World Society of Engineering Thermochemistry

AIChE Singapore Local Section

Conference Programme E-Book

3rd World Conference on Engineering Thermochemistry (WCETC 2025)

26-29 July, 2025

Singapore

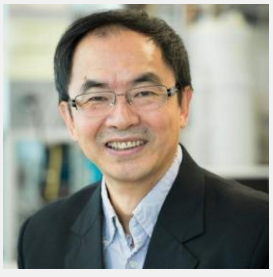
https://wsetc.org

"Welcome to the Third World Conference on Engineering Thermochemistry (WCETC 2025)! We are glad to announce that WCETC 2025 will be held on 26-29 July, 2025 in National University of Singapore. On behalf of the WCETC 2025 Organizing Committee, we sincerely invite you to join us in the beautiful Garden City of Singapore and present your latest work in the field of Engineering Thermochemistry. Two host organizations for this conference are National University of Singapore (NUS), Singapore and World Society of Engineering Thermochemistry (WSETC). The Co-organizer of this event is AIChE Singapore Local Section (AIChE-SLS). The conference provides an excellent opportunity to strengthen our network and jointly advance the development of Engineering Thermochemistry. The conference theme is dedicated to fostering collaboration and advancing this field of emerging importance in supporting our transition to more efficient and low-carbon energy conversion and utilization."

- **Chair**

Prof. Chi-Hwa Wang
National University of Singapore

- **Co-Chairs**



Prof. Xiaotao Bi
University of British Columbia

Prof. Ondrej Masek
University of Edinburgh

Prof. Shurong Wang
Zhejiang University;
Shenyang University of Chemical Technology

Scientific Committee

(in alphabetical order by last name)

Dingrong Bai	Shenyang University of Chemical Technology	China
Xiaotao Bi	University of British Columbia	Canada
Jamal Chaouki	Polytechnique Montréal	Canada
James Clark	Green Chemistry Centre, University of York	UK
Yulong Ding	University of Birmingham	UK
Anthony Dufour	University of Lorraine	France
Guoqing Guan	Hirosaki University	Japan
Zhancheng Guo	University of Science and Technology Beijing	China
Youn-Bae Kang	Pohang University of Science and Technology	Korea
Robert Legros	Polytechnique Montréal	Canada
Hui Li	Xi'an University of Architecture and Technology	China
Shuiqing Li	Tsinghua University	China
Dabin Liu	Nanjing University of Science & Technology	China
Barbara Lothenbach	Swiss Federal Laboratories for Materials Science and Technology	Switzerland
Ewa Marek	University of Cambridge	UK
Ondrej Masek	University of Edinburgh	UK
Guillain Mauviel	CNRS-Université de Lorraine	France
Koyo Norinaga	Nagoya University	Japan
Christoph Pfeifer	Universität für Bodenkultur Wien	Austria
Wolter Prins	Ghent University	Belgium
Lasse Rosendahl	Aalborg University	Denmark
Chi-Hwa Wang	National University of Singapore	Singapore
Jianqiang Wang	Chinese Academy of Sciences	China

Scientific Committee

(Continued, in alphabetical order by last name)

Shiwei Wang	Chinese Academy of Sciences	China
Shurong Wang	Zhejiang University	China
Hongwei Wu	Curtin University	Australia
Guangwen Xu	Shenyang University of Chemical Technology	China
Shicheng Zhang	Fudan University	China
Zhanguo Zhang	Shenyang University of Chemical Technology	China

Organizing Committee

(in alphabetical order by last name)

Xiaotao Bi	University of British Columbia	Canada
Guoqing Guan	Hirosaki University	Japan
Qiang Hu	Huazhong University of Science and Technology	China
Xiaorui Huang	Shenyang University of Chemical Technology	China
Chi-Hwa Wang	National University of Singapore	Singapore
Shurong Wang	Zhejiang University	China
Yiying Wang	National University of Singapore	Singapore
Guangwen Xu	Shenyang University of Chemical Technology	China
Siduo Zhang	University of British Columbia	Canada

Contents

WCETC 2025 Speakers

Prof. Chi-Hwa Wang

National University of Singapore, Singapore

Prof. Xiaotao Bi

University of British Columbia, Canada

Prof. Ondrej Masek

University of Edinburgh, UK

Prof. Shurong Wang

Zhejiang University, China; Shenyang University of Chemical Technology, China

Prof. Guangwen Xu

Shenyang University of Chemical Technology, China

Prof. Jamal Chaouki

Polytechnique Montréal, Canada

Prof. Yulong Ding

University of Birmingham, UK

Prof. Guoqing Guan

Hirosaki University, Japan

Prof. Eilhann E. Kwon

Hanyang University, Korea

Prof. Haiping Yang

Huazhong University of Science and Technology, China

Dr. Enyi Ye

A*STAR Institute of Materials Research and Engineering (IMRE), Singapore

Dr. Lili Zhang

A*STAR Institute of Sustainability for Chemicals, Energy and Environment (ISCE2), Singapore

Click on the speaker's name or picture for more details.

WCETC 2025 Speakers

Prof. Shicheng Zhang

Fudan University,
China

Prof. Ying Zheng

Western University,
Canada

Prof. Yurong He

Harbin Institute of Technology,
China

Prof. Rui Xiao

Southeast University,
China

Prof. Youn-Bae Kang

Pohang University of
Science and Technology,
Korea

A/Prof. Ewa Marek

University of Cambridge,
UK

Prof. Christoph Pfeifer

Universität für Bodenkultur Wien,
Austria

A/Prof. Cui Quan

Xi'an Jiaotong University,
China

Prof. Young-Kwon Park

University of Seoul,
Korea

Prof. Jingai Shao

Huazhong University of
Science and Technology,
China

Prof. Huiyan Zhang

Southeast University,
China

Prof. Yaning Zhang

Harbin Institute of Technology,
China

Click on the speaker's name or picture for more details.

