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ORGANIZED BY:

- Photocatalysis International Research Center (Tokyo University of Science)

CO-ORGANIZED BY:

- Research Institute for Science & Technology (Tokyo University of Science)
- University Research Administration Center (Tokyo University of Science)

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- Research Institute for Science & Technology (Tokyo University of Science)
- University Research Administration Center (Tokyo University of Science)
- Tokyo Ohka Foundation for the Promotion of Science and Technology

SUPPORTED BY:

- The Chemical Society of Japan
- The Japanese Photochemistry Association

## *Date: Friday, 1st December 2017*

**WELCOME PARTY [Cafeteria, 2nd-Floor, Management Building]**
(17:00–19:00)

## *Date: Saturday, 2nd December 2017*

**OPENING REMARKS** (9:30–10:00)
Chairperson: Atsuo Yasumori (Tokyo University of Science, Japan)

Akira Fujishima (Tokyo University of Science, Japan)
Kazuhito Hashimoto (National Institute for Materials Science, Japan)
Lei Jiang (Chinese Academy of Sciences, China)

**PLENARY TALK** (10:00–12:00)
Chairperson: Kazuya Nakata (Tokyo University of Science)

PO-1-01 10:00~10:40
**Recent Progress, Development, and Innovation in Photocatalysis International Research Center**
Akira Fujishima[a,b]
[a] President, Tokyo University of Science, Japan
[b] Director, Photocatalysis International Research Center, Tokyo University of Science, Japan

PO-1-02 10:40~11:20
**Smart Interfacial Materials from Super-Wettability to Binary Cooperative Complementary Systems**
Lei Jiang[a,b]
[a] Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, China
[b] School of Chemistry and Environment, Beihang University, China

PO-1-03 11:20~12:00
**Toward materials, interface engineering and charge transport properties of perovskite solar cells**
Qingbo Meng and Jiangjian Shi
Institute of Physics, Chinese Academy of Sciences, China

**PHOTO SESSION** (12:00–12:30)

**LUNCH** (12:30–14:00)

## **INVITED TALK** (14:00–14:40)

Chairperson: Ken-ichi Katsumata (Tokyo University of Science, Japan)

IO-1-01 14:00~14:20 **Chirality Predicted Growth of Singled-walled Carbon Nanotubes Array**

Jin Zhang
Center for Nanochemistry, College of Chemistry and Molecular Engineering, Peking University, China

IO-1-02 14:20~14:40 **Ice-Water quenching Induced $Ti^{3+}$ self-doped $TiO_2$ with surface Lattice Distortion and the Increased Photocatalytic Activity**

Baoshun Liu, Kai Cheng, Shengchao Nie, and Xiujian Zhao
State Key Laboratory of Silicate Materials for Architectures, Wuhan University of Technology, China

## **SHORT ORAL PRESENTATION (3 min)** (14:40–15:20)

Chairperson: Norihiro Suzuki (Tokyo University of Science, Japan)

PP-1-003 **Temperature Dependence of Z-schematic $CO_2$ Reduction Utilizing Water as an Electron Donor Using $CuGaS_2$ and RGO-Metal Oxides Composites**

Aruto Kashima[a], Shunya Yoshino[a], Akihide Iwase[a,b], and Akihiko Kudo[a,b]
[a] Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, Japan
[b] Photocatalysis International Research Center, Research Institute for Science and Technology, Tokyo University of Science, Japan

PP-1-009 **Photocatalytic $CO_2$ Generation from $TiO_2$ Films for New Applications**

Eden Mariquit[a], Hideaki Komaki[b], Shigekazu Kato[c], Katsunori Kitajima[d], Takashi Nakatsuyama[d], Takeshi Nakajima[d], Hirofumi Hinode[a], and Masahiro Miyauchi[a]
[a] Tokyo Institute of Technology, Japan
[b] Photocatalysis Industry Association of Japan, Japan
[c] Photocatalytic Materials Inc., Japan
[d] Ace Engineering Co. Ltd., Japan

PP-1-021 **Preparation and photocatalytic activity of $MnO_4$- doped Ti-HAp**

Kana Ishisone, Toshihiro Isobe, Sachiko Matsushita, and Akira Nakajima
Department of Materials Science and Engineering, Tokyo Institute of Technology, Japan

PP-1-040 **Photocatalytic activity & study the electronic structure of $Bi_{11}VO_{19}$ synthesized by thermal plasma**

