



## Jong Suk Yoo

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### EDUCATION

- 2009-Present      Seoul National University, Seoul, Republic of Korea  
M.S., School of Chemical & Biological Engineering (Expected in August 2011)  
Thesis: "Design of a CO-tolerant  $\text{PtRu}_x\text{Sn}_y/\text{C}$  catalyst for use as the anode of a PEM fuel cell"
- 2003-2009      Seoul National University, Seoul, Republic of Korea  
B.S. with Cum Laude, School of Chemical & Biological Engineering

### HONORS & AWARDS

- 2011      International Fulbright Science & Technology Award  
2009      Graduation Honor (Cum Laude), Seoul National University  
2007      Sunam Scholarship for academic excellence, DEERFOS Co., Ltd.  
2004      Academic Honor Prizes & Scholarships, Korea Research Foundation

### RESEARCH BACKGROUND

#### Catalysis in fuel cells

- Hydrogen oxidation reaction in PEM fuel cells
- CO oxidation reaction in PEM fuel cells
- Oxygen reduction reaction in fuel cells

#### Catalyst preparation method

- Impregnation method
- Modified precipitation method
- Sonochemical method
- Chemical vapor deposition (CVD) method
- Surface redox method (SRM)

#### Characterization techniques

- Electrochemical techniques using rotating disk electrode (RDE)  
Cyclic voltammetry, CO-stripping, Chronoamperometry
- Sing-cell activity test  
Membrane electrode assembly (MEA) preparation
- XRD, XPS: sample preparation & experiment
- Electron microscopy (HR-TEM, STEM-EDS): sample preparation
- Fourier transform infrared spectroscopy: sample preparation & experiment
- Temperature programmed techniques: TPD, TPR, TPO, CO-TPD
- Chemisorption, physisorption (BET): sample loading & experiment
- Elemental analysis (ICP-AES, EA): sample preparation & experiment
- Mass spectroscopy

### PUBLICATIONS

1. **Jong Suk Yoo**, Hyun Tae Kim, Han-Ik Joh, Heeyon Kim, Sang Heup Moon\*, "Preparation of a CO-tolerant  $\text{PtRu}_x\text{Sn}_y/\text{C}$  electrocatalyst with an optimal Ru/Sn ratio by selective Sn-deposition on the surfaces of Pt and Ru", *International Journal of Hydrogen Energy* (2011), Vol. 36, Issue 3, 1930-1938.

- Hyun Tae Kim, **Jong Suk Yoo**, Han-Ik Joh, Heeyon Kim, Sang Heup Moon\*, "Properties of Pt-based electrocatalysts containing selectively deposited Sn as the anode for polymer electrolyte membrane fuel cells", *International Journal of Hydrogen Energy* (2011), Vol. 36, Issue 2, 1606-1612

## PRESENTATIONS

- Jong Suk Yoo**, Hyun Tae Kim, Han-Ik Joh, Sang Heup Moon\*, "Preparation of a CO tolerant  $\text{PtRu}_x\text{Sn}_y/\text{C}$  catalyst with an optimal Ru/Sn ratio by selective Sn-deposition on the Pt and Ru surfaces", *22<sup>nd</sup> North American Catalysis Society Meeting*, Detroit, MI USA. Oral presentation. (June 5, 2011 ~ June 10, 2011)
- Jong Suk Yoo**, Hyun Tae Kim, Han-Ik Joh, Sang Heup Moon\*, "CO-tolerant  $\text{RuS}_x/\text{C}$  electrocatalyst as the anode in a polymer electrolyte membrane fuel cell", *2010 The Korean Institute of Chemical Engineers Annual Fall Meeting*, Daejeon, Republic of Korea. (Oct. 20, 2010 ~ Oct. 22, 2010)
- Hyun Tae Kim, **Jong Suk Yoo**, Sang Heup Moon\*, "Hydrogen and CO oxidation reactions on Au promoted Pd/C electrocatalysts prepared by the surface redox method," *The International Society of Electrochemistry 2010*, Nice, France. (Sep. 27, 2010 ~ Oct. 1, 2010)
- Jong Suk Yoo**, Hyun Tae Kim, Han-Ik Joh, Heeyon Kim, Sang Heup Moon\*, "Enhanced CO tolerance of  $\text{Pt}_{1.0}\text{Ru}_{1.0-x}\text{Sn}_x/\text{C}$  electrocatalysts prepared by the selective deposition of Sn on the surfaces of Pt and Ru," *6th Tokyo Conference on Advanced Catalytic Science and Technology*, Sapporo, Japan., Youth session oral presentation (Jul. 19, 2010 ~ Jul. 23, 2010)
- Hyun Tae Kim, **Jong Suk Yoo**, Han-Ik Joh, Heeyon Kim, Sang Heup Moon\*, "Performance of Sn promoted Pt/C, PtRu/C electrocatalysts prepared by the chemical vapor deposition method of Sn as an anode in a polymer electrolyte membrane fuel cells," *6th Tokyo Conference on Advanced Catalytic Science and Technology*, Sapporo, Japan., (Jul. 19, 2010 ~ Jul. 23, 2010)
- Hyun Tae Kim, **Jong Suk Yoo**, Han-Ik Joh, "Properties of PtRu/C catalysts prepared by the chemical vapor deposition of Ru as anodes in PEMFCs," *2010 The Korean Electrochemical Society Annual Fall Meeting*, Chunchun, Republic of Korea. (Nov. 5, 2009 ~ Nov. 6, 2009)

## TEACHING EXPERIENCE

### Teaching assistant

-Spring 2011	Introduction to Chemical & Biological Engineering
-Fall 2010	Introduction to Catalysis
-Spring 2010	Advanced Chemical Reaction Engineering
-Fall 2009	Chemical & Biological Process Laboratory

### Undergraduate research mentor

-Fall 2010	Bachelor thesis for Sung Hoon Jang (Seoul National University), "The heat-treatment effects on activity and stability of PEMFC catalysts for oxygen reduction reaction."
-Spring 2010	Bachelor thesis for Won Sang Choi (Seoul National University), "Platinum-based ternary catalysts for low temperature fuel cells."

## EXTRA-CURRICULAR ACTIVITIES

2009-Present	Student member of the Korea Institute of Chemical Engineers
2008-2009	Trained in Winter Catalysis Lectureship – sponsored by the Korean Institute of Chemical Engineers
2003-2007	Leader (drummer) of a university rock band called "The Mechanism"