WCETC 2025 Speakers

Achievement award
Prof. Hermann Hofbauer
Technical University of Vienna, Austria

Innovation award
Dr. Chenxi Zhang
Tsinghua University, China

Early-Career award
Asst. Prof. Yaxuan Jing
Nanjing University, China

Click on the speaker's name or picture for more details.

AICHE SLS 10th Anniversary Speakers

Kenny Yip
6th AIChE-SLS President

Stahl Asia Pacific Pte Ltd

MP Srinivasan
1st AIChE-SLS President

Royal Melbourne Institute of Technology, Australia

Lucas Ng Hong Kiang
2nd AIChE-SLS President

Petrochemical Corporation of Singapore (PCS)

Chi-Hwa Wang
3rd AIChE-SLS President

National University of Singapore, Singapore

Tushar Poddar
4th AIChE-SLS President

TPM Solutions LLC

Raymond Lau
5th AIChE-SLS President

Nanyang Technological University, Singapore

Click on the speaker's name or picture for more details.

This event also offered in Hybrid-mode for Zoom access for both remote and in-person attendance:
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AICHE SLS 10th Anniversary Speakers

Avijeet Mishra
NUS AIChE Student Chapter President

Asst Prof Xunyuan Yin
AIChE SLS 2024 Outstanding Young Faculty Award
Nanyang Technological University

Asst Prof Jie Shen
AIChE SLS 2024 Outstanding Young Faculty Award
Nanyang Technological University

Asst Prof Zhe Wu
AIChE SLS 2024 Outstanding Young Faculty Award
National University of Singapore

Dr Cindy Lee
AIChE SLS 2024 Service Award
National University of Singapore

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AICHE SLS 10th Anniversary Speakers

AIChE SLS 2024 Outstanding Young Researcher Award

Mr Jiguang Zhang, NUS ChBE PhD student
Dr. Ye Zhang, NUS Research Fellow

AIChE SLS 2024 Outstanding Young Researcher Award (Honorable Mention)

Mr. Wentao Song, NUS PhD Researcher
Dr. Zhihe Liu, NUS Postdoctoral Researcher

AIChE SLS 2024 Outstanding Postgraduate Research Thesis Award

Ms Ziqi Yang, NUS ChBE
Mr Vikas Dhamu, NUS ChBE

AIChE SLS 2024 Industry Award

Mr. Ignatius Lim, Business Development at Techmatic Controls Pte Ltd

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World Society of Engineering Thermochemistry

AIChE Singapore Local Section

Conference Programme

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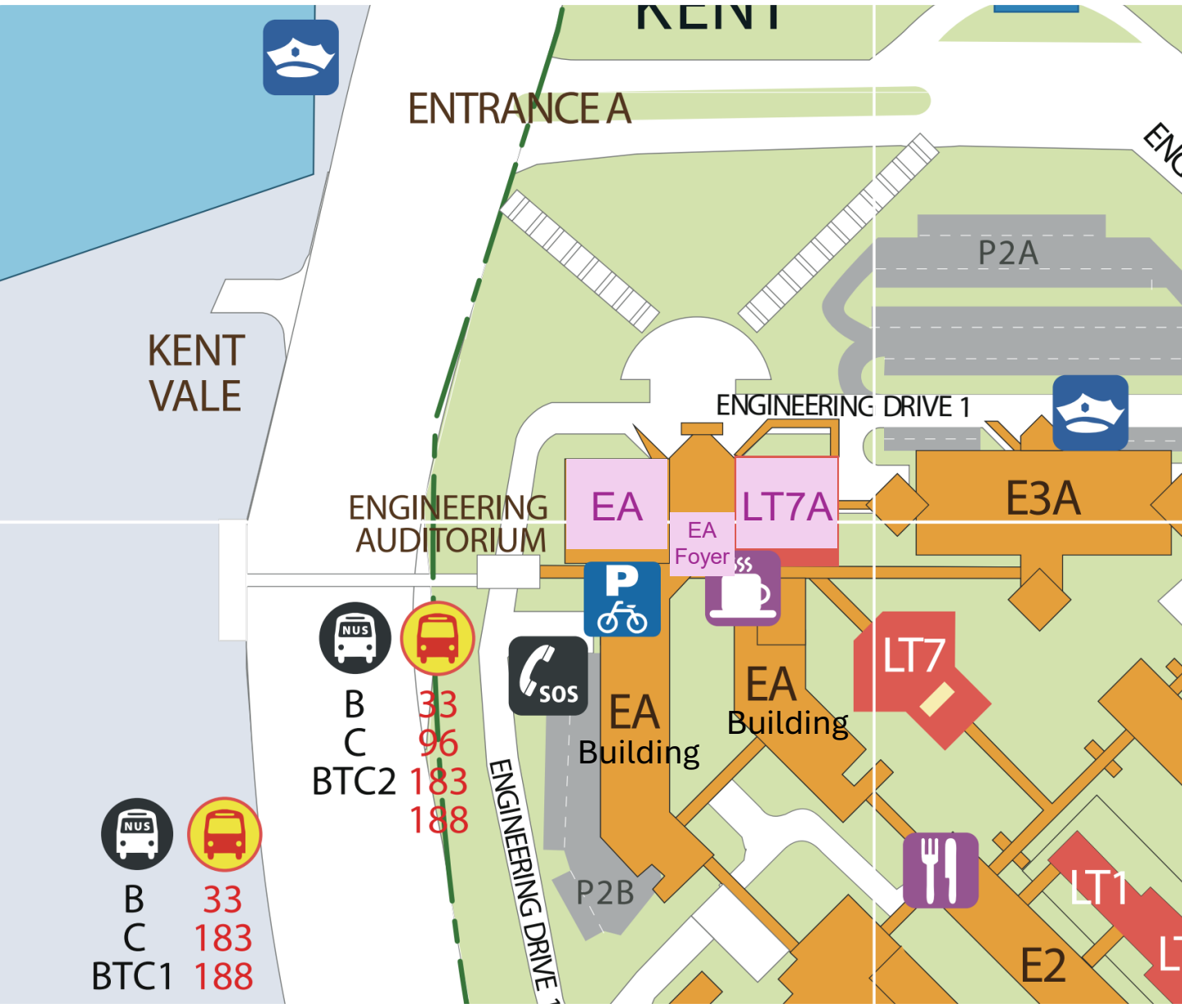
Conference Venue



