

International Symposium on Energy/Environmental Catalysis (ISEEC 2022)

Virtual, Osaka University
January 25th (Tue) – 27th (Thu), 2022



Program and Abstract

General Information

International Symposium on Energy/Environmental Catalysis (ISEEC 2022)

Date: January 25-27th, 2022

Venue: Osaka University Osaka, Japan (Virtual)

<http://www.mat.eng.osaka-u.ac.jp/msp1/ISEEC2022.pdf>

Meeting ID, Passcode:

Date:	Room:	ID:	PW:
Jan. 25 th (Tue)	https://us02web.zoom.us/j/89689831694?pwd=UWtjendjYmwzOEtaTHNlenEyOVlqQT09	896 8983 1694	OSAKA <in large character>
Jan. 26 th (Wed)	https://us02web.zoom.us/j/89902443151?pwd=NVpYL3h1QzYrOGRvN01ZZW00UGFSUT09	899 0244 3151	
Jan. 27 th (Thu)	https://us02web.zoom.us/j/86240537178?pwd=QjFOV1Z2SEdQNHdZdktZbFhU3hGUT09	862 4053 7178	

Chairs:

Hiromi YAMASHITA (Osaka University)

Yixin ZHAO (Shanghai Jiao Tong University)

Xufang QIAN (Shanghai Jiao Tong University)

Zhenfeng BIAN (Shanghai Normal University)

Local Committee:

Kohsuke MORI (Osaka University)

Yasutaka KUWAHARA (Osaka University)

Tetsutaro OHMICHII (Osaka University)

Supported and Organized by:

“Design and applications of nano-sized catalysts and photocatalysts for environmental uses and solar fuel”, International Joint Research Promotion Program, Osaka University (Nr20990630)

“Design and Synthesis of photo-and photoelectron catalysts for solar light-driven H₂ production and energy conversion”

Grant-in-Aid for Scientific Research (A) Project on (A19H008380)" (MEXT, JSPS)

Division of Materials and Manufactures Science, Graduate School of Engineering, Osaka University

Presentations:

Plenary Lecture: 40 min

Keynote Lecture: 30 min

Invited Lecturer: 20 min

Oral Lecturer: 15 min



Program

January 25 th , 2022		
8:30 - 9:00	Opening	
9:00 - 9:15	OL-1	Ting Zhang (Shanghai Jiao Tong University, China)
9:15 - 9:30	OL-2	Kazuki Kusu (Osaka University, Japan)
9:30 - 9:45	OL-3	Yao Chen (Shanghai Normal University, China)
9:45 - 10:00	Free discussion	
10:00 - 10:20	IL-1	Haibo Yin (Tsinghua University, China)
10:20 - 10:40	IL-2	Meicheng Wen (Guangdong University of Technology, China)
10:40 - 11:00	Free discussion	
11:00 - 11:45	PL-1	Alexander Katz (University of California, USA)
11:45 - 12:00	Q & A	
12:00 - 13:00	Lunch & Free discussion	
13:00 - 13:30	KL-1	Zhenfeng Bian (Shanghai Normal University, China)
13:30 - 14:00	KL-2	Yizin Zhao (Shanghai Jiao Tong University, China)
14:00 - 14:30	KL-3	Xufang Qian (Shanghai Jiao Tong University, China)
14:30 - 15:00	Free discussion	
15:00 - 15:15	OL-4	Xin Li (Shanghai Jiao Tong University, China)
15:15 - 15:30	OL-5	Kenjiro Tamaki (Osaka University, Japan)
15:30 - 15:45	OL-6	Yue Tian (Shanghai Normal University, China)
15:45 - 16:00	Free discussion	
16:00 - 16:15	OL-7	Xinyu Chai (Shanghai Jiao Tong University, China)
16:15 - 16:30	OL-8	Yuki Shimoji (Osaka University, Japan)
16:30 - 16:45	OL-9	Xiaoming Deng (Shanghai Normal University, China)
17:00 - 17:15	Free discussion	
17:15 - 18:00	PL-2	Catherine Louis (Sorbonne University, France)
18:00 - 18:15	Q & A	
18:15 - 18:45	KL-4	Launaay Franck (Sorbonne University, France)
18:45 - 19:15	KL-5	Blanchard Juliette (Sorbonne University, France)
19:15 - 19:30	Free discussion	
19:30 - 20:00	KL-6	Reboul Julien (Sorbonne University, France)
20:00 - 20:30	KL-7	Robert Raja (University of Southampton, UK)
20:30 - 21:00	Free discussion	

