

ORAL PRESENTATIONS

| Day 1, Monday, 25th August 2025 | | | |
|--|----------------|--------------------|---|
| Time | Session | Venue | Theme |
| 2.00 pm – 4.00 pm | 1 | Bunga Raya Hall 3A | Waste minimisation, processing and management |
| | 2 | Bunga Raya Hall 3 | Renewable and high-efficiency utility systems |
| | 3 | Bunga Raya Hall 2 | Process analysis, modelling and optimisation |
| | 4 | Bunga Raya Hall 1 | Numerical fluid flow and heat transfer simulation |
| | 5 | Bunga Raya 1 | Sustainable processing and production |
| | 6 | Bunga Raya 2 | Process analysis, modelling and optimisation |
| 4.30 pm – 6.30 pm | 7 | Bunga Raya Hall 3A | Process analysis, modelling and optimisation |
| | 8 | Bunga Raya Hall 3 | Sustainable processing and production |
| | 9 | Bunga Raya Hall 2 | Process integration and sustainable development |
| | 10 | Bunga Raya Hall 1 | Energy saving and clean technologies |
| | 11 | Bunga Raya 1 | Energy saving and clean technologies |
| | 12 | Bunga Raya 2 | Energy saving and clean technologies |
| Day 2, Tuesday, 26th August 2025 | | | |
| Time | Session | Venue | Theme |
| 10.30 am – 12.30 pm | 13 | Bunga Raya Hall 3A | Footprint minimisation and mitigation |
| | 14 | Bunga Raya Hall 3 | Heat transfer and heat exchangers |
| | 15 | Bunga Raya Hall 2 | Process integration for sustainable development |
| | 16 | Bunga Raya Hall 1 | Energy saving and clean technologies |
| | 17 | Bunga Raya 1 | Process analysis, modelling and optimisation |
| | 18 | Bunga Raya 2 | Process analysis, modelling and optimisation |
| 1.30 pm – 2.50 pm | 19 | Bunga Raya Hall 3A | Waste minimisation, processing and management |
| | 20 | Bunga Raya Hall 3 | Process analysis, modelling and optimisation |
| | 21 | Bunga Raya Hall 2 | Process analysis, modelling and optimisation |
| | 22 | Bunga Raya Hall 1 | Process integration for sustainable development |
| | 23 | Bunga Raya 1 | Process analysis, modelling and optimisation |
| | 24 | Bunga Raya 2 | Energy saving and clean technologies |
| 3.10 pm – 4.30 pm | 25 | Bunga Raya Hall 3A | Energy saving and clean technologies |
| | 26 | Bunga Raya Hall 3 | Process analysis, modelling and optimisation |
| | 27 | Bunga Raya Hall 2 | Process analysis, modelling and optimisation |
| | 28 | Bunga Raya Hall 1 | Energy saving and clean technologies |
| | 29 | Bunga Raya 1 | Process analysis, modelling and optimisation |
| | 30 | Bunga Raya 2 | Footprint minimisation and mitigation |
| Day 3, Wednesday, 27th August 2025 | | | |
| Time | Session | Venue | Theme |
| 1.30 am – 3.10 pm | 31 | Bunga Raya Hall 3A | Process analysis, modelling and optimisation |
| | 32 | Bunga Raya Hall 3 | Footprint minimisation and mitigation |
| | 33 | Bunga Raya Hall 2 | Numerical fluid flow and heat transfer simulation |
| | 34 | Bunga Raya Hall 1 | Energy saving and clean technologies |

Day 1, Monday, 25th August 2025

Session 1: Bunga Raya 3A

Theme: Waste minimisation, processing and management

Chair: Tim Walmsley

Co-chair: Wei Wu

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|---------------------|
| 2.00 – 2.40 PM | PRES25.0285 | Data-driven Predictive Models on food waste compost quality <i>C.T. Lee*, P.Y. Ong, L.Y. Lim, N.F. Ahmad Sanadi</i> | Prof. C.T. Lee |
| 2.40 - 3.00 PM | PRES25.0303 | Energy, exergy and economic (3E) analyses of DME-power polygeneration system based on the integration of biomass gasification and direct synthesis of DME <i>W. Xu*, P. Cui</i> | Mr. W. Xu |
| 3.00 - 3.20 PM | PRES25.0177 | The Technological Advances, Challenges and Future Trends of Energy Utilization Integrated Liquefied Natural Gas Cold Energy <i>L. An, B. Zhu, B. Wang, L. Gai*</i> | Ms. L. An |
| 3.20 - 3.40 PM | PRES25.0311 | Artificial Intelligence-Enabled Multi-Criteria Optimisation and Decision-Making for Enzymatic CO ₂ Capture in Rotating Packed Beds <i>T. Xenitopoulos, A. Papadopoulos, P. Seferlis*</i> | Mr. T. Xenitopoulos |
| 3.40 – 4.00 PM | PRES25.0312 | Supervised Machine Learning Biomass Gasification with Integrated Power Generation: Model Development and Performance Assessment <i>L. Poulidis, A. Papadopoulos, V. Silva, P. Seferlis*</i> | Mr. L. Poulidis |

Session 2: Bunga Raya Hall 3

Theme: Renewable and high-efficiency utility systems

Chair: Li Zhang

Co-chair: Seok Peng Ngan

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|--------------------|
| 2.00 – 2.40 PM | PRES25.0218 | Solar Thermal Networks: A Thermal Effectiveness Approach to Their Design <i>J.R. Lizárraga-Morazán, M. Picón Núñez*</i> | Dr. M. Picón Núñez |
| 2.40 - 3.00 PM | PRES25.0036 | Resources Allocation and Operations Optimisation for CO ₂ Capture in Industrial Clusters <i>Y.E. Chew, B.S. How, I. Moser, M.F. Benjamin, R.R. Tan, V. Andiappan*</i> | Mr. Y.E. Chew |
| 3.00 - 3.20 PM | PRES25.0061 | Optimizing Renewable Energy Integration for Sustainable Cryptocurrency Mining <i>J.T. Lanting*, J.L. San Juan</i> | Mr. J.T. Lanting |

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| 3.20 - 3.40 PM | PRES25.0169 | Optimized Dual-Organic Rankine Cycle for LNG Cold Energy Power Generation Using Genetic Algorithm <i>Y. Zhang, B. Wang, H. Tao, J. Ou, Z. Guo, L. Gai*</i> | Dr. L. Gai |
| 3.40 – 4.00 PM | PRES25.0053 | Environmental and Lifecycle Impacts of Halimeda-Derived Calcium Carbonate: Towards Carbon-Neutral Cement <i>H.M. Irfan, W. Wu*</i> | Mr. H.M. Irfan |

Session 3: Bunga Raya Hall 2

Theme: Process analysis, modelling and optimisation

Chair: Bing Shen How

Co-chair: Boglárka Eisinger

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|---------------------|
| 2.00 – 2.40 PM | PRES25.0142 | Keynote: Process Synthesis and Optimization: A P-graph Approach for Cost, Emission and Waste Minimization <i>B. Abdelbari, S.R. Wan Alwi*, V. Petar (prise)</i> | Prof. S.R. Wan Alwi |
| 2.40 - 3.00 PM | PRES25.0157 | Development of P-graph Models for the Synthesis of Plastic Waste-to-Fuel Supply Chain <i>K.B. Tũaño*, H.L. Kho, K. Aviso, R.R. Tan</i> | Ms. K.B.Tũaño |
| 3.00 - 3.20 PM | PRES25.0211 | Scenario-Based Process Sustainability Analysis Using Control Theory and P-Graph Methodology <i>L. Buics*, B. Eisinger Balassa</i> | Dr. L. Buics |
| 3.20 - 3.40 PM | PRES25.0260 | Leveraging the P-Graph Framework for the Optimal Synthesis of Pharmaceutical Wastewater Treatment Solutions. <i>A. Kevin Lius, K.H. Ng, N.H. Mohd Yusoff, Y.K. Wan, V.L. Wong*</i> | Mr. A. Kevin Lius |
| 3.40 – 4.00 PM | PRES25.0112 | Preliminary Study and Review of Cryogenic Post-Combustion CO ₂ Capture Onboard LNG-Driven Ships <i>D. Turunawarasu, J. Ballout, M. Al-Rawashdeh, B.S. How, V. Andiappan*</i> | Mr. D. Turunawarasu |

Session 4: Bunga Raya Hall 1

Theme: Numerical fluid flow and heat transfer simulation

Chair: Hon Loong Lam

Co-chair: Julius Rhoan Lustró

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|---------------|
| 2.00 – 2.40 PM | PRES25.0023 | Optimisation of the Working Fluid Flow Rate of Heat Pump-Assisted Batch Distillation <i>L. Hegely*, P. Lang</i> | Dr. L. Hegely |
| 2.40 - 3.00 PM | PRES25.0176 | CFD-Driven Optimization of CO ₂ -ODP: Unlocking Sustainable Propylene Production <i>J. Jung, S. Hwang*</i> | Ms. J. Jung |

