Technical Program - Oral Presentations

June 18th, 2025, 13:00-14:20

Advanced Catalyst Synthesis (A01)

Macronix Building, 周懷樸講堂 Room 245; Chair: Ching-Tien Chen

Time	Title	Speaker	Affiliation
13:00-13:40	From Waste Plastic to Valuable MOF Materials	Prof. Chia-Wen (Kevin) Wu (KL)	National Taiwan University
13:40-14:00	Sustainable Microplasma Engineering for Nanocatalyst Synthesis	Prof. Wei-Hung Chiang (IL)	National Taiwan University of Science and Technology
14:00-14:20	Hybrid-Phase Synthesis of IrO_x/WO_x Enables High-Performance Acidic Oxygen Evolution Reaction	Lu-Yu Chueh (#178)	National Tsing Hua University

Thermal Catalysis I (G01)

Macronix Building, Room 243; Chair: De-Hao Tsai

Time	Title	Speaker	Affiliation
13:00-13:20	AIST's Ambition in Achieving Carbon Neutrality with Integrated CO_2 Capture-Utilization Technologies: Introduction and Update on DFM-CCU Approach	Dr. Koji Kuramoto (IL)	AIST, Japan
13:20-13:40	Designing Methanation-Resistant Nickel Catalysts for Reverse Water-Gas Shift	Prof. Yu-Chuan Lin (IL)	National Chen Kung University
13:40-14:00	Heterogeneous Hydrogenation of CO_2 to Methanol by Dinuclear Iridium Complex under Gas-Solid Phase	Dr. Yuichiro Himeda (IL)	AIST, Japan
14:00-14:20	Facilitating the Dry Reforming of Methane with Interfacial Synergistic Catalysis on Ni/MgO-$AlPO_4$	Prof. Yu-Wen Chen (#011)	*National Central University*

Photocatalysis I (F01)

Macronix Building, Room 253; Chair: Ho-Hsiu Chou

Time	Title	Speaker	Affiliation
13:00-13:20	Artificial Photosynthesis by Heterogeneous Photocatalysts -Photocatalytic Reduction of CO_2 by H_2O as an Electron Donor	Prof. Teramura Kentaro (IL)	Kyoto University, Japan
13:20-13:40	Carbon Doped SnS_2 Coupled with g-C_3N_4 Heterojunction Photocatalysts for Photocatalytic 4-nitrophenol and Chromium (VI) Degradation	Dhayanantha Prabu Jaihindh (#208)	Chung Yuan Christian University
13:40-14:00	TiO_2-based Nanostructured Films for Rapid Photocatalytic Degradation of Pharmaceuticals in Wastewater	Prof. Phuoc Huu Le (#268)	Ming Chi University of Technology
14:00-14:20	Z-Scheme TiO_2 Derived from MIL-125(Ti)/g-C_3N_5 Heterojunction for Enhanced Photocatalytic Degradation of Sulfadiazine via Peroxymonosulfate Activation	Prof. Thanh-Binh Nguyen (#041)	National Kaohsiung University of Science and Technology

June 18th, 2025, 14:30-15:50

Advanced Characterizations for Mechanistic Understanding I (B01)

Macronix Building, 周懷樸講堂 Room 245; Chair: Ching-Tien Chen

Time	Title	Speaker	Affiliation
14:30-15:10	Mechanistic Studies of Methane and Carbon Dioxide Activation over Metal and Metal Phosphide Catalysts by Operando XAFS and IR	Prof. Tetsuya Shishido (KL)	Tokyo Metropolitan University, Japan
15:10-15:30	Surface Chemistry of $SrTiO_3$ Catalysts Prepared from Topochemical Conversion of $Bi_4Ti_3O_{12}$ Nanoplatelets	Prof. Wen-Yueh Yu (IL)	National Tsing Hua University
15:30-15:50	Structure Determination Opportunities at TPS 19A: High-Resolution Powder X-ray Diffraction Beamline	Dr. Yu-Chun Chuang (IL)	National Synchrotron Radiation Research Center