January 26 th , 2022		
9:00 - 9:15	OL-10	Haoran Chen (Shanghai Jiao Tong University, China)
9:15 - 9:30	OL-11	Naoki Hashimoto (Osaka University, Japan)
9:30 - 9:45	OL-12	Jiazhen Cao (Shanghai Normal University, China)
9:45 - 10:15	KL-8	Hiroshi Kominami (Kindai University, Japan)
10:15 - 10:45	KL-9	Yasutaka Kuwahara (Osaka University)
10:45 - 11:00	Free discussion	
11:00 - 11:15	OL-13	Xiaomin Liu (Shanghai Jiao Tong University, China)
11:15 - 11:30	OL-14	Aiko Hanaki (Osaka University, Japan)
11:30 - 11:45	OL-15	Qianyu Qiao (Shanghai Normal University, China)
11:45 - 12:00	OL-16	Meng Ren (Shanghai Jiao Tong University, China)
12:00 - 13:00	Free discussion	
13:00 - 13:45	PL-3	Michael Stockenhuber (The University of Newcastle, Australia)
13:45 - 14:00	Q&A	
14:00 - 14:30	KL-10	Yu Horiuchi (Osaka Prefecture University, Japan)
14:30 - 15:00	KL-11	Kohsuke Mori (Osaka University)
15:00 - 15:20	Free discussion	
15:20 - 15:40	IL-3	Priyanka Verma (Osaka University, Japan)
15:40 - 16:00	IL-4	Yukari Yamazaki (Osaka University, Japan)
16:00 - 16:20	IL-5	Ge Hao (Osaka University, Japan)
16:20 - 16:40	Free discussion	
16:40 - 17:00	IL-6	Zaza Hazrina Hashim (Osaka University, Japan)
17:00 - 17:20	IL-7	Yoshifumi Kondo (Osaka University, Japan)
17:20 - 17:40	IL-8	David Salinas-Torres (University of Alicante, Spain)
17:40 - 18:00	IL-9	Miriam Navlani-García (University of Alicante, Spain)
18:00 - 18:20	Free discussion	
18:20 - 19:05	PL-4	Zbigniew Sojka (Jagiellonian University, Poland)
19:05 - 19:20	Q&A	
19:20 - 19:30	Free discussion	
19:30 - 20:15	PL-5	Elio Giamello (University of Turin, Italy)
20:15 - 20:30	Q&A	
20:30 - 21:00	Free discussion	

January 27th, 2022

10:00 - 12:00	Free discussion	
12:00 - 13:00	Lunch & Free discussion	
13:00 - 13:15	OL-17	Tetsuya Toyonaga (Osaka University, Japan)
13:15 - 13:30	OL-18	Shintaro Naito (Osaka University, Japan)
13:30 - 13:45	OL-19	Hiroto Hata (Osaka University, Japan)
13:45 - 17:00	Free discussion	
17:00 - 17:15	OL-20	Koji Hamahara (Osaka University, Japan)
17:15 - 17:30	OL-21	Kenta Hino (Osaka University, Japan)
17:30 - 18:00	KL-12	Hiromi Yamashita (Osaka University, Japan)
18:00 - 21:00	Free discussion	

< Plenary Lecture >

PL-1

Alexander Katz (University of California Berkeley, USA)

“Molecular design of solid catalysts”

PL-2

Catherine Louis (Sorbonne University, France)

“Characterization of hydrogenation catalysts by advanced techniques of electron Microscopy”

