



## **Conference Programme**

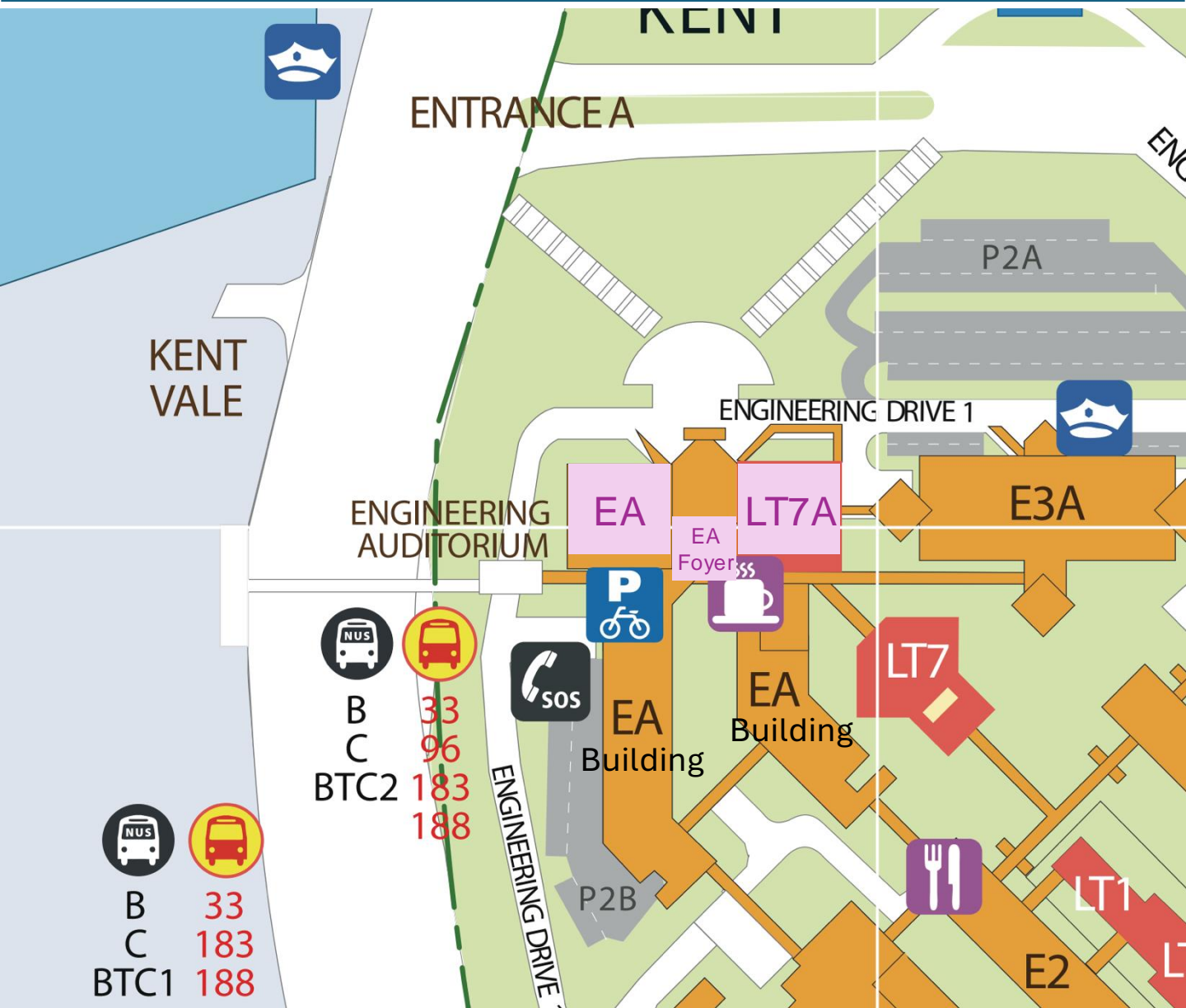
# **3rd World Conference on Engineering Thermochemistry (WCETC 2025)**

