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WEIGANG
ENVIRONMENT

1st International Conference on
Thermal Treatment and Resource Recovery
(T² R²)

Conference Programme

23-25 January 2025
Hong Kong SAR

Date: 23 Jan 2025 Venue: LT-C

Conference Programme	
23 Jan 2025 (Venue: Lecture Theatre C, The Hong Kong University of Science and Technology)	
8:30-9:00	Registration
09:00-09:05	Opening Address Ir Prof. Dan Tsang Department of Civil and Environmental Engineering, The Hong Kong University of Science and Technology, Hong Kong
09:05-09:25	Keynote Speech: Publishing sustainability and engineering work with the Nature Portfolio Dr. Laura Zinke Chief Editor of Nature Reviews Clean Technology
09:25-09:45	Keynote Speech: Biochar from Biomass and Waste for Circular Economy and ESG Prof. Yong Sik Ok HCR Professor & Director, Korea University & President, International Society of Trace Element Biogeochemistry (ISTEB)
09:45-10:05	Keynote Speech: Closing the carbon cycle: how to make sustainable fuels and products Prof. Francesca Toma Director of the Institute of Functional Materials for Sustainability, Helmholtz-Zentrum Hereon, Germany Professor in the Mechanical Engineering Dept at Helmut Schmidt University, Germany Visiting Faculty, Lawrence Berkeley National Laboratory, USA
10:05-10:25	Keynote Speech: Mesoporous Materials 2.0 Prof. Yusuke Yamauchi Distinguished Professor, Department of Materials Science and Engineering, Nagoya University, Japan Professor, AIBN & School of Chemical Engineering, University of Queensland, Australia
10:25-10:30	Group Photo (inside Lecture Theatre C)
10:30-10:50	Coffee Break
10:50-11:10	Keynote Speech: Electrochemical Dehalogenation of Contaminants Using Char-Based Cathodes Prof. William Mitch Professor, Department of Civil and Environmental Engineering, Stanford Doerr School of Sustainability, Stanford University, California, USA
11:10-11:30	Keynote Speech: Geosequestration of CO₂: Utilising Mine Tailings as Storage Solutions Supported by Microorganisms Prof. Marjorie Valix Professor, School of Chemical and Biomolecular Engineering, University of Sydney, Australia
11:30-11:50	Keynote Speech: Hydrogen Production from Photoelectrochemical (PEC) Wastewater Treatment towards Net-zero Emission and Renewable Energy Generation Prof. Irene Lo

	Chair Professor, Department of Civil and Environmental Engineering, Hong Kong University of Science and Technology, Hong Kong
11:50-12:10	Keynote Speech: Water organic pollutant recovery via advanced oxidation processes Prof. Xiaoguang Duan Associate Professor, School of Chemical Engineering, University of Adelaide, Australia
12:10-12:30	Keynote Speech: Development of sustainable plastic materials to solve the plastic waste problem Prof. Sung Yeon Hwang Associate Professor, College of Life Sciences, Kyung Hee University, South Korea
12:30-12:50	Keynote Speech: China Environmental Sanitation Industry and Waste-to-energy Technology Application Dr. Wenlong Xu Professional Senior Engineer Head of the China Association of Urban Environmental Sanitation, China
12:50-14:00	Lunch
14:00-14:20	Keynote Speech: Waste-to-energy Technology Development and low-carbon practice in China/ 中国垃圾焚烧发电技术发展和低碳实践 Dr. Jisheng Long Founder, Chairman and CEO. Shanghai SUS Environment Co., Ltd., China
14:20-14:40	Keynote Speech: Calcination of Low-Grade Clay for Low-Carbon Durable Concrete Prof. Sze Dai Pang Associate Professor, Department of Civil and Environmental Engineering, National University of Singapore, Singapore
14:40-15:00	Keynote Speech: Next-Generation Waste-to-Energy: Integrating Resource Recovery and CO2 Capture Prof. Grzegorz Lisak Associate Professor, School of Civil and Environmental Engineering, Nanyang Technological University Singapore
15:00-15:20	Keynote Speech: Hydrothermal Conversion of Organic Wastes for Pollution Control and Resource Recovery Prof. Shicheng Zhang Professor, Department of Environmental Science and Engineering, Fudan University, China
15:20-15:40	Keynote Speech: Turning Waste into Treasure - An Asian Circular Economy Model Ir. Kenny Wong Past Chairman of HKWMA Director, Business Development & Projects – Hong Kong, ALBA Group Asia, Hong Kong
15:40-16:00	Coffee Break
16:00-16:20	Keynote Speech: A holistic study on the effects of feedstock and temperature variability in textile fast pyrolysis Prof. Chi-Hwa Wang Professor, Department of Chemical and Biomolecular Engineering, National University of Singapore, Singapore

