

# Symposium program

**Tuesday, February 20, 2018**

Time	Presenter	Title
9:30-9:40	Kiyotaka Asakura Director of ICAT	Welcome speech
<i>Chair: Kiyotaka Asakura (ICAT, Hokkaido University)</i>		
9:40-10:20	<b>Michael R. Hoffmann</b> California Institute of Technology, USA	Atomic layer deposition as a tool for tuning the reactivity of heterogeneous electrocatalysts for the chlorine and oxygen evolution reactions
10:20-10:50	<b>Ryu Abe</b> Kyoto University, Japan	Design of stable mixed-anion semiconductors for photocatalytic water splitting under visible light
10:50-11:10	<b>Coffee break</b>	
<i>Chair: Atsushi Fukuoka (ICAT, Hokkaido University)</i>		
11:10-11:30	<b>Michael Wark</b> University Oldenburg, Germany	Ferrites for photoelectrochemical water splitting and photocatalytic pollutant degradation
11:30-11:50	<b>Emma Richards</b> Cardiff University, UK	EPR investigations of earth abundant W-TiO <sub>2</sub> and Mo-TiO <sub>2</sub> nano-architectures for photoelectron storage and PEC water splitting
11:50-12:10	<b>Adriana Zaleska-Medynska</b> University of Gdansk, Poland	Recent development on application of TiO <sub>2</sub> -based nanotubes in photocatalysis
12:10-14:00	<b>Lunch break</b>	
<i>Chair: Tamaki Nakano (ICAT, Hokkaido University)</i>		
14:00-14:40	<b>Bunsho Ohtani</b> Hokkaido University, Japan	Revisiting 1972-The year of kick off but anchoring for photocatalysis studies
14:40-15:00	<b>Christophe Colbeau-Justin</b> University of Paris-Saclay, France	Recent developments on studies of mobile charge-carriers in photocatalytic particles by Time Resolved Microwave Conductivity
15:00-15:20	<b>Sankar Meenakshisundaram</b> Cardiff University, UK	Supported monometallic and bimetallic nanoparticles for catalytic applications
15:20-15:45	<b>Coffee break</b>	
<i>Chair: Kenichi Shimizu (ICAT, Hokkaido University)</i>		
15:45-16:00	<b>Justyna Łuczak</b> Gdansk University of Technology, Poland	The ionic liquid-assisted solvothermal synthesis of TiO <sub>2</sub> microspheres
16:00-16:15	<b>Mohammad A. R. Jamil</b> Hokkaido University, Japan	Methylation of amines with methanol using Pt/C catalyst and base
16:15-16:30	<b>Joanna Nadolna</b> University of Gdansk, Poland	Nd-modified TiO <sub>2</sub> nanoparticles: characterization and photoactivity
16:30-17:00	<b>Teruhisa Ohno</b> Kyushu Institute of Technology, Japan	Development of p-type semiconductor electrodes for photoelectrochemical CO <sub>2</sub> reduction under visible light
17:00	<b>Group photo</b>	
17:10-18:10	<b>Poster presentations (selection of best posters by invited presenters)</b>	
18:20-20:20	<b>Banquet</b>	