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| 3.00 - 3.20 PM | PRES25.0113 | Assessment of the Thermocline Thermal Energy Storage Tank Thermal Expansion <i>K. Elfeky*, A. Mohammed, Q. Wang, K. Ge</i> | Dr. K. Elfeky |
| 3.20 - 3.40 PM | PRES25.0117 | Computational Fluid Dynamics Analysis of Molten Salt-Air Heat Exchanger Configurations <i>A. Raj*, N.B. Desai, F. Haglind</i> | Dr. A. Raj |
| 3.40 - 4.00 PM | PRES25.0135 | Use of CFD tools to design and evaluate tubular baffles in an electrochemical reactor for the removal of hexavalent chromium <i>J.E. Lugo Hinojosa*, S.A. Martínez-Delgadillo, V.X. Mendoza-Escamilla, J.A. Yañez, I. Gonzales Neria, A. Alonzo-García</i> | Mr. Lugo Hinojosa |

Session 5: Bunga Raya 1

Theme: Sustainable processing and production

Chair: Jacksin Ooi

Co-chair: Pratham Arora

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|-------------------|
| 2.00 - 2.20 PM | PRES25.0067 | The Simulation and Analysis of a Urea and Methanol Synthesis System Utilizing Waste Heat from Slag <i>Y. Peng, Q. Zhang*</i> | Mr. Y. Peng |
| 2.20 - 2.40 PM | PRES25.0109 | Hydrogen-based Energy Transition for Decarbonisation of Eco-Industrial Park Using Modified Carbon Emission Pinch Analysis (CEPA) <i>M.A.F. Abd Aziz, P.Y. Liew*, K.S. Woon, N.E. Mohammad Rozali</i> | Dr. P. Y. Liew |
| 2.40 - 3.00 PM | PRES25.0095 | Integrated Modeling Approaches to Enhance Water Sustainability in Philippine Watersheds: A Review of its Applications and Limitations <i>M.E.C. Perez, J.B.D. Pernia, C.C. Futralan, M.V. Ligaray, A.E.S. Choi*</i> | Prof. A.E.S. Choi |
| 3.00 - 3.20 PM | PRES25.0128 | Biomethanol Production from Renewable Sources and CO ₂ Derived from Biogas <i>A. Haddad, K. Mammadyarova, C. Bouallou*</i> | Prof. C. Bouallou |
| 3.20 - 3.40 PM | PRES25.0154 | Optimizing operating conditions of a green ammonia production system from off gas considering co-generation of heat and power <i>R. Sun, L. Sun, J. Li*</i> | Mr. R. Sun |

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| 3.40 – 4.00 PM | PRES25.0054 | Dynamic Simulation-Based Assessment of Pressure Control for High-Pressure Steam Generation in a Cogeneration Plant <i>M.A. Isa*</i> , MA. Abu Taleb, R. A Latip, A.C. Kamel, MF. Abidin, MT. Tahreb, M. Hadzir, B. Raghunathan | Mr. M. A. Isa |
| Session 6: Bunga Raya 2 | | | |
| Theme: Process analysis, modelling and optimisation | | | |
| Chair: Liew Linlin | | Co-chair: Nishanth Chemmangattuvalappil | |
| Time | Paper ID | Paper Title | Presenter |
| 2.00 – 2.20 PM | PRES25.0131 | An innovative Design of Extractive Distillation-Reactive Distillation coupled system for Cyclohexane/Isopropanol/Water Separation process <i>Y.S. Chen*</i> , T. Ibrahim, <i>H.H. Liang</i> , H.Y. Lee | Ms. H.H. Liang |
| 2.20 – 2.40 PM | PRES25.0159 | Towards Realistic Design of Reactive Distillation Processes: Significance of Impurities in the Feed <i>Z.Y. Kong</i> , A. Yang, G.P. Rangaiah* | Dr. Z.Y. Kong |
| 2.40 - 3.00 PM | PRES25.0300 | Thermodynamic Mechanism-Driven Extractive Distillation for Ternary Azeotrope Separation: Energy-Economic-Environmental Trade-off Optimization <i>W. Liu*</i> | Ms. W. Liu |
| 3.00 - 3.20 PM | PRES25.0297 | Process design and Energy, exergy, economic, and environmental analysis of mixed entrainer extractive distillation separation of wastewater containing tetrahydrofuran and ethanol <i>Z. Wang*</i> | Mr. Z. Wang |
| 3.20 - 3.40 PM | PRES25.0296 | Thermodynamic mechanism-driven ionic liquid reactive extractive distillation: Economic-environmental-energy-exergy trade-off optimization <i>W. Zhao*</i> | Mr. W. Zhao |

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| 3.40 – 4.00 PM | PRES25.0302 | Process comparison and performance evaluation of refining gasoline additives by extractive pressure swing distillation based on multi-objective optimization <i>W. Sun*</i> | Ms. W. Sun |
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Session 7: Bunga Raya Hall 3A

Theme: Process analysis, modelling and optimisation

Chair: Denny Ng

Co-chair: Yong Peng

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|------------------------|
| 4.30 – 5.10 PM | PRES25.0075 | Algebraic Optimization of Water-Energy Nexus System <i>S. Prabhakar*, S. Bandyopadhyay</i> | Prof. S. Bandyopadhyay |
| 5.10 - 5.30 PM | PRES25.0047 | Modelling of Woody Biomass Gasification for Process Optimization <i>K. Yu Hui, Y. Kansha*</i> | Ms. K. Yu Hui |
| 5.30 - 5.50 PM | PRES25.0049 | Developing a Multi-objective Optimization Model for Integrated Hybrid Technology in Wastewater Treatment Plants <i>L. Chua*, J.L. San Juan</i> | Mr. L. Chua |
| 5.50 - 6.10 PM | PRES25.0122 | Design and Multi-objective Optimization of a Green Methanol-based Poly-generation System for Sustainable Olefins and Aromatics Production <i>Z. Song, G. Liu*</i> | Dr. Z. Song |
| 6.10 - 6.30 PM | PRES25.0203 | Multi-period natural gas pipeline scheduling optimisation integrated with LNG cold energy cascade utilisation <i>B. Wang*, W. Zhao</i> | Dr. B. Wang |

Session 8: Bunga Raya Hall 3

Theme: Sustainable processing and production

Chair: Raymond Tan

Co-chair: Haoshui Yu

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|------------------|
| 4.30 – 5.10 PM | PRES25.0314 | Electrifying Post-Combustion Carbon Capture: Modeling, Integration, and Smart Operation <i>B.H.Y. Ong*, D. Allgäuer, A. Masero, F. Köhlkamp, O. Levon</i> | Dr. B.H.Y Ong |
| 5.10 - 5.30 PM | PRES25.0081 | Robust Decarbonization Planning of Multi-regional Energy Sector with Flexible Carbon Capture and Storage Systems <i>R.T. Marquez, J.F. Tapia*</i> | Mr. R.T. Marquez |

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| 5.30 - 5.50 PM | PRES25.0077 | A Comparative Techno-Economic Analysis of Gray, Blue and Green Hydrogen Production Technologies <i>D. Jeon, J. Lee, J.K. Kim*</i> | Mr. D. Jeon |
| 5.50 - 6.10 PM | PRES25.0048 | Development of Capture and Utilization System for NOX Gas from NH3 Combustion <i>I. Ino, Y. Kansha*</i> | Mr. I. Ino |

Session 9: Bunga Raya Hall 2

Theme: Process integration and sustainable development

Chair: Viknesh Andiappan

Co-chair: Jean Pimentel

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|------------------|
| 4.30 – 5.10 PM | PRES25.0039 | A Pinch Analysis Framework for Multiscale Energy Systems Integration <i>T. Walmsley*, A. Adeel, E. Klinac (burroughs), C. Bayer</i> | Dr. T. Walmsley |
| 5.10 - 5.30 PM | PRES25.0037 | Solar Thermal Integration in Industrial Processes using Pinch Analysis and Flow Optimization <i>R.K. Yadav*, S. Bandyopadhyay, A. Hoadley, R. Dargaville</i> | Mr. R.K. Yadav |
| 5.30 - 5.50 PM | PRES25.0056 | Targeting Dual Objective Source-Sink Problems Using Pinch Analysis <i>A. M U*, S. Bandyopadhyay</i> | Ms. A. M U |
| 5.50 - 6.10 PM | PRES25.0074 | Optimisation of Nonlinear Resource Conservation Network using Pinch Analysis <i>A. Jain*, S. Bandyopadhyay</i> | Mr. A. Jain |
| 6.10 - 6.30 PM | PRES25.0058 | Targeting for water reuse in source-sink network with epistemic uncertainty in parameters <i>A.K. Pandey*, S. Bandyopadhyay</i> | Mr. A. K. Pandey |

Session 10: Bunga Raya Hall 1

Theme: Energy saving and clean technologies

Chair: Peng Yen Liew

Co-chair: Edwin Lim

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|-----------------|
| 4.30 – 5.10 PM | PRES25.0264 | The P-graph Framework: Foundations and Extensions for Industrial and Regional Energy Optimization Supporting Decarbonization <i>J. Pimentel*, B.S. How, H.L. Lam, V. Petar (prise), R.R. Tan, F. Friedler</i> | Dr. J. Pimentel |

