

## Oral session program

### Room A

July 25, Monday

	9:30	Opening ceremony		
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Chair: Atsushi MURAMATSU (Tohoku University)

PL1	10:00	Single-atom catalysis: progress, opportunity and challenge	Tao ZHANG	Dalian Institute of Chemical Physics
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G04 Green & sustainable catalysis

Chair: Hiroshi OGIHARA (Saitama University) & Shohei TADA (Ibaraki University)

OA101	11:30	Novel chemical recycling method of waste plastic by catalytic decomposition over zeolite in petroleum-based solvent	Masahiko MATSUKATA, Tohru KAMO, Kohei OMICHI	Waseda University
OA102	11:50	How CO <sub>2</sub> chemisorption states affect hydrogenation activity	Bin YANG, Limin GUO	Huazhong University of Science and Technology
OA103	12:10	Polymer-supported cobalt-promoted 1,3,5-regioselective cyclotrimerization of aryl alkynes	Yoichi-M. A. YAMADA, Abhijit SEN, Takuma SATO, Aya OHNO, Heeyoel BAEK	RIKEN
OA104	12:30	CO <sub>2</sub> methanation under the oxygen co-existence condition using spiral-type structured catalysts and its exergy evaluation	Hiroshi AKAMA, Tomoya TANIGUCHI, Ryo WATANABE, Yoshiumi KOHNO, Choji FUKUHARA	Shizuoka University

G04 Green & sustainable catalysis

Chair: Hiroshi AKAMA (Shizuoka University) & Yoichi M. A. YAMADA (RIKEN)

OA105	14:30	Catalytic conversion of methanol to methyl formate via proton-exchange membrane electrolysis	Hitoshi OGIHARA, Ryoji KISHI, Nanako KURAMOCHI, Miru YOSHIDA-HIRAHARA, Ichiro YAMANAKA, Hideki KUROKAWA	Saitama University
OA106	14:50	Environmentally benign economically feasible method for tri(furyl)methane synthesis	Babasaheb-M. MATSAGAR, Kevin C.-W. WU	National Taiwan University
OA107	15:10	Study of ZnZrO <sub>x</sub> for CO <sub>2</sub> -to-methanol hydrogenation: understanding Zn incorporation behavior into ZrO <sub>2</sub>	Shohei TADA, Nagomu OCHIAI, Masahiko NISHIJIMA, Noriko YAMAUCHI, Yoshio KOBAYASHI, Kenta IYOKI	Ibaraki University
OA108	15:30	Catalytic conversion of CO <sub>2</sub> for the production of sustainable aviation fuel	Pin LIM, Jie CHANG, Chee Kok POH, Kelvin KWOK, Shi Chang TEO, Tze Yuen YEO, Hsien Hui KHOO, Luwei CHEN, Armando BORGNA	Agency for Science, Technology and Research (A*STAR)
OA109	15:50	Study of bio-char formation from simulated pyrolysis oil under mild condition	Elham NEJADMOGHADAM, Abdenour ACHOUR, Olov ÖHRMAN, Prakhar ARORA, Louise OLSSON, Derek CREASER	Chalmers University of Technology

G04 Green & sustainable catalysis

Chair: Dmitry MURZIN (Abo Akademi University) & Masahiko MATSUKATA (Waseda University)

KL4	16:10	Zeolite catalysis contribution to a sustainable chemical industry	Andrei-Nicolae PARVULESCU	BASF SE
KL5	16:50	Catalysis for a more sustainable chemistry	Rhett KEMPE	Universität Bayreuth

Chair: Tatsumi ISHIHARA (Kyushu University)

PL2	18:00	Catalysis using gold containing nanomaterials	Graham J. HUTCHINGS	Cardiff University
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July 26, Tuesday

Chair: Keiichi TOMISHIGE (Tohoku University)

PL3	9:00	Heterogeneous catalysis for valorization of cellulose and chitin	Atsushi FUKUOKA	Hokkaido University
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Industrial				
Chair: Koichi MATSUSHITA (ENEOS Corporation) & Masaru OGURA (The University of Tokyo)				
KL6	10:30	Research and development of automotive materials and parts using material digital transformation	Hirohito HIRATA	Toyota Motor Corporation
KL7	11:10	Advanced FCC catalyst design for chemical refinery	Takaki MIZUNO	JGC Catalysts and Chemicals
G04 Green & sustainable catalysis				
Chair: Nobutaka YAMANAKA (National Defense Academy) & Yasutaka KUWAHARA (Osaka University)				
KL8	13:30	Carbon nitride photocatalysts for overall water splitting	Xinchen WANG	Fuzhou University
OA207	14:10	Hydrolysis of chitin with acid catalysts in the presence of mechanical forces	Hirokazu KOBAYASHI, Yusuke SUZUKI, Takuya SAGAWA, Mizuho YABUSHITA, Kota TECHIKAWARA, Atsushi FUKUOKA	Hokkaido University
OA208	14:30	Towards molecular understanding of unzipping cyclic saccharide for bio-based chemical production	Po-Wen CHUNG	Academia Sinica
OA209	14:50	Requirements for the development of successful commercial processes	Paresh-Laxmikant DHEPE	CSIR-National Chemical Laboratory
OA210	15:10	Synthesis of Silicalite-1-encapsulated Ni nanoparticle catalyst from Ni phyllosilicate for dry reforming of methane	Yusheng ZHANG, Ryota TAKAHASHI, Hiroyasu FUJITSUKA, Teruoki TAGO	Tokyo Institute of Technology
G04 Green & sustainable catalysis				
Chair: Po-Wen CHUNG (Academia Sinica) & Hirokazu KOBAYASHI (The University of Tokyo)				
OA211	15:50	Glycolaldehyde as bio-based C <sub>2</sub> platform chemical: catalytic reductive amination of vicinal hydroxyl aldehydes	Sofie-Van PRAET, Bert SELS	KU Leuven
KL11	16:10	Heterogeneous catalysis concepts for a sustainable future	Jorge GASCON	King Abdullah University of Science and Technology (KAUST)
OA214	16:50	On demand production of ethers or alcohols from furfural and HMF by selecting the composition of a Zr/Si catalyst	Nicola SCOTTI, Federica ZACCHERIA, Filippo BOSSOLA, Claudio EVANGELISTI, Vladimiro DAL SANTO, Nicoletta RAVASIO	SCITEC-CNR/ICCOM-CNR
OA215	17:10	Valorisation of 2,5-dimethylfuran over zeolite catalysts studied by on-line FTIR-MS gas phase analysis	Christopher SAUER, Anders LOREN, Andreas SCHAEFER, Per-Anders CARLSSON	Chalmers University of Technology
Chair: Yoshitada MORIKAWA (Osaka University)				
PL4	18:00	Activating N <sub>2</sub> - the Haber-Bosch process and beyond	Jens K. NØRSKOV	Technical University of Denmark
<b>July 27, Wednesday</b>				
Chair: Haruyuki MAKIO (Mitsui Chemicals)				
PL5	9:00	Development of homogeneous olefin polymerization catalysts with tunable selectivity	Jerzy KLOSIN	The Dow Chemical Company
G04 Green & sustainable catalysis				
Chair: Kenji WADA (Kagawa University) & Tomoo MIZUGAKI (Osaka University)				
OA301	10:30	A quasi-stable molybdenum sub-oxide with abundant oxygen vacancies for CO <sub>2</sub> hydrogenation to methanol	Yasutaka KUWAHARA, Takashi MIHOI, Koji HAMAHARA, Hisayoshi KOBAYASHI, Hiromi YAMASHITA	Osaka University /JST PRESTO
OA302	10:50	One-pot synthesis of alkyl levulinates directly from furfural by combining Ni-Sn alloy nanoparticles and montmorillonite K10	Nobutaka YAMANAKA, Daiki ABE, Masaiku MIWAKA, Kenji, YASUNAGA, Hiroshi YAMADA	National Defense Academy
OA303	11:10	A novel catalytic reaction system capturing solid carbon from greenhouse gas emitted from industrial process	Choji FUKUHARA, Masaki TANEYASHI, Shuza HATANO, Tomoya TANIGUCHI, Hiroshi AKAMA, Ryo WATANABE	Shizuoka University
OA304	11:30	Positive effect of mesoporous support on metal complex catalysis for fine chemicals synthesis	Ken MOTOKURA, Sae KAWASHIMA, Yuanyuan KONG, Siming DING, Masayuki NAMBO, Yuichi MANAKA, Wang-Jae CHUN	Yokohama National University/Tokyo Institute of Technology

G04 Green & sustainable catalysis				
Chair: Choji FUKUHARA (Shizuoka University) & Ken MOTOKURA (Yokohama National University)				
OA305	13:30	Selective hydrodeoxygenation of biogenic acyl compounds using supported Pt-Mo catalysts	Tomoo MIZUGAKI, Katsumasa SAKODA, Sho YAMAGUCHI, Takato MITSUDOME	Osaka University
OA306	13:50	Top-down HCl treatment to prepare highly active Ga species in Ga/ZSM-5 for propane aromatization	Yong-Hyun LIM, Hyungjoo KIM, Do Heui KIM	Seoul National University
OA307	14:10	Deoxydehydration and hydrogenation of methyl glycosides to dideoxy sugars over ReOx-Pd/CeO <sub>2</sub> catalyst	Ji CAO, Masazumi TAMURA, Akira NAKAYAMA, Yoshinao NAKAGAWA, Keiichi TOMISHIGE	Tohoku University
OA308	14:30	Development of titania-supported iridium catalysts for the synthesis of N-containing chemicals via borrowing hydrogen or dehydrogenative pathways	Kenji WADA, Han YU, Qi FENG	Kagawa University
OA309	14:50	Natural bauxite: a cheaper alternative catalyst for lignin hydrotreatment?	You-Wayne CHEAH, Ivan Gil JIMÉNEZ, Phuoc Hang HO, Olov ÖHRMAN, Prakhar ARORA, Derek CREASER, Louise OLSSON	Chalmers University of Technology
OA310	15:10	Bio-olefins from crude industrial waste glycerol and sugar alcohols via Ru-catalyzed hydrodeoxygenation in Bu <sub>4</sub> PBr ionic liquids	Kwinten JANSSENS, Aram BUGAEV, Maxime STALPAERT, Mickaël HENRION, Alexander SOLDATOV, Dirk DE VOS	KU Leuven
G10 Organometallic catalysis				
Chair: Makoto TOKUNAGA (Kyushu University) & Osamu ISHITANI (Tokyo Institute of Technology)				
OA311	15:50	Borylation of C(sp <sup>3</sup> )-O bonds under heterogeneous gold catalysis	Hiroki MIURA, Yuka HACHIYA, Hidenori NISHIO, Tetsuya SHISHIDO	Tokyo Metropolitan University
OA312	16:10	Mechanistic study on Lewis acid-mediated Suzuki-Miyaura cross-coupling reaction	Yuta UETAKE, Takashi NIWA, Takamitsu HOSOYA, Hidehiro SAKURAI	Osaka University
OA313	16:30	Pd/Cu-Catalyzed dehydrogenative coupling of dimethyl phthalate: Synchrotron radiation sheds light on mechanism of the Pd- and Cu-catalytic cycles	Masafumi HIRANO, Yuki KANAZAWA, Kousuke SANO, Takato MITSUDOME, Hikaru TAKAYA	Tokyo University of Agriculture and Technology
KL20	16:50	Bridging the gap between well-defined and industrial catalysts via a molecular approach	Christophe COPÉRET	ETH Zürich
Chair: Yoshihiro KUBOTA (Yokohama National University)				
PL6	18:00	Oxygenate-mediated conversion of CO <sub>2</sub> to light olefins and fuels - fundamental and applied aspects	Unni OLSBYE	University of Oslo
July 28, Thursday				
Chair: Akihiko KUDO (Tokyo University of Science)				
PL7	9:00	Semiconductor photocatalysts and their combination with molecular catalysts for energy storage and environmental improvement	Takeshi MORIKAWA	Toyota Central R&D Laboratories
G04 Green & sustainable catalysis				
Chair: Shuntaro TSUBAKI (Kyushu University) & Hiroki MIURA (Tokyo Metropolitan University)				
OA401	10:30	Influence of strong metal-support interaction (SMSI) on catalytic properties of substituted-hydroxyapatite supported Au nanoparticles	Akihiro NAKAYAMA, Ryusei SODENAGA, Yuvaraj GANGARAJURA, Ayako TAKETOSHI, Toru MURAYAMA, Tetsuo HONMA, Norihito SAKAGUCHI, Tetsuya SHIMADA, Shinsuke TAKAGI, Masatake HARUTA, Botao QIAO, Junhu WANG, Tamao ISHIDA	Tokyo Metropolitan University
OA402	10:50	Direct amination of alcohols over supported Ru catalysts with the assistance of MgO	Yusuke KITA, Midori KUWABARA, Keigo KAMATA, Michikazu HARA	Tokyo Institute of Technology
OA403	11:10	Aerobic α,β-dehydrogenation of ketones using Pd/Au/CeO <sub>2</sub> catalyst and its mechanistic insights	Daisuke TAKEI, Takafumi YATABE, Tomohiro YABE, Ray MIYAZAKI, Jun-ya HASEGAWA, Kazuya YAMAGUCHI	The University of Tokyo