■ **Plenary lecture (40 min)**

■ **Invited lecture (20 min)**

■ **Key-note lecture (30 min)**

■ **Short talk (15 min)**

# Symposium program

Wednesday, February 21, 2018

Time	Presenter	Title	Page
<i>Chair: Bunsho Ohtani (ICAT, Hokkaido University)</i>			
9:30-10:10	<b>Detlef Bahnemann</b> Leibniz University of Hannover, Germany	Catalytic vs. photocatalytic processes on TiO <sub>2</sub> surfaces: an isotopic and FTIR study	
10:10-10:40	<b>Kazuhiko Maeda</b> Tokyo Institute of Technology, Japan	Photocatalytic CO <sub>2</sub> reduction and water oxidation using surface-modified semiconductors	
10:40-11:00	<i>Coffee break</i>		
<i>Chair: Ryu Abe (Kyoto University)</i>			
11:00-11:30	<b>Wojciech Macyk</b> Jagiellonian University, Poland	How to determine band gap energy and redox properties of photocatalysts?	
11:30-11:50	<b>Jeremy J. Pietron</b> US Naval Research Laboratory, USA	Plasmonic photocatalysis and small molecule oxidation catalysis at oxidation-stable Cu-TiO <sub>2</sub> aerogels	
11:50-12:10	<b>Elena Selli</b> University of Milan, Italy	Charge carriers photogenerated in photocatalytic materials: transient absorption and time-resolved photoluminescence investigations	
12:10-14:00	<i>Lunch break</i>		
<i>Chair: Jun-ya HASEGAWA (ICAT, Hokkaido University)</i>			
14:00-14:40	<b>David Ollis</b> North Carolina State University, USA	Kinetics of photocatalyzed reactions: five lessons learned	
14:40-15:00	<b>Izabela Rzeznicka</b> Shibaura Institute of Technology, Japan	Hybrid surface materials of inorganic-organic layered structures as cathode materials for Li-airrechargeable batteries	
15:00-15:20	<b>Agata Markowska-Szczupak</b> West Pomeranian University of Technology, Poland	Antimicrobial activity of modified titanium dioxide for detoxification and disinfection of water	
15:20-15:35	<b>Osamu Tomita</b> Kyoto University, Japan	Polyoxometalate as a stable shuttle redox mediator in Z-scheme water splitting	
15:35-15:50	<b>Anna Malankowska</b> University of Gdansk, Poland	Trimetallic Au@Pd@Pt core-shell nanoparticles modified TiO <sub>2</sub> and NaTaO <sub>3</sub> with enhanced visible light activity	
15:50-16:10	<i>Coffee break</i>		
<i>Chair: Mai Takashima (ICAT, Hokkaido University)</i>			
16:10-16:40	<b>Hynd Remita</b> CNRS and University of Paris- Saclay, Orsay, France	Conjugated polymer nanostructures for photocatalysis under visible light	
16:40-17:00	<b>Satoru Takakusagi</b> Hokkaido University, Japan	Structure and reactivity on well-defined model catalyst surfaces studied by STM and XAFS	
17:00-17:20	<b>Anna Zielińska-Jurek</b> Gdansk University of Technology, Poland	Magnetic photocatalysts for water treatment	
17:20-17:40	<b>Yuichi Kamiya</b> Hokkaido University, Japan	Catalytic reduction of nitrate toward purification of actually polluted groundwater	
17:40-17:55	<b>Cody Finke</b> California Institute of Technology, USA	Atomic layer deposition as a tool for tuning the reactivity of heterogeneous electrocatalysts for the chlorine and oxygen evolution reactions	
17:55-18:10	<b>Anna Gołębiewska</b> University of Gdansk, Poland	The effect of gold shape and size on the visible light induced photoactivity of Au-TiO <sub>2</sub>	
18:10-18:20	<i>Ceremony of poster awards</i>		
18:20-18:30	<b>Ewa Kowalska</b> Hokkaido University, Japan	Closing remarks	

# Symposium program

**Thursday, February 22, 2018**

**Post-conference trip (8:00-20:00)**



- 8:00 Departure (Mystays Sapporo hotel)
- 10:15 Toya Lake and Toyako Volcano Science Museum (<http://www.toyako-vc.jp/en/volcano/>)
- 10:30 Movie show
- 11:00 Departure to Shiraoi (lunch during the trip)
- 12:00 Shiraoi, Poroto Kotan with Ainu Museum  
(<http://www.ainumuseum.or.jp/en/study/eng01.html>)
- 12:15-12:40 performance (or 13:15-13:40)\*
- 13:30 Departure to Noboribetsu (or 13:50)\*
- 14:00 Noboribetsu (or 14:20)\*
- 14:00-14:30 Oyunuma observatory  
(or 14:20-14:50)\*
- 14:30-15:10 Hell Valley  
(or 14:50-15:40)\*
- 15:20-17:30 Onsen (hot spring bath)  
(or 15:50-17:30)\*
- 17:30-18:30 Dinner
- 18:30 Departure to New Chitose Airport and Sapporo
- 20:00 Arrival at Mystays Sapporo hotel