Electrocatalysis I (E01)

Macronix Building, Room 243; Chair: Yung-Tin (Frank) Pan

Time	Title	Speaker	Affiliation
14:30-14:50	Advanced Non-Precious Metal Electrocatalysts for Rechargeable Zinc–Air Batteries via MOF–Graphene and LDH–Carbon Integration	Prof. Che-Ning Yeh (IL)	National Tsing Hua University
14:50-15:10	Metal/Sulfur Energy-storage Materials for High Energy Density	Prof. Sheng-Heng Chung (IL)	National Chen Kung University
15:10-15:50	Designs of Bifunctional Catalysts for the Air Electrodes of Rechargeable Metal-Air Batteries	Prof. Chi-Chang Hu (KL)	National Tsing Hua University

Biocatalysis I (C01)

Macronix Building, Room 253; Chair: Paul Lin

Time	Title	Speaker	Affiliation
14:30-15:10	Discovery and Engineering of Small Molecule Biosynthetic Pathways	Prof. Yi Tang (KL)	UCLA, USA
15:10-15:30	Development of a Biotechnological Process for the Production of Bio-Indigo and Indigo Derivative Pigments via a Monooxygenase-Halogenase Cascade Enzyme Reaction	Prof. Kwon-Young Choi (IL)	Ajou University, Korea
15:30-15:50	Synthetic Amino Acid Elongation via Transaminase Engineering	Prof. Claire R. Shen (IL)	National Tsing Hua University

Computational Catalysis & Thermal Catalysis (G&D)

Macronix Building, Semicircle Lounge; Chair: Kun-Han Lin

Time	Title	Speaker	Affiliation
14:30-14:50	Low-Temperature Aerobic Sulfide Oxidation to Sulfones Catalyzed by Ru-Doped Hexagonal Perovskite $SrMnO_3$	Dr. Keiju Wachi (#100)	Institute of Science Tokyo, Japan
14:50-15:10	Efficient Integration of Calcium Looping with Methane Bi-reforming using Pd-enhanced Ni-CaO Dual Functional Nanomaterials	Zhi Xuan Law (#023)	National Tsing Hua University
15:10-15:30	Machine Learning Assisted Computational Bimetallic Catalyst Design for Methyl Cyclohexane Dehydrogenation	Dr. Chuhong Lin (#066)	Nanyang Technological University, Singapore

June 19th, 2025, 10:40-12:00

Thermal Catalysis II (G02)

Macronix Building, 周懷樸講堂 Room 245; Chair: Chia-Min Yang

Time	Title	Speaker	Affiliation
10:40-11:20	Separate Storage of Electrons and Protons Using Base Promoters to Facilitate Ammonia Synthesis	Prof. Minkee Choi (KL)	Korea Advanced Institute of Science and Technology (KAIST)
11:20-11:40	Utilization of a Moving Bed Reactor of a Dual-function Material for the Continuous Conversion of CO_2 to Methane	Dr. Yuya Ono (#123)	AIST, Japan
11:40-12:00	Cerium Coordination-dependent Surface Intermediates Dictate Activity in Dimethyl Carbonate Synthesis from CO_2 and Methanol	Prof. Yung-Kang Peng (#039)	City University of Hong Kong

Advanced Catalyst Synthesis II (A02)

Macronix Building, Room 243; Chair: Sung-Fu Hung

Time	Title	Speaker	Affiliation
10:40-11:00	Li-mediated Electrochemical Ammonia Synthesis - The Operation-dependent Optimum	Dr. Aoni Xu (IL)	University of Sydney, Australia
11:00-11:40	Integrative Catalytic Pairs – the Smallest Catalytic Units to Drive Complex Chemical Reactions	Prof. Bin Liu (KL)	City University of Hong Kong

Biocatalysis II (C02)

