

**OS15: The 16th Japan-Korea Students' Symposium**  
**- New Energy Flow for Sustainable Society Properties and Applications of Next**  
**Generation Energy Materials**

**Main room**

October 27, 2015

13:30 – 13:45 **Opening address**

13:45 – 15:05 **Session 1** (20 min for Oral Presentation)  
Chair: Mirai Takeda, Byungju Lee

OS15-1 **Experimental evaluation of effective reaction area in SOFC cathode by electrochemical impedance spectroscopy using the patterned electrode**  
Yusuke Shindo, Yoshinobu Fujimaki, Takashi Nakamura, Fumitada Iguchi, Hiroo Yugami, Keiji Yashiro, Tatsuya Kawada, Koji Amezawa (Tohoku University, Japan)

OS15-2 **Parametric impedance analysis of photoelectrochemical cells with various semiconducting electrodes**  
Minh Hoang Pham, Eui-Chol Shin, Dang Thanh Nguyen, Dong-Chun Cho, Jaeyoung Heo (Chonnam National University, Korea), Soon-Hyung Kang (Department of Chemistry Education, Korea), Jong-Sook Lee (Chonnam National University, Korea)

OS15-3 **Modification of oxygen potential at (La,Sr)CoO<sub>3- $\delta$</sub>  electrode surface**  
Dan Nonami, Keij Yashiro, Shinichi Hashimoto, Tatsuya Kawada (Tohoku University, Japan)

OS15-4 **Analysis of the grain boundary conductivity of doped CeO<sub>2</sub> thin films at elevated temperature**  
NoWoo Kwak, WooChul Jung (Korean Advanced Institute of Science and Technology, Korea)

15:05 – 15:20 **Coffee Break**

15:20 – 16:20 **Tutorial lecture 1** (1 h presentation for Tutorial lecture)

OS15-5 **High performance water splitting photoelectrodes based on heterogeneous nanostructures**  
Ho Won Jang (Seoul National University, Korea)

16:20 – 16:35 **Coffee Break**

16:35 – 17:55 **Session 2** (20 min for Oral Presentation)  
Chair: Genki Imai, Jaehun Lee

OS15-6 **Evaluation of reaction distribution in composite cathode lithium ion secondary batteries studied by using two-dimensional XAS**  
Kazuki Chiba, Yuta Kimura, Takashi Nakamura, Koji Amezawa (Tohoku University, Japan), Hajime Tanida, Yoshiharu Uchimoto, Zempachi Ogumi (Kyoto University, Japan)

OS15-7 **Lithium dynamics in NCM523**

Hyun-soo Sim (Seoul National University, Korea)

OS15-8 **Characterization of ferroelastic behavior of  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$  using Electron Backscatter Diffraction**  
Kouhei Shishido, Yuta Kimura, Keiji Yashiro, Shin-ichi Hashimoto, Mayu Muramatu, Tatsuya Kawada (Tohoku University, Japan)

OS15-9 **Hybrid supercapacitor comprised of graphite and activated carbon using  $\text{Na}^+$  co-intercalation**  
Kyungmi Lim (Seoul National University, Korea)

**Room 8**

October 28, 2015

10:40 – 12:00 **Session 3** (20 min for Oral Presentation)  
Chair: Yusuke Okamoto, Eui-Chol Shin

OS15-10 **Determination of Fracture Properties in Ion and Mixed Conducting Ceramics under Controlled Conditions**  
Ryo Muraoka, Takahiro Taguchi, Satoshi Watanabe, Kazuhisa Sato, Toshiyuki Hashida (Tohoku University, Japan)

OS15-11 **Effects of crystal orientation to electromotive force of  $\text{LiCoO}_2$  under mechanical stress**  
Mahunnop Fakkao, Yuta Kimura, Takashi Nakamura, Naoki Kuwata, Junichi Kawamura, Tatsuya Kawada, Koji Amezawa (Tohoku University, Japan)

OS15-12 **Polyelectrolyte gel membrane with enhanced mechanical properties**  
Hae-Ryung Lee, Jeong-Yun Sun (Seoul National University, Korea)

OS15-13 **Investigation of Mechanical properties of SOFC Electrolytes at High temperature**  
Tomohiro Kori, Yuta Kimura, Keij Yashiro, Shinichi Hashimoto, Tatsuya Kawada (Tohoku University, Japan)

12:00 – 13:00 **Lunch Break**

13:00 – 14:20 **Session 4** (20 min for Oral Presentation)  
Chair: Riyan Achmad Budiman, Đăng Thành Nguyen

