2025____