Macronix Building, Room 253; Chair: Ethan I. Lan

Time	Title	Speaker	Affiliation
10:40-11:00	Synergistic enhancement of microbial PBAT degradation through environmental optimization	Prof. Chi-Te Liu (IL)	National Taiwan University
11:00-11:20	Thermostable PET Hydrolases as Biocatalysts for Sustainable Polyester Recycling: A Comparative Kinetic and Thermodynamic Analysis	Prof. Shen-long Tsai (IL)	National Taiwan University of Science and Technology
11:20-11:40	Ancestral Thylakoid-Free Cyanobacterium Anthocerotibacter panamensis Provides Minimal Blueprints for Photosynthesis	Prof. Ming-Yang Ho (IL)	National Taiwan University
11:40-12:00	Green Synthetic Biology for Increasing Photoproduction	Dr. Kuan-Jen Lu (IL)	Academia Sinica

June 19th, 2025, 13:30-15:10

Advanced Catalyst Synthesis III (A03)

Macronix Building, 周懷樸講堂 Room 245; Chair: Chung-Wei Kung

Time	Title	Speaker	Affiliation
13:30-13:50	ZIF-derived High-entropy Alloy Nanoparticles as Catalysts for Hydrogenation Reactions	Prof. Cheng-Yu Wang (IL)	National Yang Ming Chiao Tung University
13:50-14:10	Polymeric Chalcogenides as High-Performance Electrocatalysts for Dye-Sensitized Solar Cells	Prof. Chun-Ting Li (IL)	National Taiwan Normal University
14:10-14:30	Integrated Conductivity and Activity Control in Bimetallic Metal-Organic Framework Electrocatalysts	Prof. Sarah Sunah Park (IL)	Pohang University of Science and Technology, Korea

Photocatalysis II (F02)

Macronix Building, Room 243; Chair: Ho-Hsiu Chou

Time	Title	Speaker	Affiliation
13:30-13:50	Development of Photocatalyst Materials for Water Splitting and CO_2 Reduction	Prof. Akihiko Kudo (KL)	Tokyo University of Science, Japan
13:50-14:10	Synthesis and Tunable Optical Properties of Zn-Doped $NaBiS_2$ Quantum Dots for Improving Their Photoelectrochemical Properties	Prof. Kazutaka Akiyoshi (IL)	Nagoya University, Japan
14:10-14:30	Green Ammonia Synthesis by Electrochemical and Photochemical Process	Prof. Kijung Yong (IL)	Pohang University of Science and Technology, Korea

Computational Catalysis I (D01)

Macronix Building, Room 253; Chair: Hung-Kong Tian

Time	Title	Speaker	Affiliation
13:30-14:10	Modeling single-atom catalysts	Prof. Gianfranco Pacchioni (KL)	Università di Milano-Bicocca, Italy
14:10-14:30	Heterogeneous Catalyst Design by Computational Chemistry and Generative Artifical Intelligence	Prof. Atsushi Ishikawa (IL)	Institute of Science Tokyo, Japan
14:30-14:50	Decoding Surface Reactivity Trends in Bimetallic Catalysts for Alkaline HOR via DFT and Machine Learning-Assisted Structure Sampling	Prof. Hong-Kang Tian (IL)	National Chen Kung University

Electrocatalysis II (E02)

Macronix Building, Semicircle Lounge; Chair: Yung-Tin (Frank) Pan

Time	Title	Speaker	Affiliation
13:30-13:50	Direct Conversion of Ammonia and Its Catalysis in Fuel Cell	Prof. Andrew C. Chien (#229)	Feng Chia University
13:50-14:10	Modification of the $Sr_2Fe_{1.5}Mo_{0.5}O_6$ Cathode in Solid Oxide Electrolysis Cells by Infiltration of Metal Additive (Ag, Cu, Ni, and Ce) Catalysts to Study the CO_2 Electrolysis Efficiency and Elucidate the Reaction Mechanism	Prof. Lee Yi-Hsuan (#080)	National Taipei University of Technology
14:10-14:30	Boosting Multi-carbon Product Formation in Electrochemical CO_2 Reduction via Polymer-Coated Copper Catalyst	Dr. Omran Moradlou (#098)	Academia Sinica
14:30-14:50	CO_2-Triggered Break-in and Formation of Accessible High Surface Area Nanoporous Cu Cathode for CO_2RR from CuO-MgO Nanocomposites	Ding-Huei Tsai (#081)	National Tsing Hua University