OA404	11:30	CO <sub>2</sub> hydrogenation to methanol over Co <sub>3</sub> InCo <sub>0.75</sub> -In <sub>2</sub> O <sub>3</sub> catalysts	Yifu WANG, Bin YANG, Limin GUO	Huazhong University of Science & Technology
G04 Green & sustainable catalysis Chair: Kevin C.-W. WU (National Taiwan University) & Tamao ISHIDA (Tokyo Metropolitan University)				
OA405	13:30	Critical role of hydrogen spillover in methane oxidation to methanol over polyoxometalate at room temperature	Sikai WANG, Ning YAN	National University of Singapore
OA406	13:50	Fast catalytic pyrolysis of lignocellulose by tuned microwaves	Shuntaro TSUBAKI, Noriko OHARA, Yuki HAMADA, Jun FUKUSHIMA, Masateru NISHIOKA, Takeharu SUGIYAMA, Hisahiro EINAGA, Wang-Jae CHUN, Yuji WADA, Makoto YASUDA	Osaka University
OA407	14:10	Development of copper nitride nanocube: An efficient heterogeneous catalyst for the green oxidation of indoles	Hang XU, Sho YAMAGUCHI, Takato MITSUDOME, Tomoo MIZUGAKI	Osaka University
OA408	14:30	Enhanced catalytic performance of CeO <sub>2</sub> supported Rh catalyst on heterogeneous hydroformylation of propylene by regulating Rh active sites	Ying ZHENG, Ning YAN, Xinbin MA	Joint School of National University of Singapore and Tianjin University
OA409	14:50	Citral to menthol transformations in flow over extruded catalysts	Zuzana VAJGLOVÁ, Irina SIMAKOVA, Narendra KUMAR, Päivi MÄKI-ARVELA, Markus PEURLA, Dmitry MURZIN	Abo Akademi University
OA410	15:10	New ruthenium supported electride catalyst (Ru/RScSi) for ammonia synthesis at low pressures. Mechanistic insight	Charlotte CROISE, Fabien CAN, Khaled ALABD, Sophie TENCE, Xavier COURTOIS, Nicolas BION	Université de Poitiers/Université de Bordeaux

Chair: Hiroyuki SEKI (JGC Catalysts and Chemicals)

PL8	16:00	Challenges in refining and petrochemical catalysis	Omer Refa KOSEOGLU	Saudi Aramco
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July 29, Friday

Chair: Yutaka AMAO (Osaka Metropolitan University)

PL9	9:00	Design of nanostructured catalysts for hydrogen-carbon cycles and environmental uses	Hiromi YAMASHITA	Osaka University
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G04 Green & sustainable catalysis

Chair: Katsutoshi SATO (Nagoya University) & Aritomo YAMAGUCHI (AIST)

KL27	10:30	Valorization of polyolefins via catalytic upcycling	Susannah SCOTT	University of California, Santa Barbara
OA503	11:10	Hydrogenation of L-proline into L-prolinol over Pt-MoOx/Al <sub>2</sub> O <sub>3</sub>	Satoshi SUGANUMA, Chinami KAKU, Etsushi TSUJI, Naonobu KATADA	Tottori University
OA504	11:30	Synthesis of carbon-supported Cu catalyst for selective hydrogenation of xylose into xylitol	Hiroyasu FUJITSUKA, Ryokuto KANOMATA, Yuki YAMAGUCHI, Motoaki KAWASE, Teruoki TAGO	Kyoto University

G04 Green & sustainable catalysis

Chair: Satoshi SUGANUMA (Tottori University) & Hiroyasu FUJITSUKA (Kyoto University)

OA505	13:30	Selective transformations of triglycerides into fatty acids, amides, nitriles and amines by using heterogeneous catalysis	S. M. A.-Hakim SIDDIKI, Abeda Sultana TOUCHY, Kotohiro NOMURA, Ken-ichi SHIMIZU	Tokyo Metropolitan University / Hokkaido University
OA506	13:50	ZrO <sub>2</sub> oxide supported Ru catalyst for CO <sub>2</sub> methanation at low temperature	Katsutoshi SATO, Hitomi HIGHCHI, Katsutoshi NAGAOKA	Nagoya University
OA507	14:10	Highly efficient production of 5-hydroxymethylfurfural from catalytic conversion of carbohydrates	Pengru CHEN, Aritomo YAMAGUCHI, Norihito HIYOSHI, Naoki MIMURA	National Institute of Advanced Industrial Science and Technology (AIST)
OA508	14:30	Catalytic oxidation of 5-hydroxymethylfurfural over palladium-containing catalysts: Trends and dependencies	Konstantin-L. TIMOFEEV, Tamara S. KHARLAMOVA, Valery A. SVETLICHNYI, Olga V. VODYANKINA	Tomsk State University
OA509	14:50	Reductive amination of aliphatic and benzylic carboxylic acids	Robin COECK, Dirk E. DE VOS	KU Leuven

OA510	15:10	From humins wastes to highly efficient Nb@graphite-like carbon catalysts: An exemplification of the circular economy concept	Magdi-EI FERGANI, Natalia CANDU, Madalina TUDORACHE, Pascal GRANGER, Vasile I. PARVULESCU, Simona M. COMAN	University of Bucharest/University of Lille
	15:30	Closing ceremony		

## Room B

### July 25, Monday

#### G07 Photocatalysis

Chair: Fumiaki AMANO (Tokyo Metropolitan University) & Takashi HISATOMI (Shinshu University)

OB101	11:30	Photoelectrochemical CO <sub>2</sub> Reduction to Formate over Hybrid System of CdS Photoanode and Formate Dehydrogenase under Visible Light Irradiation	Masanobu HIGASHI, Takumi TOYODOME, Itsuki TANAKA, Tomoko YOSHIDA, Yutaka AMAO	Osaka City University
OB102	11:50	Infrared absorption of metal-oxide photocatalysts excited under water	Zhebin FU, Hiroshi ONISHI	Kobe University
KL2	12:10	Photocatalytic water splitting and CO <sub>2</sub> fixation as artificial photosynthesis	Akihiko KUDO	Tokyo University of Science

#### G07 Photocatalysis

Chair: Hiroshi ONISHI (Kobe University) & Masanobu HIGASHI (Osaka Metropolitan University)

OB105	14:30	Kinetics investigation of two electron transfer oxygen reduction reaction on triazine sites of carbon nitrides	Zhenyuan TENG, Qitao ZHANG, Akira YAMAKATA, Bin LIU, Teruhisa OHNO	Kyushu Institute of Technology
OB106	14:50	Density functional theory study on a nitrogen-rich carbon nitride material C <sub>3</sub> N <sub>5</sub> as photocatalyst for CO <sub>2</sub> reduction to C1 and C2 products	Yuelin WANG, Thanh Ngoc PHAM, Yoshitada MORIKAWA, Likai YAN	Osaka University
OB107	15:10	Development of Zinc Hydroxide as an Abundant and Universal Cocatalyst for the Selective Photocatalytic Conversion of CO <sub>2</sub> by H <sub>2</sub> O	Xuanwen XU, Kentaro TERAMURA, Hiroyuki ASAKURA, Saburo HOSOKAWA, Tsunehiro TANAKA	Kyoto University
OB108	15:30	Vapor-fed photoelectrochemical water splitting by gas diffusion photoelectrodes	Fumiaki AMANO	The University of Kitakyushu
OB109	15:50	Influences of cocatalysts deposited on perovskite-type oxynitrides as O <sub>2</sub> -evolving photocatalysts in Z-scheme water splitting	Hideki KATO, Tsuyoshi SEKINE, Naoto MORISHITA, Ryosuke AOYAGI, Kosaku KATO, Akira YAMAKATA, Hiromu KUMAGAI	Tohoku University

#### G07 Photocatalysis

Chair: Kentaro TERAMURA (Kyoto University) & Hideki KATO (Tohoku University)

OB110	16:10	Enhanced overall water splitting by a Zr-doped TaON-based photocatalyst	Jiadong XIAO, Shinji NISHIMAE, Takashi HISATOMI, Yasunobu INOUE, Kazunari DOMEN	Shinshu University
OB111	16:30	Bi-containing composites for photocatalytic application	Yulia A BELIK, Evgeniya A. KOVALYOVA, Lubov V. MALIY, Olga V. VODYANKINA	Tomsk State University
OB112	16:50	Photocatalytic activity of Bi <sub>12</sub> SiO <sub>20</sub> nanoparticles prepared by pulsed laser ablation in liquid	Aleksandra GOLUBOVSKAYA, Elena FAKHRUTDINOVA, Valery SVETLICHNYI	National Research Tomsk State University
OB113	17:10	Understanding photocatalytic activity dependence on node topology in Ti based Metal Organic Frameworks	Nikita KOLOBOV, Karim ADIL, Jorge GASCON	King Abdullah University of Science and Technology (KAUST)

### July 26, Tuesday

#### G07 Photocatalysis

Chair: Teruhisa OHNO (Kyushu Institute of Technology) & Yu HORIUCHI (Osaka Metropolitan University)