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| 5.10 - 5.30 PM | PRES25.0165 | Performance-based Mapping of Electric Tricycle considering Road Grade in the Philippines <i>M.A. Mozo, V. Banaguas, J.I. Encarnacion, C.M. Odulio*</i> | Dr. C. M. Odulio |
| 5.30 - 5.50 PM | PRES25.0194 | Modelling the Energy Storage Potential of Retired EV Batteries for Renewable Integration <i>R. Santran, A. Dey, R. Aanand, R. Singh*</i> | Mr. R. Santran |
| 5.50 - 6.10 PM | PRES25.0001 | Physics-informed neural network for modeling the municipal solid waste to energy process <i>W. Wu*</i> | Prof. Wu |
| 6.10 - 6.30 PM | PRES25.0152 | Digitalisation: The Missing Step Before AI in Industry 4.0 <i>S.P. Ngan, S.L. Ngan, D. Zhao, H.L. Lam*</i> | Mr. S.P. Ngan |

Session 11: Bunga Raya 1

Theme: Energy saving and clean technologies

Chair: Savier Kong

Co-chair: Navdeep Bhadbhade

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|-------------------|
| 4.30 – 5.10 PM | PRES25.0024 | Experimental and Mathematical Modelling of CO2 Solubility in 2-Dimethylethanolamine-Potassium Chloride Aqueous Solution <i>J.H. Law, M.B. Jasser, M.K. Aroua*</i> | Mr. J.H. Law |
| 4.50 – 5.10 PM | PRES25.0025 | Deep Eutectic Solvents Design via Computer-Aided Molecular Design for Industrial Applications <i>K.N. Manor Muhanin, N. Chemmangattuvalappil, C.H. Lim, J. Ooi</i> | Mr. Manor Muhanin |
| 5.10 - 5.30 PM | PRES25.0080 | Process Design and Optimization of Membrane Systems for Biogas Upgrading with Varying Membrane Performance <i>S.J. Kim, J.K. Kim*, Y. Song</i> | Mr. S.J. Kim |
| 5.30 - 5.50 PM | PRES25.0301 | Extracting polar acetic acid from water via multicomponent deep eutectic solvents: thermodynamics and molecular dynamics <i>Y. Zhou*</i> | Ms. Y. Zhou |
| 5.50 - 6.10 PM | PRES25.0305 | Highly efficient separation of heavy metals from wastewater with hydrophobic deep eutectic solvents <i>D. Liu*</i> | Ms. D. Liu |

| Session 12: Bunga Raya 2 | | | |
|--|-----------------|--|-------------------|
| Theme: Energy saving and clean technologies | | | |
| Chair: H. Mikulčić | | Co-chair: Karen Kong | |
| Time | Paper ID | Paper Title | Presenter |
| 4.50 – 5.10 PM | PRES25.0179 | Process Development and Techno-economic Analysis of Hydrogen Liquefaction Process with Partial Utilization of LNG Cold Energy <i>H. Jung, S. Hwang*</i> | Mr. H. Jung |
| 5.10 - 5.30 PM | PRES25.0130 | Process Integration and Electrification Pathways for Zero Carbon Milk Powder Spray Drying <i>S. Mcarthur, M. Walmsley*, T. Walmsley, B. Lincoln</i> | Prof. M. Walmsley |
| 5.30 - 5.50 PM | PRES25.0237 | A Comparative and Economic Analysis of Technology Routes for Producing Benzene from Aromatics <i>W. Yuan*, Y. Guo, L. He</i> | Dr. W. Yuan |
| 5.50 - 6.10 PM | PRES25.0236 | The Development of Cracking C9 Utilization Technology in Petrochemical Industry <i>X. Liu*, L. He</i> | Dr. X. Liu |
| 6.10 - 6.30 PM | PRES25.0020 | Enhanced Heat Recovery Network With Integrated Sensible Heat Storage Facilities for Energy Intensive Industry <i>T.J.N. Ang, Á. Orosz, F. Friedler, V. Andiappan, B.S. How*</i> | Ms. T.J.N. Ang |
| 4.50 – 5.10 PM | PRES25.0179 | Process Development and Techno-economic Analysis of Hydrogen Liquefaction Process with Partial Utilization of LNG Cold Energy <i>H. Jung, S. Hwang*</i> | Mr. H. Jung |
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Day 2, Tuesday, 26th August 2025**Session 13: Bunga Raya 3A****Theme: Footprint minimisation and mitigation****Chair: Edwin Lim****Co-chair: Chew Tin Lee**

| Time | Paper ID | Paper Title | Presenter |
|------------------|----------------|--|------------------|
| 10.30 – 11.10 AM | PRES25.0093 | Bilevel programming for optimizing carbon dioxide removal portfolios <i>K. Aviso*</i> , <i>M.V. Migo-Sumagang</i> , <i>R.R. Tan</i> | Prof. K. Aviso |
| 11.10 – 11.30 AM | PRES25.0306 | Comparative Life Cycle Carbon Footprint Assessment of Three DME-Power polygeneration Systems Based on Biomass Gasification <i>L. Yang*</i> , <i>Z. Zhu</i> | Ms. L. Yang |
| 11.30 – 11.50 AM | PRES25.0293 | A Life Cycle Analysis of Energy Use and Environmental Impacts of Bioplastics from Seaweed Biorefinery <i>S. Chaurasiya</i> , <i>N. Preuss</i> , <i>F. You*</i> | Prof. F. You |
| 11.50 – 12.10 PM | PRES25.0245 | Optimum integration strategies for energy efficiency measures, energy conversion technologies, and renewable technologies under various resource constraints. <i>N. Bhadbhade*</i> , <i>J. Grand</i> , <i>E. Klinac (burroughs)</i> , <i>B.H.Y. Ong</i> | Dr. N. Bhadbhade |
| 12.10 – 12.30 PM | MDPI Processes | | Dr Lee |

Session 14: Bunga Raya Hall 3**Theme: Heat transfer and heat exchangers****Chair: Santanu Bandyopadhyay****Co-chair: Olga Arsenyeva**

| Time | Paper ID | Paper Title | Presenter |
|------------------|-------------|---|---------------|
| 10.30 – 11.10 AM | PRES25.0043 | An integrated vapor compression and mechanically pumped two-phase cooling loops for high-power electronic devices: transient analysis and flow stability control <i>N. Li</i> , <i>J. Wang</i> , <i>M. Zeng*</i> , <i>T. Ma</i> , <i>Q. Wang</i> | Dr. N. Li |
| 11.10 – 11.30 AM | PRES25.0005 | Numerical Investigation on Solid-Liquid Phase Change in a Cylindrical Module for Latent Heat Energy Storage <i>U. Khaqan</i> , <i>X. Liang</i> , <i>H. Du</i> , <i>S. Ud Din</i> , <i>J. Wang*</i> | Ms. U. Khaqan |

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| 11.30 – 11.50 AM | PRES25.0101 | Soft-sensor modeling of vessel interior temperatures under different nozzle configurations in a cooling process <i>J. Wang, F. Xu, Y. Sakai, H. Takahashi, R. Zhang, H. Kanayama, D. Satou, Y. Kansha*</i> | Dr. J. Wang |
| 11.50 – 12.10 PM | PRES25.0072 | Experimental and analytical investigation of plate-fin recuperator for a micro gas turbine <i>Z. Han, D. Xu, Q. Kong, D. Liu, Q. Ma, Q. Wang, T. Ma*</i> | Mr. Z. Han |

Session 15: Bunga Raya Hall 2

Theme: Process integration for sustainable development

Chair: Zhongwen Song

Co-chair: Lik Yin Ng

| Time | Paper ID | Paper Title | Presenter |
|------------------|-------------|--|-------------------|
| 10.30 – 11.10 AM | PRES25.0008 | Decarbonising Hard-to-Abate Industries: A Techno-Economic Case Study of Retrofitting an SMR-Based Ammonia Plant <i>S. Perković, H. Mikulčić*</i> | Prof. H. Mikulčić |
| 11.10 – 11.30 AM | PRES25.0011 | Process simulation, system integration and techno-economic analysis (TEA) of direct air carbon capture and green fuel production <i>M. Qi, B. Luong, H. Yu*</i> | Prof. H. Yu |
| 11.30 – 11.50 AM | PRES25.0032 | Optimal Allocation of Economic Benefits in an Eco-Industrial Park under Neutrosophic Environment <i>J.F. Tapia*, I.H. Gue, R.R. Tan, K. Aviso</i> | Dr. J.F. Tapia |
| 11.50 – 12.10 PM | PRES25.0171 | Optimization of Energy Efficiency in NGCC Power Plants for Carbon Capture Process Integration <i>H. Koo*, S. Hwang</i> | Mr. H. Koo |
| 12.10 – 12.30 PM | PRES25.0270 | Cost-Optimal Capture Rate Analysis for Membrane CO ₂ Capture Process with Life - Cycle and Economic Assessment <i>Y. Song, M. Binns, S. Lee, J.H. Lee, J.G. Yeo, J.K. Kim*</i> | Mr. Y. Song |

