

# The 6<sup>th</sup> Japan-China Workshop on Environmental Catalysis and Eco-Materials

Nanka Memorial Hall, Ehime University, Matsuyama, Japan, December 4-5, 2013

## Program

Plenary Lecture; 60 min including discussion

Keynote Lecture; 20 min including discussion

Oral Presentation; 20 min (presentation, 15 min; discussion, 5min)

## December 4 (Wednesday), 2013

10:30-10:40      Opening Ceremony

Chairperson: Prof. Y. Teraoka (Kyushu University, Japan)

10:40-11:40      PL1

**Novel strategies for propene production from natural gases or bio-ethanol**

Masakazu Iwamoto (Tokyo Institute of Technology)

11:40-13:00      Lunch

Chairpersons: Prof. W. Shanguan (Shanghai Jiao Tong University, China) & Prof. M. Haneda (Nagoya Institute of Technology, Japan)

13:00-13:20      KL-1

**Carbonate-assisted catalytic performance of potassium species for PM combustion by gaseous oxygen**

Masaru Ogura (The University of Tokyo)

13:20-13:40      O-01

**Simulation of continuously regenerating trap with catalyzed DPF**

Kazuhiro Yamamoto, Tatsuya Sakai (Nagoya University)

13:40-14:00      KL-2

**DMOTEG-PMMA dual-templating generation of 3DOM LSMO supported silver nanoparticles: Synthesis with controllable size and super-catalytic performance for methane combustion**

Junhua Li, Hamidreza Arandiyani, and Hongxing Dai (Tsinghua University; Beijing University of Technology)

14:00-14:20 O-02

**Low-temperature catalytic oxidation of toluene over hollow polyhedral manganese oxides**

Yinnian Liao, Ruosi Peng, and Daiqi Ye (South China University of Technology; Xinjiang University; Guangdong Provincial Key Laboratory of Atmospheric Environment and Pollution Control)

14:20-14:50 Coffee Break

Chairpersons: Prof. D. Ye (South China University of Technology, China) & Prof. M. Ogura (University of Tokyo, Japan)

14:50-15:10 O-03

**Calcium phosphate coatings incorporated in mesoporous TiO<sub>2</sub>/SBA-15 by a facile inner-pore sol-gel process toward enhanced adsorption-photocatalysis performances**

Xufang Qian, Takashi Kamegawa, Kohsuke Mori, Hexing Li, and Hiromi Yamashita (Osaka University; Kyoto University; Shanghai Normal University)

15:10-15:30 KL-3

**Lignin conversion to aromatic chemicals**

Takao Masuda (Hokkaido University)

15:30-15:50 O-04

**Selective hydrodeoxygenation of phenols in water by supported Pt-based catalysts**

Hidetoshi Ohta, Bo Feng, Hirokazu Kobayashi, Kenji Hara, and Atsushi Fukuoka (Ehime University; Hokkaido University)

15:50-16:10 O-05

**Development of heterogeneous catalytic system for utilization of biomass-derived materials into value-added chemicals**

Kohki Ebitani and Shun Nishimura (Japan Advanced Institute of Science and Technology)

16:20-18:20 Poster Session

18:30-20:30 Banquet

## December 5 (Thursday), 2013

Chairperson: Prof. H. He (Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China)

9:00-10:00 PL2

### **New green routes for synthesizing zeolite catalysts**

Qinming Wu, Yinying Jin, Chuyu Chen, Qi Sun, Liang Wang, Xiangju Meng, and Feng-Shou Xiao (Zhejiang University)

10:00-10:30 Coffee Break

Chairpersons: Prof. Y. Zhu (Tsinghua University, China) & Prof. M. Machida (Kumamoto University, Japan)

10:30-10:50 O-06

### **Effect of Fe addition on catalytic properties of TiO<sub>2</sub>-supported Pt catalysts**

Hisahiro Einaga, Narihiro Urahama, and Yasutake Teraoka (Kyushu University)

10:50-11:10 O-07

### **Effect of support on the oxidation of carbon monoxide over the palladium nanocube catalysts**

Xiaojun Liu, Hong He, Rui Wang, Liyun Song, Wenge Qiu, and Guizhen Zhang (Beijing University of Technology)

11:10-11:30 O-08

### **Isotope-modulated excitation *in situ* IR spectroscopy – A powerful tool for catalysis research**

Nobutaka Maeda and Alfons Baiker (Dalian University of Technology; ETH Zurich)

11:30-11:50 O-09

### **The deactivation of supported Wacker type catalyst for CO oxidation: Experiment and modeling results**

Li Wang, Hailin Zhao, Yafen Feng, Guanzhong Lu, and Yun Guo (East China University of Science & Technology)