Conference Venue

EA	Engineering Auditorium
LT7A	Lecture Theatre 7A
EA Foyer	Engineering Auditorium Foyer

Internal Shuttle Bus Stop

SBS Transit

https://map.nus.edu.sg/assets/campusmap/pdf/campus_map_full_version.pdf

Shuttle Bus Time Schedule

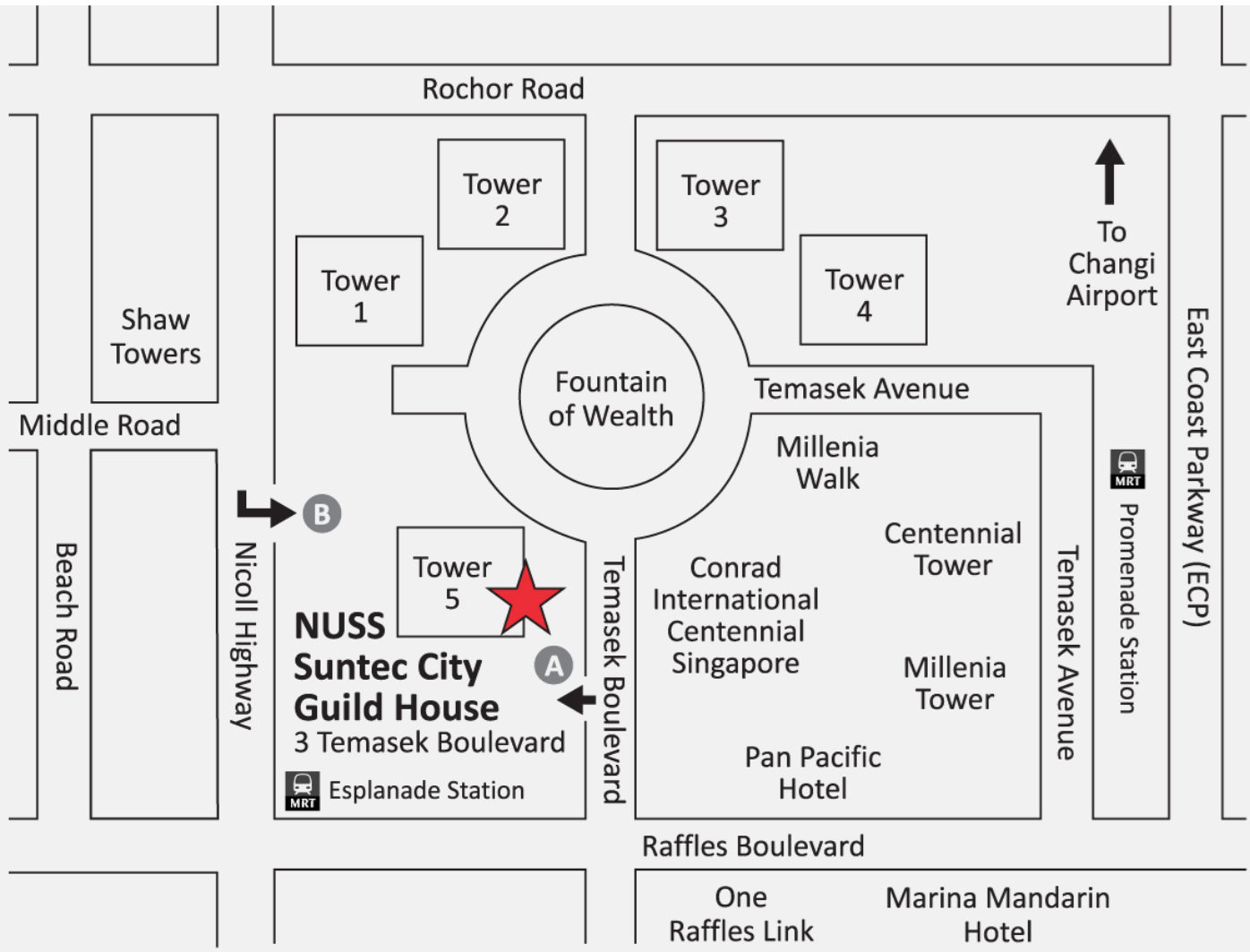
Date	Departure Time	Pick-up Point	Drop-off Point
26 July Saturday	2.00PM	Park Avenue Rochester Hotel	NUS College of Design and Engineering front gate
	4.30PM	NUS College of Design and Engineering front gate	Park Avenue Rochester Hotel
27 July Sunday	8.10AM	Park Avenue Rochester Hotel	NUS College of Design and Engineering front gate
	6.00PM	NUS College of Design and Engineering front gate	SUNTEC City Guild House
	9.30PM	SUNTEC City Guild House	Park Avenue Rochester Hotel
28 July Monday	8.30AM	Park Avenue Rochester Hotel	NUS College of Design and Engineering front gate
	6.40PM	NUS College of Design and Engineering front gate	Park Avenue Rochester Hotel

Note: Please arrive at the pick-up point at least **10 minutes before the scheduled departure time** to avoid missing the shuttle.

Please contact Loh Yung Pheng (Phone number: +65 86288677; Email: yungpheng.loh@u.nus.edu) for any queries on the conference shuttle busses.