16:20-16:40	Keynote Speech: Bioresources for Carbon Neutrality: Potential and Technological Paths Prof. Charles Chunbao XU Chair Professor, School of Energy and Environment, City University of Hong Kong, Hong Kong
16:40-17:00	Keynote Speech: Renewable energy assisted biomass conversion for high value products Prof. Haiping Yang Professor, School of Energy and Power Engineering, Huazhong University of Science and Technology, China
17:00-17:20	Keynote Speech: Carbonation story: the effect of pyrolysis temperature on the fractal dimensions and carbon dioxide capture capability of biochar Prof. Harn Wei Kua Dean's Chair Associate Professor, Department of the Built Environment, National University of Singapore, Singapore
17:20-17:40	Keynote Speech: Current Status of Woody Biomass Power Generation in Japan and the Potential for Recycling Biomass Ash as Fertilizer Prof. Tomoyuki MAKINO Professor, Graduate School of Agricultural Science, Tohoku University, Japan

Section A

Date: 24 Jan 2025 Venue: LT-C

Conference Programme	
24 Jan 2025 (Venue: Lecture Theatre C, The Hong Kong University of Science and Technology)	
Session Chair: Prof. Samir Khanal, University of Hawai'i at Mānoa, USA Prof. Yuqing Sun, Sun Yat-sen University, China	
09:00-09:20	Keynote Speech: Assisting Thermal Treatment Processes for Metal Stabilization and Recovery by Quantitative X-Ray Diffraction Prof. Kaimin Shih Associate Dean (T&L - UG), Faculty of Engineering, The University of Hong Kong, Hong Kong
09:20-09:40	Keynote Speech: Opportunities for Resources Recovery when Industry & Academia Cross Over Mr. Victor Li General Manager, Dunwell Environmental Management Co Ltd
09:40-10:00	Keynote Speech: Alternate Thermal Treatment of Municipal Solid Waste (MSW) and Potential Reuse of the Incinerator Ash Dr. Alex CHEUNG Director, Environmental and Sustainability, SMEC Asia Limited, Hong Kong
10:00-10:20	Keynote Speech: Prof. Patryk Oleszczuk Professor, Maria Curie-Sklodowska University, Poland
10:20-10:40	Keynote Speech: Anaerobic Biorefinery for Waste to Resources Prof. Samir Khanal Professor, Department of Molecular Biosciences and Bioengineering, University of Hawai'i at Mānoa, USA
10:40-11:00	Coffee Break
11:00-11:20	Keynote Speech: Cement Plant - Parallel Kiln Technology for Waste-to-Resources Mr. Kevin Y.S. Lai Business Development Advisor, Weigang Environment Hong Kong & Macau Representative, China Association of Urban Environmental Sanitation
11:20-11:40	Invited Speech: Techno-economic analysis (TEA) and life cycle assessment (LCA) of a commercialized 2500 ton/d scale sludge-to-energy utility in a textile industrial park Prof. Jinping Tian Professor, School of Environment, Tsinghua University, China
11:40-12:00	Invited Speech: Pyrolyze waste biomass into engineered biochar for diversified environmental applications Prof. Yuqing Sun Assistant Professor, School of Agriculture and Biotechnology, Sun Yat-sen University, China
12:00-12:20	Keynote Speech: Prof. Shurong Wang Professor, State Key Laboratory of Clean Energy Utilization, Zhejiang University, Hangzhou, China
12:20-13:40	Lunch