**26-29 July, 2025**

**Singapore**



**<https://wsetc.org>**

# Location



## Conference Venue

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

|   |                           |
|---|---------------------------|
|  | Internal Shuttle Bus Stop |
|  | SBS Transit               |

|  |  |
|--|--|
| Engineering Auditorium Foyer (EA Foyer)  | Saturday, 26 July 2025 All time are in Singapore time  |
| 13.00-16.00  | Conference Registration  |
| Engineering Auditorium (EA)  | Saturday, 26 July 2025<br><br><b>AICHE Singapore Local Section (SLS) 10<sup>th</sup> Anniversary Celebration</b> |
| 14.00-14.05  | <b>Yip Kenny</b> (6 <sup>th</sup> AIChE-SLS President).<br>Opening ceremony. General Introduction of AIChE-SLS.  |
| 14.05-14.10  | <b>MP Srinivasan</b> (1 <sup>st</sup> AIChE-SLS President)   |
| 14.10-14.15  | <b>Lucas Ng</b> (2 <sup>nd</sup> AIChE-SLS President)  |
| 14.15-14.20  | <b>Chi-Hwa Wang</b> (3 <sup>rd</sup> AIChE-SLS President)  |
| 14.20-14.25  | <b>Tushar Poddar</b> (4 <sup>th</sup> AIChE-SLS Chair)   |
| 14.25-14.30  | <b>Raymond Lau</b> (5 <sup>th</sup> AIChE-SLS Chair)   |
| 14.30-14.35  | NUS Student Chapter President Presentation   |
| 14.35-14.40  | NTU Student Chapter President Presentation   |
| 14.40-15.00  | Award Presentation Ceremony and Photo Session  |
| 15.00-15.30  | Award Winners Presentation   |
| <i>This event also offered in Hybrid-mode for Zoom access for both remote and in-person attendance:</i><br><br>Join Zoom Meeting<br><a href="https://nus-sg.zoom.us/j/81270920709?pwd=aOQottNoVz5xCTbYQz3vKnYuTPyFSK.1">https://nus-sg.zoom.us/j/81270920709?pwd=aOQottNoVz5xCTbYQz3vKnYuTPyFSK.1</a><br>Meeting ID: 812 7092 0709<br>Passcode: 921448 |  |
| EA Foyer   | Saturday, 26 July 2025   |
| 15.30-16.00  | Joint reception for AIChE SLS and WCETC 2025   |

| EA          | Sunday, 27 July 2025  | All time are in Singapore time |
|-------------|---|--------------------------------|
| 8.50-9.10   | <b>Welcome Speech</b><br><b>Chair</b><br><b>Chi-Hwa Wang</b><br><b>National University of Singapore</b>   |                                |
| 9.10-9.40   | <b>Plenary Speaker</b><br><b>Yulong Ding</b><br><b>University of Birmingham, UK</b><br>Industrial decarbonization using thermochemical based PeroCycle technology                         |                                |
| 9.40-10.10  | <b>Plenary Speaker</b><br><b>Jamal Chaouki</b><br><b>Polytechnique Montréal, Canada</b><br>Microwave-assisted Thermochemical Reactions: Examples of Process Electrification               |                                |
| 10.10-10.30 | Tea Break   |                                |
| 10.30-11.00 | <b>Welcome Speech</b><br><b>Co-Chair</b><br><b>Ondrej Masek</b><br><b>University of Edinburgh, UK</b>   |                                |
| 11.00-11.25 | <b>Keynote Speaker</b><br><b>Haiping Yang</b><br><b>Huazhong University of Science and Technology, China</b><br>Renewable Energy Driven Biomass Conversion for H <sub>2</sub> and Biochar |                                |
| 11.25-11.50 | <b>Keynote Speaker</b><br><b>Guoqing Guan</b><br><b>Hirosaki University, Japan</b><br>Development of Heterostructure Catalysts for Bio-oil Upgrading                                      |                                |
| 11.50-12.50 | Lunch Break   |                                |