PL-3

Michael Stockenhuber (The University of Newcastle, Australia)

“Tailored product control through understanding of acidity, redox properties and morphology of catalysts”

PL-4

Zbigniew Sojka (Jagiellonian University, Poland)

“Redox catalysis on euhedral spinel nanocrystals and spinel|oxide heterojunctions - mechanistic insights into CH₄ oxidation, CO-PROX and deN₂O reactions”

PL-5

Elio Giamello (University of Turin, Italy)

“Photochemistry and photocatalysis of visible light active (VLA) systems”

< Keynote Lecture >

KL-1

Zhenfeng Bian (Shanghai Normal University, China)
“Green recovery of precious metals from solid waste”

KL-2

Yizin Zhao (Shanghai Jiao Tong University, China)
“Stabilization of hybrid perovskite for efficient perovskite photovoltaics”

KL-3

Xufang Qian (Shanghai Jiao Tong University, China)
“Carbon quantum dots fenton-like catalysis”

KL-4

Franck Launay (Sorbonne University, France)
“Catalysts design for the one-pot synthesis of cyclic carbonates from alkenes, carbon dioxide and oxygen”

KL-5

Juliette Blanchard (Sorbonne University, France)
“Strategies for coating colloidal nanoparticles with a silica shell”

KL-6

Julien Reboul (Sorbonne University, France)
“(Al)MOF-derived catalysts: a promising strategy for the synthesis of highly stable and active catalysts for methane reforming and CO₂ methanation”

KL-7

Robert Raja (University of Southampton, UK)
“Predictive molecular design of multifunctional solid catalysts”

KL-8

Hiroshi Kominami (Kindai University, Japan)
“Plasmonic photocatalysts having core-shell structure”

KL-9

Yasutaka Kuwahara (Osaka University, Japan)
“Pd nanoparticles and aminopolymers confined in hollow silica spheres for selective hydrogenation reactions”

KL-10

Yu Horiuchi (Osaka Prefecture University, Japan)

“Design of visible-light-responsive MOF photocatalysts and strategies for improving their activity”

KL-11

Kohsuke Mori (Osaka University, Japan)

“Nano-catalyst engineering for formic acid/CO₂ mediated storage and release of hydrogen energy”

KL-12

Hiromi Yamashita (Osaka University, Japan)

“Design of nanostructured photocatalysts using porous materials for environmental uses and solar fuels”

< Invited Lecture >

IL-1

Haibo Yin (Tsinghua University, China)

“Photo(Electro)catalytic ammonia synthesis via the reduction of nitrogen source under ambient conditions”

IL-2

Meicheng Wen (Guangdong University of Technology, China)

“Pd supported catalysts for the highly efficient catalytic oxidation of typical VOCs”

IL-3

Priyanka Verma (Osaka University, Japan)

“Noble metal-based plasmonic catalysts for hydrogenation and dehydrogenation reactions”

IL-4

Yukari Yamazaki (Osaka University, Japan)

“Development of defect-introduced Pt/TiO₂-x Photocatalysts via reduction assisted by hydrogen spillover phenomenon”

IL-5

Ge Hao (Osaka University, Japan)

“Plasmon-induced catalytic CO₂ hydrogenation by a nano-sheet Pt/HxMoO₃-y hybrid with abundant surface oxygen vacancies”

IL-6

Zaza Hazrina Hashim (Osaka University, Japan)

“Effect of mesopore structure of CaO-Fe₂O₃-SiO₂ composite synthesized from dephosphorization slag on CO₂ adsorption”

IL-7

Yoshifumi Kondo (Osaka University, Japan)

“Photocatalytic hydrogen peroxide production on Zr-MOF with missing-linker defects”

IL-8

David Salinas-Torres (University of Alicante, Spain)

“Design of efficient biomass-derived carbon supports for the development of promising Pd-based catalysts for the dehydrogenation of formic acid”

IL-9

Miriam Navlani-García (University of Alicante, Spain)