June 19th, 2025, 15:10-16:30

Advanced Catalyst Synthesis IV (A04)

Macronix Building, 周懷樸講堂 Room 245; Chair: Chun-Hong Kuo

Time	Title	Speaker	Affiliation
15:10-15:50	Semiconductor Polyhedra for Photocatalytic Organic Transformations	Prof. Hsuan-Yi Huang (KL)	National Tsing Hua University
15:50-16:10	Teaching Copolymerization Catalysis to Metal–Organic Frameworks by Confining Molecular Catalysts in Lattices	Prof. Chia-Her Lin (IL)	National Tsing Hua University
16:10-16:30	Toward CO-Mediated Synthesis of Multicomponent High-Entropy-Alloy Nanocrystals for Hydrogen Evolution Reaction	Chia-Ying Wu (#244)	National Tsing Hua University

Electrocatalysis III (E03)

Macronix Building, Room 243; Chair: Yung-Tin (Frank) Pan

Time	Title	Speaker	Affiliation
15:10-15:50	Single Metal Site Catalysts for PEM Fuel Cells	Prof. Gang Wu (IL)	Washington University in St. Louis, USA
15:50-16:10	Surface Orientation-Dependent Oxygen Evolution Reaction on Transition Metal-Doped Noble Metal Oxide Electrodes	Prof. Naoto Todoroki (IL)	Tohoku University, Japan
16:10-16:30	Accelerating by Data-Science and Unveiling by Theory: Aiming to Understand Microscopic Electrode Process at Electrified Solid-Liquid Interfaces	Prof. Ken Sakaushi (IL)	National Institute for Materials Science (NIMS), Japan

Thermal Catalysis III (G03)

Macronix Building, Room 253; Chair: De-Hao Tsai

Time	Title	Speaker	Affiliation
15:10-15:30	Mid-temperature CO_2 and H_2O deoxygenation using hydrogen-treated CeO_2-based mixed oxides	Prof. Shawn D. Lin (IL)	National Taiwan University of Science and Technology
15:30-15:50	Electrochemical Control of CO_2 Methanation Using Ni/YSZ Tubular Electrochemical Reactor	Dr. Genki Horiguchi (#121)	AIST, Japan
15:50-16:10	Synthesis of Nanosized Ti-based Perovskite Nanoparticles for Liquid-phase Acid-base Catalysis	Dr. Takeshi Aihara (#159)	Institute of Science Tokyo, Japan
16:10-16:30	Ceria Supported Bimetallic Catalyst for CO_2 Methanation Reaction	Prof. Andrew C. Chien (#156)	Feng Chia University

June 20th, 2025, 09:30-10:50

Photocatalysis III (F03)

Macronix Building, 周懷樸講堂 Room 245; Chair: Che-Chia Hu

Time	Title	Speaker	Affiliation
9:30-10:10	Photo(electro)catalysis as a Technological Solution for Sustainable Environment	Prof. Wonyong Choi (KL)	Korea Institute of Energy Technology, Korea
10:10-10:30	Processable Conjugated Polymers for Photocatalytic Hydrogen Production from Water and Photocatalytic Carbon Dioxide Reduction	Dr. Reiner Sebastian Sprick (IL)	University of Strathclyde, Scotland
10:30-10:50	Construction of N-Rich Heptazine-Based 2D-Covalent Organic Frameworks for Enhancing Photocatalytic Hydrogen Generation	Islam Mohamed Ahmed Mekhemer (#248)	National Tsin Hua University