OB201	10:30	Supramolecular visible-light photoredox catalysis in water	Munetaka AKITA, Naoki NOTO, Yuki HYODO, Michito YOSHIZAWA, Takashi KOIKE	Tokyo Institute of Technology
OB202	10:50	Photoelectrocatalytic activity and stability of WO <sub>3</sub> with brownmillerite-type Ca <sub>2</sub> FeCoO <sub>5</sub> as a cocatalyst for oxygen evolution reaction	Etsushi TSUJI, Yoshiki DEGAMI, Hiroyuki OKADA, Satoshi SUGANUMA, Naonobu KATADA	Tottori University
OB203	11:10	Photocatalytic CO <sub>2</sub> reduction to form CH <sub>4</sub> using water as an electron donor over a cocatalyst-loaded NaTaO <sub>3</sub> :Sr photocatalyst	Shunya YOSHINO, Wasusate SOONTORNCHAIYAKUL, Yuichi YAMAGUCHI, Akihiko KUDO	Tokyo University of Science

OB204	11:30	Two-dimensional oxynitride $\text{Ca}_2\text{Ta}_3\text{O}_9\text{N}$ nanosheets and free-standing membranes for photocatalyst and fuel cell application	<u>Chu-Wei HSU</u> , Takumi IDETA, Keisuke AWAYA, Kazuto HATAKEYAMA, Michio KOINUMA, Shintaro IDA	Kumamoto University
G07 Photocatalysis Chair: Etsushi TSUJI (Tottori University) & Munetaka AKITA (Tokyo Institute of Technology)				
OB205	13:30	Highly efficient photocatalysis D- $\pi$ -A type sensitized $\text{TiO}_2$ micro-flower photocatalyst for $\text{H}_2$ production under NIR light	<u>Xiaofeng SHEN</u> , Motonori WATANABE, Atsushi TAKAGAKI, Jun Tae SONG, Tatsumi ISHIHARA	Kyushu University
OB206	13:50	Plasmonic water splitting over gold-loaded titanium(IV) oxide modified with a hole-transferring cocatalyst under irradiation of visible light	Eri FUDO, Atsuhiko TANAKA, Hiroshi KOMINAMI	Kindai University
OB207	14:10	Photocatalytic nonoxidative coupling of methane over the Pd-Bi loaded gallium oxide	<u>Surya Pratap SINGH</u> , Akira YAMAMOTO, Eri FUDO, Atsuhiko TANAKA, Hiroshi KOMINAMI, Hisao YOSHIDA	Kyoto University
OB208	14:30	Direct and selective photocatalytic oxidation of $\text{CH}_4$ to oxygenates with $\text{O}_2$ at room temperature	Hui SONG, Jinhua YE	National Institute for Materials Science (NIMS)
OB209	14:50	Photocatalytic activity of $\text{SrTaO}_2\text{N}$ synthesized by flux-assisted nitridation	<u>Takashi HISATOMI</u> , Takehiro OTSUKI, Akio HIRAKO, Kazunari DOMEN	Shinshu University / JST-PRESTO
OB210	15:10	Linker defect engineering of a metal-organic framework to improve its activity for photocatalytic hydrogen evolution reaction	<u>Yu HORIUCHI</u> , Masaya MATSUOKA	Osaka Prefecture University
Industrial Chair: Shigeo SATOKAWA (Seikei University) & Hiroyuki KAMATA (IHI Corporation)				
OB211	15:50	Investigation of the effects of addition of metals on $\text{Cs/SiO}_2$ -based catalysts for methyl methacrylate synthesis	<u>Wataru NINOMIYA</u> , Kazufumi NISHIDA, Akio HAYASHI, Yuki KATO, Toshio HASEGAWA	Mitsubishi Chemical Corporation
OB212	16:10	Alkylation of isobutane with butenes using OSDA-free zeolite Beta	<u>Sam Van MINNEBRUGGEN</u> , Trees DE BAERDEMAEKER, Ka Yan CHEUNG, Andrei-Nicolae PARVULESCU, Ulrich MULLER, Patrick TOMKINS, Rodrigo DE OLIVEIRA SILVA, Xiangju MENG, Feng-shou XIAO, Toshiyuki YOKOI	KU Leuven
OB213	16:30	Activation of hydrotreatment catalysts under industrial conditions: study of the sulfiding agent	<u>Julien DUPONT</u> , Pascal BLANCHARD, Christine LANCELOT, Svetan KOLITCHEFF, Georges FRÉMY, Carole LAMONIER	University of Lille/ARKEMA
OB214	16:50	Unravelling structure activity relationships in the Alpha MMA aldol synthesis catalyst via the use of Surface Organo-Metallic Chemistry	<u>Adam CULLEN</u> , David JOHNSON, Ian YORK, John RUNNACLES	Mitsubishi Chemical UK
OB215	17:10	Single-reactor tandem oxidation-amination process for the synthesis of furan diamines from 5-hydroxymethylfurfural	<u>Marc PERA-TITUS</u> , Jin SHA, Bright T. KUSEMA, Wenjuan ZHOU, Zhen YAN, Stephane STREIFF	Cardiff University/CNRS-Solvay

### July 27, Wednesday

#### Industrial

Chair: Noritatsu TSUBAKI (University of Toyama) & Wataru NINOMIYA (Mitsubishi Chemical Corporation)

KL13	10:30	Biocatalysts to widen the feedstock pool	Jennifer HOLMGREN	LanzaTech
KL14	11:10	Development for hydrogen storage and transportation technology by using novel dehydrogenation catalyst in MCH-LOHC system	Yoshimi OKADA	Chiyoda Co.

#### Industrial

Chair: Teruoki TAGO (Tokyo Institute of Technology) & Kenichi SHIMIZU (Hokkaido University)

OB305	13:30	Studies on reaction mechanism of methacrolein oxidation over $\text{H}_3\text{PMo}_{12}\text{O}_{40}$ using $^{13}\text{C}$ -labeled reactant	<u>Mitsuru KANNO</u> , Jun HIRATA, Taiki UMEZAWA, Wataru NINOMIYA, Yuichi KAMIYA	Mitsubishi Chemical Corporation
OB306	13:50	Advanced FCC catalyst design for LPG production	<u>Yusuke TAKAMIYA</u> , Chisuzu TANAKA, Hiroki HASEGAWA, Takaki MIZUNO	JGC Catalysts and Chemicals Ltd.

OB307	14:10	Development of biomass-derived $\beta$ -substituted acrylate polymer by group-transfer polymerization	<u>Motosuke IMADA</u> , Yasumasa TAKENAKA, Takeharu TSUGE, Hideki ABE	Nippon Shokubai Co. Ltd.
OB308	14:30	Multi-promoters regulated iron catalyst with well-matching reverse water-gas shift and chain propagation for boosting CO <sub>2</sub> hydrogenation	<u>Heng ZHAO</u> , Guohui YANG, Noritatsu TSUBAKI	University of Toyama
OB309	14:50	A machine learning model for utilization of Carbon dioxide to industrially active chemicals with high selectivity using one exemplary reaction	Abhijit CHATTERJEE	Dassault Systems K.K.
OB310	15:10	Industrially attractive Zn-containing catalysts for the non-oxidative dehydrogenation of propane to propene	<u>Evgenii KONDRATENKO</u> , Dan ZHAO, Shanlei HAN, Xinxin TIAN, Dmitry DORONKIN, Vita KONDRATENKO, Jan-Dierk GRUNWALDT	Leibniz-Institut für Katalyse e.V.

#### G12 Reactor engineering

Chair: Isao OGINO (Hokkaido University) & Takeshi FURUSAWA (Utsunomiya University)

KL17	15:50	Challenges and solutions for relevant laboratory protocols for FCC catalyst testing	Marius KIRCHMANN	hte GmbH
OB313	16:30	Flow membrane reactor using AEI-type zeolite membrane for esterification of acetic acid	<u>Motomu SAKAI</u> , Yuma SEKINE, Masahiko MATSUKATA	Waseda University
OB314	16:50	Catalytic valorization of hemicelluloses in an innovative compartmented fixed-bed reactor	<u>Victoria Dias da Silva FREITAS</u> , Maxime PICHOU, Léa VILCOCQ, Régis PHILIPPE, Pascal FONGARLAND	Université Claude Bernard
OB315	17:10	Transient kinetics of selective hydrodesulfurization over supported (Co)MoS catalysts	<u>Ekaterina GALAND</u> , Etienne GIRARD, Mickaël RIVALLAN, Antoine DAUDIN, Yves SCHURMAN	IFP Energies nouvelles/IRCELYON

#### July 28, Thursday

##### G05 Catalysis in energy conversion

Chair: Tetsuya SHISHIDO (Tokyo Metropolitan University) & Ayumu ONDA (Kochi University)

OB401	10:30	Drastic rate enhancement of low temperature ammonia synthesis by exploiting reaction kinetics under forced cycling	<u>William-J. MOVICK</u> , Fuminao KISHIMOTO, Kazuhiro TAKANABE	The University of Tokyo
OB402	10:50	Selective hydrogenation of CO <sub>2</sub> to CO over the interfacial active site created by doping Co single atoms in ZrO <sub>2</sub>	<u>Nazmul DOSTAGIR</u> , Rattanawalee RATTANAWAN, Min GAO, Jin OTA, Jun-ya HASEGAWA, Kiyotaka ASAKURA, Atsushi FUKUOKA, Abhijit SHROTRI	Hokkaido University
KL23	11:10	Fully exposed palladium cluster catalysts enable hydrogen production from nitrogen heterocycles	Ding MA	Peking University

##### G05 Catalysis in energy conversion

Chair: Kazuya YAMAGUCHI (The University of Tokyo) & Ryo WATANABE (Shizuoka University)

KL24	13:30	Controlling reaction routes and product selectivity in C1 chemistry	Ye WANG	Xiamen University
OB407	14:10	Modulation of electronic state of active sites of Fe-N-C catalysts by introduction of Cu for efficient ORR catalysis in alkaline medium	<u>Jong-Gyeong KIM</u> , Sunghoon HAN, Chanho PAK	Gwangju Institute of Science and Technology (GIST)
OB408	14:30	CO <sub>2</sub> hydrogenation over supported Rh catalysts: Unusual effect of phosphorous on the selectivity	<u>Tetsuya SHISHIDO</u> , Kazuma FUKUDA, Hiroki MIURA	Tokyo Metropolitan University
OB409	14:50	High purity pressurized hydrogen production from ammonia in a catalytic membrane reactor: the role of catalyst design	<u>Jose-Luis CERRILLO</u> , Natalia MORLANÉS, Shekhar KULKARNI, Natalia REALPE, Adrian RAMÍREZ, Sai KATIKANENI, Stephen PAGLIERI, Aqil JAMAL, Mani SARATHY, Pedro CASTAÑO, Jorge GASCON	King Abdullah University of Science and Technology (KAUST)
OB410	15:10	Breaking structure sensitivity in CO <sub>2</sub> hydrogenation: on the role of the interface between metallic Co clusters and a reducible oxide support	Emiel HENSEN	Eindhoven University of Technology

#### July 29, Friday

##### G05 Catalysis in energy conversion

Chair: Yuichi MANAKA (AIST) & Michihisa KOYAMA (Shinshu University)