OS15-14 **Numerical study of heat transfer from fractured geothermal reservoirs for the design of reinjection**  
Miho Asaki, Saki Kondoh, Toshiyuki Hashida (Tohoku University, Japan)

OS15-15 **Graphene Quantum Sheet Catalyzed Silicon Photocathode for selective conversion from  $\text{CO}_2$  to CO**  
Ki Dong Yang, Ki Tae Nam (Seoul National University)

OS15-16 **Effect of  $\text{CO}_2$  sorption on flow behavior in simulated injection experiments for development of  $\text{CO}_2$  geological storage technology**  
Soichi Echizen, Tomohito Takase, Toshiyuki Hashida (Tohoku University, Japan)

OS15-17 **High performance humidity sensor based on  $\text{MoS}_2$ /reduced graphene oxide hybrid composites**  
Seo Yun Park, Ho Won Jang (Seoul National University, Korea)

## Sakura Kitchen

17:30 – 19:30 Dinner and Poster Session

OS15-18 **Preferred in-plane orientation in palladium decoration on graphene oxide: microstructures and the influence on electrical properties**  
Bo Reum Lee, Jong-myeong Jeon, You Rim Choi, Young-Seok Shim, Koo Tak Hong, Janghyun Jo, Miyoung Kim, Ho Won Jang (Seoul National University, Korea)

OS15-19 **Heterogeneous Metal Oxide Nanostructure for Efficient Solar Fuel Generator**  
Mi Gyoung Lee, Ho Won Jang (Seoul National University, Korea)

OS15-20 **Relationship between impedance spectra, performance and microstructure of Ni-YSZ anode**  
Mirai Takeda, Keiji Yashiro, Shin-ichi Hashimoto, Tatsuya Kawada (Tohoku University, Japan)

OS15-21 **Reversible energy storage in NaF-FeF<sub>2</sub> nanocomposite electrode**  
Insang Hwang, Sung-kyun Jung, Youngbeom Cho, Hyungsub Kim, Kisuk Kang (Seoul National University, Korea)

OS15-22 **Theoretical evidence for low charging overpotentials of superoxide discharge products in metal-air batteries**  
Byungju Lee, Gabin Yoon, Hee-Dae Lim, and Kisuk Kang

OS15-23 **Li-excess cathode materials for high energy Li-ion battery**  
Do-hoon Kim (Seoul National University, Korea)

OS15-24 **Snow melting system using SOFC**  
Issei Susuta, Yashino Keiji, Kawada Tatsuya, Hashimoto Shinichi (Tohoku University, Japan)

OS15-25 **Controlling surface Sr segregation in model epitaxial thin film perovskite cathode for solid oxide fuel cells**  
Bonjae Koo, Han Gil Seo, WooChul Jung (Korea Advanced Institute of Science and Technology, Korea)

OS15-26 **Influence of cation nonstoichiometry to oxygen nonstoichiometry in mixed ionic and electronic conducting perovskite oxides**  
Yusuke Okamoto (Tohoku University, Japan), Akihide Kuwabara (JFCC, Japan), Takashi Nakamura, Tatsuya Kawada, Koji Amezawa (Tohoku University, Japan)

OS15-27 **Proton dissolution into BaZr<sub>1-x</sub>Y<sub>x</sub>O<sub>3-δ</sub>**  
Genki Imai, Takashi Nakamura, Koji Amezawa (Tohoku University, Japan)

OS15-28 **Electrical Characterizations of Perovskite Solar Cells by Impedance Spectroscopy**  
Dang-Thanh Nguyen, Dong-Chun Cho, Eui-Chol Shin, (Chonnam National University, Korea), You-Hyun Seo, Seok-In Na, (Chonbuk National University, Korea), Soon-Hyung Kang, Eun-Mi Han, Jong-Sook Lee (Chonnam National University, Korea)

OS15-29 **The chemical and electrochemical property of the  $\text{La}_{0.6}\text{Sr}_{0.4}\text{Co}_{0.2}\text{Fe}_{0.8}\text{O}_{3-\delta}$  electrodes**  
Xingwei Wang, Keiji Yashiro, Hashimoto Shinichi, Kawada Tatsuya (Tohoku University, Japan)

OS15-30 **Oxygen Thermotransport of Mixed Conducting Oxide**  
Ihnbeom Lee (Seoul National University, Korea)