World Society of
Engineering Thermochemistry

Conference Dinner (27 July)



BY BUS

Suntec Singapore (Convention Centre) : 36, 70M, 111, 133, 133A, 162M, 518, 518A, 700A, 857, NR1, 97, 97A, 70A, 106, 502, 502A, 502B, 518, 551, 575, 576, 577, 578, 579, 580, 581,

BY MRT

Nearest Station: Promenade / Esplanade

BY CAR

- Nicoll Highway
- Raffles Boulevard (from Bras Basah Road)
- Temasek Avenue (from Raffles Boulevard)
- Rochor Road exit from East Coast Expressway (ECP)

Nearest Carpark: West Wing (Green Zone) Carpark, Entrance A / B

Suntec City Guild House

3 Temasek Boulevard (Tower 5) #02- 401/402

Suntec City Mall Singapore 038983

*The dress code information is available on page 11.

Conference Agenda Overview

Time	26 July	27 July	28 July	29 July
Morning		Opening Ceremony; Plenary Session	Keynote Session	Lab Tour
Afternoon	Registration; AICHE SLS Session	Parallel Session; Keynote Session	Parallel Session; Keynote Session; Closing Ceremony	
Evening		Banquet*; WSETC AGM		

***DRESS CODE:** For the **banquet** at Suntec City Guild House on 27 July, the recommended dress code is **smart casual**.
Bermudas, ¾ pants, and sandals are **permitted**.
Sleeveless T-shirts, singlets, flip-flops and slippers are **not allowed** in any area of the Guild House, except at the swimming pool.

For more details, please refers to https://www.nuss.org.sg/nuss-dress-code-updated/

World Society of
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Conference Timetable

Date	Time	Content	Venue
26 July Saturday	13.00-16.00	Conference Registration	NUS EA Foyer
	14.00-15.30	AICHE SLS 10th Anniversary Celebration	NUS EA
	15.30-16.00	Tea Break/Joint reception	NUS EA Foyer
27 July Sunday	8.50-9.10	Opening Ceremony	NUS EA
	9.10-10.10	Plenary Session	NUS EA
	10.10-10.40	Tea Break	NUS EA Foyer
	10.40-11.50	Plenary Session	NUS EA
	11.50-12.50	Lunch Break	NUS EA Foyer
	12.50-15.45	Parallel Session	NUS EA; LT7A
	15.45-16.15	Tea Break	NUS EA Foyer
	16.15-17.30	Keynote Session	NUS EA
	18.30-22.00	Banquet & WSETC AGM	NUSS Suntec City Guild House
28 July Monday	9.10-10.10	Keynote Session	NUS EA
	10.10-10.35	Tea Break	NUS EA Foyer
	10.35-11.50	Keynote Session	NUS EA
	11.50-12.50	Lunch Break	NUS EA Foyer
	12.50-15.10	Parallel Session	NUS EA; LT7A
	15.10-15.30	Tea Break	NUS EA Foyer
	15.30-17.50	Parallel Session	NUS EA; LT7A
	17.50-18.15	Keynote Session	NUS EA
	18.15-18.25	Closing Ceremony	NUS EA
29 July Tuesday	9.00-12.00	Lab Tour	NUS; A*STAR

Engineering Auditorium Foyer (EA Foyer)	Saturday, 26 July 2025 All times are in Singapore time
13.00-16.00	Conference Registration
15.30-16.00 Joint reception for AICHE SLS and WCETC 2025	

Engineering Auditorium (EA)	Saturday, 26 July 2025 AICHE Singapore Local Section (SLS) 10th Anniversary Celebration
14.00-14.05	**Yip Kenny** (6th AIChE-SLS President). Opening ceremony. General Introduction of AIChE-SLS.
14.05-14.10	**MP Srinivasan** (1st AIChE-SLS President)
14.10-14.15	**Lucas Ng** (2nd AIChE-SLS President)
14.15-14.20	**Chi-Hwa Wang** (3rd AIChE-SLS President)
14.20-14.25	**Tushar Poddar** (4th AIChE-SLS President)
14.25-14.30	**Raymond Lau** (5th AIChE-SLS President)
14.30-14.35	NUS Student Chapter President Presentation
14.35-15.10	**Award Winners Presentation** **AIChE SLS 2024 Outstanding Young Faculty Award** • **Asst Prof Xunyuan Yin**, Nanyang Technological University • **Asst Prof Jie Shen**, Nanyang Technological University • **Asst Prof Zhe Wu**, National University of Singapore **AIChE SLS 2024 Industry Award** • **Mr. Ignatius Lim**, Business Development at Techmatic Controls Pte Ltd

This event also offered in Hybrid-mode for Zoom access for both remote and in-person attendance:
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Engineering Auditorium (EA)	Saturday, 26 July 2025 All times are in Singapore time AIChE SLS 10th Anniversary Celebration
15.10-15.30	**Award Presentation Ceremony and Photo Session** **AIChE SLS 2024 Outstanding Young Researcher Award** • **Mr Jiguang Zhang**, NUS ChBE PhD student • **Dr. Ye Zhang**, NUS Research Fellow **AIChE SLS 2024 Outstanding Young Researcher Award (Honorable Mention)** • **Mr. Wentao Song**, NUS PhD Researcher • **Dr. Zhihe Liu**, NUS Postdoctoral Researcher **AIChE SLS 2024 Outstanding Postgraduate Research Thesis Award** • **Ms Ziqi Yang**, NUS ChBE • **Mr Vikas Dhamu,** NUS ChBE **AIChE SLS 2024 Service Award** • **Dr Cindy Lee**, ChBE National University of Singapore **AIChE SLS 2024 10th Anniversary Member Award** • **Mr. Tushar Podder** • **Mr. Lucas Ng** • **Prof. Chi-Hwa Wang** • **Prof. Yen Wah Tong** • **A/Prof. Raymond Lau** • **Mr. Kenny Yip** • **Dr. Adil Dhalla** • **Mr. Jia Ming Ngai** • **Prof. Praveen Linga** • **A/Prof. Kang Zhou** • **Prof. Ning Yan** • **Dr. Tej S. Choksi** • **Mr. Calvin Neo**