OB501	10:30	Plasmon chemistry of silver metal nanoparticles in conjunction with single-site Ti-oxide species	<u>Priyanka VERMA</u> , Yasutaka KUWAHARA, Kohsuke MORI, Hiromi YAMASHITA	Osaka University
OB502	10:50	Effect of Mn on steam reforming of biomass with Ni-Mn/SBA-15 catalyst at low temperature	<u>Zan Win Moh Moh PHOO</u> , Yoshiya TABUCHI, Osamu NAKAGOE, Hideaki SANNO, Shuji TANABE	Nagasaki University/Mandalay Technological University
KL28	11:10	Non-reductive CO <sub>2</sub> conversion to carbonates, carbamates, and ureas catalyzed by CeO <sub>2</sub> under low CO <sub>2</sub> pressure	Keiichi TOMISHIGE	Tohoku University
G05 Catalysis in energy conversion Chair: Shuji TANABE (Nagasaki University) & R Nandini DEVI (CSIR-National Chemical Laboratory)				
OB505	13:30	Efficient solar-to-CO conversion system in low CO <sub>2</sub> concentration streams utilizing Au <sub>25</sub> clusters exhibiting a high CO <sub>2</sub> binding affinity	<u>Beomil KIM</u> , Hoeun SEONG, Dongil LEE, Jihun OH	Korea Advanced Institute of Science and Technology (KAIST)
OB506	13:50	Active sites of Cs-promoted Ru/ $\gamma$ -Al <sub>2</sub> O <sub>3</sub> catalysts for low-pressure NH <sub>3</sub> synthesis	<u>Shih-Yuan CHEN</u> , Chih-Li CHANG, Masayasu NISHI, Wei-Chih HSIAO, Yves Ira A. REYES, Hiroyuki TATENO, Ho-Hsiu CHOU, Chia-Min YANG, Hsin-Yi Tiffany CHEN, Takehisa MOCHIZUKI, Hideyuki TAKAGI, Tetsuya NANBA	National Institute of Advanced Industrial Science and Technology (AIST)
KL30	14:10	Low temperature catalysis by surface protonics	Yasushi SEKINE	Waseda University
OB509	14:50	Effect of the preparation methods on the physicochemical properties of Indium-based catalysts and their catalytic performance for CO <sub>2</sub> hydrogenation	<u>Phuoc-Hoang HO</u> , Giovanni TIZZANINI, Sreetama GHOSH, Wei DI, Oleg PAJALIC, Lars JOSEFSSON, Patricia BENITO, Derek CREASER, Louise OLSSON	Chalmers University of Technology
OB510	15:10	Mechanistic study of non-thermal plasma assisted CO <sub>2</sub> hydrogenation over Ru/MgAl layered double hydroxide using in-house developed NTP-DRIFTS cell	Shanshan XU, <u>Sarayute CHANSAL</u> , Cristina STERE, Huanhao CHEN, Xiaolei FAN, Christopher HARDACRE	The University Manchester

## Room C

### July 25, Monday

#### G09 Selective oxidation

Chair: Junya OHYAMA (Kumamoto University) & Yoshihiro KON (AIST)

OC101	11:30	Aerobic oxidation of alkenes with iron-containing perovskite oxide catalysts	<u>Keigo KAMATA</u> , Satomi SHIBATA, Michikazu HARA	Tokyo Institute of Technology
OC102	11:50	The local catalyst structure and oxidation catalysis over crystalline orthorhombic Mo <sub>3</sub> VO <sub>x</sub> for selective oxidation of ethane	<u>Satoshi ISHIKAWA</u> , Nagisa AOKI, Kosuke SHIMODA, Takashi KAMACHI, Wataru UEDA	Kanagawa University
OC103	12:10	Regiospecific $\alpha$ -methylene C-H functionalization of tertiary amines with alkynes catalyzed by supported gold nanoparticles and zinc salts	<u>Takafumi YATABE</u> , Kazuya YAMAGUCHI	The University of Tokyo
OC104	12:30	Selective oxidation of methane into HCHO and CO catalyzed by in situ formed FeO <sub>x</sub> nanoclusters prepared from a diiron-introduced polyoxometalate	<u>Keiju WACHI</u> , Tomohiro YABE, Takaaki SUZUKI, Kentaro YONESATO, Kosuke SUZUKI, Kazuya YAMAGUCHI	The University of Tokyo

#### G09 Selective oxidation

Chair: Keigo KAMATA (Tokyo Institute of Technology) & Takafumi YATABE (The University of Tokyo)

OC105	14:30	Effect of redox property of Cu zeolites on catalytic partial oxidation of methane investigated by in situ XAFS spectroscopy	<u>Junya OHYAMA</u> , Yuka TSUCHIMURA, Airi HIRAYAMA, Hiroshi YOSHIDA, Masato MACHIDA, Shun NISHIMURA, Kazuo KATO, Itsuki MIYAZATO, Keisuke TAKAHASHI	Kumamoto University
OC106	14:50	Partial oxidation of methane to formaldehyde by single oxygen transfer at novel lattice oxygen sites of palladium and ruthenium bimetal oxide	Ming ZHAO, Yang SONG, Daiki HIGASHIKUBO, Masanaru MORIYAMA, Hiroyuki IMAI, Atsushi TAKAGAKI, <u>Kyoko K. BANDO</u> , Tetsuya SHISHIDO, Xiaohong LI	The University of Kitakyushu

OC107	15:10	Designing methane oxidation catalysis knowledge maps for designing catalysts	Lauren TAKAHASHI, Keisuke TAKAHASHI	Hokkaido University
OC108	15:30	Effect of additive on selectivity in the phenol oxidation with H <sub>2</sub> O <sub>2</sub> over Ti-beta and related catalyst	Satoshi INAGAKI, Mei TAKEYAMA, Yu YOKOSE, Takuto KISHIDA, Yoshihiro KUBOTA	Yokohama National University
OC109	15:50	Unravelling the role of catalyst preparation procedure of NiO catalysts on their catalytic performance in ethane oxidative dehydrogenation	Jose NIETO, Agustin de ARRIBA, Rosa SÁNCHEZ-TOVAR, Yousra ABDELBAKI, Rachid ISSAADI, Benjamin SOLSONA	Instituto de Tecnología Química

#### G09 Selective oxidation

Chair: Yoshinao NAKAGAWA (Tohoku University) & Jose M. Lopez NIETO (Instituto Tecnología Química)

OC110	16:10	An <i>in-situ</i> DRIFTS-MS study on elucidating the role of V in the selective oxidation of methacrolein to methacrylic acid over heteropolyacid compounds	Sarayute CHANSAL, Yuki KATO, Wataru NINOMIYA, Christopher HARDACRE	The University Manchester
OC111	16:30	The role of oxygen species in oxidative coupling of CH <sub>4</sub> over Mn-Na <sub>2</sub> WO <sub>4</sub> /SiO <sub>2</sub>	Vita-A. KONDRATENKO, Zeynep AYDIN, Anna ZANINA, Jianshu LI, Juan CHEN, Yuming LI, Guiyuan JIANG, Evgenii V. KONDRATENKO	Leibniz-Institut für Katalyse e.V.
OC112	16:50	Stability and oxidation properties of the O <sub>2</sub> activated on Fe-FER in methane oxidation with FTIR/MS product detection	Edyta TABOR, Maria LEMISHKA, Kinga MLEKODAJ, Joanna E. OLSZOWKA, Hana JIRGLOVA, Agnieszka KORNAS, Jiri DEDECEK	J. Heyrovsky Institute of Physical Chemistry of the CAS
OC113	17:10	Glycerol valorization in liquid phase for the production of glycolic acid	Mickaël CAPRON, Edgar GONZALES, Claudia Patricia TAVERA RUIZ, Soraya ZAID, Jean Sebastien GIRARDON, Elzbieta SKRZYNSKA, Franck DUMEIGNIL, Juliana APARICIO	Univ. Lille CNRS

#### July 26, Tuesday

#### G09 Selective oxidation

Chair: Satoshi INAGAKI (Yokohama National University) & Satoshi ISHIKAWA (Kanagawa University)

OC201	10:30	Production of adipic acid by aerobic oxidation of 2-methoxycyclohexanone with H <sub>3</sub> PW <sub>12</sub> O <sub>40</sub> catalyst	Yoshinao NAKAGAWA, Kosuke HATAKEYAMA, Masazumi TAMURA, Keiichi TOMISHIGE	Tohoku University
OC202	10:50	Control of selective oxidation of biomass by kinetic model incorporating multiple active sites and key reactive oxygen species	Tsutomu CHIDA, Kousuke HIROMORI, Naomi SHIBASAKI-KITAKAWA, Naoki MIMURA, Aritomo YAMAGUCHI, Atsushi TAKAHASHI	Tohoku University
OC203	11:10	Selective oxidation of alcohols using flow reactors in the presence of Pt catalyst	Yoshihiro KON, Takuya NAKASHIMA, Tadairo FUJITANI, Shun-ya ONOZAWA, Shu KOBAYASHI, Kazuhiko SATO	National Institute of Advanced Industrial Science and Technology (AIST)
OC204	11:30	Dehydrogenative conversion of methane by the supported indium catalysts	Shoji IGUCHI, Yuta NISHIKAWA, Ayumi NAKAYA, Ayako SUZUKI, Kiyotaka ASAKURA, Ichiro YAMANAKA	Tokyo Institute of Technology

#### G06 Environmental catalysis

Chair: Hiroshi YOSHIDA (Kumamoto University) & Saburo HOSOKAWA (Kyoto Institute of Technology)

OC205	13:30	Preparation of metastable layered manganese cobalt oxide nanosheet catalysts for catalytic toluene combustion	Keisuke AWAYA, Yuto KOYANAGI, Kazuto HATAKEYAMA, Shintaro IDA	Kumamoto University
OC206	13:50	VOCs sorption over hierarchical and conventional ZSM-5 zeolites	Limin GUO	Huazhong University of Science and Technology
OC207	14:10	Tandem base-metal oxide catalyst for automotive three-way reaction: MnFe <sub>2</sub> O <sub>4</sub> for preferential oxidation of hydrocarbon	Keisuke MARUICHI, Ryosuke SAKAI, Kakuya UEDA, Akira ODA, Junya OHYAMA, Atsushi SATSUMA	Nagoya University
OC208	14:30	Effect of crystallite structure of Y-doped ZrO <sub>2</sub> on the morphology of IrRh particles and the three-way catalytic performance of supported IrRh catalyst	Masaaki HANEDA, Yoshihide NISHIDA, Koki AONO, Hiromi TOGASHI, Shunsuke OHISHI	Nagoya Institute of Technology
OC209	14:50	Local structure of Pd <sup>2+</sup> cation in high-loading Pd-CHA zeolite and its relationship with NO adsorption/desorption property	Shunsaku YASUMURA, Takashi TOYAO, Zen MAENO, Ken-ichi SHIMIZU	Hokkaido University