11:50-13:00 Lunch

Chairpersons: Prof. J. Li (Tsinghua University, China) & Prof. A. Satsuma (Nagoya University, Japan)

13:00-13:20 KL-4

**Selective catalytic reduction of NO<sub>x</sub> with NH<sub>3</sub> over highly efficient Cu-SSZ-13 catalyst prepared by one-pot synthesis method**

Hong He, Lijuan Xie, Fudong Liu, Feng-Shou Xiao, Xiaoyan Shi, and Shaoxin Wang (Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences; Zhejiang University)

13:20-13:40 O-10

**Structure-activity relationship of ceria based catalysts for the SCR reaction of NH<sub>3</sub>**

Yue Peng and Junhua Li (Tsinghua University)

13:40-14:00 O-11

**The NO reduction and NH<sub>4</sub>HSO<sub>4</sub> decomposition over V<sub>2</sub>O<sub>5</sub>-MoO<sub>3</sub>/CeO<sub>2</sub>-TiO<sub>2</sub> catalysts**

Yujiao Fang, Hong He, Liyun Song, and Jingdi Chao (Beijing University of Technology)

14:00-14:20 KL-5

**Direct decomposition of toxic nitrogen monoxide on C-type cubic rare earth oxides**

Nobuhito Imanaka (Osaka University)

14:20-14:50 Coffee Break

Chairpersons: Prof. H. He, (Beijing University of Technology, China) & Prof. K. Ebitani (Japan Advanced Institute of Science and Technology, Japan)

14:50-15:10 O-12

**Activity and stability of Rh/AlPO<sub>4</sub> catalyst for NO reduction by CO**

Min Li, Xiaodong Wu, Yidan Cao, Shuang Liu, and Duan Weng (Tsinghua University)

15:10-15:30 O-13

**Melting Cu-V-O as catalyst for decomposition of sulfuric acid in solar thermochemical water splitting cycles**

M. Machida, T. Tajiri, T. Yamashita, T. Kawada, and S. Hinokuma (Kumamoto University)

15:30-15:50 O-14

**CO<sub>2</sub> hydrogenation over Cu-Zn-Al/zeolite composite catalysts for C<sub>2+</sub> hydrocarbon synthesis under low pressure**

Masahiro Fujiwara, Yasuo Iizuka, Kumi Shiokawa, and Hiroaki Sakurai (National Institute of Advanced Industrial Science and Technology)

15:50-16:10 O-15

**Oxidation of benzene with hydrogen peroxide over iron complexes encapsulated in zeolite**

Syuhei Yamaguchi, Tetsuya Ohnishi, Keiko Takiguchi, and Hidenori Yahiro (Ehime University)

Chairpersons: Prof. T. An (Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, China) & Prof. H. Yahiro (Ehime University, Japan)

16:10-16:30 KL-6

**Synthesis of various novel photocatalysts and their applications in the degradation of environmental pharmaceuticals and photocatalytic inactivation of bacteria in water**

Xin Nie, Huixian Shi, Guiying Li, Huijun Zhao, Po-kueng Wong, and Taicheng An (Guangzhou Institute of Geochemistry, Chinese Academy of Sciences; University of Chinese Academy of Sciences; Griffith University; The Chinese University of Hong Kong)

16:30-16:50 O-16

**BiPO<sub>4</sub> oxy-acid salt photocatalyst with high activity**

Yongfa Zhu (Tsinghua University)

16:50-17:10 O-17

**Dye-modified KTaO<sub>3</sub> photocatalyst for solar water splitting**

Hidehisa Hagiwara, Takanori Inoue, Shintaro Ida, and Tatsumi Ishihara (Kyushu University; Oita University)

17:10-17:30 O-18

**Synthesis of specific cocatalyst on semiconductor photocatalysts for hydrogen production from water splitting**

Zhi Jiang, Yanxiang Huang, and Wenfeng Shangguan (Shanghai Jiao Tong University)