| EA          | Sunday, 27 July 2025   | All time are in Singapore time |
|-------------|--|--------------------------------|
| 12.50-13.10 | <b>Highlighted Presentation</b><br><b>Young-Kwon Park</b><br><b>University of Seoul, Korea</b><br>Effective conversion of waste plastic over metal loaded zeolite under methane gas  |                                |
| 13.10-13.30 | <b>Highlighted Presentation</b><br><b>Yaning Zhang</b><br><b>Harbin Institute of Technology, China</b><br>Sustainable high-quality aviation oil recovery from organic solid wastes through microwave-assisted heating technology               |                                |
| 13.30-13.45 | Chen Qu<br>Tohoku University, Japan<br>Characterization of hydrochars produced from nitrogen-rich biomass  |                                |
| 13.45-14.00 | Mo Zheng<br>Institute of Process Engineering, Chinese Academy of Sciences, China<br>Investigation of co-pyrolysis of biomass and polymer by using reactive molecular dynamics: Understanding tar generation and char structure transformation  |                                |
| 14.00-14.15 | Lingzhao Kong<br>Suzhou University of Science and Technology, China<br>Insights into Low Temperature Microwave-Assisted Pyrolysis of Biomass from Fundamental Research to Pilot Plant  |                                |
| 14.15-14.30 | Zhengang Zhou<br>Zhejiang University, China<br>Effective amine solvent regeneration over ordered mesoporous silica catalysts for energy-saving CO <sub>2</sub> capture   |                                |
| 14.30-14.45 | Jiajun Yu<br>Southeast University, China<br>Lignin Catalytic Pyrolysis Hydrodeoxygenation Coupled with Methoxy Reforming for Hydrogen Supply In-Situ   |                                |
| 14.45-15.00 | Danchen Zhu<br>Huazhong University Of Science And Technology, China<br>Tuning metal site and surface functional group structure in MgO particles biochar composites to unravel the mechanism for adsorption of phosphate from aqueous solution |                                |
| 15.00-15.30 | Tea Break  |                                |

|                           |   |
|---------------------------|---|
| Lecture Theatre 7A (LT7A) | <b>Sunday, 27 July 2025</b> <div>All time are in Singapore time</div>   |
| 12.50-13.10               | <b>Highlighted Presentation</b><br><b>Hongwei Wu</b><br><b>Curtin University, Australia</b><br>Formation of Condensable Volatiles during Cellulose Pyrolysis: Thermal Ejection vs Evaporation   |
| 13.10-13.30               | <b>Highlighted Presentation</b><br><b>Youn-Bae Kang</b><br><b>Pohang University of Science and Technology, Korea</b><br>Development of a Novel Technique to Measure Hydrocarbon Gas Pyrolysis Rate using Molten Metal Catalysts for Turquoise Hydrogen Production |
| 13.30-13.45               | Zhongliang Yu<br>Shangrao Normal University, China<br>Thermochemical method to synthesize noble metal-like catalysts for formic acid decomposition  |
| 13.45-14.00               | Xinhua Liu<br>Institute of Process Engineering, Chinese Academy of Sciences, China<br>Measurement and characterization of gas-solid apparent reaction kinetics coupling intraparticle heat and mass transfer  |
| 14.00-14.15               | Xin Jia<br>Shenyang University of Chemical Technology, China<br>Pyrolysis in a fixed bed with internals to produce volatiles with respectively enriched light and heavy fractions   |
| 14.15-14.30               | Gan Wan<br>Huazhong University of Science and Technology, China<br>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               | Zeyuan Liu<br>Zhejiang University, China<br>CO <sub>2</sub> sequestration technologies impede the progress toward the Sustainable Development Goals in the climate-energy-air-health cascade  |
| 14.45-15.00               | Abu Farhan Bin Abu Kasim<br>University of Cambridge, UK<br>Realising the opportunity for improving the efficiency of compressed air energy storage using non-stoichiometric solid oxides  |
| 15.00-15.30               | Tea Break   |

| EA          | Sunday, 27 July 2025   | All time are in Singapore time |
|-------------|--|--------------------------------|
| 15.30-16.00 | <b>Keynote Speaker</b><br><b>Lili Zhang</b><br><b>A*STAR's Institute of Sustainability for Chemicals, Energy and Environment (ISCE2)</b><br>Sustainable production of chemicals and fuels from alternative feedstock |                                |
| 16.00-16.30 | <b>Keynote Speaker</b><br><b>Ewa Marek</b><br><b>University of Cambridge, UK</b>   |                                |
| 16.30-17.00 | <b>Keynote Speaker</b><br><b>Christoph Pfeifer</b><br><b>Universität für Bodenkultur Wien, Austria</b>   |                                |