Session 16: Bunga Raya Hall 1

Theme: Energy saving and clean technologies

Chair: Peng Yen Liew

Co-chair: László Hégyely

| Time | Paper ID | Paper Title | Presenter |
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| 10.30 – 11.10 AM | PRES25.0205 | Process Electrification and Carbon Reduction through Heat Pump-assisted Distillation <i>J.Y. Chen, P.S. Chen, Z.Y. Du, J.Y. Lee*</i> | Dr. J.Y. Lee |
| 11.10 – 11.30 AM | PRES25.0012 | A Comparative Study Between Pinch Design Method and Superstructure Applied on Carbon Capture Storage <i>R. Handogo*, R. Panca Anugraha, P.L.A. Nanggala, J. Juwari, R.R. Satriyo, I GP.F.A. Kusuma, S.F. Amarasuli</i> | Mr. P.L.A Nanggala |
| 11.30 – 11.50 AM | PRES25.0031 | Optimising Energy Transitions: Assessing Renewable Energy Integrations with Grid Limitations <i>X.H. Cheng, D.R. Markandu, B.S. How, V. Andiappan*</i> | Ms. X.H. Cheng |
| 11.50 – 12.10 PM | PRES25.0103 | Optimal Energy Resource and Storage Planning for Residential Sector Decarbonisation <i>C. Lau, I. Moser, B.S. How, V. Andiappan*</i> | Mr. C. Lau |
| 12.10 – 12.30 PM | PRES25.0108 | Optimisation Framework of Multi-Energy Peer-to-Peer Trading with Hybrid Market Models in Eco-industrial Park <i>N.S.H. Kamarudzaman, P.Y. Liew*, K.W. Tan, K.S. Woon, N.R. Jamian</i> | Ms. Kamarudzaman |

Session 17: Bunga Raya 1

Theme: Process analysis, modelling and optimisation

Chair: Savier Kong

Co-chair: Joseph Ortenero

| Time | Paper ID | Paper Title | Presenter |
|------------------|-------------|---|------------------|
| 10.30 – 10.50 AM | PRES25.0017 | Dynamic Modelling of an Amine-based CO ₂ Capture Unit Using Hollow Fiber Membrane Contactors in a Coal-fired Power Plant Considering Load Variation <i>Z. Cheng, Z. Li, P. Liu*</i> | Mr. Z. Cheng |
| 10.50 – 11.10 AM | PRES25.0213 | N-best Design Options with Strategical Differences in Process Network Synthesis <i>Á. Orosz, S.Y. Teng, F. Friedler*</i> | Dr. A. Orosz |
| 11.10 – 11.30 AM | PRES25.0253 | A Perspective on Integrating Process Dynamics Simulation into Process Control Education at Undergraduate Level | Dr. V. Andiappan |

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| | | <i>V. Andiappan*</i> , <i>Z.Y. Kong</i> , <i>I. Teh</i> , <i>J. Sunarso</i> | |
| 11.30 – 11.50 AM | PRES25.0146 | Sustainable Valorization of Paper Industry Waste (Paper Dust) via Downdraft Air Gasification: A Comprehensive Aspen Plus® Process Model for Syngas Production <i>S. Kumar</i> , <i>A. Halba</i> , <i>P. Arora*</i> | Prof. P. Arora |
| 11.50 – 12.10 PM | PRES25.0214 | Sustainability and Energy Efficiency in Administrative Processes: A Control Theory Approach with P-Graph Optimization <i>B. Eisinger*</i> , <i>L. Buics</i> | Dr. Eisinger |
| 12.10 – 12.30 PM | PRES25.0196 | Decarbonizing Industrial Process Heat: A Renewable Energy Roadmap for Aotearoa-New Zealand <i>D.J.S. Chong*</i> , <i>T. Walmsley</i> , <i>M. Atkins</i> , <i>B. Bertok</i> , <i>M.R. Walmsley</i> | Mr. D.J.S Chong |

Session 18: Bunga Raya 2

Theme: Process analysis, modelling and optimisation

Chair: Jui-Yuan Lee

Co-chair: Yoke Kin Wan

| Time | Paper ID | Paper Title | Presenter |
|------------------|-------------|---|------------------------|
| 10.30 – 10.50 AM | PRES25.0014 | Vulnerability Assessment of Coupled Energy and Resource Networks Considering the Contribution of Neighboring Nodes <i>R. Duan</i> , <i>L. Kang*</i> , <i>Y. Liu</i> | Mr. R. Duan |
| 10.50 – 11.10 AM | PRES25.0057 | A Mixed-Integer Linear Programming Model for Enhanced Weathering Networks Considering Logistical Emissions <i>M.V. Migo-Sumagang*</i> , <i>K. Aviso</i> , <i>D. Foo</i> , <i>R.R. Tan</i> , <i>Y.L. Tan</i> | Dr. M.V. Migo-Sumagang |
| 11.10 – 11.30 AM | PRES25.0083 | Thermodynamic Analysis of CO ₂ -Rich Natural Gas Utilization via Chemical Looping Hydrogen Generation <i>A.H. Ahmad</i> , <i>M. Aziz*</i> | Mr. A.H. Ahmad |
| 11.30 – 11.50 AM | PRES25.0304 | Process design and multi-objective optimization based on extractive distillation for separation of vinyl acetate/methyl acetate/water azeotrope <i>Y. Zhang*</i> | Ms. Y. Zhang |
| 11.50 – 12.10 PM | PRES25.0224 | Optimization of an Integrated Multilevel Energy Complementary System for Hydrogen Production, Storage, and Utilization <i>L. Huang</i> , <i>J. Sun*</i> , <i>D. Foo</i> , <i>X. Zeng</i> , <i>L. Wang</i> , <i>S. Hu</i> | Dr. J. Sun |

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|------------------|-------------|---|-------------|
| 12.10 – 12.30 PM | PRES25.0124 | Maximizing Environmental Returns under Capital Constraints: A Sectoral Optimization Model Using P-Graph D. Zhao, S.L. Ngan*, A.H. Jamil, B.S. How, S.P. Ngan | Dr. D. Zhao |
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Session 19: Bunga Raya Hall 3A

Theme: Waste minimisation, processing and management

Chair: Dominic Foo

Co-chair: Sebastian Werle

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|----------------|
| 1.30 – 1.50 PM | PRES25.0078 | Development of green water treatment process using photocatalyst-containing droplets <i>S. Kato, Y. Kansha*</i> | Mr. S. Kato |
| 1.50 - 2.10 PM | PRES25.0256 | Synergistically Optimized Distributed Energy System Combining Hydrogen-Blended Natural Gas and Geothermal Energy for Low-Carbon Residential Areas <i>Y. Peng, Q. Liao*, B. Wang, Y. Chen, Y. Liang</i> | Dr. Y. Peng |
| 2.10 - 2.30 PM | PRES25.0295 | Energy, exergy and economic analyses of DME-power polygeneration system based on the integration of biomass gasification and direct synthesis of DME <i>W. Xu*</i> | Mr.W. Xu |
| 2.30 - 2.50 PM | PRES25.0318 | Circular Economy Strategies Analysis in Palm Oil Mills Using P-Graph <i>E.G.D. Liyis, S.W. Teh, S.X. Teng, K.W. Cheng, Y.J. Chan, H.L. Lam*</i> | Prof. H.L. Lam |

Session 20: Bunga Raya Hall 3

Theme: Process analysis, modelling and optimisation

Chair: Kathleen Aviso

Co-chair: Nishanth Chemmangattuvalappil

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|------------------------|
| 1.30 – 1.50 PM | PRES25.0016 | Multi-Period Optimization of Industry 5.0 Technology Adoption in Oil Palm Plantation <i>M.A. Mohamaad Zaki, J. Ooi, C.H. Lim*</i> | Mr. M.A. Mohamaad Zaki |
| 1.50 - 2.10 PM | PRES25.0062 | Design and Optimization of Coal-fired Combined Cooling, Heating and Power System for Integration of Hybrid Hydrogen Network <i>W. Duan, Q. Zhang*</i> | Ms. Duan |
| 2.10 - 2.30 PM | PRES25.0065 | Comparative analysis of syngas production via gasification and plasma gasification of municipal solid waste for methanol synthesis <i>A. Sornchai, Y. Patcharavorachot, D. Saebea*</i> | Ms. Sornchai |

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|----------------|-------------|---|---------------|
| 2.30 - 2.50 PM | PRES25.0240 | Assessing the Optimal Resource Mix for Deep Decarbonization of the Indian Power Sector by 2070 <i>A.D.C. Arul Babu, V. Ramadesigan*, R. Banerjee</i> | Mr. Arul Babu |
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Session 21: Bunga Raya Hall 2

Theme: Process analysis, modelling and optimisation

Chair: John Frederick D. Tapia

Co-chair: Hanim Basarudin

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|---------------|
| 1.30 – 1.50 PM | PRES25.0015 | Thermodynamic Performance analysis of the Combined Liquid Organic Hydrogen Carrier and Solid Oxide Fuel Cell System <i>M. Qiu, L. Kang*, Y. Liu</i> | Ms. M. Qiu |
| 1.50 - 2.10 PM | PRES25.0068 | A comprehensive framework for targeting the disturbance propagation path and debottleneck strategy of chemical process considering the topology and cascading effects <i>L. Zhao, G. Liu*</i> | Ms. L. Zhao |
| 2.10 - 2.30 PM | PRES25.0073 | Performance Modelling of Biomass/Ammonia/Coal Co-firing in Pulverized Coal-fired Boiler using Process Simulation <i>R. Waluyo, M. Aziz*</i> | Mr. Waluyo |
| 2.30 - 2.50 PM | PRES25.0050 | Assessment of Potential Modifications to High-Pressure (HP) and Medium-Pressure (MP) Boiler Feed Water (BFW) Pump Systems for Integrated Plant Network Analysis in BFW Services <i>M.A. Isa*, MA. Abu Taleb, R. A Latip, A.C. Kamel, MS. Samin, W.A.F. Wan Abd Munir, M. M Hadzir, W MN. W Ismail, B. Raghunathan</i> | Mr. MS. Samin |