\*depending on traffic conditions

## LIST OF PRESENTATIONS

### *Plenary lectures:*

1. Atomic layer deposition as a tool for tuning the reactivity of heterogeneous electrocatalysts for the chlorine and oxygen evolution reactions  
**Michael R. Hoffmann** (9:40-10:20, February 20)  
California Institute of Technology, USA
2. Revisiting 1972-The year of kick off but anchoring for photocatalysis studies  
**Bunsho Ohtani** (14:00-14:40, February 20)  
Hokkaido University, Japan
3. Catalytic vs. photocatalytic processes on TiO<sub>2</sub> surfaces: an isotopic and FTIR study,  
**Detlef Bahnemann** (9:30-10:10, February 21)  
Leibniz University of Hannover, Germany
4. Kinetics of photocatalyzed reactions: five lessons learned  
**David Ollis** (14:00-14:40, February 21)  
North Carolina State University, USA

### *Key-note lectures:*

1. Design of stable mixed-anion semiconductors for photocatalytic water splitting under visible light  
**Ryu Abe** (10:20-10:50, February 20)  
Kyoto University, Japan
2. Development of p-type semiconductor electrodes for photoelectrochemical CO<sub>2</sub> reduction under visible light  
**Teruhisa Ohno** (16:30-17:00, February 20)  
Kyushu Institute of Technology, Japan
2. Photocatalytic CO<sub>2</sub> reduction and water oxidation using surface-modified semiconductors  
**Kazuhiko Maeda** (10:10-10:40, February 21)  
Tokyo Institute of Technology, Japan
3. How to determine band gap energy and redox properties of photocatalysts?  
**Wojciech Macyk** (11:00-11:30, February 21)  
Jagiellonian University, Poland
4. Conjugated polymer nanostructures for photocatalysis under visible light  
**Hynd Remita** (16:10-16:40, February 21)  
CNRS and University of Paris-Saclay, Orsay, France

### **Invited lectures:**

1. Ferrites for photoelectrochemical water splitting and photocatalytic pollutant degradation  
**Michael Wark** (11:10-11:30, February 20)  
University Oldenburg, Germany
2. EPR investigations of earth abundant W-TiO<sub>2</sub> and Mo-TiO<sub>2</sub> nano-architectures for photoelectron storage and PEC water splitting  
**Emma Richards** (11:30-11:50, February 20)  
Cardiff University, UK
3. Recent development on application of TiO<sub>2</sub>-based nanotubes in photocatalysis  
**Adriana Zaleska-Medynska** (11:50-12:10, February 20)  
University of Gdansk, Poland
4. Recent developments on studies of mobile charge-carriers in photocatalytic particles by Time Resolved Microwave Conductivity  
**Christophe Colbeau-Justin** (14:40-15:00, February 20)  
University of Paris-Saclay, France
5. Supported monometallic and bimetallic nanoparticles for catalytic applications  
**Sankar Meenakshisundaram** (15:00-15:20, February 20)  
Cardiff University, UK
6. Plasmonic photocatalysis and small molecule oxidation catalysis at oxidation-stable Cu-TiO<sub>2</sub> aerogels  
**Jeremy J. Pietron** (11:30-11:50, February 21)  
US Naval Research Laboratory, USA
7. Charge carriers photogenerated in photocatalytic materials: transient absorption and time-resolved photoluminescence investigations  
**Elena Selli** (11:50-12:10, February 21)  
University of Milan, Italy
8. Hybrid surface materials of inorganic-organic layered structures as cathode materials for Li-airrechargeable batteries  
**Izabela Rzeznicka** (14:40-15:00, February 21)  
Shibaura Institute of Technology, Japan
9. Antimicrobial activity of modified titanium dioxide for detoxification and disinfection of water  
**Agata Markowska-Szczupak** (15:00-15:20, February 21)  
West Pomeranian University of Technology, Szczecin, Poland
10. Structure and reactivity on well-defined model catalyst surfaces studied by STM and XAFS  
**Satoru Takakusagi** (16:40-17:00, February 21)  
Hokkaido University, Japan
11. Magnetic photocatalysts for water treatment  
**Anna Zielinska-Jurek** (17:00-17:20, February 21)  
Gdansk University of Technology, Poland
12. Catalytic reduction of nitrate toward purification of actually polluted groundwater  
**Yuichi Kamiya** (17:20-17:40, February 21)  
Hokkaido University, Japan