**Main room**

October 29, 2015

9:00 – 10:00 **Session 5** (20 min for Oral Presentation)  
Chair: Issei Susuta, Ki Dong Yang

OS15-31 **Humidity and DC bias effects on AC characteristics of PCFC and PCEC with Y doped  $\text{BaCeO}_3$  Electrolytes**  
Hee-Jin Song, Eui-Chol Shin, Su-Hyun Moon, Dong-Chun Cho, Jong-Sook Lee (Chonnam National University, Korea)

OS15-32 **Degradation of oxygen electrode in SOEC operation**  
Hiroki Akabane, Keiji Yashiro, Shin-ichi Hashimoto, Tatsuya Kawada (Tohoku University, Japan)

OS15-33 **Hybrid Z-Scheme Using Photosystem I and  $\text{BiVO}_4$  for Hydrogen Production**  
Younghye Kim, Della Shin, Woo Je Chang, Hae Lin Jang, Chan Woo Lee, Hye-Eun Lee, Ki Tae Nam (Seoul National University, Korea)

10:00 – 10:15 **Coffee Break**

10:15 – 11:15 **Tutorial lecture 2** (1 h presentation for Tutorial lecture)

OS15-34 **Another Aspect of SOFC as Mechanical Structure**  
Fumitada Iguchi (Tohoku University, Japan)

11:15 – 11:30 **Coffee Break**

11:30 – 12:30 **Session 6** (20 min for Oral Presentation)  
Chair: Mirai Takeda, Ihnbeom Lee

OS15-35 **Investigation on Carbon Deposition and Expansion in Ni-YSZ Cermet**  
Yuki Shinomiya, Nobuaki Ohmura, Takashi Nakamura, Koji Amezawa (Tohoku University, Japan)

OS15-36 **Oxygen Transport Membrane**  
Pham Thuy Linh, Joong-Sook Lee (Jeonnam National University)

OS15-37 **Suppression effect of carbon deposition on Ni by coexisting oxides**  
Mitsuki Haga, Shinichi Hashimoto, Keiji Yashiro, Tatsuya Kawada (Tohoku University, Japan)

12:30 – 13:30 **Lunch Break**

13:30 – 14:30 **Tutorial lecture 3** (1 h presentation for Tutorial lecture)

OS15-38 **Solid-state Lithium Batteries with Thin-Film Amorphous Electrolyte**  
Naoaki Kuwata (Tohoku University, Japan)

14:30 – 14:45 **Coffee Break**

14:45 – 16:05 **Session 7** (20 min for Oral Presentation)  
Chair: Mahunnop Fakkao, Bonjae Koo

OS15-39 **Self-assembled Peptide Materials**  
Jaehun Lee, Ki Tae Nam (Seoul National University, Seoul)

OS15-40 **Electrical conduction behavior of anion conductors**  
Shusuke Mizunuma, Takashi Nakamura, Koji Amezawa (Tohoku University, Japan)

OS15-41 **From anti-oxidant to an energy storage material (Vitamin E battery)**  
Sechan Lee, Jihyun Hong and Kisuk Kang (Seoul National University, Korea)

OS15-42 **Microstructure changes of nickel during the low-temperature oxidation**  
Zhao Fei, Yashino Keiji, Hashimoto Shinichi, Kawada Tatsuya (Tohoku University, Japan)

16:05 – 16:20 **Coffee Break**

16:20 – 17:40 **Session 8** (20 min for Oral Presentation)  
Chair: Yusuke Okamoto, Insang Hwang

OS15-43 **Cross Effect of Scandium doped Calcium Titanate**  
Donghoon Shin (Seoul National University, Korea)

OS15-44 **Evaluation of surface exchange coefficient of SOFC cathode materials by pulse isotope exchange**  
Hiroshi Chiba, Riyan Achmad Budiman, Hiroki Satou, Kenji Yashiro, Shin-ichi Hashimoto, Tatsuya Kawada (Tohoku University, Japan)

OS15-45 **Solid electrolyte**  
Kyungbae Oh (Seoul National University, Korea)

OS15-46 **Cathodic reaction of  $\text{La}_{0.6}\text{Sr}_{0.4}\text{CoO}_{3-\delta}$  on proton-conducting electrolyte  $\text{SrZr}_{0.9}\text{Y}_{0.1}\text{O}_{3-\delta}$  under fuel cell condition**  
Shunsuke Noda, Shin-ichi Hashimoto, Keiji Yashiro, Tatsuya Kawada (Tohoku University, Japan)

17:40 – 18:00 **Closing address**