17:30-17:40 Closing Ceremony

**December 6 (Friday), 2013**

Excursion

## Poster Program, December 4 (Wednesday), 2013

16:20-18:20

- P01 **Microwave-assisted NO decomposition on metal ion-exchanged zeolites**  
Takeshi Ohnishi, Masateru Nishioka, and Masaru Ogura (The University of Tokyo; National Institute of Advanced Industrial Science and Technology; Kyoto University)
- P02 **Sulfation of Pt/Al<sub>2</sub>O<sub>3</sub> catalyst for soot oxidation: High utilization of NO<sub>2</sub> and oxidation of surface oxygenated complexes**  
Shuang Liu, Xiaodong Wu, Duan Weng, Min Li, and Jun Fan (Tsinghua University; The Administrative Centre for China's Agenda 21)
- P03 **Catalytic performance of supported Ag nano-particles prepared by liquid-phase chemical reduction for soot oxidation**  
Masaaki Haneda, Yuri Miura, and Atsuya Towata (Nagoya Institute of Technology; National Institute of Advanced Industrial Science and Technology)
- P04 **Stable substitution of potassium in perovskites and their catalytic activity for diesel PM oxidation**  
Xi Wang, Maiko Nishibori, Hisahiro Einaga, and Yasutake Teraoka (Kyushu University)
- P05 **TEM observation of carbon and Ag/CeO<sub>2</sub> catalyst for PM combustion**  
Kohei Kamatani and Masaru Ogura (The University of Tokyo)
- P06 **The preparation and catalytic performances of 3DOM-mesoporous La<sub>1-x</sub>K<sub>x</sub>MnO<sub>3</sub> perovskite-type catalysts for soot combustion**  
Guizhen Zhang, Xiaojun Ji, Hong He, Wenge Qiu, Xuehong Zi, and Hongxing Dai (Beijing University of Technology)
- P07 **Catalytic performance of Ir-promoted Rh/CeO<sub>2</sub>-ZrO<sub>2</sub> for NO-CO-C<sub>3</sub>H<sub>6</sub>-H<sub>2</sub>-O<sub>2</sub> reaction in a stoichiometric condition**  
Takahiro Kaneko, Masaaki Haneda, Naoto Kamiuchi, and Masakuni Ozawa (Nagoya Institute of Technology; Nagoya University)
- P08 **Effects of cooling condition on Pd/Ce<sub>0.5</sub>Zr<sub>0.5</sub>O<sub>2</sub> catalysts during thermal ageing: re-dispersion of Pd**  
Jie Wan, Rui Ran, Xiaodong Wu, Min Li, Yidan Cao, and Duan Weng (Tsinghua University)

- P09 **OSC property and structural change of Pd/ceria-zirconia catalyst**  
Naoto Kamiuchi, Masaaki Haneda, and Masakuni Ozawa (Nagoya University; Nagoya Institute of Technology)
- P10 **Three-way nanocatalysts prepared from colloidal precious metal nanoparticles**  
Hong He, Guizhen Zhang, Licheng Liu, Xuehong Zi, Rui Wang, Huixiao Hei, and Hongxing Dai (Beijing University of Technology)
- P11 **Synthesis and characterization of ceria-zirconia supported non-precious metals catalyst**  
Masatomo Hattori and Masaaki Haneda (Nagoya Institute of Technology)
- P12 **Three way catalytic activity and thermal sintering behavior of Pt/CeO<sub>2</sub>-ZrO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts**  
Masakuni Ozawa, Takahiro Okouchi, Katsutoshi Kobayashi, and Masaaki Haneda (Nagoya University; Nagoya Institute of Technology)
- P13 **Oxygen storage capacity and three way catalysis of sol-modified ceria-zirconia supported noble metal catalysts**  
Takashi Fuwa, Masahiro Takahashi, Katsutoshi Kobayashi, Naoto Kamiuchi, Hiroki Yuzuriha, Masaaki Haneda, and Masakuni Ozawa (Nagoya University; Nagoya Institute of Technology)
- P14 **Comparative study of oxygen storage capacity and three way catalysis over ceria and zirconia nanoparticle catalysts**  
Shunichi Takahashi, Katsutoshi Kobayashi, Kiyotaka Kato, Takashi Fuwa, Masaaki Haneda, and Masakuni Ozawa (Nagoya University; Nagoya Institute of Technology)
- P15 **Visible light-enhanced dehydrogenation of ammonia borane on molybdenum oxide nanostructure**  
Hefeng Cheng, Takashi Kamegawa, Kohsuke Mori, and Hiromi Yamashita (Osaka University; Kyoto University)
- P16 **CdS supported by flowerlike Ni/Ni(OH)<sub>2</sub> for effective photocatalytic H<sub>2</sub> evolution**  
Xiaoping Chen, Yu Yang, and Wenfeng Shangguan (Shanghai Jiao Tong University)