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EA	Sunday, 27 July 2025	All times are in Singapore time
8.50-9.10	**Welcome Speech** **Chair** **Chi-Hwa Wang** **National University of Singapore**	
9.10-9.40	**Plenary Speaker** **Yulong Ding** **University of Birmingham, UK** Industrial decarbonization using thermochemical based PeroCycle technology *Join Zoom Meeting* *Meeting ID: 871 9698 5812; Passcode: 695496*	
9.40-10.10	**Plenary Speaker** **Jamal Chaouki** **Polytechnique Montréal, Canada** Microwave-assisted Thermochemical Reactions: Examples of Process Electrification *Join Zoom Meeting* *Meeting ID: 871 9698 5812; Passcode: 695496*	
10.10-10.40 Tea Break		
10.40-11.00	**Welcome Speech** **Co-Chair** **Ondrej Masek** **University of Edinburgh, UK** *Join Zoom Meeting* *Meeting ID: 871 9698 5812; Passcode: 695496*	
11.00-11.25	**Keynote Speaker** **Haiping Yang** **Huazhong University of Science and Technology, China** Renewable Energy Driven Biomass Conversion for H_2 and Biochar	
11.25-11.50	**Keynote Speaker** **Guoqing Guan** **Hirosaki University, Japan** Development of Heterostructure Catalysts for Bio-oil Upgrading	
11.50-12.50 Lunch Break		

EA	Sunday, 27 July 2025 Session chair: Haiping Yang	All times are in Singapore time
12.50-13.10	**Highlighted Presentation** **Young-Kwon Park** **University of Seoul, Korea** Effective conversion of waste plastic over metal loaded zeolite under methane gas	
13.10-13.30	**WCETC 2025 Innovation Award** **Chenxi Zhang** **Tsinghua University, China** Syngas to Aromatics in Fluidized Bed Reactor	
13.30-13.45	Yun Yu Curtin University, Australia Formation of Condensable Volatiles during Cellulose Pyrolysis: Thermal Ejection vs Evaporation	
13.45-14.00	Mo Zheng Institute of Process Engineering, Chinese Academy of Sciences, China Investigation of co-pyrolysis of biomass and polymer by using reactive molecular dynamics: Understanding tar generation and char structure transformation	
14.00-14.15	Chen Qu Tohoku University, Japan Characterization of hydrochars produced from nitrogen-rich biomass	
14.15-14.30	Hongcai Su Zhejiang University, China Hydrogen and terephthalic acid production from polyester-polyolefin mixed waste plastics by low-temperature hydrothermal conversion process	
14.30-14.45	Jiajun Yu Southeast University, China Lignin Catalytic Pyrolysis Hydrodeoxygenation Coupled with Methoxy Reforming for Hydrogen Supply In-Situ	
14.45-15.00	Danchen Zhu Huazhong University Of Science And Technology, China Tuning metal site and surface functional group structure in MgO particles biochar composites to unravel the mechanism for adsorption of phosphate from aqueous solution	
15.00-15.15	Yuhui Zhang Shenyang University of Chemical Technology, China Nature of pyrolysis: thermally conformed progressive reaction founds the essential way to maximize oil yield	

EA	Sunday, 27 July 2025 Session chair: Haiping Yang
15.15-15.30	Hong Zhang Shenyang University of Chemical Technology, China Updated time-dependent variation of reaction rate during biochar gasification using a plug-flow reactor with online particle sampling
15.30-15.45	Wei Cheng Huazhong University Of Science And Technology, China Emission behavior and reduction mechanism of particulate matter during the co-combustion of biomass and municipal sewage sludge
15.45-16.15 Tea Break	

World Society of
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Lecture Theatre 7A (LT7A)	Sunday, 27 July 2025 Session chair: Lili Zhang; Huiyan Zhang All times are in Singapore time
12.50-13.10	**Highlighted Presentation** **Huiyan Zhang** **Southeast University, China** Research Progress on the Oriented Conversion of Biomass to High-quality Liquid Fuels and Carbon Materials
13.10-13.30	**WCETC 2025 Early-Career Award** **Yaxuan Jing** **Nanjing University, China** Catalytic Upcycling of Waste Plastics via Precise C–O and C–C Bond Activation
13.30-13.45	Bo Wang Harbin Institute of Technology, China Solar-Driven Biomass Chemical Looping Gasification and Potassium Feldspar-Toughened Oxygen Carriers for Enhanced Syngas and Hydrogen Production
13.45-14.00	Yiying Wang National University of Singapore, Singapore Hydrothermally Synthesized Biochar-Carbon Nanotubes Composites: Upcycling Plastic Waste into Multifunctional Materials
14.00-14.15	Xinhua Liu Institute of Process Engineering, Chinese Academy of Sciences, China Measurement and characterization of gas-solid apparent reaction kinetics coupling intraparticle heat and mass transfer
14.15-14.30	Gan Wan Huazhong University of Science and Technology, China Using non-thermal plasma to improve elemental mercury removal efficiency of copper-containing brominated pyrolytic chars derived from waste printed circuit boards
14.30-14.45	Zhongliang Yu Shangrao Normal University, China Thermochemical method to synthesize noble metal-like catalysts for formic acid decomposition
14.45-15.00	Yu Zhang Xi'an Jiaotong University, China Catalytic Hydrothermal Gasification of Biomass for Renewable Natural Gas Production: Experimental Analysis of Gasification Performance and Comprehensive System Evaluation