13:40-14:00	<p>Keynote Speech: Reconciling soil health benefits with carbon sequestration value of processed biowastes</p> <p>Prof. Nanthi Bolan Professor, UWA School of Agriculture and Environment, University of Western Australia, Australia</p>
14:00-14:20	<p>Invited Speech: Biomass for Negative-Carbon Goal: Materials and Strategies</p> <p>Prof. Leichang Cao Professor, College of Chemistry and Molecular Science, Henan University, China</p>
14:20-14:40	<p>Invited Speech: Integrated Hydrothermal Conversion and Anaerobic Digestion: A Bio-Refining Approach for Organic Solid Waste</p> <p>Prof. Huihui Chen Associate professor, School of Environmental and Chemical Engineering, Shanghai University, China</p>
14:40-15:00	<p>Invited Speech: Strategies for Enrichment and Collection of Perfluorocarboxylic Acids</p> <p>Prof. Yu-Jung Liu Assistant Professor, School of Public Health, Taipei Medical University, Taiwan</p>
15:00-15:20	<p>Invited Speech: Granulation of microalgae and activated sludge in wastewater treatment</p> <p>Prof. Bui Xuan Thanh Professor, Faculty of Environment and Natural Resources, University of Technology – Viet Nam National University, Vietnam</p>
15:20-15:40	<p>Invited Speech</p> <p>Prof. Jingzi Beiyuan Associate Professor, School of Environment and Chemical Engineering, Foshan University, China</p>
15:40-15:50	<p>Enhancing the performance of GAC sorption with UV-chlorination in potable reuse trains using ozone-based treatment trains</p> <p>Dr. Yi-Hsueh Brad Chuang Associate Professor, Institute of Environmental Engineering, National Yang Ming Chiao Tung University, Taiwan</p>
15:50-16:00	<p>Automated machine learning-assisted analysis of biomass catalytic pyrolysis for selective production of benzene, toluene, and xylene</p> <p>Zihang Zhang College of Energy Engineering, Zhejiang University, China</p>
16:00-16:10	<p>Agricultural and antibiotic residue derived hydrochar for soil amendment and solid biofuel</p> <p>Prof. Shakeel Ahmad Professor, Faculty of Environmental Science and Engineering, Kunming University of Science and Technology</p>
16:00-16:20	<p>Membrane bioreactor for industrial wastewater treatment at different fluxes</p> <p>Nguyen Phuong-Thao VNU-HCM Key laboratory of Advanced Waste Treatment Technology, Ho Chi Minh City University of Technology, Vietnam National University Ho Chi Minh, Viet Nam</p>

Section B

Date: 24 Jan 2025 Venue: LT-F

Conference Programme	
24 Jan 2025 (Venue: Lecture Theatre F, The Hong Kong University of Science and Technology)	
Session Chair: Prof. Harn Wei Kua, National University of Singapore, Singapore Prof. Xiaohong Zhu, Beijing University of Technology, China	
09:00-09:20	Keynote Speech: Development of Robust Adsorbents for Low-temperature NO₂ Capture Prof. Jin Shang Associate Professor, School of Energy and Environment, City University of Hong Kong, Hong Kong
09:20-09:40	Keynote Speech: Accelerating Circular Construction: Digitalising Onsite Waste Management and Enabling Material Exchange Ms. Margaret Ho Senior Manager – Industry Development, Environment & Sustainability, Construction Industry Council, Hong Kong
09:40-10:00	Keynote Speech: Pilot Biochar Production Plant and Biochar Application in Hong Kong Ir. Andy Chan Technical Director, Binnies Hong Kong Limited, Hong Kong
10:00-10:20	Keynote Speech: The Small World of Solid Waste Recycling & Recovery Dr. Vincent Wang Technical Manager, Veolia Hong Kong Holding Limited
10:20-10:40	Keynote Speech: Decarbonization Practices in OPARK2 Project Dr. Ji Dai Decarbonization Director/ Senior Design Manager, China State Construction Engineering (Hong Kong) Limited, Hong Kong
10:40-11:00	Coffee Break
11:00-11:20	Keynote Speech: Advances in the use of functional nano- materials in ultrahigh performance concrete (UHPC) including piezo-resistive sensors Prof. Nemkumar (Nemy) Banthia Professor, Department of Civil Engineering, University of British Columbia, Canada
11:20-11:40	Invited Speech: Lessons from Ancient Sustainable Construction for Modern Sustainability: Insights from Roman Concrete Prof. Xiaohong Zhu EBI-Shell Fellow, University of California, Berkeley, USA Professor, Key Laboratory of Urban Security and Disaster Engineering of Ministry of Education, Beijing University of Technology, China
11:40-12:00	Invited Speech: Innovative use of calcium carbonate-rich solid wastes for synthesizing carboaluminate cementitious materials Prof. Yanshuai Wang Professor, College of Civil and Transportation Engineering, Shenzhen University, China
12:00-12:20	Invited Speech: Recycling Natural Claystone as an Eco-friendly Cement Alternative by Thermal Treatment to Decarbonize the Concrete Industry Dr. Fulin Qu