Shankar S. Kekade[a], S.A. Raut[a], V.L. Mathe[a], R.J. Choudhary[b], D.M. Phase[b], and S.I. Patil[b]
[a] Department of Physics, S. P. Pune University, India
[b] UGC-DAE, Consortium for Scientific Research, India

PP-1-044 **Artificial Photosynthetic Water Splitting Using $Cu_3MS_4$ (M=V, Nb, and Ta) with a Sulvanite Structure as a Hydrogen Evolving Photocatalyst**

Shuhei Natsume[a], Shunya Yoshino[a], Akihide Iwase[a,b], and Akihiko Kudo[a,b]
[a] Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, Japan
[b] Photocatalysis International Research Center, Research Institute for Science and Technology, Tokyo University of Science, Japan

PP-1-046 **Utilizing Metal Sulfide $H_2$-evolving Photocatalysts with Visible-Light Response up to 600 nm for a Z-schematic Water Splitting System**

Shunya Yoshino[a], Akihide Iwase[a,b], and Akihiko Kudo[a,b]
[a] Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, Japan
[b] Photocatalysis International Research Center, Research Institute for Science and Technology, Tokyo University of Science, Japan

PP-1-060 **Visible-Light-Driven Z-Scheme Photocatalyst Systems for Highly Efficient Water Splitting under Neutral Condition**

Yuhei Udagawa[a], Shunya Yoshino[a], Akihide Iwase[a,b], and Akihiko Kudo[a,b]
[a] Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, Japan
[b] Photocatalysis International Research Center, Research Institute for Science and
Technology, Tokyo University of Science, Japan

PP-1-063 **Charge carrier separation in $TiO_2$-graphene hybrid composites**

Antoni W. Morawski[a], Ewelina Kusiak-Nejman[a], Agnieszka Wanag[a], Joanna Kapica-Kozar[a], and Christophe Colbeau-Justin[b]
[a] Faculty of Chemical Engineering, Institute of Inorganic Technology and Environment Engineering, West Pomeranian University of Technology, Poland
[b] Laboratoire de Chimie Physique – CNRS Université Paris-Sud-Université Paris-Saclay, France

PP-1-072 **Highly Enhanced Photocurrent via $Al_2O_3$ Passivation to Eliminate Reverse Schottky Barrier at PbS/Au Contact**

Jinhuan Li, Yinglin Wang, and Xintong Zhang
Northeast Normal University, China

PP-1-117 **Electrochromic performance of $TiO_2$(B) based ultrathin transparent films**

He Ma, Changhua Wang and Xintong Zhang
Key Laboratory of UV-Emitting Materials and Technology, Ministry of Education, Northeast Normal University, China

PP-1-119 **Development of Novel Visible-Light-Driven Photocatalysts by Ag(I)- and Cu(I)-Substitution of Layered Perovskite Oxides**

Kenta Watanabe[a], Akihide Iwase[a,b], and Akihiko Kudo[a,b]

[a] Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, Japan

[b] Photocatalysis International Research Center, Research Institute for Science and Technology, Tokyo University of Science, Japan

PP-1-151 **Near-infrared (NIR) controlled reversible cell adhesion on a responsive nano-biointerface**

Haijun Cui[a,b] and Shutao Wang[a,b]

[a] Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, China

[b] University of Chinese Academy of Sciences (UCAS), China

## POSTER PRESENTATION [Entrance area, 3rd-Floor, Library Building] (15:20–16:50)

## BANQUET [Banquet area, 3rd-Floor, Library Building] (17:00–19:00)

## *Date: Sunday, 3rd December 2017*

### **PLENARY TALK** (9:30–10:00)

Chairperson: Akihiko Kudo (Tokyo University of Science, Japan)

PO-2-01
9:30~10:00

**SEMICONDUCTOR PHOTOCATALYSIS – BASIC MECHANISTIC AND SYNTHETIC ASPECTS**

Horst Kisch
Department of Chemistry and Pharmacy, University of Erlangen-Nürnberg, Germany

### **KEYNOTE TALK** (10:00–10:25)

Chairperson: Akihiko Kudo (Tokyo University of Science, Japan)

KO-2-01
10:00~10:25

**Development of particulate photocatalyst systems for water splitting**

Kazunari Domen
The University of Tokyo, Japan

### **INVITED TALK** (10:25–11:25)

Chairperson: Masahiro Miyauchi (Tokyo Institute of Technology, Japan)