Lecture Theatre 7A (LT7A)	Sunday, 27 July 2025 Session chair: Lili Zhang; Huiyan Zhang	All times are in Singapore time
15.00-15.15	Deao Zhu Zhejiang University, China Kinetics simulation study of biomass partial gasification for producer gas and biochar co-production in the fluidized bed	
15.15-15.30	Haodong Fan Huazhong University of Science and Technology, China Experimental and numerical study of combustion and emission characteristics of biomass gasification gas blended with natural gas in a non-premixed burner	
15.30-15.45	Abu Farhan Bin Abu Kasim University of Cambridge, UK Realising the opportunity for improving the efficiency of compressed air energy storage using non-stoichiometric solid oxides	
15.45-16.15 Tea Break		

World Society of
Engineering Thermochemistry

EA	Sunday, 27 July 2025 Session chair: Chi-Hwa Wang; Rui Xiao	All times are in Singapore time
16.15-16.40	**Keynote Speaker** **Lili Zhang** **A*STAR's Institute of Sustainability for Chemicals, Energy and Environment (ISCE2)** Sustainable production of chemicals and fuels from alternative feedstock	
16.40-17.05	**Keynote Speaker** **Ewa Marek** **University of Cambridge, UK** Chemical Looping for Sustainable Industry: A new approach towards green chemicals *Join Zoom Meeting* *Meeting ID: 871 9698 5812; Passcode: 695496*	
17.05-17.30	**Keynote Speaker** **Yurong He** **Harbin Institute of Technology, China** Multiscale flow and heat mass transfer characteristics in application of particle system *Join Zoom Meeting* *Meeting ID: 871 9698 5812; Passcode: 695496*	

World Society of
Engineering Thermochemistry

Suntec City Guild House	Sunday, 27 July 2025	All times are in Singapore time
19.45-20.30	WSETC Annual General Meeting (AGM)	
19.45-20.05	**Welcome Speech by WSETC Co-Directors** **Guangwen Xu** Fellow of The Royal Academy of Engineering President of Shenyang University of Chemical Technology Chasing after engineering thermochemistry for groundbreaking innovations **Xiaotao Bi** Director, UBC Clean Energy Research Centre (CERC) University of British Columbia	
20.05-20.30	**WSETC Award Ceremony and Photo Session** **Achievement Award** **Hermann Hofbauer**, Technical University of Vienna **Innovation Award** **Chenxi Zhang**, Tsinghua University **Early-Career Award** **Yaxuan Jing**, Nanjing University	

WSETC AGM is also offered in Hybrid-mode for Zoom access for those Scientific Committee Members not physically attending WCETC 2025:

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Meeting ID: 871 9698 5812; Passcode: 695496

EA	Monday, 28 July 2025	All times are in Singapore time
9.10-9.20	**Welcome speech** **Co-Chair** **Xiaotao Bi** **University of British Columbia, Canada**	
9.20-9.45	**Keynote Speaker** **Ying Zheng** **Western University, Canada** Catalytic Hydrogenation for drop-in biofuels	
9.45-10.10	**Keynote Speaker** **Shicheng Zhang** **Fudan University, China** Hydrothermal conversion of organic waste for resource recovery and pollution control	
10.10-10.35 Tea Break		
10.35-11.00	**Welcome speech** **Co-Chair** **Shurong Wang** **Zhejiang University, China** **Shenyang University of Chemical Technology, China** Hydrothermal conversion of biomass and plastics	
11.00-11.25	**Keynote Speaker** **Eilhann E. Kwon** **Hanyang University, Korea** Applying Pseudo-Catalytic Transesterification in the Thermo-Chemical Process	
11.25-11.50	**Keynote Speaker** **Enyi Ye** **A*STAR's Institute of Materials Research and Engineering (IMRE), Singapore** Thermochemical Depolymerization of Polyolefins for Chemical Upcycling	
11.50-12.50 Lunch Break		

EA	Monday, 28 July 2025 Session chair: Ying Zheng; Jingai Shao	All times are in Singapore time
12.50-13.10	**Highlighted Presentation** **Jingai Shao** **Huazhong University of Science and Technology, China** Recent advances in CO_2 adsorption of biomass-based porous carbons	
13.10-13.25	Yanwei Hu Harbin Institute of Technology, China Boiling Heat Transfer Mechanism and Bubble Dynamics Characteristics on Adaptive Wetting Surfaces	
13.25-13.40	Guang Yang Huazhong University Of Science And Technology, China Modification of Ni@SiO_2 yolk-shell catalysts for the efficient and stable reforming of biomass tar	
13.40-13.55	Nivedha Katturajan RMIT University, Melbourne, Australia Solid-State Hybrid Supercapacitor Based on Bi_2O_3/AC and $RuCo_2O_4$ Electrodes for Enhanced Energy Storage Performance	
13.55-14.10	Chuang Zhang China University of Mining & Technology, China Ultrasonic-coupled ozone oxidation of Shengli lignite for efficient extraction of humic acid	
14.10-14.25	Geng Li Huazhong University Of Science And Technology, China High-quality syngas production: producing high-quality combustible gas by high temperature reaction of torrefied biomass and catalyst synergy in Converter high-temperature flue gas	
14.25-14.40	Hanmin Yang KTH Royal Institute of Technology, Sweden Insights into pyrolysis of hydrothermal-treated Cl-containing mixed plastic waste: chlorine transformation and reactions kinetics	
14.40-14.55	Ke Yang Southeast University, China Study on the biomass catalytic pyrolysis over hierarchically porous ZSM-5 catalyst derived from solid wastes by means of photoionization mass spectrometry	
14.55-15.10	Hanyu Hu Zhejiang University, China Electro-Triggered Phase-Change Gels via a Biomass-Based Design for Controllable Seasonal Heat Storage at Room Temperature	
15.10-15.30 Tea Break		