Session 22: Bunga Raya Hall 1

Theme: Process integration for sustainable development

Chair: Yang Yang

Co-chair: Yoke Kin Wan

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|--------------|
| 1.30 – 1.50 PM | PRES25.0280 | A Heat Exchanger Network Retrofit Method for Non-Continuous Processes based on Clustering and Reinforcement Learning <i>Y. Jiang*, T. Walmsley, K. Hall, B.H.Y. Ong, M.R. Walmsley, M. Atkins</i> | Mr. Y. Jiang |

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|----------------|-------------|---|-------------|
| 1.50 - 2.10 PM | PRES25.0127 | Intelligent Structural Optimization of Composite Mini-channel Heat Exchangers by using Reinforcement Learning Algorithms <i>D. Xu, Z. Han, D. Liu, Q. Wang, T. Ma*</i> | Mr. D. Xu |
| 2.10 - 2.30 PM | PRES25.0051 | Evaluation of retrofit strategies to mitigate scope 1, 2, and 3 emissions in wastewater treatment plants for carbon neutrality <i>H. Song, T. Woo, S. Kim, C. Jung, N. Jeon, S. Heo, C. Yoo*</i> | Ms. H. Song |
| 2.30 - 2.50 PM | PRES25.0064 | Machine Learning Based Integrated Optimization of Mass-Energy for Refinery and Synthetic Plant of Chemicals <i>Y. Yang, Q. Zhang*</i> | Dr. Y. Yang |

Session 23: Bunga Raya 1

Theme: Process analysis, modelling and optimisation

Chair: Adeniyi Isafiade

Co-chair: Dalila Alias

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|--------------|
| 1.30 – 1.50 PM | PRES25.0288 | The few-shot weld defect classification method based on improved ResNet50 and generative adversarial network <i>B. Wang, Z. Qiao*</i> | Mr. Z. Qiao |
| 1.50 - 2.10 PM | Oleology | Maximizing Enhanced Oil Recovery with Effective Coalescing using MyCelx Coalescing Technology <i>J.M. Lee*</i> | Ms. Lee |
| 2.10 - 2.30 PM | PRES25.0313 | Application-specific quality assessment of recycled plastics using Zero-shot Learning and Large Language Models (LLMs) <i>Q.Y. Ong, K. Ragaert, S.Y. Teng*</i> | Ms. Q.Y. Ong |

Session 24: Bunga Raya 2

Theme: Energy saving and clean technologies

Chair: Bohong Wang

Co-chair: Viknesh Andiappan

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|-----------------|
| 1.30 – 1.50 PM | PRES25.0147 | Electrocatalytic Activity of Nickel Zinc Selenide on Nickel Foam for the Production of Hydrogen via Water Electrolysis <i>A. Flaviano, P.R. Morente, M.B. Owogowog, J. Balisnomo, J. Ocon, J. Ortenero*</i> | Ms. A. Flaviano |

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|----------------|-------------|--|----------------|
| 1.50 - 2.10 PM | PRES25.0207 | Use of metallurgical slags in ecological catalysis <i>M. Utegenova*</i> , <i>M. Sadenova</i> , <i>S. Tungatarova</i> | Ms. Utegenova |
| 2.10 - 2.30 PM | PRES25.0308 | Clean production of fluid catalytic cracked diesel using ionic liquids and predictive molecular thermodynamics <i>X. Wang*</i> , <i>G. Li</i> | Mr. X. Wang |
| 2.30 - 2.50 PM | PRES25.0292 | Ammonia Decomposition: A Route to Clean Hydrogen Generation <i>P. Arora*</i> , <i>M. Chopra</i> | Prof. P. Arora |

Session 25: Bunga Raya Hall 3A

Theme: Energy saving and clean technologies

Chair: Bing Shen How

Co-chair: Marzhan Sadenova

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|-------------------|
| 3.10 – 3.30 PM | PRES25.0060 | Carbon Dioxide Capture Performance Characterization of Mesoporous Carbon Impregnated with Triethylenetetramine <i>F. Chrisnardy</i> , <i>Y. Kansha*</i> | Ms. F. Chrisnardy |
| 3.30 – 3.50 PM | PRES25.0243 | Modeling and Optimization of Natural Gas Pipeline Networks Based on the Integration of PWL and McCormick Relaxations <i>H. Hao*</i> , <i>B. Wang</i> | Ms. H. Hao |
| 3.50 – 4.10 PM | PRES25.0098 | Pathway Optimization for Low-Carbon Plastic Waste-to-Hydrogen Production with Flexible Feed Composition Using a Regression Model <i>S.K.Y. Song</i> , <i>V. Andiappan</i> , <i>F. Friedler</i> , <i>B.S. How*</i> | Ms. S.K.Y. Song |
| 4.10 – 4.30 PM | PRES25.0033 | Multi-Parameter Optimization of Minimal Surface Structure Tank for Metal Hydride as Mobile Hydrogen Storage Solution <i>L.A. Lesmana</i> , <i>M. Aziz*</i> | Mr. L.A. Lesmana |

Session 26: Bunga Raya Hall 3

Theme: Process analysis, modelling and optimisation

Chair: Yasuki Kansha

Co-chair: Karen Kong

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|--------------|
| 3.10 – 3.30 PM | PRES25.0018 | Optimal Design of a Modular Renewable Methanol Synthesis System Based on Reconfiguration of Reactor and Separator Units <i>L. Zhang</i> , <i>J. Tang</i> , <i>L. Kang*</i> , <i>Y. Liu</i> | Ms. L. Zhang |
| 3.30 – 3.50 PM | PRES25.0019 | Optimal Design of Hydrogen Refueling Station Considering Matching of Multi-stage Compression and Storage Processes | Mr. J. Lian |

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|----------------|-------------|---|-----------------|
| | | <i>J. Lian, L. Kang*, Y. Liu</i> | |
| 3.50 – 4.10 PM | PRES25.0029 | Optimal design of modular production systems for renewable methanol with multi-capacity production lines based on operating windows regulation <i>X. Kong, J. Wang, L. Kang, Y. Liu*</i> | Mr. X. Kong |
| 4.10 – 4.30 PM | PRES25.0069 | Determining Optimal Crisis Operation for Integrated Plastics Recycling Network Using Fuzzy Linear Programming Enterprise Input-Output Model <i>B.J. Santos*, M.F. Benjamin, J.F. Tapia, R.R. Tan</i> | Mr. B.J. Santos |

Session 27: Bunga Raya Hall 2

Theme: Process analysis, modelling and optimisation

Chair: Jeksin Ooi

Co-chair: Akos Orosz

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|----------------|
| 3.10 – 3.30 PM | PRES25.0076 | Circular Integration of Electrified Plastic Waste-to-X Systems into Oil Refineries <i>A.S.T. Tan, S. Mousa, D. Al-Mohannadi, J.Y. Lee, V. Andiappan, B.S. How*</i> | Ms. A.S.T. Tan |
| 3.30 – 3.50 PM | PRES25.0151 | Kinetic Modeling of Hydrogenation Reaction and Derivation of Optimal Operating Conditions for Quality Improvement <i>J. Park, S. Hwang*</i> | Ms. J. Park |
| 3.50 – 4.10 PM | PRES25.0289 | Synthesis of CO ₂ -based Polyethylene Through Hybrid Renewable and PtX Systems <i>M. Dokl, Z. Kravanja, L. Čuček*</i> | Ms. M. Dokl |
| 4.10 – 4.30 PM | PRES25.0133 | Design Optimization of Small-Scale Horizontal-Axis Wind Turbines Using Genetic Algorithms to Minimize CO ₂ Emissions <i>M. Lumbera*, J.I. Encarnacion</i> | Mr. M. Lumbera |

Session 28: Bunga Raya Hall 1

Theme: Energy saving and clean technologies

Chair: Dominic Foo

Co-chair: Laszlo Hegely

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|-----------|
| 3.10 – 3.30 PM | PRES25.0007 | Collaborative optimization planning of multi-island energy systems considering ship-based mobile energy storage <i>A. Yu, Z. Li, P. Liu*</i> | Ms. A. Yu |

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|----------------|-------------|---|-----------------|
| 3.30 – 3.50 PM | PRES25.0030 | Performance evaluation of ceramic solar system for domestic space heating: A case study in Heibei, China <i>S. Yang, Z. Fang, S. Zhang*, Z. Wang</i> | Dr.S. Zhang |
| 3.50 – 4.10 PM | PRES25.0089 | Performance of Nickel-Iron Selenide on Bamboo Nanocellulose for Hydrogen Production <i>J. Ortenero*, A.R. Lapuz</i> | Dr. J. Ortenero |
| 4.10 – 4.30 PM | PRES25.0164 | Evaluation of the carbon emissions of electric vehicles in the Philippines using representative drive cycles and local power mix <i>J.I. Encarnacion*, M.A. Mozo, V. Banaguas, C.M. Odulio</i> | Dr. Encarnacion |