	Senior Research Associate, Department of Civil and Environmental Engineering, University of New South Wales, Australia
12:20-12:40	Invited Speech: Development of high-strength lightweight concrete by utilizing biochar aggregate Dr. Liang Chen Researcher, New York University Abu Dhabi, United Arab Emirates
12:40-13:40	Lunch
13:40-14:00	Keynote Speech: Utilization of drinking water treatment sludge to develop eco-friendly concrete and its application to self-healing concrete Prof. Yan Zhuge FTSE, Professor in Structural Engineering, University of South Australia, Australia
14:00-14:20	Invited Speech: Value-added utilization of biochar to modify rheo-viscoelastic behavior of fresh cement composites in the context of intelligent construction Prof. Junyi Zhang Associate Professor, Hohai University, College of Civil and Transportation Engineering, Hohai University, China
14:20-14:40	Invited Speech: Waste to Hydrogen: Comparative Assessment of Greenhouse Gas Emissions Dr. Claudia Labianca Engineer - Resources & Waste, LCA Specialist, Arup, Hong Kong
14:40-15:00	Invited Speech: Microwave pyrolysis of sewage sludge to produce high-value syngas Dr. Junhao Lin Engineer, Shenzhen Energy and Environmental Protection Co., Ltd, China
15:00-15:20	Invited Speech: Research on Microbial Mineralization Modification of Biochar to Support Low-Carbon Building Materials Dr. Yilin Su Assistant Researcher, Guangdong Key Laboratory of Materials and Equipment in Harsh Marine Environment, Guangzhou Maritime University/ Guangzhou Jiao Tong University, China
15:20-15:40	Invited Speech: Transforming MSWI fly ash into low-carbon construction materials Prof. Lei Wang Professor, State Key Laboratory of Clean Energy Utilization, Zhejiang University, China
15:40-15:50	A novel method for MSWI fly ash resource based on calcium component regulation and CO₂ mineralization Jie Chen State Key Laboratory of Clean Energy Utilization, Institute of Thermal Power Engineering of Zhejiang University, Hangzhou 310027, Zhejiang, China
15:50-16:00	Textile waste into advanced pipe insulation for sustainable building energy solutions Dongchan Jin Department of Architecture Engineering, Yonsei University, Republic of Korea
16:00-16:10	Innovative Pre-Biochar Layering Techniques for Fire Resistance in Sustainable Bio-Building Materials Ji Yong Choi Department of Architecture and Architectural Engineering, Yonsei University, Republic of Korea

16:10-16:20	Evaluating carbon mitigation potential of cross-laminated timber in residential buildings using life cycle assessment (LCA) Yujin Kang Department of Architecture Engineering, Yonsei University, Republic of Korea
16:20-16:40	Keynote Speech: Intelligent concrete and low-carbon materials for future sustainable infrastructure Prof. Wengui Li ARC Future Fellow, Scientia Associate Professor, School of Civil and Environmental Engineering, The University of New South Wales, Sydney, Australia

Section C

Date: 24 Jan 2025 Venue: LT-G

Conference Programme	
24 Jan 2025 (Venue: Lecture Theatre G, The Hong Kong University of Science and Technology)	
Session Chair: Prof. Eakalak Khan, University of Nevada at Las Vegas, USA Prof. Season Si Chen, Tsinghua Shenzhen International Graduate School, China	
09:00-09:20	Keynote Speech: Capturing Hydrogen and Nutrients from the Air Prof. Steven Wang Associate Vice President (Resources Planning), Department of Mechanical Engineering, City University of Hong Kong, Hong Kong
09:20-09:40	Keynote Speech: The Sustainability Attitude-Behavior Gap in Hong Kong: Implications for Resource Circularity Prof. Kira Matus Professor, Division of Public Policy and Division of Environment and Sustainability, Hong Kong University of Science and Technology, Hong Kong
09:40-10:00	Keynote Speech: Beneficial reuse of the carbon black byproducts of methane pyrolysis Prof. Dan Alessi Professor, Faculty of Science-Earth and Atmospheric Sciences, University of Alberta, Edmonton, Canada
10:00-10:20	Keynote Speech: Zero-waste close-loop biorefinery system for food waste valorization Prof. Carol Sze Ki LIN Professor, School of Energy and Environment, City University of Hong Kong, Hong Kong
10:20-10:40	Keynote Speech: Resource Recovery from Wastewater by Biochar Prof. Eakalak Khan Professor, Civil and Environmental Engineering and Construction Department, University of Nevada at Las Vegas, Nevada, USA
10:40-11:00 Coffee Break	
11:00-11:20	Keynote Speech: Analysis of the Sustainable Application of Agal Biochar for Anaerobic Membrane Bioreactors in Wastewater Treatment Prof. Huu Hao Ngo Distinguished Professor, School of Civil and Environmental Engineering, University of Technology Sydney, Australia
11:20-11:40	Invited Speech: Fabrication of novel nZVI-biochar composites by thermal process for environmental remediation Prof. Jingchun Tang Professor, College of Environmental and Science and Engineering, Nankai University, China
11:40-12:00	Invited Speech: The research on the technology and microbial mechanisms for efficient anaerobic digestion of organic wastes Prof. Gang Luo Professor, Department of Environmental Science and Engineering, Fudan University, China