LT7A	Monday, 28 July 2025 Session chair: Shicheng Zhang; Yaning Zhang	All times are in Singapore time
12.50-13.10	**Highlighted Presentation** **Yaning Zhang** **Harbin Institute of Technology, China** Sustainable high-quality aviation oil recovery from organic solid wastes through microwave-assisted heating technology	
13.10-13.25	Zhengang Zhou Zhejiang University, China Effective amine solvent regeneration over ordered mesoporous silica catalysts for energy-saving CO_2 capture	
13.25-13.40	Bo Peng Southeast University, China N-doped hierarchical porous carbons derived from heavy bio-oil for supercapacitor applications	
13.40-13.55	Chenxu Chen China University of Mining & Technology, China Enhancing the efficiency of methylcyclohexane dehydrogenation of Pt/Al_2O_3 catalyst doped by Ga and Ce adding: Unraveling the role of oxygen vacancy	
13.55-14.10	Ruihan Dong Huazhong University Of Science And Technology, China Comprehensive investigation on the influence of different activators on pyrolysis kinetics, thermodynamics, and product characteristics in the one-step preparation of activated carbon from spirulina	
14.10-14.25	Dohee Kwon Hanyang University, Korea Conversion of polyoxymethylene waste into syngas through CO_2-assisted pyrolysis	
14.25-14.40	Zeyuan Liu Zhejiang University, China CO_2 sequestration technologies impede the progress toward the Sustainable Development Goals in the climate-energy-air-health cascade	
14.40-14.55	Xin Jia Shenyang University of Chemical Technology, China Internals-regulated pyrolysis under high-vacuum conditions for acquiring massive primary pyrolytic products: Verification and Characteristics	
14.55-15.10	Hao Jiang Huazhong University Of Science And Technology, China Carbon black production from high-temperature pyrolysis of waste tires	
15.10-15.30 Tea Break		

EA	Monday, 28 July 2025 Session chair: Eilhann E. Kwon; Chihiro Fushimi	All times are in Singapore time
15.30-15.50	**Highlighted Presentation** **Chihiro Fushimi** **Tokyo University of Agriculture and Technology, Japan** Heat storage and discharge properties of microencapsulated phase change material in a fluidized bed for flexible power generation	
15.50-16.05	Zhibing Chang China University of Mining & Technology, China Oxidative-Assisted Pyrolysis of Tar-Rich Coal for Light Tar Production at Low Heating Temperatures	
16.05-16.20	Zizhao Chen Huazhong University Of Science And Technology, China MOF-based medium-entropy alloys as efficient and stable catalysts for dry reforming of methane	
16.20-16.35	Zihang Zhang Zhejiang University, China Mechanistic insights into the role of N/O-doped biochar in enhanced phenolics production during biomass pyrolysis	
16.35-16.50	Lu Wang Huazhong University of Science and Technology, China Mechanism of K-assisted Bamboo Gasification for Porous Char and H_2-rich Syngas Poly-generation	
16.50-17.05	Chunxing Ren Institute of Process Engineering, Chinese Academy of Sciences, China Overall reaction mechanisms of UMDH pyrolysis unraveled with ReaxFF MD simulations and shock tube experiments	
17.05-17.20	Yanling Zhao Huazhong University of Science and Technology, China Targeted catalyst regulation based on the contribution of catalyst properties to catalytic combustion of Volatile Organic Compounds	
17.20-17.35	Yuhong Qin Taiyuan University of Technology, China ReaxFF molecular dynamics and thermodynamics study on release and transformation of different types of potassium species during biomass thermal conversion	

LT7A	Monday, 28 July 2025 Session chair: Enyi Ye; Youn-Bae Kang	All times are in Singapore time
15.30-15.50	**Highlighted Presentation** **Youn-Bae Kang** **Pohang University of Science and Technology, Korea** Development of a Novel Technique to Measure Hydrocarbon Gas Pyrolysis Rate using Molten Metal Catalysts for Turquoise Hydrogen Production	
15.50-16.05	Ningbo Gao Xi'an Jiaotong University Biomass/Plastic Gasification Combined Catalysis-Plasma for Green H_2 Production	
16.05-16.20	Funing Wang Zhejiang University, China Biochar technology cannot offset land carbon emissions in Guangdong province, China	
16.20-16.35	Jung-Hun Kim Hanyang University, Korea CO_2-mediated Catalytic Pyrolysis of Spent Filter Waste	
16.35-16.50	Tianqi Tang Harbin Institute of Technology, China Meso-scale structure evolution process in a wet particle system by CFD-DEM simulation	
16.50-17.05	Xiayu Liu Huazhong University of Science and Technology, China Microwave-assisted catalytic pyrolysis of microalgae over a composite catalyst of HZSM-5/BC for nitrogen-containing chemicals	
17.05-17.20	Jingfeng Wu Zhejiang University, China Mild upgradation of lignin-derived phenols to cycloalkanes over polyoxometalate catalysts	
17.20-17.35	Amir Jalalinejad Karlsruhe Institute of Technology (KIT), Germany Predictive Thermodynamic Modeling for Efficient Distillation of Fast Pyrolysis Bio-Oil Fractions	
17.35-17.50	Hao Song Huazhong University of Science and Technology, China Physicochemical structure evolution and kinetic analysis during bamboo char CO_2 gasification	

EA	Monday, 28 July 2025	All times are in Singapore time
17.50-18.15	**Keynote Speaker** **Christoph Pfeifer** **Universität für Bodenkultur Wien, Austria** Electrifiation of a multi fluidized bed steam gasification process. *Join Zoom Meeting* *Meeting ID: 871 9698 5812; Passcode: 695496*	

EA	Monday, 28 July 2025
18.15-18.25	Conference closing

World Society of
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	Tuesday, 29 July 2025	All times are in Singapore time
10.00-11.00	Laboratory Tour and Visit to the **Agency for Science, Technology and Research (A*STAR)' s Institute of Materials Research and Engineering (IMRE)**	
11.00-11.30	Laboratory Tour and Visit to **Department of Chemical and Biomolecular Engineering, National University of Singapore (NUS)**	
11.30-12.00	Laboratory Tour and Visit to **Campus for Research Excellence And Technological Enterprise (CREATE) Tower, NUS**	
13.00-14.00	Laboratory Tour and Visit to **ASTAR's Institute of Sustainability for Chemicals, Energy and Environment (ISCE2)***	

If you are interested in participating, please contact Yiying Wang at e0679975@u.nus.edu.