Session 29: Bunga Raya 1

Theme: Process analysis, modelling and optimisation

Chair: Nianqi Li

Co-chair: Dalila Alias

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|----------------|
| 3.10 – 3.30 PM | PRES25.0220 | Evaluation of hydrodynamic behavior in an electrochemical reactor of tubular baffles with different impellers. <i>O. Abrica Gonzalez*, S.A. Martínez-Delgadillo, J.A. Yañez-Varela</i> | Mr. O. Abrica |
| 3.30 – 3.50 PM | PRES25.0250 | Thermodynamic Optimization of Thermal Grids Using Pinch and Exergy Analysis <i>J. Grand*, B.H.Y. Ong, B. Wellig</i> | Mr. J. Grand |
| 3.50 – 4.10 PM | PRES25.0227 | Optimisation of Energy Utilisation and Heat Recovery in Plastic Waste Management Using TRNSYS <i>C. Si, Y.V. Fan, L. Čuček*, M. Dokl, Z. Kravanja</i> | Ms. C. Si |
| 4.10 – 4.30 PM | PRES25.0271 | Enhanced NO ₂ Gas-Sensing Performance by Core-Shell Ni/ZIF-8/ZnO Nanospheres <i>R.R. Kumar*</i> | Dr. R.R. Kumar |

Session 30: Bunga Raya 2

Theme: Footprint minimisation and mitigation

Chair: Kok Sin Woon

Co-chair: Sue Lin Ngan

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|----------------|
| 3.10 – 3.30 PM | PRES25.0090 | Indirect Economic Impacts and Emissions of Basalt Enhanced Weathering in Malaysia <i>K. Aviso, D. Foo, I.H. Gue, M.V. Migo-Sumagang, R.R. Tan*, Y.L. Tan</i> | Prof. R.R. Tan |

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|----------------|-------------|--|-----------------------|
| 3.30 – 3.50 PM | PRES25.0145 | <p>Bridging Data Gaps in Coal Quality Assessment: A Machine Learning Approach for the Process Performance Enhancement</p> <p><i>H. Basarudin*</i>, A.Z.S. Zulkifli, S. Yusup, M.N. Zulkifle, M.S.H. Mohd Samsuri, H. Basarudin</p> | Dr. H. Basarudin |
| 3.50 – 4.10 PM | PRES25.0209 | <p>Systematic Framework for Evaluating Microreactors vs. CSTR and PFR Systems</p> <p><i>A. Nemet*</i>, M. Zazijal, Z. Kravanja</p> | Dr. A. Nemet |
| 4.10 – 4.30 PM | PRES25.0239 | <p>A Multi-Dimensional Framework for Just and Equitable Renewable Energy Target Allocation in India's Federal System</p> <p><i>N.T. Venkataramana</i>, T. Kanitkar, V. Ramadesigan*, R. Banerjee</p> | Mr. N.T Venkataramana |

Day 3, Wednesday, 27th August 2025

Session 31: Bunga Raya 3A

Theme: Process analysis, modelling and optimisation

Chair: Zekun Yang

Co-chair: Benjamin Ong

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|----------------|
| 1.30 – 1.50 PM | PRES25.0096 | Double-effect Parallel Batch Distillation by Feed Splitting <i>L. Hegely, P. Lang*</i> | Prof. P. Lang |
| 1.50 - 2.10 PM | PRES25.0144 | Establishing the correlation between Gas Chromatography-Mass Spectroscopy (GCMS) fragmentation and Laminar Burning Velocity (LBV) in sustainable gasoline blending components. <i>C. Av Muthiah*, M. Subramaniam, S. Shinde, P. Seferlis</i> | Ms. AV Muthiah |
| 2.10 - 2.30 PM | PRES25.0259 | Value Potential for Screening of Reaction Pathways <i>D.K.S. Ng*</i> | Prof. Ng |
| 2.30 - 2.50 PM | PRES25.0228 | Optimized Dual-Battery Energy Storage System for Improved Lifetime and Cost Reduction in Renewable Energy Systems <i>A.D. Binti Nizamuddin, W.S. Ho*, H. Hashim, M.A. Zubir, Z. Ab Muis, K.Y. Wong</i> | Dr.W.S. Ho |

Session 32: Bunga Raya Hall 3

Theme: Footprint minimisation and mitigation

Chair: Andreja Nemet

Co-chair: Maria Victoria Migo-Sumagang

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|---|--------------------|
| 1.30 – 1.50 PM | PRES25.0273 | Multi-Period Planning for Corporate Emission Reduction <i>D. Foo*, C.H. Chew</i> | Prof. D. Foo |
| 1.50 - 2.10 PM | PRES25.0123 | Can the EU-27 Achieve Its 2030 Climate Targets? An AI-Driven Forecast of Energy and Emissions Trends <i>K.S. Woon*, M.Y. Chin</i> | Dr. K.S. Woon |
| 2.10 - 2.30 PM | PRES25.0132 | Flexible superstructure synthesis approach for multi-region and multi-period carbon capture and storage network design <i>H. Liu, A.J. Isafiade*</i> | Prof.A.J. Isafiade |
| 2.30 - 2.50 PM | PRES25.0175 | Sustainable Urban Mobility system: Network Based Approach for Multimodal Integration and Emission Reduction | Mr. I. Jeong |

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| | | <i>L. Jeong, S. Kim, J. Kwak, M. Choi, S. Lee*</i> | |
| 2.50 – 3.10 PM | PRES25.0021 | Integrated Off-Grid Resource Sharing and Energy Network Optimisation for Several Co-Located Rural Communities in Namibia <i>K. Jegede*, A.J. Isafiade, M. Short</i> | Ms. K. Jegede |

Session 33: Bunga Raya Hall 2

Theme: Numerical fluid flow and heat transfer simulation

Chair: Jin Wang

Co-chair: Martin Picón Núñez

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|----------------------|
| 1.30 – 1.50 PM | PRES25.0003 | Investigation of Thermoelectric Cooling in Wearable Generators Using Phase Change Materials as a Heat Sink <i>J. Saleem, Z. Hou, M. Shen, N. Ahmed, J. Wang*</i> | Mr. Saleem |
| 1.50 - 2.10 PM | PRES25.0161 | CFD Analysis of CO ₂ Dispersion in Air-Conditioned Office Spaces with Varying Occupancy Configurations <i>R.P. Estaquio*, N.D. Genuino, L.C. Manuel, K. Santos, N. Astrologo, S.M. Montecillo, J.R. Lustro, J.R. Hizon</i> | Dr.J.R. Lustro |
| 2.10 - 2.30 PM | PRES25.0226 | Modeling Heat Transfer Enhancement in a CO ₂ Methanation Reactor with Twisted Tape Inserts <i>C. Troyano Ferré*, R. Cabello, A.E. Plesu Popescu, J. Bonet-Ruiz, P. Gamallo Belmonte, X. Gimenez Font</i> | Mr. C. Troyano Ferré |

Session 34: Bunga Raya Hall 1

Theme: Energy saving and clean technologies

Chair: Lik Yin Ng

Co-chair: Sue Lin Ngan

| Time | Paper ID | Paper Title | Presenter |
|----------------|-------------|--|-------------|
| 1.30 – 1.50 PM | PRES25.0298 | The strong interaction between the hydrophobic deep eutectic solvent and phenol enables efficient separation of aqueous and phenol system <i>Y. Zhou*</i> | Ms. Zhou |
| 1.50 - 2.10 PM | PRES25.0307 | Cleaner production of fluid catalytic cracking diesel with ionic liquids and predictive molecular thermodynamic. <i>X. Wang*</i> | Mr. Wang |
| 2.10 - 2.30 PM | PRES25.0261 | Enhancement of Energy Efficiency for Chilled Water Networks in Existing University Building <i>D. Alias, P. Tan, D.K.S. Ng*</i> | Dr. Alias |
| 2.30 - 2.50 PM | PRES25.0038 | Advancing Decarbonization in Process Industries: Multi-objective and Multi-period Heat Exchanger | Dr. Z. Yang |