Advanced Characterization for Mechanistic Understanding II (B02)

Macronix Building, Room 243; Chair: Ching-Tien Chen

Time	Title	Speaker	Affiliation
9:30-9:50	Characterization of Atomically Dispersed Hydrotalcite Oxide Supported Copper Catalysts	Prof. Po-Wen Chung (IL)	Academia Sinica
9:50-10:10	Designing carbon-based catalysts for cellulose hydrolysis	Prof. Hirokazu Kobayashi (IL)	The University of Tokyo, Japan
10:10-10:30	Activation, Methane Cracking, and Stability of Iron–Aluminum Catalysts for Turquoise Hydrogen and Fibrous Carbon: Mechanistic Insights and Durability Enhancement	Dr. Shih-Yuan Chen (#001)	AIST, Japan
10:30-10:50	Comparative study of Na/Al_2O_3 and $Na/Cu/Al_2O_3$ for integrated CO_2 capture and reduction to CO	Dr. Tomone Sasayama (#163)	AIST, Japan

Computational Catalysis II (D02)

Macronix Building, Room 253; Chair: Kun-Han Lin

Time	Title	Speaker	Affiliation
9:30-10:10	Machine Learning for Catalysis: From Extracting Knowledge to Aiding Design	Prof. Bryan Goldsmith (KL)	University of Michigan, USA
10:10-10:30	Improving the Determination of Surface Area for Porous Materials: A Weighted Average BET Approach	Prof. Szu-Chia Chien (IL)	National Central University
10:30-10:50	Computationally Guided Design of Hydrogen Evolution Electrocatalysts Leveraging High-Entropy Alloy Platforms	Prof. Kun-Han Lin (IL)	National Tsing Hua University

June 20th, 2025, 11:10-12:10

Photocatalysis IV (F04)

Macronix Building, 周懷樸講堂 Room 245; Chair: Reiner Sebastian Sprick

Time	Title	Speaker	Affiliation
11:10-11:30	Reticular Dual Sites with Enhanced Electron Injection for CO_2-to-C_2H_4 Photoreduction Over 75% Selectivity	Dr. Yan Guo (IL)	University of Hong Kong, Hong Kong
11:30-11:50	Photocatalytic Reduction of CO_2 by Zn_2Cr Layered Double Hydroxides	Prof. Ken-ichi Katsumata (IL)	Tokyo University of Science, Japan
11:50-12:10	Advanced Band Engineering in Photocatalysts: Towards Clean Energy and Carbon Valorization	Dr. Indrajit Shown (#056)	Hindustan Institute of Technology and Science, India

Advanced Characterization for Mechanistic Understanding III (B03)
Macronix Building, Room 243; Chair: Wen-Hui Cheng

Time	Title	Speaker	Affiliation
11:10-11:30	Surface and Interfacial Dynamics in Electrochemical Energy Materials	Dr. Yen-Gu Lin (IL)	National Synchrotron Radiation Research Center
11:30-11:50	Charge Carrier Dynamics of Semiconductor Nanoheterostructures by Time-resolved Spectroscopies for Photocatalytic Applications	Prof. Ying-Chih Pu (IL)	National University of Tainan
11:50-12:10	Spectroscopic and Theoretical Insights into High-Entropy-Alloy Surfaces and Their Interfaces with Semiconductors for Enhanced Photocatalytic Hydrogen Production	Jui Tai Lin (IL) (#176)	National Tsing Hua University

Computational Catalysis III (D03)
Macronix Building, Room 253; Chair: Tzu-Hsiung Yang

Time	Title	Speaker	Affiliation
11:10-11:30	Theoretical Insight into the Importance of Noncovalent Interactions in Catalysis	Prof. Seiji Mori (IL)	Ibaraki University, Japan
11:30-11:50	Computation Design of Novel Molten Catalysts for CO_2 -Free Production of H_2 from Methane Pyrolysis	Prof. Vishal Agarwal (IL)	Indian Institute of Technology Kanpur, India
11:50-12:10	Probing Cyclization Mechanisms by Computation: From Gold-Catalyzed Cascade Cyclization to Photocatalytic Cyclization Reactions	Prof. Tzu-Hsiung Yang (IL)	National Tsing Hua University