| Suntec City Guild House | Sunday, 27 July 2025  |
|-------------------------|---|
| 19.45-20.30             | WCETC Annual General Meeting (AGM)  |
| 19.45-20.05             | <b>Welcome Speech by WCETC Co-Directors</b><br><br><b>Professor Guangwen Xu</b><br>Fellow of The Royal Academy of Engineering<br>President of Shenyang University of Chemical Technology<br><br><b>Professor Tony Bi</b><br>Director, UBC Clean Energy Research Centre (CERC)<br>University of British Columbia |
| 20.05-20.30             | Ceremony of Society Award Winner Presentations and Photo Session  |

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

Join Zoom Meeting  
<https://nus-sg.zoom.us/j/87196985812?pwd=DIjlUmNCnDt3XFdJFOXNMubylgxK6.1>  
 Meeting ID: 871 9698 5812  
 Passcode: 695496

| EA          | Monday, 28 July 2025  | All time are in Singapore time |
|-------------|---|--------------------------------|
| 9.10-9.20   | <b>Welcome speech</b><br><b>Co-Chair</b><br><b>Prof. Xiaotao Bi</b><br><b>University of British Columbia, Canada</b>  |                                |
| 9.20-9.45   | <b>Keynote Speaker</b><br><b>Ying Zheng</b><br><b>Western University, Canada</b><br>Catalytic Hydrogenation for drop-in biofuels  |                                |
| 9.45-10.10  | <b>Keynote Speaker</b><br><b>Shicheng Zhang</b><br><b>Fudan University, China</b><br>Hydrothermal conversion of organic waste for resource recovery and pollution control |                                |
| 10.10-10.40 | Tea Break   |                                |
| 10.40-11.00 | <b>Welcome speech</b><br><b>Co-Chair</b><br><b>Prof. Shurong Wang</b><br><b>Zhejiang University, China</b>  |                                |
| 11.00-11.25 | <b>Keynote Speaker</b><br><b>Eilhann E. Kwon</b><br><b>Hanyang University, Korea</b><br>Applying Pseudo-Catalytic Transesterification in the Thermo-Chemical Process      |                                |
| 11.25-11.50 | <b>Keynote Speaker</b><br><b>Enyi Ye</b><br><b>A*STAR's Institute of Materials Research and Engineering (IMRE), Singapore</b>   |                                |
| 11.50-12.50 | Lunch Break   |                                |



| EA          | Monday, 28 July 2025  | All time are in Singapore time |
|-------------|---|--------------------------------|
| 12.50-13.10 | <b>Highlighted Presentation</b><br><b>Cui Quan</b><br><b>Xi'an Jiaotong University, China</b><br>Production of hydrogen-rich syngas from catalytic reforming of biomass gasification tar coupled with in-situ CO <sub>2</sub> capture                   |                                |
| 13.10-13.25 | Guang Yang<br>Huazhong University Of Science And Technology, China<br>Modification of Ni@SiO <sub>2</sub> yolk-shell catalysts for the efficient and stable reforming of biomass tar  |                                |
| 13.25-13.40 | Linmin Zhang<br>Forschungszentrum Jülich, Germany<br>Molecular dynamics and thermodynamic insights into charge compensation-induced slag structure evolution and its impact on fluidity   |                                |
| 13.40-13.55 | Hong Zhang<br>Shenyang University of Chemical Technology, China<br>Updated time-dependent variation of reaction rate during biochar gasification using a plug-flow reactor with online particle sampling  |                                |
| 13.55-14.10 | Geng Li<br>Huazhong University Of Science And Technology, China<br>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 |                                |
| 14.10-14.25 | Hanmin Yang<br>KTH Royal Institute of Technology, Sweden<br>Insights into pyrolysis of hydrothermal-treated Cl-containing mixed plastic waste: chlorine transformation and reactions kinetics   |                                |
| 14.25-14.40 | Ke Yang<br>Southeast University, China<br>Study on the biomass catalytic pyrolysis over hierarchically porous ZSM-5 catalyst derived from solid wastes by means of photoionization mass spectrometry  |                                |
| 14.40-14.55 | Wei Cheng<br>Huazhong University Of Science And Technology, China<br>Emission behavior and reduction mechanism of particulate matter during the co-combustion of biomass and municipal sewage sludge  |                                |
| 14.55-15.10 | Hanyu Hu<br>Zhejiang University, China<br>Electro-Triggered Phase-Change Gels via a Biomass-Based Design for Controllable Seasonal Heat Storage at Room Temperature   |                                |
| 15.10-15.30 | Tea Break   |                                |