## Short talks:

1. The ionic liquid-assisted solvothermal synthesis of TiO<sub>2</sub> microspheres  
**Justyna Łuczak** (15:45-16:00, February 20)  
Gdansk University of Technology, Poland
2. Methylation of amines with methanol using Pt/C catalyst and base  
**Md. A. R. Jamil** (16:00-16:15, February 20)  
Hokkaido University, Japan
3. Nd-modified TiO<sub>2</sub> nanoparticles: characterization and photoactivity  
**Joanna Nadolna** (16:15-16:30, February 20)  
University of Gdansk, Poland
4. Polyoxometalate as a stable shuttle redox mediator in Z-scheme water splitting  
**Osamu Tomita** (15:20-15:35, February 21)  
Kyoto University, Japan
5. Trimetallic Au@Pd@Pt core-shell nanoparticles modified TiO<sub>2</sub> and NaTaO<sub>3</sub> with enhanced visible light activity  
**Anna Malankowska** (15:35-15:50, February 21)  
University of Gdansk, Poland
6. Atomic layer deposition as a tool for tuning the reactivity of heterogeneous electrocatalysts for the chlorine and oxygen evolution reactions  
**Cody Finke** (17:40-17:55, February 21)  
California Institute of Technology, USA
7. The effect of gold shape and size on the visible light induced photoactivity of Au-TiO<sub>2</sub>  
**Anna Gołąbiewska** (17:55-18:10, February 21)  
University of Gdansk, Poland

## Posters (17:25-18:25, February 20):

1. Identification and structural characterization of metal-oxide powders with energy-resolved density of electron traps  
**Akio Nitta**  
Hokkaido University, Japan
2. Theoretical study of selective mechanochemical activation in chitin hydrolysis  
**Danjo De Chavez**  
Hokkaido University, Japan
3. Multielectron-transfer mechanism in heterogeneous photocatalysis based on light-intensity dependence analysis  
**Shugo Takeuchi**  
Hokkaido University, Japan
4. Photo-induced  $\beta$ -elimination of an alcohol leading to a vinyl monomer  
**Hassan Nageh**  
Hokkaido University, Japan
5. Organic-inorganic hybrid complexes prepared using gallic acid derivatives toward transparent film with high glass transition temperature  
**Kanako Aoki**  
Hokkaido University, Japan