June 20th, 2025, 15:00-16:40

Electrocatalysis IV (E04)
Macronix Building, 周懷樸講堂 Room 245; Chair: Tsu-Chin Chou

Time	Title	Speaker	Affiliation
15:00-15:40	Understanding the electrolyte effect in Electrochemical CO_2 Reduction Reaction	Prof. Yun Jeong Hwang (KL)	Seoul National University, Korea
15:40-16:00	Tuning Product Selectivity in CO_2 Electroreduction via Alloy-Induced Modulation of CO Binding Geometry	Prof. Tsu-Chin Chou (IL)	National Tsing Hua University
16:00-16:20	Nanocurvature-induced field effects enable control over the activity of single-atom electrocatalysts	Prof. Yanwei Lum (IL)	National University of Singapore, Singapore
16:20-16:40	Cation- and CO_2-Assisted Electrodeposition of Cu Nanocrystals for Enhanced CO_2 Electroreduction	Wei-Ting Tu (#078)	National Tsing Hua University

Advanced Characterization for Mechanistic Understanding IV (B04)

Macronix Building, Room 243; Chair: Min-Hsin Yeh

Time	Title	Speaker	Affiliation
15:00-15:20	Vibrational Spectroscopy at Electrified Interfaces: Electrochemical Catalytic Reaction	Prof. Heng-Liang Wu (IL)	National Taiwan University
15:20-15:40	Probing Electrochemical Behaviors of $Ni(OH)_2$ and MnO_2 Electrodes via In Situ Raman Microscopy	Prof. Tzu-Ho Wu (IL)	National Yunlin University of Science and Technology
15:40-16:00	The Intersection of Thermo- and Electro- Catalysis: Common Concepts for Mechanistic Investigations	Prof. Minju Chung (IL)	Korea Advanced Institute of Science and Technology, Korea
16:00-16:20	Tandem Electrocatalyst for Efficient Nitrate Electroreduction via Immobilization of the Molecular Cu on Fe Single Atom	Dr. Mia Rinawati (#236)	National Taiwan University of Science and Technology
16:20-16:40	CO Migration Myth Busted: Electrolyte-Mediated Shuttling Unlocks C–C Coupling on Dual-Atom Catalysts	Dr. Kesevn Lakshmanan (#267)	National Taiwan University of Science and Technology

Thermal Catalysis IV (G04)

Macronix Building, Room 253; Chair: Yu-Chuan Lin

Time	Title	Speaker	Affiliation
15:00-15:20	High-Purity Hydrogen from Aqueous-Phase Reforming of Methanol over Na-Doped Zirconia-Supported Pt Catalysts	Prof. Young-Woong Suh (IL)	Hanyang University, Korea
15:20-15:40	Histidine Stabilization for Supported Metal Nanoparticles: A Simple Trick for a Big Problem in Thermal Catalysis	Prof. Alex Yip (IL)	University of Canterbury, New Zealand
15:40-16:00	Reversibly Interconvertible Cu+-H/Cu Species: Unlocking Selective Hydrogenation for Sustainable Chemical Production	Prof. Tawan Sooknoi (IL)	King Mongkut's Institute of Technology Ladkrabang, Thailand
16:00-16:20	Heterogeneous Fe Catalysts for N-Alkylation of Amines with Alcohols	Prof. Masazumi Tamura (IL)	Osaka Metropolitan University, Japan
16:20-16:40	Catalytic Transformation of Biomass Derivatives into Fuels and Chemicals over Bimetallic Ni–Re Catalysts	Prof. Atthapon Srifa (IL)	Mahidol University, Thailand