***Jurong Island (JI) Passes are required for the ISCE2 visit.** Visitors are kindly requested to contact Yiying Wang at e0679975@u.nus.edu to obtain the JI Pass application form. Participants who prefer not to provide personal information for the JI Pass application may opt to join only part of the lab tour.

World Society of
Engineering Thermochemistry

WCETC 2025 Achievement Award

Achievement Award Winner

Prof. Hermann Hofbauer

Department of Chemical Engineering, Vienna University of Technology (TU Wien), Austria

Professor Hermann Hofbauer is internationally recognized for his pioneering contributions to thermal biomass utilization and chemical engineering. With over 30 years of research and innovation in the field of engineering thermochemistry, he has played a key role in transforming biomass into a clean, renewable energy source.

His most notable achievement is the development of the **Güssing gasifier**—the world's first successful commercial-scale dual fluidized bed steam gasification plant for biomass. Launched in Güssing, Austria, this facility marked a breakthrough in renewable energy by demonstrating how biomass can be efficiently converted into high-quality synthesis gas (syngas). The plant attracted widespread attention from scientists, engineers, and industry leaders, establishing itself as a global benchmark and triggering further research and deployment of similar technologies worldwide.

Under Professor Hofbauer's leadership, this gasification platform was further expanded to produce synthetic natural gas (SNG) and liquid biofuels, paving the way for more flexible and sustainable energy systems. His work on advanced gas cleaning and integration of biomass into chemical production has influenced both academia and industry.

Professor Hofbauer has authored or co-authored over 330 scientific publications, which have been cited more than 11,000 times. He holds an h-index of 60 (Scopus), reflecting the high impact and lasting relevance of his research. He has coordinated numerous national and European research projects and has served in key international roles, including as Austria's representative and chair in several IEA Bioenergy Executive Committees.

Beyond his research accomplishments, Professor Hofbauer has been a dedicated educator and university leader. He has held senior academic positions at TU Wien, where he has helped shape curricula and mentored generations of students and young researchers in chemical and process engineering.

Through his visionary work, Professor Hofbauer has advanced the global transition toward renewable energy. His innovations in biomass gasification have not only influenced science and engineering but also helped establish Austria as a hub of sustainable energy research. He is a truly deserving recipient of this award, recognized for his scientific excellence, leadership, and enduring contributions to a cleaner energy future.

WCETC 2025 Innovation Award

Innovation Award Winner

Dr. Chenxi Zhang

Department of Chemical Engineering, Tsinghua University, China

Doctor Chenxi Zhang is a distinguished leader in engineering thermochemistry, whose groundbreaking contributions span chemical engineering, particle technology, and sustainable energy. He exemplifies the rare blend of deep scientific insight and practical innovation, underpinned by expertise in physics, materials science, and catalysis.

In 2023, Doctor Zhang led the successful launch of the world's first industrial-scale sustainable aviation fuel (SAF) demonstration plant based on CO_2 hydrogenation—marking a major global milestone. With annual production capacity in the tens of thousands of tons, the plant places him among world leaders in sustainable fuels, alongside industrial giants like Honeywell UOP and Johnson Matthey.

Doctor Zhang has authored over 40 peer-reviewed publications and holds more than 70 patents, demonstrating both academic excellence and strong real-world impact. His honors include the 2024 Industrial & Engineering Chemistry Research Influential Researcher Award and the 2023 PARTICUOLOGY Outstanding Reviewer Award.

Beyond academia, Doctor Zhang is co-founder and CTO of Tsing Energy Co. Ltd., where he plays a key role in commercializing CO_2 hydrogenation technologies. His leadership and vision have driven significant industrial investment and technological scale-up. Doctor Zhang's achievements make him an outstanding recipient of this Innovation Award.

WCETC 2025 Early Career Award

Early Career Award Winner

Asst. Prof. Yaxuan Jing

School of the Environment, Institute for the Environment and Health, Nanjing University, China

Assistant Professor Yaxuan Jing is an emerging leader in the field of catalytic thermochemical conversion, with a focus on the upcycling of waste plastics and biomass into valuable fuels and chemicals. His innovative research addresses critical environmental and energy challenges by developing precise catalytic strategies for breaking down complex molecular structures.

In plastic upcycling, Assistant Professor Jing has pioneered methods for the selective cleavage of C–O and C–C bonds in waste polymers, enabling their transformation into high-value arenes and clean fuels. Notably, he was the first to achieve catalytic conversion of mixed aromatic plastics directly into arenes—a breakthrough in plastic waste valorization.

In the realm of biomass conversion, he introduced novel C–C coupling approaches to synthesize longer-chain biofuel precursors. His application of the Robinson annulation reaction marked the first use of this method for increasing carbon chain length in biofuel intermediates.

Assistant Professor Jing has published 25 first- or corresponding-author papers in leading journals, including Nature Reviews Chemistry, Angewandte Chemie, Chem, and Accounts of Chemical Research, earning over 1,900 citations. Three of his papers have been recognized as ESI Highly Cited Papers.

3rd World Conference on Engineering Thermochemistry (WCETC 2025)

26-29 July, 2025

Singapore

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