| EA          | Monday, 28 July 2025   | All time are in Singapore time |
|-------------|--|--------------------------------|
| 15.30-15.45 | Corinna Maria Grottola<br>Institute of Sciences and Technologies for Sustainable Energy and Mobility (STEMS) of the National Research Council (CNR), Italy<br>Agricultural biorefinery concept for thermochemical integration of HTL and co-pyrolysis for biofuel and biochar production |                                |
| 15.45-16.00 | Funing Wang<br>Zhejiang University, China<br>Biochar technology cannot offset land carbon emissions in Guangdong province, China   |                                |
| 16.00-16.15 | Jung-Hun Kim<br>Hanyang University, Korea<br>CO <sub>2</sub> -mediated Catalytic Pyrolysis of Spent Filter Waste   |                                |
| 16.15-16.30 | Xiayu Liu<br>Huazhong University Of Science And Technology, China<br>Microwave-assisted catalytic pyrolysis of microalgae over a composite catalyst of HZSM-5/BC for nitrogen-containing chemicals   |                                |
| 16.30-16.45 | Jingfeng Wu<br>Zhejiang University, China<br>Mild upgradation of lignin-derived phenols to cycloalkanes over polyoxometalate catalysts   |                                |
| 16.45-17.00 | Amir Jalalinejad<br>Karlsruhe Institute of Technology (KIT), Germany<br>Predictive Thermodynamic Modeling for Efficient Distillation of Fast Pyrolysis Bio-Oil Fractions   |                                |
| 17.00-17.15 | Hao Song<br>Huazhong University Of Science And Technology, China<br>Physicochemical structure evolution and kinetic analysis during bamboo char CO <sub>2</sub> gasification   |                                |
| 17.15-17.30 | Yuhui Wang<br>China University of Mining & Technology, China<br>Multi-scale construction of Ni <sub>3</sub> P/DPS catalyst and its catalytic hydrogenation of dimethyl oxalate   |                                |
| 17.30-17.45 | Chenxu Chen<br>China University of Mining & Technology, China<br>Enhancing the efficiency of methylcyclohexane dehydrogenation of Pt/Al <sub>2</sub> O <sub>3</sub> catalyst doped by Ga and Ce adding: Unraveling the role of oxygen vacancy  |                                |

| EA          | Monday, 28 July 2025  | All time are in Singapore time |
|-------------|---|--------------------------------|
| 17.45-18.00 | <div data-bbox="264 163 482 203">Haodong Fan</div> <div data-bbox="264 205 1142 244">Huazhong University of Science and Technology, China</div> <div data-bbox="264 246 1403 372">Experimental and numerical study of combustion and emission characteristics of biomass gasification gas blended with natural gas in a non-premixed burner</div> |                                |