OC210	15:10	Synthesis of zeolitic Ti, Zr-substituted vanadotungstates and investigation of their catalytic activity for low-temperature NH <sub>3</sub> -SCR	<u>Meilin TAO</u> , Satoshi ISHIKAWA, Yusuke INOMATA, Toru MURAYAMA, Wataru UEDA	Kanagawa University
G06 Environmental catalysis Chair: Masaaki HANEDA (Nagoya Institute of Technology) & Limin GUO (Huazhong University of Science and Technology)				
OC211	15:50	Unraveling the structure and role of Mn and Ce for selective catalytic reduction of NO <sub>x</sub> in application-relevant catalysts and conditions	<u>Javier RUIZ-MARTÍNEZ</u> , Lieven E. GEVERS, Linga R. ENAKONDA, Ameen SHAHID, Samy OULD-CHIKH, Pasi P. PAALANEN, Mohamed Neji HEDHILI, Fei WEN	King Abdullah University of Science and Technology (KAUST)
OC212	16:10	Conversion of CO <sub>2</sub> to cyclic and poly- carbonates over constrained di-nuclear catalysts	<u>Oz Moshe GAZIT</u> , Sreenath PAPURRU, Dina SHPASSER, Raanan CARMIELI, Pini SHEKHTER	Israel Institute of Technology
OC213	16:30	Investigating the effect of various NO/NO <sub>2</sub> ratio on N <sub>2</sub> O formation over Cu-functionalized zeolites during ammonia-SCR by in situ DRIFTS studies	<u>Ghodsieh Isapour TOUTIZAD</u> , Aiyong WANG, Joonsoo HAN, Yingxin FENG, Henrik GRÖNBECK, Derek CREASER, Louise OLSSON, Magnus SKOGLUNDH, Hanna HÄRELIND	Chalmers University of Technology
OC214	16:50	Non-thermal plasma-assisted preparation of CuO/Al <sub>2</sub> O <sub>3</sub> catalysts for toluene total oxidation	<u>Victor DEBOOS</u> , Savita KALIYA PERUMAL VEERA, Jean-Marc GIRAUDON, Nathalie DE GEYTER, Rino MORENT, Jean-François LAMONIER	Universite de Lille
OC215	17:10	Towards obtaining a high fraction of iron active sites in Fe-MOR for effective N <sub>2</sub> O abatement	<u>Edyta TABOR</u> , Kinga MLEKODAJ, Joanna E. OLSZOWKA, Mariia LEMISHKA, Jiri DEDECEK, Daniela PIETROGIACOMI, Maria C. CAMPA	J. Heyrovsky Institute of Physical Chemistry / Chemistry Department, Sapienza University of Rome

### July 27, Wednesday

G06 Environmental catalysis

Chair: Toshiyuki MASUI (Tottori University) & Yoshihide NISHIDA (Nagoya Institute of Technology)

OC301	10:30	Ce-modified Rh overlayer prepared by pulsed arc plasma deposition for three-way catalytic converter	<u>Hiroshi YOSHIDA</u> , Tomoyo KOIDE, Takuya UEMURA, Junya OHYAMA, Masato MACHIDA	Kumamoto University/Kyoto University
OC302	10:50	Supported ruthenium catalysts for reduction of perchlorate in water toward polluted water purification	<u>Yuichi KAMIYA</u> , Daiki YOSHIDA, Jiahao LIU, Kaili HUANG, Ryoichi OTOMO	Hokkaido University
OC303	11:10	Investigation on the promoting effect of CO on low-temperature NO <sub>x</sub> adsorption over Pd/CeO <sub>2</sub>	<u>Sungha HWANG</u> , Yongwoo KIM, Jaeha LEE, Eunwon LEE, Hyokyoung LEE, Changho JEONG, Chang Hwan KIM, Do Heui KIM	Seoul National University
OC304	11:30	Purification of automotive exhaust gases over Pd/SrTi <sub>1-x</sub> Co <sub>x</sub> O <sub>3-δ</sub>	<u>Saburo HOSOKAWA</u> , Yuji YOSHIYAMA, Hiroyuki ASAKURA, Kentaro TERAMURA, Tsunehiro TANAKA	Kyoto Institute of Technology/Kyoto University

### APCAT session

Chair Jeffrey Chi-Sheng WU (National Taiwan University) & Hiromi YAMASHITA (Osaka University)

KL15	13:30	Artificial photosynthesis for solar fuel production: fundamental and application	Can LI	Dalian Institute of Chemical Physics, Chinese Academy of Sciences
KL16	14:10	Design strategy for developing new catalysts using nanotechnology and DFT calculation	Kwan-Young LEE	Korea University

Chair Piyasan PRASERTHDAM (Chulalongkorn University) & Hisao YOSHIDA (Kyoto University)

IL1	14:50	Photo-Fenton enhanced twin-reactor for green hydrogen production and organic wastewater degradation simultaneously	Jeffrey Chi-Sheng WU	National Taiwan University
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IL2	15:10	Visible-light driven synthesis for ingredient of biodegradable polymer with the system of water-soluble zinc porphyrin and platinum nano-particles	Yutaka AMAO	Osaka Metropolitan University
Chair Kwan-Young LEE (Korea University) & Keiichi Tomishige (Tohoku University)				
IL3	15:50	Formation of 3D-nanostructured solid carbon products from CO <sub>2</sub> at room temperature under the dynamic CO <sub>2</sub> electrochemical reduction environment	Joongjai PANPRANOT	Chulalongkorn University
IL4	16:10	Nano Au catalysts and Rh supported ionic liquid phase for the production of propanal/propanol from ethylene, hydrogen and CO/CO <sub>2</sub>	Le Minh THANG	Hanoi University of Science and Technology
Chair Yutaka AMAO (Osaka Metropolitan University), Fengshou XIAO (Zhejiang University)				
KL19	16:30	Innovating sustainable catalyst systems for low-carbon energy solutions	Sibudjing KAWI	National University of Singapore
KL21	17:10	Controlling redox and acid catalyst function to control rates and product selectivity	Michael STOCKENHUBER	The University of Newcastle

### July 28, Thursday

G03 Fundamentals and characterization

Chair: Atsushi Urakawa (Delft University of Technology) & Kyoko BANDO (AIST)

KL22	10:30	Thermochemical properties of reactive hydrogen and its catalytic consequences in hydrogenation and hydrogenolysis catalysis	Ya-Huei Cathy CHIN	University of Toronto
OC403	11:10	Ru nanocatalyst on MgO to enhance ammonia synthesis: The in-situ ETEM study	Lizhuo WANG, Jia DING, Wenjie YANG, Jun HUANG	The University of Sydney
OC404	11:30	Elucidation of ad/desorption process of N <sub>2</sub> and H <sub>2</sub> molecules on Ru-based ammonia synthesis catalysts using modulation-excitation infrared spectroscopy	Tomohiro NOGUCHI, David S. Rivera ROCABADO, Takayoshi ISHIMOTO, Miho YAMAUCHI	Kyushu University

G03 Fundamentals and characterization

Chair: Miho YAMAUCHI (Kyushu University) & Shinya FURUKAWA (Hokkaido University)

OC405	13:30	In situ XAFS analysis of PtAu nanoparticles deposited on a flat HOPG surface.	Kiyotaka ASAKURA, Bing HU, Naoto TODOROKI, Toshimasa WADAYAMA, Kotaro HIGASHI, Tomoya URUGA, Yasuhiro IWASAWA, Hiroko ARIGA, Satoru TAKAKUSAGI	Hokkaido University
OC406	13:50	The size of CeO <sub>2</sub> support governs the redox properties and reactivity of Pd/CeO <sub>2</sub> catalysts for low-temperature CO oxidation	Valery MURAVEV, Nikolay KOSINOV, Emiel HENSEN	Eindhoven University of Technology
OC407	14:10	Mechanistic insights into low-temperature CO <sub>2</sub> hydrogenation to methanol over Re/TiO <sub>2</sub> catalyst using Operando DRIFTS-SSITKA	Nat PHONGPRUEKSATHAT, Kah Wei TING, Takashi TOYAO, Atsushi URAKAWA	Delft University of Technology
OC408	14:30	Unravelling channel structure-diffusivity relationships in zeolite ZSM-5 at the single-molecule level	J.J.-Erik MARIS, Donglong FU, Katarina STANCIAKOVA, Nikolaos NIKOLOPOULOS, Onno VAN DER HEIJDEN, Laurens D.B. MANDEMAKER, Marijn E. SIEMONS, Desiree SALAS PASTENE, Lukas C. KAPITEIN, Freddy T. RABOUW, Florian MEIRER, Bert M. WECKHUYSEN	Utrecht University
KL26	14:50	Coupled operando EPR as a powerful tool for mechanistic investigations of catalytic reactions	Jabor RABEAH	Leibniz Institute for Catalysis at the University of Rostock

### July 29, Friday

G03 Fundamentals and characterization

Chair: Wen-Yueh YU (National Taiwan University) & Hiroyuki ASAKURA (Kindai University)

OC501	10:30	Evaluation and characterization of solid MAO as a cocatalyst for olefin polymerization	Kazuki AE, Ryo TANAKA, Yuushou NAKAYAMA, Takeshi SHIONO	Hiroshima University
OC502	10:50	Synthesis and catalysis of a peroxo-vanadium structure on a fluoride-containing polyoxovanadate	Yuji KIKUKAWA, Yui SAKAMOTO, Hikari HIRASAWA, Yushi KUIMOTO, Yoshihito HAYASHI	Kanazawa University

OC503	11:10	Ni-catalyzed dehydrogenation of alkanes promoted by carbon deposition	Shigeru SUGIYAMA, Akihiko KOIZUMI, Naohiro SHIMODA, Yuki KATO, Wataru NINOMIYA	Tokushima University
OC504	11:30	Formation of the solid solutions of transition metal elements and MgO	Kazu OKUMURA, Hitomi HOSHI, Takumi SASAKI, Sachiko MORITA, Hikaru IYOSHI	Kogakuin University
G03 Fundamentals and characterization Chair: Shigeru SUGIYAMA (Tokushima University) & Kazu OKUMURA (Kogakuin University)				
OC505	13:30	Redox-driven reversible structural evolution of atomic Ag species on $\gamma$ -Al <sub>2</sub> O <sub>3</sub>	Ken-ichi SHIMIZU, Hiroe KUBOTA, Shinya MINE, Takashi TOYAO, Zen MAENO	Hokkaido University
OC506	13:50	Effect of support species on performance of Fe-based catalysts for propane dehydrogenation with co-feeding of H <sub>2</sub> S	Ryo WATANABE, Yuta YODA, Yoshiumi KOHNO, Choji FUKUHARA	Shizuoka University
OC507	14:10	In-situ infrared spectroscopy characterizations of non-reductive conversion of CO <sub>2</sub> mediated by surface oxygen vacancy of ceria	Wen-Yueh YU, Zi-Jie GONG, You-Ren LI	National Taiwan University / Advanced Research Center for Green Materials Science and Technology
OC508	14:30	Catalysts with bimodal pore structure prepared by sedimentation of mesoporous silica-alumina spheres and reinforcement with silica	Masaki OKAMOTO, Yuki TAKAHASHI	Keio University
OC509	14:50	Implications of hydrocarbon pool mechanism of methane dehydroaromatization over Mo/zeolite catalysts	Yujie LIU, Emiel HENSEN, Nikolay KOSINOV	Eindhoven University of Technology
OC510	15:10	In-situ electron microscopy studies on methane decomposition over carbon-supported Ni-Cu catalysts	Tom A.J. WELLING, Suzan E. SCHOEMAKER, Krijn P. DE JONG, Petra E. DE JONGH	Utrecht University

## Room D

### July 25, Monday

G02 Advanced materials for catalysis

Chair: Masayuki SHIRAI (Iwate University) & Soichi KIKKAWA (Tokyo Metropolitan University)