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| | | Network Synthesis with Post-combustion Carbon Capture <i>Z. Yang, T. Pan, S. Zhang, N. Zhang*, R. Smith</i> | |
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POSTER PRESENTATIONS

| Day 1, Monday, 25 th August 2025 | | |
|---|---|----------------------|
| Paper ID | Paper Title | Presenter |
| PRES25.0009 | Modelling Framework for Coupling of Power and Freshwater Production Sector Considering Storage <i>P. Lonić, F. Jurić, H. Mikulčić*</i> | Prof. Mikulčić |
| PRES25.0013 | Benchmarking Hydrogen Life Cycle Assessments: A Review of Methodologies and Results <i>R.P. S. Thomas Adisan, S.R. Wan Alwi*, Z. Abdul Manan, V. Andiappan, J.S. Lim, B.S. How</i> | Mr. S. Thomas Adisan |
| PRES25.0028 | The Potential and Role of Seasonal Energy Storage in the Transition of Power and Heating Sectors <i>Z. Li, C. Li, Z. Wang, J. Huang, P. Liu*</i> | Mr. Li |
| PRES25.0041 | Textile Waste Recycling: The Role of Thermogravimetric Analysis <i>L. Slobodkina, R. Muzyka, S. Sobek, M. Sajdak, S. Werle*</i> | Prof. Werle |
| PRES25.0046 | Techno-economic Analysis of Sustainable Aviation Fuel from Corn Stover <i>J.F. Tapia*, A.M. Abrasia, J.A. Dalisay, J.A. Halili, A.F. Miguel, K.M. Mangali, C.J. Lopez, D. Foo, R.R. Tan</i> | Dr. Tapia |
| PRES25.0079 | Innovative Approaches to Palm Oil Mill Management Through Electrocoagulation <i>V.Z. Cabrera, M.B. Sorila, S. Tercenio, J. Ortenero*, A.E.S. Choi</i> | Dr. Ortenero |
| PRES25.0085 | Enhancing Energy Efficiency through Heat Recovery in Coal-Fired Power Plant using Aspen Energy Analyzer <i>S.S. Johari*, S. Yusup, A.Z.S. Zulkifli, M.S.H. Mohd Samsuri</i> | Ms. Johari |
| PRES25.0092 | Advances in Biodegradable Plastic Production: Exploring Strategies and Technologies using Renewable Resources <i>G.M.V. Silva, A.J.A. Go, R.E.M. Manlulu, J.A.R. Calero, K. Aviso, A.E.S. Choi*</i> | Prof. Choi |
| PRES25.0094 | Paving the way to Sustainability: Exploring the Effects of Additives to Concrete Mixes for Enhancing Mechanical Properties and Cost Efficiency <i>P. Dizon, K.L. Guanlao, K. Marqueses, C.J. Oliva, K. Aviso*, A.E.S. Choi</i> | Prof. Aviso |
| PRES25.0121 | Sustainable Methanol Production via Integrated Supercritical CO ₂ Cycle: Process Optimization and Energy Efficiency Analysis <i>Z. Ling, C. Bouallou*</i> | Prof. Bouallou |

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|-------------|---|----------------------------|
| PRES25.0126 | Chemometric-based Local Temperature Prediction for Control System Design <i>H. Takahashi, Y. Kansha*</i> | Prof. Kansha |
| PRES25.0136 | A Product Centric Design for the Recovery of Value-Added Chemicals from Crude Bio-Oil <i>Y.Q. Lee, H.S. Lee, X.K. Wong, S. Thangalazhy-Gopakumar, J. Ooi, N.G. Chemmangattuvalappil*</i> | Prof. Chemmangattuvalappil |
| PRES25.0138 | Harnessing AI for Sustainability: Evidence on Energy Efficiency and Green Innovation <i>Y. Zhou, W. Bu*, S.L. Ngan, D. Zhao</i> | Dr. Zhou |
| PRES25.0162 | Impact of Biomass Co-Firing on Flame Temperature and Pollutant Emissions in a 300 MW Coal-Fired Boiler: A Computational Fluid Dynamics Analysis <i>M.N. Zulkifle*, S. Yusup</i> | Mr. Zulkifle |
| PRES25.0183 | Introducing the Time-Based GCC for Visualising the Natural Variation in Cold Utility Availability <i>R.K. Yadav*, S. Bandyopadhyay, A. Hoadley, R. Dargaville</i> | Mr. Yadav |
| PRES25.0278 | Eco-Friendly Guava Wine Fermentation: Insights from Spectrophotometry and Cyclic Voltammetry <i>K. Anonuevo, J. Balisnomo, J. Ortenero*</i> | Prof. Balisnomo |
| PRES25.0299 | Designing A Solar-Centric Eco-Industrial Park: A Modelling and Economic Assessment of Resource Integration <i>I.W.A. Soh, H.M. Lee, Y.Z. Lui, Y.K. Wan*</i> | Mr. Soh |
| PRES25.0316 | Aligning Hazardous Waste Sitting with Circular Economy and SDG Priorities: A Monte Carlo- Validated Framework for Developing Countries <i>M.K. Wang*, H.L. Lam</i> | Ms. Wang |
| PRES25.0319 | Heat Exchanger Network Synthesis Using a Segmented MINLP Superstructure: Enhancing Integration and Reducing Design Multiplicity <i>A. Nemet*, E. Ahmetović, Z. Kravanja</i> | Dr. Nemet |

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| Paper ID | Paper Title | Presenter |
|-------------|--|-----------|
| PRES25.0180 | An Integrated Assessment of CO2 Capture Processes in Various Techniques <i>Y.S. Chen, B.Y. Yu*</i> | Mr. Chen |
| PRES25.0182 | Overview of Various CO2 Utilization Processes: Process Design, Technical Economic and Life Cycle Assessment <i>H.C. Hua, B.Y. Yu*</i> | Dr. Hua |

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| PRES25.0184 | Regularities of stabilization of the active component of oxide catalysts in deep oxidation of methane <i>M. Zhylybek*</i> , <i>T. Baizhumanova</i> , <i>S. Tungatarova</i> , <i>M. Zhumabek</i> , <i>K. Kassymkan</i> , <i>R. Orazbekova</i> , <i>B. Mustakym</i> , <i>M. Erkibaeva</i> | Ms. Zhylybek |
| PRES25.0188 | Extraction of carbon-containing concentrate from fly ash and its application <i>R. Kulumbegov</i> , <i>L. Delitsyn</i> , <i>O. Popel</i> , <i>M. Sulman*</i> | Prof. Sulman |
| PRES25.0198 | Optimization Model for Progressive Industrial Decarbonization <i>K. Aviso</i> , <i>D. Foo</i> , <i>G. Poplewski</i> , <i>R.R. Tan*</i> | Prof. Tan |
| PRES25.0200 | Risk Analysis of LNG Cold Energy Power Generation System Based on Fuzzy Analysis and Bayesian Network <i>Y. Zhou</i> , <i>B. Wang*</i> | Mr. Zhou |
| PRES25.0201 | A study on the rapid prediction method for geothermal reservoir and extracted water temperature fields base FNO model. <i>Y. Zhang</i> , <i>J. Gong</i> , <i>Y. Chen*</i> , <i>K. Jiao</i> , <i>B. Wang</i> , <i>Q. Liao</i> , <i>D. Han</i> | Ms. Zhang |
| PRES25.0204 | Effect of Halides on the Morphology and Electrocatalytic Activity of Nickel Zinc Selenide Towards Hydrogen Production <i>A. Flaviano</i> , <i>J. Ortenero*</i> , <i>P.R. Morente</i> , <i>M.B. Owogowog</i> , <i>J. Balisnomo</i> | Mr. Owogowog |
| PRES25.0206 | Investigation on the Vertical Interaction of Outdoor - Indoor PM 2.5 Concentrations via In-situ Monitoring <i>K. Cantonao</i> , <i>J.R. Lustrro*</i> | Ms. Cantonao |
| PRES25.0219 | Synthesis and Optimization of Integrated Hydrogen Production and Supply Network for Multi-Plant Scenario <i>L. Mufanebadza</i> , <i>T. Chitsiga</i> , <i>A.J. Isafiade*</i> | Ms. Mufanebadza |
| PRES25.0222 | Development and Performance Assessment of a Solar-Assisted Desiccant Dryer for Banana, Camote, and Taro Chips <i>R. Mamuad*</i> , <i>L. Aglipay</i> , <i>L. Tomas</i> , <i>A.E.S. Choi</i> | Dr. Mamuad |
| PRES25.0229 | Process Simulation and Optimization of Propylene Separation for Energy Efficiency in a Refinery <i>H. Wang</i> , <i>J. Sun*</i> , <i>C. Lu</i> , <i>D. Foo</i> | Dr. Sun |
| PRES25.0231 | Application of Game Theory to Integrated Supply Chain and Interplant HENs Involving Multiple Unequal Period Durations <i>A.J. Isafiade*</i> | Prof. Isafiade |
| PRES25.0235 | Using signal processing and machine learning techniques to develop a gas leak detection system <i>W. Tzu Wei</i> , <i>C.W. Ong</i> , <i>C.L. Chen*</i> | Mr. Tzu Wei |

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| PRES25.0242 | Utilization of silicate-containing waste in the production of heavy concrete <i>D. Anop, O. Rudenko, M. Sadenova*, N. Kulenova, N. Beisekenov, A. Lutay, A. Kolesnikova, A. Alimbaeva</i> | Dr. Sadenova |
| PRES25.0244 | Integration of TPP ash and slag waste into the process of aerated concrete production <i>D. Anop, O. Rudenko, M. Sadenova*, E. Kuldeyev, N. Soshnikov, S. Lutai, V. Shevlyakov, N. Beisekenov</i> | Dr. Sadenova |
| PRES25.0247 | Enhancing Building Energy Efficiency through an Innovative Rapid Diagnostic Method for Thermal Protection of Envelope Structures <i>A. Polyvianchuk, V. Malyarenko, R. Semenenko, O. Yefimov, Y. Riepin, O. Arsenyeva*</i> | Prof. Arsenyeva |
| PRES25.0248 | A Review of Energy and Emission Management Standards, Implementation and Integration Approaches <i>N.A.I. Sulaiman, Z. Abdul Manan*, J.S. Lim, S.R. Wan Alwi, S.N.A. Ahmad Termizi</i> | Ms. Sulaiman |
| PRES25.0249 | Retrofitting Multi-Period Heat Exchanger Networks with Simulated Annealing <i>R. Damalerio, B.H.Y. Ong*, J. Stampfli, M.K. Patel, B. Wellig</i> | Dr. Ong |
| PRES25.0252 | LSTM-Driven Predictive Scheduling for Green Energy-Hydrogen-Methanol Integrated Systems <i>R. Bian, R. He*, X. Yan, X. Tong</i> | Mr. Bian |
| PRES25.0254 | A Comprehensive Review of Techno-Economic Assessment and Social Impacts for Hydrogen Generation <i>N. Ibrahim, Z. Abdul Manan*</i> | Ms. Ibrahim |