12:00-12:20	<p>Invited Speech: Carbon dot decorated g-C₃N₄ for enhanced photocatalysis in pollutant degradation Prof. Season Si Chen Assistant Professor, Department of Environmental Science and Technology Tsinghua Shenzhen International Graduate School, China</p>
12:20-12:40	<p>Invited Speech: Development & Practice of Thermal Treatment & Resource Recovery for Municipal Solid Waste Mr. Kevin Qi Lu Managing Director of International Business Division, Chongqing Sanfeng Covanta Environmental Industry Co., Ltd., China</p>
12:40-13:40	Lunch
13:40-14:00	<p>Invited Speech: Fractionation and valorization of lignocellulosic biomass into sustainable chemicals Prof. Feng Shen Professor, Agro-Environmental Protection Institute, Ministry of Agriculture and Rural Affairs, China</p>
14:00-14:20	<p>Invited Speech: Glucose oxidation over active copper sites stabilized by lignin-derived carbon Prof. Yang Cao Associate Professor, College of Engineering, Nanjing Agricultural University, Nanjing, China</p>
14:20-14:40	<p>Invited Speech: Waste-derived Biochar Enhanced Drainage Ditch for Removing Triclocarban in Agricultural Runoff Prof. Sumana Siripattanakul-Ratpukdi Associate Professor, Department of Environmental Engineering, Khon Kaen University, Thailand</p>
14:40-15:00	<p>Invited Speech: Removal of Dissolved Organic Matter from Sugar Mill Effluent using O₃/GAC for Water Reuse Application: Performance, DOM characterizations, GAC Reusability, and DBP formation Prof. Thunyalux Ratpukdi Associate Professor, Department of Environmental Engineering, Khon Kaen University, Thailand</p>
15:00-15:20	<p>Invited Speech: Machine Learning-guided Engineered Biochar Synthesis for CO₂ Capture Towards Environmental Sustainability Prof. Xiangzhou Yuan Professor, School of Energy and Environment, Southeast University, China</p>
15:20-15:30	<p>Nature and Climate Governance: Bridging Risks and Opportunities in Asia Kyu Won Chung Researcher, International ESG Association, Republic of Korea</p>
15:30-15:40	<p>Biodiversity Strategies for Korean Semiconductor Companies: Implications from Industry and Market Ja Gyun Im Researcher, International ESG Association, Republic of Korea</p>
15:40-15:50	<p>Carbon Negative Biochar Systems Contribute to Sustainable Urban Green Infrastructure Sachini Senadheerage Don Graduate Student, Department of Environmental Science and Ecological Engineering, Korea University, Republic of Korea</p>

15:50-16:10	Keynote Speech: Histidine Stabilization for Metal Nanoparticles: a simple trick for a big problem in thermal catalysis Prof. Alex Yip Professor, Department of Chemical and Process Engineering, University of Canterbury, New Zealand
16:10-16:30	Keynote Speech: Biochar as a Multifaceted Solution for Climate Change Mitigation and Sustainable Development Prof. Ondrej Masek Professor, Personal Chair of Net Zero Emission Technologies, School of Geosciences, University of Edinburgh, UK
16:30-16:50	Keynote Speech: Degradation of GenX in water by VUV photolysis and VUV/sulfite reduction processes Prof. Kyung-Duk Zoh Professor, Department of Environmental Health Sciences, Seoul National University, South Korea

Site Visit

Date: 25 Jan 2025 T Park, Hong Kong

Conference Programme		
25 Jan 2025, T Park, Hong Kong		
	Time	Description
09:00-13:00	09:00	Gather in HKUST at 09:00
	10:00 – 11:30	T Park guided tour
	11:30 – 12:00	Sharing and Exchange session
	12:00– 13:00	Return to HKUST

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