KL1	11:30	Controlling reactivity for electrochemical reduction through mass transport and charged polymer overlayers	Adam Z. WEBER	Lawrence Berkeley National Laboratory
OD103	12:10	Synthesis of ordered carbonaceous frameworks with single-atomic metal species from metalloporphyrin molecular crystals	Takeharu YOSHII, Koki CHIDA, Hiroto NISHIHARA	Tohoku University
OD104	12:30	Highly active and durable ruthenium phosphide nanoparticle catalyst for deoxygenation of sulfoxides	Hiroya ISHIKAWA, Sho YAMAGUCHI, Takato MITSUDOME, Tomoo MIZUGAKI	Osaka University

G02 Advanced materials for catalysis

Chair: Masahiro SADAKANE (Hiroshima University) & Takeharu YOSHII (Tohoku University)

OD105	14:30	CO <sub>2</sub> fixation reaction over Ta- and Nb-based solid-solution metal oxide clusters	Soichi KIKKAWA, Mio TSUKADA, Vorakit CHUDATEMIYA, Jun HIRAYAMA, Kotaro HIGASHI, Kazuo KATO, Tomoya URUGA, Naoki NAKATANI, Takafumi YAMAMOTO, Seiji YAMAZOE	Tokyo Metropolitan University
OD106	14:50	Size and doping effects on oxidation catalysis of atomically precise gold clusters stabilized by PVP	Tatsuya TSUKUDA, Shingo HASEGAWA, Shinya MASUDA, Shinjiro TAKANO, Koji HARANO	The University of Tokyo/Kyoto University
OD107	15:10	Nanocatalyst engineering for CO <sub>2</sub> hydrogenation to formic acid as a promising hydrogen storage material	Kohsuke MORI, Hiroto HATA, Hiromi YAMASHITA	Osaka University/ESICB, Kyoto University
OD108	15:30	Amination of alcohols using NH <sub>3</sub> over Ir/TiO <sub>2</sub> catalyst	Haoyue LI, Ning YAN	National University of Singapore
OD109	15:50	Iridium nanodisks intercalated between graphite layers	Masayuki SHIRAI, Tomoki SOBU, Mika SODENO, Shusuke KATO, Etty N. KUSUMAWATI, Hidetaka NANA O	Iwate University

G02 Advanced materials for catalysis

Chair: Kosuke MORI (Osaka University) & Tatsuya TSUKUDA (The University of Tokyo)

OD110	16:10	Optimization of zirconia supported catalysts for the direct synthesis of methanethiol: effect of the Mo loading and of the nature of the alkali ion	Nicolas MONTROUSSIER, Pascal BLANCHARD, Christine LANCELOT, Georges FRÉMY, Hélori SALEMBIER, Carole LAMONIER	Arkema / Univ. Lille
OD111	16:30	A time-efficient non-corrosive synthesis method for robust and continuous b-oriented ZSM-5 zeolite membranes on coated porous ceramics of various silica-to-alumina ratios in neutral fluoride media	Romy L. RIEMERSMA, Anne-Eva NIEUWELINK, Eelco T.C. VOGT, Bert. M WECKHUYSEN	Utrecht University
OD112	16:50	One pot valorization of glycerol into acrylic acid using bronze-based mixed oxides: differences between acid and acid-redox catalysts	Agustín-de ARRIBA, Daniel DELGADO, Patricia CONCEPCIÓN, Jose Manuel LÓPEZ NIETO	Instituto de Tecnología Química (UPV-CSIC)
OD113	17:10	Effect of missing-linker defects in Zr-MOF on photocatalytic hydrogen peroxide production	Yoshifumi KONDO, Yasutaka KUWAHARA, Kohsuke MORI, Hiromi YAMASHITA	Osaka University

### July 26, Tuesday

G02 Advanced materials for catalysis

Chair: Toshihiro MIYAO (University of Yamanashi) & Mizuho YABUSHITA (Tohoku University)

OD201	10:30	A newfound zeolite catalyst for highly efficient carbonylation	Jie YAO, Guohui YANG, Noritatsu TSUBAKI	University of Toyama
OD202	10:50	Ag <sup>+</sup> -zeolites as an ethylene release material applicable for controlled ripening of fruits and vegetables	Yuan HUANG, Ryoichi OTOMO, Ken-ichi SHIMIZU, Yuichi KAMIYA, Shin-ichiro NORO	Hokkaido University
OD203	11:10	Metal nanoparticles catalyzed hydrogenation of nitriles under ambient conditions	Yoshihide NISHIDA, Chandan CHAUDHARI, Katsutoshi SATO, Katsutoshi NAGAOKA, Masaaki HANEDA	Nagoya Institute of Technology
OD204	11:30	Stable oxyhydride as electronic promotor for liquid phase hydrogenation	Masayoshi MIYAZAKI, Kiya OGASAWARA, Masaaki KITANO, Hideo HOSONO	Tokyo Institute of Technology

G02 Advanced materials for catalysis

Chair: Yuichi KAMIYA (Hokkaido University) & Yusuke YAMADA (Osaka Metropolitan University)

OD205	13:30	Ternary nanoalloy on ceria as a highly active, selective, and stable catalyst for the oxidative dehydrogenation of propane using CO <sub>2</sub>	Feilong XING, Ken-ichi SHIMIZU, Shinya FURUKAWA	Hokkaido University
OD206	13:50	Ni/SiO <sub>2</sub> catalyst prepared through citrate-assisted impregnation for vapor-phase hydrogenation of acetoin to 2,3-butanediol	Kazuki NAKAZONO, Syuya HOSAKA, Yasuhiro YAMADA, Stoshi SATO	Chiba University
OD207	14:10	Rational design of multifunctional zeolite hybrid materials for domino reaction, light olefin production, and methane utilization	Chularat WATTANAKIT, Chadatip RODAUM, Sorasak KLINYOD, Duangkamon SUTTIPAT, Thidarat IMYEN	Vidyasirimedhi Institute of Science and Technology (VISTEC)
OD208	14:30	Development of nickel phosphide nanoalloy catalyst for the highly selective hydrogenation of D-glucose to D-sorbitol	Sho YAMAGUCHI, Takato MITSUDOME, Tomoo MIZUGAKI	Osaka University
OD209	14:50	Hydrogenation of olefins by Ni-Ir alloy catalyst	Masazumi TAMURA, Jia-qi BAI, Yoshinao NAKAGAWA, Akira NAKAYAMA, Keiichi TOMISHIGE	Osaka City University
OD210	15:10	Reduction of dinitrogen to ammonia at lattice anion sites of Ba-Ce oxynitride-hydrides	Masaaki KITANO, Kiya OGASAWARA, Masayshi MIYAZAKI, Hideo HOSONO	Tokyo Institute of Technology

G02 Advanced materials for catalysis

Chair: Satoshi SATO (Chiba University) & Masazumi TAMURA (Osaka Metropolitan University)

OD211	15:50	Mechanochemical route for MFI zeolites with small Ce species and their application to low-temperature oxidative coupling of methane	Mizuho YABUSHITA, Motohiro YOSHIDA, Ryota OSUGA, Fumiya MUTO, Shoji IGUCHI, Shuhei YASUDA, Atsushi NEYA, Mami HORIE, Sachiko MAKI, Kiyoshi KANIE, Ichiro YAMANAKA, Toshiyuki YOKOI, Atsushi MURAMATSU	Tohoku University
OD212	16:10	Heterogeneous catalysis of cyano-bridged polynuclear metal complexes for energy conversion and environmental mitigation	Yusuke YAMADA	Osaka City University

OD213	16:30	Electrophilic amination of simple arenes catalyzed by a Cu-loaded MOF	<u>Lisa-Van EMELEN</u> , Niels VAN VELTHOVEN, Vincent LEMMENS, Aram BUGAEV, Simon SMOLDERS, Dirk E. DE VOS	KU Leuven
KL12	16:50	Concerto catalysis of transition metals and zeolite microporous sieves	Dirk E. De VOS	KU Leuven

### July 27, Wednesday

G11 Biocatalysis / G05 Catalysis in energy

Chair: Shiro HIKICHI (Kanagawa University) & Yu-Chuan LIN (National Cheng Kung University)

OD301	10:30	Biocatalytic CO <sub>2</sub> reduction into formate using membrane-bound [NiFe]-hydrogenase and [Mo]-formate dehydrogenase	<u>Ki-Seok YOON</u> , Takuo MINATO, Nguyen Khac HUNG, Seiji OGO	Kyushu University
OD302	10:50	Hybrid process to produce 3-hydroxybutyrate from CO <sub>2</sub> and acetone by using carboxylase and dehydrogenase under visible-light irradiation	<u>Yu KITA</u> , Masanobu HIGASHI, Ritsuko FUJII, Yutaka AMAO	Osaka City University
OD303	11:10	Na-modified Pt nanoparticles on Al <sub>2</sub> O <sub>3</sub> as dual functional materials for CO <sub>2</sub> capture and selective hydrogenation to CO	<u>Lingcong LI</u> , Shinta MIYAZAKI, Takashi TOYAO, Zen MAENO, Ken-ichi SHIMIZU	Hokkaido University
OD304	11:30	Core-shell structured oxide supported Co catalysts for ammonia synthesis under mild conditions	<u>Katsutoshi NAGAOKA</u> , Katsutoshi SATO, Shin-ichiro MIYAHARA, Koji INAZU	Nagoya University

G05 Catalysis in energy conversion

Chair: Chularat WATTANAKIT (Vidyasirimedhi Institute of Science and Technology) & Katsutoshi NAGAOKA (Nagoya University)

OD305	13:30	Selective conversion of CO <sub>2</sub> into para-Xylene over a ZnCr <sub>2</sub> O <sub>4</sub> -ZSM-5 catalyst	<u>Weizhe GAO</u> , Guohui YANG, Noritatsu TSUBAKI	University of Toyama
OD306	13:50	N-decorated Ni/SiO <sub>2</sub> derived from carbothermal reduction of nickel phyllosilicates in the hydrogenation of levulinic acid to gamma-valerolactone	Yu-Chuan LIN	National Cheng Kung University
OD307	14:10	CO <sub>2</sub> hydrogenation selectivity shift over In-Co binary oxides catalysts: catalytic mechanism and structure-property relationship	<u>Biao GAO</u> , Longtai LI, Bin YANG, Yifu WANG, Tatsumi ISHIHARA, Limin GUO, Lingxia ZHANG	Huazhong University of Science and Technology
OD308	14:30	Effect of B site substitution in Gd <sub>2</sub> B <sub>1-0.2</sub> Ni <sub>0.2</sub> O <sub>7</sub> (B= Ti, Zr) ternary metal oxide catalysts in dry reforming of methane	<u>Seema Rajan GHODKE</u> , Shibin R. THUNDIYIL, Nandini R. DEVI	CSIR-National Chemical Laboratory
OD309	14:50	Hydrogen production by biogas reforming and WGS over Co-based supported catalysts	<u>Sholpan S. ITKULOVA</u> , Yerzhan A. BOLEUBAYEV, Kirill A. VALISHEVSKIY	D.V. Sokolsky Institute of Fuel Catalysis and Electrochemistry /Kazakh British Technical University
OD310	15:10	Understanding the effect of Ni location in a Ni/MgAlO <sub>x</sub> /ZrO <sub>2</sub> hierarchical system on DRM reaction	<u>Jin WANG</u> , Yuki HIRAYAMA, Gbolade KAYODE, Matthew MONTEMORE, Isao OGINO, Oz M. GAZIT	Israel Institute of Technology