| LT7A        | Monday, 28 July 2025  | All time are in Singapore time |
|-------------|---|--------------------------------|
| 12.50-13.10 | <b>Highlighted Presentation</b><br><b>Xiangzhou Yuan</b><br><b>Southeast University, China</b><br>Active learning-empowered engineered biochar for CO <sub>2</sub> adsorption capture   |                                |
| 13.10-13.25 | Hongcai Su<br>Zhejiang University, China<br>Hydrogen and terephthalic acid production from polyester-polyolefin mixed waste plastics by low-temperature hydrothermal conversion process   |                                |
| 13.25-13.40 | Bo Peng<br>Southeast University, China<br>N-doped hierarchical porous carbons derived from heavy bio-oil for supercapacitor applications  |                                |
| 13.40-13.55 | Yiyang Wang<br>National University of Singapore, Singapore<br>Hydrothermally Synthesized Biochar-Carbon Nanotubes Composites: Upcycling Plastic Waste into Multifunctional Materials  |                                |
| 13.55-14.10 | Ruihan Dong<br>Huazhong University Of Science And Technology, China<br>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<br>Hanyang University, Korea<br>Conversion of polyoxymethylene waste into syngas through CO <sub>2</sub> -assisted pyrolysis   |                                |
| 14.25-14.40 | Juping Liu<br>Huazhong University of Science and Technology, China<br>Hydrodeoxygenation of lignin-derived oxygenated aromatic compounds catalyzed by nano-floral hydrotalcite for the preparation of liquid-phase organic hydrogen carriers                                  |                                |
| 14.40-14.55 | Yuhui Zhang<br>Shenyang University of Chemical Technology, China<br>Nature of pyrolysis: thermally conformed progressive reaction founds the essential way to maximize oil yield  |                                |
| 14.55-15.10 | Hao Jiang<br>Huazhong University Of Science And Technology, China<br>Carbon black production from high-temperature pyrolysis of waste tires   |                                |
| 15.10-15.30 | Tea Break   |                                |

| LT7A        | Monday, 28 July 2025   | All time are in Singapore time |
|-------------|--|--------------------------------|
| 15.30-15.45 | Zizhao Chen<br>Huazhong University Of Science And Technology, China<br>MOF-based medium-entropy alloys as efficient and stable catalysts for dry reforming of methane  |                                |
| 15.45-16.00 | Zihang Zhang<br>Zhejiang University, China<br>Mechanistic insights into the role of N/O-doped biochar in enhanced phenolics production during biomass pyrolysis  |                                |
| 16.00-16.15 | Wang Lu<br>Huazhong University Of Science And Technology, China<br>Mechanism of K-assisted Bamboo Gasification for Porous Char and H <sub>2</sub> -rich Syngas Poly-generation   |                                |
| 16.15-16.30 | Qingjin Zhang<br>Shenyang University of Chemical Technology, China<br>Effect of Temperature on Gas-Solid Flow Structure in Bubbling Fluidized Beds   |                                |
| 16.30-16.45 | Chuang Zhang<br>China University of Mining & Technology, China<br>Ultrasonic-coupled ozone oxidation of Shengli lignite for efficient extraction of humic acid   |                                |
| 16.45-17.00 | Yanling Zhao<br>Huazhong University Of Science And Technology, China<br>Targeted catalyst regulation based on the contribution of catalyst properties to catalytic combustion of Volatile Organic Compounds                |                                |
| 17.00-17.15 | Yu Zhang<br>Xi'an Jiaotong University, China<br>Catalytic Hydrothermal Gasification of Biomass for Renewable Natural Gas Production: Experimental Analysis of Gasification Performance and Comprehensive System Evaluation |                                |
| 17.15-17.30 | Yuhong Qin<br>Taiyuan University of Technology, China<br>ReaxFF molecular dynamics and thermodynamics study on release and transformation of different types of potassium species during biomass thermal conversion        |                                |
| 17.30-17.45 | Zongpin Fu<br>China University of Mining & Technology, China<br>Electron-Rich Cun+-O-Con+ boosts active site reconfiguration to trigger multi-pathway C-O bond hydrogenolysis activation in coal                           |                                |



**Tuesday, 29 July 2025**

9.00-12.00

**Laboratory Tour and Visit to the National University of Singapore (NUS) and the Agency for Science, Technology and Research (A\*STAR)**

(ASTAR's Institute of Materials Research and Engineering (IMRE) & ASTAR's Institute of Sustainability for Chemicals, Energy and Environment (ISCE2))

**Collaborative Research Meeting**

If you are interested in participating, please contact Yiying Wang at [e0679975@u.nus.edu](mailto:e0679975@u.nus.edu).