ONLINE PRESENTATIONS

| Paper ID | Paper Title | Presenter |
|-------------|---|------------------------|
| PRES25.0012 | A Comparative Study Between Pinch Design Method and Superstructure Applied on Carbon Capture Storage <i>R. Handogo*, R. Panca Anugraha, P.L.A. Nanggala, J. Juwari, R.R. Satriyo, I.G.P.A. Kusuma, S.F. Amarasuli</i> | Mr. Nanggala |
| PRES25.0044 | Economic Evaluation of a Stage Compression Heat Pump System for Industrial Applications <i>G. Martínez-Rodríguez*, A.L. Fuentes-Silva, J.C. Baltazar</i> | Dr. Martínez-Rodríguez |
| PRES25.0045 | Minimization of Drying Time and Thermo-Economic Evaluation during Solar Dehydration of Apple <i>R.A. Olmos-Cruz, G. Martínez-Rodríguez*, J.C. Baltazar, E. Sánchez-García</i> | Ms. Olmos-Cruz |
| PRES25.0052 | Heat Transfer Performance Optimization of Triply Periodic Minimal Surface Heat Exchangers Based on Thermal Resistance Distribution Contro <i>J. Wang, N. Li, Z. Cheng, T. Ma, M. Zeng*, Q. Wang</i> | Dr. Li |
| PRES25.0059 | Multi-energy system design for low-carbon industrial parks <i>Y. Zhu, L. Liu*, J. Du</i> | Dr. L. Liu |
| PRES25.0097 | A Game Theoretic Approach in Modeling the Competition of Aviation Fuel Production Firm <i>J.G. Uy, J.L. San Juan*</i> | Mr. Uy |
| PRES25.0102 | Operational Analysis of a Solar Thermal Storage System Using COMSOL Multiphysics for Industrial Applications <i>C.R. Diaz-De-León, J. Martinez-Sanchez, J.C. Baltazar, G. Martínez-Rodríguez*</i> | Mr. Diaz-de-León |
| PRES25.0107 | A Quasi-2D Model for Reversible Solid Oxide Fuel Cell: Thermal Management and Performance Analysis <i>N. Yang, C. Wang, Y. Zhuang*, J. Du</i> | Ms. Yang |
| PRES25.0115 | Factors Affecting Fishermen's Readiness to Pay for Protection and Indemnity Insurance in Kuala Kedah, Malaysia <i>L. Chuah*, A. Kafi, J.W. Ooi, Y.H. Leong, Y.L. Pua, O. Nor Hasni, M. Maruf, K. Mokhtar, A. Mohd Jaeh, I. Ibrahim</i> | Dr. Chuah |
| PRES25.0125 | Assessing Malaysian Ship Registration and Seafarer Recruitment for Sustainable Maritime Sector Growth | Dr. Chuah |

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| | <i>F. Sg, K. Mokhtar, L. Chuah*</i> , N.H. Mr Muhamaruesa, M.M. Brahim, J. Melvin Mobilik, N. Saidi | |
| PRES25.0137 | Phase transition dynamics of phase change material in the grille-capsule packed channel <i>H. Jia, Y. Tian, J. Yang*, Q. Wang</i> | Mr. Jia |
| PRES25.0148 | The Effect of Thermal Fluid Velocity on the Performance of Evacuated Collectors under Scaling Conditions <i>H.G. Lugo Granados*, L. Canizalez Dávalos, M. Picón Núñez</i> | Dr. Lugo Granados |
| PRES25.0163 | CFD Analysis of a Crucible Furnace Using Recycled PET as Fuel for Smelting Non-ferrous Metals <i>B.E. Rubio-Campos, E. Murrieta-Luna*, L. Canizalez Dávalos, M.M. May-Vazquez, S. Murrieta-Escoto, L.L. Romero-Martínez</i> | Dr. Murrieta-Luna |
| PRES25.0168 | Feasibility assessment of a large-scale grid-integrated wind power plant for electrifying energy-intensive industry amid policy and market uncertainties <i>J. Hang, J. Li*, P. Liu, G. Zhang, H. Liu</i> | Prof. Liu |
| PRES25.0172 | Numerical Study of Two-phase Flow Characteristics and Mixing Uniformity in Dispersive Pipes with Different Diameters <i>G. Song, Q. Xiao, X. Yan, Q. Wang, T. Ma*</i> | Dr. Song |
| PRES25.0185 | Metal-enzyme biocatalyst for the conversion of cellulose to sorbitol <i>A. Sulman*, B. Tikhonov, D. Lisichkin, O. Grebennikova, V. Molchanov, A. Sokolova, V. Matveeva</i> | Ms. Sulman |
| PRES25.0186 | Multifunctional Zeolite Based Catalysts for Tandem Reactions in Biomass Conversion <i>V. Matveeva*, L. Nikoshvili, A. Sulman, O. Manaenkov</i> | Prof. Matveeva |
| PRES25.0187 | Sustainable gypsum composites with a complex of porous modifiers <i>V. Petropavlovskaya, T. Novichenkova, K. Petropavlovskii, M. Sulman*, K. Chalov</i> | Prof. Sulman |
| PRES25.0188 | Extraction of carbon-containing concentrate from fly ash and its application <i>R. Kulumbegov, L. Delitsyn, O. Popel, M. Sulman*</i> | Prof. Sulman |
| PRES25.0189 | Cu, Ni, Pt bimetallic microporous supported silica catalysts for direct formaldehyde synthesis from carbon dioxide and hydrogen <i>D. Tscvetkov, A. Kuragin, M. Markova, E. Bakhvalova, A. Sidorov, N. Lakina, M. Sulman, V. Doluda*</i> | Prof. Doluda |
| PRES25.0195 | Effect of Ammonium on Copper Recovery under Fluidized Bed Homogenous Crystallization System <i>J. Godezano, D. Senoro, M.C. Lu*</i> | Mr. Godezano |

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| PRES25.0210 | Improved Property Prediction for Molecular Composition Reconstruction Framework of Biomass-Derived Materials in Oil Refining Plants <i>J. Jiao, X. Gao, J. Li*</i> | Mr. Jiao |
| PRES25.0216 | Predicting the Thermal Performance of a Flat Plate Solar Collector Network by Programming a Neural Network <i>L. Canizalez Dávalos*, D.A. Sánchez Martínez, A. Talavera López, E. Murrieta-Luna, L. Alvarado Perea</i> | Dr. Canizalez Dávalos |
| PRES25.0217 | Solar Thermal Networks: A Thermal Effectiveness Approach to Their Design <i>J.L. García-Castillo*, M. Picón-Núñez, J.A. Crespo-Quintanilla</i> | Dr. García-Castillo |
| PRES25.0241 | Study on the Potential Use of Plastics from Electronic Waste to Produce Construction Materials with Enhanced Performance Characteristics <i>M. Sadenova*, R. Sapinov, N. Kulenova, O. Rudenko, S. Boldyryev, M. Eleukenov, N. Beisekenov, S. Gert</i> | Dr. Sadenova |
| PRES25.0257 | Synthesis of Palm Based Integrated Biorefinery for Low Carbon Fuel Production <i>J.P. Rajakal, D.K.S. Ng*</i> | Dr. Rajakal |
| PRES25.0262 | Thermodynamic Performance and Components Cost Analysis for a Low Enthalpy Geothermal Power Plant <i>A.I. Karypidis, D. Misirlis*, C. Papapostolou, K. Kleidis</i> | Prof. Misirlis |
| PRES25.0265 | Energy Efficiency Programs as a Pillar of Low-Carbon Development Strategy and Equitable Access: Evidence-Based Data from Greece <i>C. Papapostolou*, D. Misirlis, S. Kyrodimos</i> | Prof. Papapostolou |
| PRES25.0268 | Preliminary Investigation of the Heat Transfer and Pressure Drop of a Plate-Fin Heat Exchanger for Aero Engine Applications <i>M. Dimitriadou*, V. Karaikos, Z. Vlahostergios, D. Misirlis, K. Yakinthos, C. Mcnab, B. Pollard</i> | Ms. Dimitriadou |
| PRES25.0274 | Comparative Analysis of Analytical and Computational Thermal Models for the Free Double Piston Composite Cycle Engine <i>K. Fotis, V. Karaikos, Z. Vlahostergios*, D. Misirlis, K. Yakinthos</i> | Mr. Fotis |
| PRES25.0281 | The acoustic detection of two-phase flow parameters in chemical processes and its industrial application <i>C. Ren*, Z. Huang, Y. Shuai, Y. Yang, J. Wang</i> | Prof. Ren |