G03 Fundamentals and characterization

Chair: Kiyotaka ASAKURA (Hokkaido University) & Vasile PARVULESCU (University of Bucharest)

OD311	15:50	The origin of active magnesium silicate on wet-kneaded silica-magnesia catalyst for one-step ethanol-to-butadiene process	<u>Sangho CHUNG</u> , Tuiana SHOINKHOROVA, Ildar MUKHAMBETOV, Adrian RAMIREZ, Edy ABOU-HAMAD, Selvedin TELAOVIC, Jorge GASCON, Javier RUIZ-MARTINEZ	King Abdullah University of Science and Technology (KAUST)
OD312	16:10	Acidity of naphtha reforming catalyst: 2,6-di-tert-butylpyridine, a new probe molecule	<u>Quentin RIVET</u> , Thibaud NARDIN, David FARRUSSENG	IFP Energies nouvelles/IRCELYON
OD313	16:30	Operando gas and heating TEM with on-the-fly dry and wet gas composition control	<u>Dan ZHOU</u> , Ronald G. SPRUIT, Merijn PEN, Tian QIN, Xiaoben ZHANG, Fan ZHANG, Xi LIU, Wei LIU, Hugo PEREZ GARZA	DENSsolutions B.V.
OD314	16:50	Highly selective CO <sub>2</sub> methanation over Co-Fe nanoparticles wrapped on N-doped graphitic carbons catalysts as	Ana PRIMO, Lu PENG, Bogdan JURCA, <u>Vasile I. PARVULESCU</u> , Hermenegildo GARCIA	Universitat Politècnica de València / University of Bucharest
OD315	17:10	An experimental and theoretical investigation of metal-support interactions in various kinds of metal-oxide-supported rhenium materials	<u>Shinya MINE</u> , Kah Wei TING, Yoyo HINUMA, Zen MAENO, Takashi TOYAO, Ken-ichi SHIMIZU	Hokkaido University

### July 28, Thursday

G06 Environmental catalysis				
Chair: Toru MURAYAMA (Tokyo Metropolitan University) & Syuhei YAMAGUCHI (Ehime University)				
OD401	10:30	Toward the development of Pd/SSZ-13 passive NO <sub>x</sub> Adsorbers for eliminating NO <sub>x</sub> emissions during the cold-start period	Do-Heui KIM	Seoul National University
OD402	10:50	Low-temperature three-way catalytic reaction in an electric field	Ayaka SHIGEMOTO, Yuki OMORI, Kohei SUGIHARA, Takuma HIGO, Toru UENISHI, Yasushi SEKINE	Waseda University
OD403	11:10	Catalytic phenol oxidation over Pt/CeO <sub>2</sub> -ZrO <sub>2</sub> -SnO <sub>2</sub> /ZrO <sub>2</sub> /SBA-16 catalysts in liquid-phase	Naoyoshi NUNOTANI, Abdul R. SUPANDI, Nobuhito IMANAKA	Osaka University
OD404	11:30	Study on catalytic ozonation of toluene by Mn-based catalysts with different morphologies	Ziyang Xu, Lei LIU, Mingli Fu	South China University of Technology

G06 Environmental catalysis				
Chair: Do Heui KIM (Seoul National University) & Naoyoshi NUNOTANI (Osaka University)				
OD405	13:30	Spinel-type Fe-doped Al <sub>2</sub> O <sub>3</sub> with cation defect as an oxygen storage material	Hiroyuki ASAKURA, Koyo OYAMADA, Saburo HOSOKAWA, Kentaro TERAMURA, Tsunehiro TANAKA	Kyoto University/Elements Strategy Initiative for Catalysts & Batteries (ESICB)
OD406	13:50	Low-temperature NO <sub>x</sub> removal (NH <sub>3</sub> -SCR) in the presence of water over tungsten-substituted vanadium oxide	Toru MURAYAMA, Yusuke INOMATA, Hiroe KUBOTA, Eiji KIYONAGA, Keiichiro MORITA, Kazuhiro YOSHIDA, Takashi TOYAO, Ken-ichi SHIMIZU	Tokyo Metropolitan University / Yantai Key Laboratory of Gold Catalysis and Engineering
OD407	14:10	The active site and reaction mechanism of Cu/TiO <sub>2</sub> for catalytic CO oxidation	Wen-Ta YANG, Sofia Ya Hsuan LIOU, Chin Jung LIN	National Taiwan University
OD408	14:30	Photothermal catalytic CO <sub>2</sub> hydrogenation by nano-sheet Pt/H <sub>2</sub> MoO <sub>3-y</sub> hybrid with abundant surface oxygen vacancy	Hao GE, Yasutaka KUWAHARA, Kazuki KUSU, Hiromi YAMASHITA	Osaka university
OD409	14:50	Peculiar Pd-support interaction in catalytic water denitrification: Impact of the preparation method of Ce <sub>x</sub> Zr <sub>1-x</sub> O <sub>2</sub> support	Pascal GRANGER, Jean-Philippe DACQUIN, Simona TRONCÉA, Vasile I. PARVULESCU	University of Lille / University of Bucharest
OD410	15:10	Kinetic study of the tandem CO <sub>2</sub> hydrogenation to C <sub>3</sub> hydrocarbons reaction over (Pd)-Zn-ZrO <sub>2</sub> based catalysts with SAPO-18 and SAPO-34	Tomás CORDERO-LANZAC, Adrián RAMÍREZ, Sigurd ØIEN-ØDEGAARD, Christian AHOBASAM, Jorge GASCÓN, Unni OLSBYE	University of Oslo

### July 29, Friday

G01 New concepts for catalysis				
Chair: Takehiko SASAKI (The University of Tokyo) & Keisuke TAKAHASHI (Hokkaido University)				
OD501	10:30	Metal-support cooperation in aluminum metaphosphate-supported platinum nanoparticles for the selective hydrogenolysis of phenols	Xiongjie JIN, Rio TSUKIMURA, Takeshi AIHARA, Hiroki MIURA, Tetsuya SHISHIDO, Kyoko NOZAKI	The University of Tokyo
OD502	10:50	An ethanol direct synthesis strategy realized by capsule catalyst: the space-confined-self-regulation mechanism	Guohui YANG, Peng LU, Jie YAO, Noritatsu TSUBAKI	University of Toyama, Chinese Academy of Sciences
OD503	11:10	Ammonia decomposition over hexagonal BaTiO <sub>(3-x)N<sub>y</sub></sub> supported Ni catalyst	Kiya OGASAWARA, Masayoshi MIYAZAKI, Hideo HOSONO, Masaaki KITANO	Tokyo Institute of Technology
OD504	11:30	Nonoxidative dehydrogenation of ethane via the Mars-van Krevelen mechanism over Ce <sub>0.8</sub> Co <sub>0.2</sub> O <sub>2</sub>	Kosuke WATANABE, Yukiko HOSONO, Takuma HIGO, Hikaru SAITO, Hideaki TSUNEKI, Shun MAEDA, Kunihide HASHIMOTO, Yasushi SEKINE	Waseda University

G01 New concepts for catalysis				
Chair: Masaaki KITANO (Tokyo Institute of Technology) & Marc PERA-TITUS (Cardiff University)				
KL29	13:30	Design of efficient photocatalysts and electrocatalysts for oxygen evolution and CO <sub>2</sub> reduction reactions	Rong XU	Nanyang Technological University
OD507	14:10	Electrochemical potential control for improvement of thermal CO oxidation	Xingyu QI, Tatsuya SHINAGAWA, Kazuhiro TAKANABE	The University of Tokyo
OD508	14:30	Non-Faradaic promotion of ethylene hydrogenation under oscillating potentials	Chia-Wei LIM, Max J. HULSEY, Ning YAN	National University of Singapore

KL31	14:50	Opportunities of ball milling in catalysis	Ferdi SCHÜTH	Max-Planck-Institut für Kohlenforschung
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## Room E

### July 25, Monday

G08 Solid acids and bases

Chair: Junko N. KONDO (Tokyo Institute of Technology) & Kazumasa OSHIMA (Kyushu University)

OE101	11:30	Base catalysis of polyanionic group V metal oxide clusters	Seiji YAMAZOE, Yu FUJIKI, Vorakit CHUDATEMIYA, Soichi KIKKAWA, Jun HIRAYAMA, Kazuki SHIBUSAWA, Naoki NAKATANI	Tokyo Metropolitan University /ESICB, Kyoto University / JST-PRESTO
OE102	11:50	Sugars dehydration with Nb-based mixed metal oxide catalysts	Daniele PADOVAN, Hideki KATO, Atsushi FUKUOKA, Kiyotaka NAKAJIMA	Hokkaido University
OE103	12:10	Equilibrium and kinetics of alkane/alkene interactions with acidic H-ZSM-5 zeolites	Mutjalin LIMLAMTHONG, Hang YIN, Jungkyu CHOI, Isao OGINO, Alex Chi-Kin YIP	University of Canterbury
OE104	12:30	Catalytic cracking of low-density polyethylene over zeolite-containing hierarchical two-layered catalyst using Curie point pyrolyzer	Atsushi ISHIHARA, Shinya MATSUURA, Tadanori HASHIMOTO	Mie University

G08 Solid acids and bases

Chair: Kiyotaka NAKAJIMA (Hokkaido University) & Hiromi MATSUHASHI (Hokkaido University of Education)

KL3	14:30	Effect of hydrogen spillover on acidic properties of silica-supported tungsten oxide catalyst	Piyasan PRASERTHDAM	Chulalongkorn University
OE107	15:10	Semi-quantitative estimation of the amount of effective Brønsted acid sites of SiO <sub>2</sub> -supported H <sub>4</sub> SiW <sub>12</sub> O <sub>40</sub> heteropoly acid for adsorption of various molecules	Junko NOMURA-KONDO, Kodai MIYASHITA, Shuhei YASUDA, Toshiyuki YOKOI, Yasuhiro HOSOGI, Shintaro ITAGAKI, Yoshikuni OKUMURA	Tokyo Institute of Technology
OE108	15:30	Transcription-induced formation of Al pair sites in CHA-type aluminosilicate using Al-rich amorphous aluminosilicate precursor	Yoshiyasu IMANISHI, Ting XIAO, Mizuho YABUSHITA, Ryota OSUGA, Toshiki NISHITOBA, Sachiko MAKI, Kiyoshi KANIE, Wenbin CAO, Toshiyuki YOKOI, Atsushi MURAMATSU	Tohoku University
OE109	15:50	Effect of cobalt modification on zeolite catalyst for direct decomposition of dimethyl sulfide	Kazumasa OSHIMA, Rina KADONAGA, Masahiro KISHIDA, Shigeo SATOKAWA	Kyushu University

G08 Solid acids and bases

Chair: Toshiyuki YOKOI (Tokyo Institute of Technology) & Hiroyuki IMAI (The University of Kitakyushu)

