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$_{3-\delta}$ electrode surface
Dan Nonami, Keiji Yashiro, Shinichi Hashimoto, Tatsuya Kawada (Tohoku University, Japan)

OS15-4  Analysis of the grain boundary conductivity of doped CeO$_2$ 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, Đặng Thành Nguyên

**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 \( \text{CO} \)
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)
Dinner and Poster Session

17:30 – 19:30

Preferential 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)

Heterogeneous Metal Oxide Nanostructure for Efficient Solar Fuel Generator
Mi Young Lee, Ho Won Jang (Seoul National University, Korea)

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

Reversible energy storage in NaF-FeF$_2$ nanocomposite electrode
Insang Hwang, Sung-kyun Jung, Youngbeom Cho, Hyungsuk Kim, Kisuk Kang (Seoul National University, Korea)

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

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

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

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)

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)

Proton dissolution into BaZr$_{1-x}$Y$_x$O$_{3-δ}$
Genki Imai, Takashi Nakamura, Koji Amezawa (Tohoku University, Japan)

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

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 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 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)
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 antioxidant 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 Tatsuaya (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 La$_{0.6}$Sr$_{0.4}$CoO$_{2+\delta}$ on proton-conducting electrolyte SrZr$_{0.9}$Y$_{0.1}$O$_{2+\delta}$ under fuel cell condition
Shunsuke Noda, Shin-ichi Hashimoto, Keiji Yashiro, Tatsuya Kawada (Tohoku University, Japan)

17:40 – 18:00 Closing address