“Formic acid dehydrogenation boosted by highly stable biomasswaste-derived catalysts”

< Oral Lecture >

OL-1

Ting Zhang (Shanghai Jiao Tong University, China)

“Overcoming acidic $\text{H}_2\text{O}_2/\text{Fe(II/III)}$ redox-induced low H_2O_2 utilization efficiency by carbon quantum dots fenton-like catalysis”

OL-2

Kazuki Kusu (Osaka University, Japan)

“ CO_2 hydrogenation over reduced molybdenum oxide catalyst and its enhanced catalytic activity under visible light”

OL-3

Yao Chen (Shanghai Normal University, China)

“Selective recovery of precious metals through photocatalysis”

OL-4

Xin Li (Shanghai Jiao Tong University, China)

“Photoelectrochemical valorization of organic waste”

OL-5

Kenjiro Tamaki (Osaka University, Japan)

“Design of $\text{Co/g-C}_3\text{N}_4\text{-Au}$ nanorod hybrid catalyst for boosting CO_2 reduction by surface plasmon resonance”

OL-6

Yue Tian (Shanghai Normal University, China)

“Highly active oxygen reduction to H_2O_2 : Coupling effect of oxygen functional groups with core-shell TiO_2/C ”

OL-7

Xinyu Chai (Shanghai Jiao Tong University, China)

“Ruthenium enhanced Ni(OH)_2 catalyst for electrocatalytic oxidation of 5-(Hydroxymethyl)furfural”

OL-8

Yuki Shimoji (Osaka University, Japan)

“Surface Modification of Ag@Pd/TiO_2 with a TiO_x Shell to Promote the Interconversion between Formate/Bicarbonate”

OL-9

Xiaoming Deng (Shanghai Normal University, China)

“Polyaniline- TiO_2 composite photocatalysts for light-driven hexavalent chromium ions reduction”

OL-10

Haoran Chen (Shanghai Jiao Tong University, China)

“Cs-rich wide band gap $\text{Cs}_{0.8}\text{FA}_{0.2}\text{PbI}_{2.2}\text{Br}_{0.8}$ perovskite with inhibited I-Br phase segregation”

OL-11

Naoki Hashimoto (Osaka University, Japan)

“Development of novel high entropy alloy catalysts by hydrogen spillover assisted reduction on TiO_2 ”

OL-12

Jiazhen Cao (Shanghai Normal University, China)

“Aqueous photocatalytic recycling of gold and palladium from waste electronics and catalysts”

OL-13

Xiaomin Liu (Shanghai Jiao Tong University, China)

“Organic tetrabutylammonium cation intercalation to heal inorganic CsPbI_3 perovskite”

OL-14

Aiko Hanaki (Osaka University, Japan)

“Synthesis of functional oxide composites from waste steel slag and evaluation of its CO_2 adsorption performance”

OL-15

Qianyu Qiao (Shanghai Normal University, China)

“Surface modification of phosphate ion to promote photocatalytic recovery of precious metals”

OL-16

Meng Ren (Shanghai Jiao Tong University, China)

“Lead stabilization and iodine recycling of lead halide perovskite solar cells”

OL-17

Tetsuya Toyonaga (Osaka University, Japan)

“Preparation of Pt/TiO_2 -x nanorods assisted by hydrogen spillover and its photocatalytic application”

OL-18

Shintaro Naito (Osaka University, Japan)

“Structural analysis of reduced molybdenum oxide catalyst for light-assisted CO_2 hydrogenation”

OL-19

Hiroto Hata (Osaka University, Japan)

“Interplay of Pd ensemble sites induced by GaOx modification in CO₂ hydrogenation to formic acid”

OL-20

Koji Hamahara (Osaka University, Japan)

“CO₂-methanol conversion reaction using oxygen vacancies in reduced molybdenum oxide catalysts”

OL-21

Kenta Hino (Osaka University, Japan)

“Effect of Metal-oxide cluster species on photocatalytic H₂O₂ production using MOF photocatalysts”