OE110	16:10	Brønsted acid sites formation by penta-coordinated aluminum species in amorphous alumina-boria catalyst for bio-phenylglyoxal conversion	Wenjie YANG, Lizhuo WANG, Yijiao JIANG, Jun HUANG	The University of Sydney/Macquarie University
OE111	16:30	Effects of SBA-15 functionalization on physicochemical properties and catalytic activity for acetylation of glycerol	Panida SRIRATCHATCHAWAN, Srisin EAIMSUMANG, Apanee LUENGNARUEMITCHAI	Chulalongkorn University
OE112	16:50	Modified ultra-stable Y zeolite for improved selectivity in hydrocracking	Ildar MUKHAMBETOV, Sangho CHUNG, Samy OULD-CHIKH, Selvedin TELALOVIC, Mohammad AWWAD, Robert P. HODGKINS, Omer R. KOSEOGLU, Mitsunori WATABE	King Abdullah University of Science and Technology (KAUST)
OE113	17:10	Ca-promotion of Ga/ZSM-5 zeolite for the enhanced stability in the methanol to aromatic conversion: the nature, structure and role of the extraframework ensembles	Evgeny PIDKO, Chuncheng LIU, Elena KHRAMENKOVA, Evgeny USLAMIN, Enrico SIRECI, Freek KAPTEIJN	Delft University of Technology

### July 26, Tuesday

G14 Computation in catalysis

Chair: Junya HASEGAWA (Hokkaido University) & Supareak PRASERTHDAM (Chulalongkorn University)

OE201	10:30	Molecular adsorption on TiO <sub>2</sub> surfaces: a frontier molecular orbital theory approach	Takashi KAMACHI, Nobutsugu HAMAMOTO, Toshinobu TATSUMI, Motoshi TAKAO, Takashi TOYAO, Yoyo HINUMA, Ken-ichi SHIMIZU	Fukuoka Institute of Technology / Kyoto University
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OE202	10:50	DFT study on nitrite reduction by copper complex: concerted asynchronous mechanism	Yohei KAMETANI, Kei IKEDA, Yoshihito SHIOTA, Kazunari YOSHIKAWA	Kyushu University
OE203	11:10	Catalysts studies with universal neural network potential	Gerardo-Valadez HUERTA, Ayako TAMURA, Katsutoshi SATO, Katsutoshi NAGAOKA, Michihisa KOYAMA	Nagoya University / Shinshu University
OE204	11:30	Multi-scale simulations of equilibrium step fluctuations and Cu-Zn surface alloying on Cu(111)	Harry-Handoko HALIM, Yoshitada MORIKAWA	Osaka University

#### G08 Solid acids and bases

Chair: Seiji YAMAZOE (Tokyo Metropolitan University) & Atsushi ISHIHARA (Mie University)

OE205	13:30	Aromatization of hydrocarbons over metal-containing zeolite	Hirofumi IMAI, Ryu NOGUCHI, Natsuki ETANE	The University of Kitakyushu
OE206	13:50	Tetralin conversion into benzene and its derivatives on Mo-loaded *BEA zeolite	Sayaka SEKINO, Kazuki NAKAJIMA, Satoshi SUGANUMA, Etsushi TSUJI, Naonobu KATADA	Tottori University
KL9	14:10	A new class of zeolite catalyst with location and state of active sites controlled	Toshiyuki YOKOI	Tokyo Institute of Technology
KL10	14:50	Tailoring acid catalysts for sustainable bio-refining	Jun HUANG	The University of Sydney

#### G14 Computation in catalysis

Chair: Yoshitada MORIKAWA (Osaka University) & Takashi KAMACHI (Fukuoka Institute of Technology)

OE211	15:50	Prediction of catalytic reaction product composition using machine learning and physics-based feature engineering	Iori SHIMADA, Mitsumasa OSADA, Hiroshi FUKUNAGA, Michihisa KOYAMA	Shinshu University
OE212	16:10	Metal-support charge-transfer interaction in Au/OMS-2 activates adsorbed O <sub>2</sub> for indirect C-H activation of piperidone: a DFT mechanistic study	Jun-ya HASEGAWA, Ray MIYAZAKI, Xiongjie JIN, Daichi YOSHII, Takafumi YATABE, Kazuya YAMAGUCHI	Hokkaido University
OE213	16:30	First-principles-based on-line optimization of catalytic reforming processes	Supareak PRASERTHDAM, Piyasan PRASERTHDAM	Chulalongkorn University
OE214	16:50	An automated expert-bias free strategy for unraveling nature of extraframework catalytic ensembles in zeolites: a case study of Cu/MOR methane oxidation catalyst	Elena KHRAMENKOVA, Michael MEDVEDEV, Evgeny PIDKO	Delft University of Technology
OE215	17:10	Modelling the transport and adsorption processes during the impregnation of $\gamma$ -alumina with nickel solutions: Impact of the pH and initial metal concentration	Rita FAYAD, Aurelie GALFRE, Francoise COUENNE, Elsa JOLIMAITRE, Loic SORBIER, Charles-Philippe LIENEMANN, Melaz TAYAKOUT-FAYOLLE	University Claude Bernard Lyon 1

### July 27, Wednesday

#### G13 Electrocatalyst

Chair: Tatsuya TAKEGUCHI (Iwate University) & Yu-Jen SHIH (National Sun Yat-sen University)

OE301	10:30	Maximizing the intrinsic performance of oxygen evolution electrocatalyst by electrolyte engineering at near-neutral pH	Takeshi NISHIMOTO, Tatsuya SHINAGAWA, Kazuhiro TAKANABE	The University of Tokyo
OE302	10:50	Hydrogen production by zeolite electrolyte membrane electrolysis cell in pure water	Keigo TASHIRO, Taisei SAITO, Hiroshige MATSUMOTO, Shigeo SATOKAWA	Seikei University
OE303	11:10	Fourteen-membered macrocyclic Fe complexes for electrochemical oxygen reduction	Yuta NABAE, Teruaki HAYAKAWA, Makoto MORIYA, Ryo TAKAHAMA, Kazuki KAMOI, Junya OHYAMA	Tokyo Institute of Technology
OE304	11:30	Solid-polymer-electrolyte (SPE) electrolysis of urea aqueous solutions for hydrogen production	Ayumu OKANO, Shoji IGUCHI, Takano KAJINO, Ichiro YAMANAKA	Tokyo Institute of Technology

#### G13 Electrocatalyst

Chair: Ryuji KIKUCHI (Hokkaido University) & Yuta NABAE (Tokyo Institute of Technology)

OE305	13:30	Functionalizing metal-organic frameworks with Bi for enhancing CO <sub>2</sub> electroreduction	Jun Tae SONG, Yuta TAKAOKA, Motonori WATANABE, Atsushi TAKAGAKI, Tatsumi ISHIHARA	Kyushu University / WPI-I <sup>2</sup> CNER
OE306	13:50	Two-dimensional graphdiyne combined with Cu-HAB for ethanol production via CO <sub>2</sub> electrochemical reduction	Xiaofan HOU, Nailiang YANG, Dan WANG, Eika W. QIAN	Tokyo University of Agriculture and Technology

OE307	14:10	Increasing surface hydrophobicity of nitrogen-doped carbons through rapid microwave heating	Isao OGINO, Takumi ODAWARA, Hikaru SUGATA, Yusaku YAMAZAKI, Shinichiro IWAMURA, Hironobu ONO, Shin R. MUKAI	Hokkaido University
OE308	14:30	Electrochemical denitrification to N <sub>2</sub> and NH <sub>4</sub> <sup>+</sup> yield over PdSn/Ni and PdCu/Ni as affected by facet ratio of Sn(200)/(101) and Cu(200)/(111)	Yu-Jen SHIH, Zhi-Lun WU	National Sun Yat-sen University
OE309	14:50	Electro-epoxidation of propylene with water at PtOx anode	Minori SAITO, Ryosuke HOSHINO, Shoji IGUCHI, Ichiro YAMANAKA	Tokyo Institute of Technology
OE310	15:10	Challenging techniques for suppression overvoltage of perovskite oxide-based zinc-air battery	Yoshiki KATO, Md M. RAHMAN, Tatsuya TAKEGUCHI	Iwate University

#### G01 New concepts for catalysis

Chair: Minkee CHOI (KAIST) & Kazuhiro TAKANABE (The University of Tokyo)

KL18	15:50	Heterogeneous atomic catalysts overcoming the limitations of single-atom catalysts	Hyunjoo LEE	Korea Advanced Institute of Science and Technology (KAIST)
OE313	16:30	Supported catalytically active liquid metal solutions (SCALMS) as novel materials for dynamic single atom catalysis	Marco HAUMANN, Nicola TACCARDI, Peter WASSERSCHIED	Friedrich-Alexander-Universität
OE314	16:50	Core-shell catalyst structuration as a mean to enhance the selectivity towards C2 in the oxidative coupling of methane under microwave heating	Jose PALOMO, Reina KANEDA, Lingjun HU, Atsushi URAKAWA	Delft University of Technology
OE315	17:10	Pickering interfacial catalysis for aerobic alcohol oxidation in oil foams	Marc PERA-TITUS, Shi ZHANG, Dmytro DEDOVETS, Andong FENG, Kang WANG	Cardiff University

#### July 28, Thursday

##### Industrial

Chair: Atsushi SATSUMA (Nagoya University) & Adam CULLEN (Mitsubishi Chemical UK)

OE401	10:30	Comparing and valorizing lignin sources through direct catalytic hydrogenation	Abdenour ACHOUR, Derek CREASER, Louise OLSSON	Chalmers University of Technology
OE402	10:50	Catalytic CO <sub>2</sub> conversion by Fe based catalyst to produce lower olefins for greener plastic production	Hiroyuki KAMATA, Noriki MIZUKAMI, Yuichi ISHIDA, Takuya HASHIMOTO, Chee Kok POH, Kelvin KWOK, Jie CHANG, Shi Chang TEO, Chuandayani Gunawan GWIE, Terence SEAH	IHI Corporation
OE403	11:10	A 100m <sup>2</sup> scale photocatalytic solar hydrogen production system from water	Hiroshi NISHIYAMA, Taro YAMADA, Kazunari DOMEN	The University of Tokyo
OE404	11:30	Conversion of isobutanol into isobutylene by dehydration over alumina catalysts	Yuki KATO, Tatsuya SUZUKI, Akio TAKEDA, Wataru NINOMIYA	Mitsubishi Chemical Corporation

#### G01 New concepts for catalysis

Chair: Masaya MATSUOKA (Osaka Metropolitan University) & Marco HAUMANN (Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU))

OE405	13:30	Hysteresis in ammonia catalysis: comparison between iron and ruthenium catalysts	Ken-ichi AIKA, Koji INAZU, Manabu SUGIMOTO	National Institute of Technology, Numazu College
OE406	13:50	Unprecedented catalysis of alkali metal-ion single sites confined in zeolite pores replacing transition metal catalysis for selective C-H activation	Takehiko SASAKI, Shilpi GHOSH, Shankha ACHARYYA, Yusuke YOSHIDA, Takuma KANEKO, Yasuhiro IWASAWA	The University of Tokyo
KL25	14:10	Advancing catalysis via nanoscale engineering	Javier PÉREZ-RAMÍREZ	ETH Zürich
OE409	14:50	Generating catalysts gene sequencing in catalysts big data	Keisuke TAKAHASHI	Hokkaido University
OE410	15:10	Selective partial hydrogenation at dynamically changing metal-polymer interfaces	Minkee CHOI, Songhyun LEE, Kyunglim HYUN, Younghwan PARK	Korea Advanced Institute of Science and Technology (KAIST)