- P17 **Photochemical and photocatalytic degradation of antivirus pharmaceuticals amantadine and rimantadine in water and risk assessment of their degradation products**  
Jibin An, Hansun Fang, Taicheng An, Yenpeng Gao, and Guiying Li (Guangzhou Institute of Geochemistry, Chinese Academy of Sciences; University of Chinese Academy of Sciences)
- P18 **Plasma-catalytic oxidation of toluene on MnO<sub>x</sub>/SBA-15 at the atmospheric pressure and room temperature**  
Meijuan Lu, Rong Huang, Peitao Wang, Junliang Wu, Bichun Huang, Mingli Fu, Limin Chen, and Daiqi Ye (South China University of Technology)
- P19 **Effect of preparation method on methane combustion over Co-promoted Pd/alumina**  
Takumi Tojo, Kohei Okuda, Junya Oyama, and Atsushi Satsuma (Nagoya University; Kyoto University)
- P20 **The effect of pore structure of zeolites on toluene removal by non thermal plasma combined catalysis**  
Rong Huang, Meijuan Lu, and Daiqi Ye (South China University of Technology)
- P21 **Catalytic oxidation of hydrocarbons by ozone over SiO<sub>2</sub>-supported metal oxides**  
Yusuke Nagai, Nanako Maeda, Hisahiro Einaga, and Yasutake Teraoka (Kyushu University)
- P22 **Well-dispersed palladium supported on ordered mesoporous Co<sub>3</sub>O<sub>4</sub> for catalytic oxidation of o-xylene**  
Yafei Wang, Changbin Zhang, Fudong Liu, and Hong He (Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences)
- P23 **Selective oxidation of sulfides with hydrogen peroxide over copper(II)-terpy complexes in zeolite Y cages**  
Akinori Suzuki, Syuhei Yamaguchi, and Hidenori Yahiro (Ehime University)
- P24 **Structure influence of 1D-MnO<sub>2</sub>, 2D-MnO<sub>2</sub> and 3D-MnO<sub>2</sub> on catalytic performance for ethanol oxidation**  
Bingyang Bai and Junhua Li (Tsinghua University)
- P25 **Oxidation of hydrocarbons with hydrogen peroxide over iron complexes encapsulated in zeolite**  
Keiko Takiguchi, Syuhei Yamaguchi, and Hidenori Yahiro (Ehime University)



- P26 **Catalytic reaction for cyanosilylation over perovskite-type oxide catalysts**  
Takahisa Okuwa, Syuhei Yamaguchi, and Hidenori Yahiro (Ehime University)
- P27 **Anodic properties of SDC-supported Ni-Fe composite for solid oxide fuel cell**  
Tomohisa Takemasa, Yoshiteru Itagaki, Syuhei Yamaguchi, Hiroyuki Yamaura, and Hidenori Yahiro (Ehime University)
- P28 **Catalytic oxidization of diesel soot on LaMnO<sub>3</sub>- based perovskites in presence of NO<sub>x</sub>**  
Mingxia Chen, Guchu Zou, Jianwei Shi, and Wenfeng Shangguan (Shanghai Jiao Tong University)
- P29 **Theoretical study of dehydration of 1,4-butanediol over rare earth oxides**  
Fumiya Sato and Satoshi Sato (Ehime University; Chiba University)
- P30 **Sm-Fe-based perovskite-type oxide thick-film as impedancemetric acetylene sensor**  
Tomohisa Tasaki, Satoko Takase, and Youichi Shimizu (Kyushu Institute of Technology)
- P31 **CO oxidation over supported precious metal catalysts - Unique effect of TiO<sub>2</sub> as a support**  
Heng Liu, Masatoshi Yanagihara, Junya Oyama, and Atsushi Satsuma (Nagoya University; Kyoto University)
- P32 **Novel polyporphyrin membrane as singlet oxygen photosensitizers for full-spectrum photooxidation**  
Wenting Wu, Liying Zhan, Ying Geng, and Xueyan Wu (China University of Petroleum)
- P33 **Selective methane oxidation and electronic structures of LiNiO<sub>2</sub>**  
Takafumi Miyazaki, Ryohei Sumii, Hiroaki Tanaka, Kenta Amemiya, and Shojun Hino (Ehime University; Institute for Molecular Science; Institute for Materials Structure Science)
- P34 **Cyanosilylation of benzaldehyde using Zn-Sn oxide catalyst with cubic shape particles**  
Hiroyuki Yamaura, Kenta Morihara, Syuhei Yamaguchi, and Hidenori Yahiro (Ehime University)
- P35 **Biodiesel fuel synthesis with immobilized heteropolyacid catalysts**  
Syuhei Yamaguchi, Hazwani Binti Abu Hassan, Masahiro Shiraishi, Takahisa Tsuda, and Hidenori Yahiro (Ehime University; Taiyo Oil Co., Ltd.)