IO-2-01
10:25~10:45

**Low-Cost Z-Scheme Solar Water Splitting Reactors**

William Gaieck[a], Samuel Keene[b], Kevin Tkacz[a], Christopher D. Sanborn[c], Yuanxun Shao[a], Sasuke Breen[c], Houman Yaghoubi[c], Rohini Bala Chandran[c,d], Chengxiang Xiang[e], Adam Z. Weber[d], and Shane Ardo[a,c]
[a] Department of Chemical Engineering and Materials Science, University of California Irvine, USA
[b] Department of Physics, University of California Irvine, USA
[c] Department of Chemistry, University of California Irvine, USA
[d] Lawrence Berkeley National Laboratory, Energy Technologies Area, USA
[e] California Institute of Technology, Joint Center for Artificial Photosynthesis, USA

IO-2-02
10:45~11:05

**Photocatalytic $CO_2$ reduction using water as an electron donor**

Akihiko Kudo
Department of Applied Chemistry, Faculty of Science, Tokyo University of Science, Japan

IO-2-03
11:05~11:25

**All Solid-State Overall Water-Splitting Photocatalyst, Silver-Inserted Zinc Rhodium Oxide and Bismuth Vanadium Oxide, Sensitive to Red Light**

Hiroshi Irie
Clean Energy Research Center, University of Yamanashi, Japan

**PHOTO SESSION** (11:25–11:55)

**LUNCH** (11:55–13:30)

## KEYNOTE TALK (13:30–13:55)

Chairperson: Hiroshi Irie (University of Yamanashi, Japan)

KO-2-02 13:30~13:55

**Solar $CO_2$ reduction using water by semiconductor/molecular-catalyst hybrid systems**

Takeshi Morikawa, Shunsuke Sato, Takeo Arai, Keita Sekizawa, and Tomiko M. Suzuki
Toyota Central R&D Labs, Inc., Japan

## INVITED TALK (13:55–15:15)

Chairperson: Chiaki Terashima (Tokyo University of Science)

IO-2-04 13:55~14:15

**Rational Design and Engineering of Active Sites for Efficient Photocatalysis**

Jinhua Ye[a,b,c]
[a] International Center for Materials Nanoarchitectonics (WPI-MANA), National Institute for Materials Science (NIMS), Japan
[b] Graduate School of Chemical Science and Engineering, Hokkaido University, Japan,
[c] TJU-NIMS International Collaboration Laboratory, Tianjin University, China

IO-2-05 14:15~14:35

**Direct Observation of Interfacial Excitation between Ultrathin CuO Film and Rutile $TiO_2$ and Its Application for Environmental Remediation**

Masahiro Miyauchi, Kazutaka Osako, Kosuke Matsuzaki, Tomofumi Susaki,
Akira Yamaguchi, and Hideo Hosono
Tokyo Institute of Technology, Japan

IO-2-06 14:35~14:55

**Biotoxicity assessment based on the Electrochemical biosensors**

Jinfang Zhi[a], Deyu Fang[a, b], Guanyue Gao[a, b], and Yuan Yu[a]
[a] Key Laboratory of Photochemical Conversion and Optoelectronic Materials, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, China
[b] University of Chinese Academy of Sciences, China

IO-2-07 14:55~15:15

**Boron-doped diamond microelectrodes for *in vivo* electrochemical analysis**

Yasuaki Einaga[a,b]
[a] Department of Chemistry, Keio University, Japan
[b] JST-ACCEL, Japan

**COFFEE BREAK** (15:15–15:35)

## INVITED TALK (15:35–16:55)

Chairperson: Akihide Iwase (Tokyo University of Science)

IO-2-08 15:35~15:55
**Applications of the visible-light-active photocatalyst for the risk reduction of infectious diseases**
Shinichiro Miki
Panasonic Corporation, Japan

IO-2-09 15:55~16:15
**Oxygen Vacancy Induced $TiO_2$ Photocatalysis, Photoelectrocatalysis and Photothermocatalysis**
Xintong Zhang
Key Laboratory of UV Light-Emitting Materials and Technology of Ministry of Education, Northeast Normal University, China

IO-2-10 16:15~16:35
**Global Expansion of Photo-Catalysis Business**
Hiroshi Tanie and Masamitsu Iseri
TOTO Ltd. Green Building Materials Division, Japan

**CLOSING REMARKS** (16:35–16:40)

Hideki Sakai (Tokyo University of Science, Japan)