6. Photocatalytic properties of TiO<sub>2</sub>-coated Au nanoshells  
**Kanjiro Torigoe**  
Tokyo University of Science, Japan
7. Reductive transformations of CO<sub>2</sub>, carboxylic acids and amides into chemicals  
**Ken-ichi Shimizu**  
Hokkaido University, Japan
8. Single and dual-modified titania photocatalysts with noble metals for improvement of their photocatalytic performance  
**Kenta Yoshiiri**  
Hokkaido University, Japan
9. Ultrafast XAFS studies on the photoabsorption processes  
**Kiyotaka Asakura**  
Hokkaido University, Japan
10. Synthesis of carbon catalyst with vicinal carboxylic acid groups as active sites  
**Lina Mahardiani**  
Hokkaido University, Japan
11. Photocatalytic properties of Ti<sub>x</sub>Cu<sub>y</sub> nanotubes arrays obtained via anodic oxidation  
**Magda Kozak**  
University of Gdansk, Poland
12. Theoretical study of palladium-catalyzed asymmetric hydrosilylation of styrene with helical poly(quinoxaline-2,3-diyl) chiral phosphine ligand  
**Manusada Ratanasak**  
Hokkaido University, Japan
13. The effect of ionic liquid anion type on the surface properties and photoactivity of TiO<sub>2</sub> particles  
**Marta Paszkiewicz-Gawron**  
University of Gdansk, Poland
14. Incorporation of multinuclear copper active sites into nitrogen-doped carbon for electrochemical oxygen reduction  
**Masaru Kato**  
Hokkaido University, Japan
15. Development of plasmonic photocatalysts with enhanced antimicrobial activity  
**Maya Endo**  
Hokkaido University, Japan
16. Selective FDCA formation from HMF by CeO<sub>2</sub>-supported Au catalyst  
**Minjune Kim**  
Hokkaido University, Japan
17. Possibility of multi atom resonance X-ray raman spectroscopy - a new operando low Z-element XAFS method  
**Natee Sirisit**  
Hokkaido University, Japan
18. Co-catalytic action of non-noble metal deposits on titania photocatalyst for multielectron oxygen reduction  
**Peng Wang**  
Hokkaido University, Japan

19. Few-layer graphene-TiO<sub>2</sub> composite photocatalysts for hydrogen production from methanol-water solution  
**Rei Mizuno**  
Muroran Institute of Technology, Japan
20. Sensing of singlet oxygen using intramolecular electron donor-acceptor dyads  
**Reiko Kohara**  
Hokkaido University, Japan
21. Effect of Pt supported hydrophobic mesoporous silica on oxidation of ethylene at low temperature  
**Shazia Sharmin Satter**  
Hokkaido University, Japan
22. Effects of Ag incorporation of in the Cu<sub>2</sub>ZnSnS<sub>4</sub> thin film on its photovoltaic and photoelectrochemical performances  
**Shigeru Ikeda**  
Konan University, Japan
23. Mechanism and kinetic studies on oxidative decomposition of acetic acid on a bismuth-modified titania photocatalyst  
**Shunsuke Shiba**  
Hokkaido University, Japan
24. Fate of charge carrier dynamics in perovskite nanocrystal thin films  
**Sushant Ghimire**  
Hokkaido University, Japan
25. Synthesis and electrochemical oxygen reduction reaction activity of Pt–Ni alloy nanowires  
**Tianchi Li**  
Hokkaido University, Japan
26. Reverse water gas shift reaction using SILP type catalyst  
**Tomohiro Yasuda**  
Hokkaido University, Japan
27. Reaction mechanism of DMC formation from CO<sub>2</sub> and methanol over CeO<sub>2</sub>: a DFT study  
**Toshiyuki Sugiyama**  
Hokkaido University, Japan
28. Aggregate formation of a near-infrared dye leading to characteristic photo excitation and emission behaviors  
**Yue Wang**  
Hokkaido University, Japan
29. Application of fluorescence XAFS using a BCLA to model fuel cell catalysts  
**Yuki Wakisaka**  
Hokkaido University, Japan
30. Interparticle charge transfer for methanol dehydrogenation on platinum-loaded titania particles prepared from P25  
**Kunlei Wang**  
Hokkaido University, Japan
31. Effect of the precursor on hydrogenation and visible photocatalytic performance of TiO<sub>2</sub>  
**Lijuan Han**  
Gansu Natural Energy Institute, China