

# Jee Eon Kim, Ph.D.

Emeryville, CA

Email: kjee@sas.upenn.edu Homepage: <http://jeeeon.net>

## EDUCATION

---

- 2010 – 2015 **University of Pennsylvania**  
*Ph.D. in Inorganic Chemistry, December 2015*
- 2006 – 2010 **Chung-ang University** (Seoul, South Korea)  
*B.S. in Chemistry*
- **Magna Cum Laude**
  - Certified in teaching secondary chemistry issued by Ministry of Education, South Korea (2010).
  - Partial scholarship awarded for TOP 10 % of the chemistry department for 3 years.
- Summer, 2007 **University of California, Berkeley**  
*Summer session*
- Student in Organic Chemistry, Organic Chemistry Laboratory and Writing.

## RESEARCH EXPERIENCE

---

- 2010 – 2015 **University of Pennsylvania** Philadelphia, PA  
Advisor: Prof. Eric J. Schelter

### **Thesis: Model Compounds of Trivalent and Tetravalent Lanthanide Metal Complexes for Elucidating Rational Reactivity**

Motivation: Lanthanide metals are critical resources in environmentally benign technologies, such as wind-power generators or catalytic converters used in automobiles, as well as strong Lewis acids in organic transformation reactions. Due to the current separations process requiring numerous extraction steps for sufficient purities, RE metals increases the expense of raw materials for these technologies. As utilizing their redox properties and Lewis acidity, a thorough investigation of controlling the rational reactivity of lanthanide metal can broaden the potentials of the element to the new applications.

#### **a. The first model study for the reactivity of trivalent cerium acetylide complexes.**

- Synthesized and characterized the **first example** of terminal trivalent cerium acetylide complex,  $\text{Na}[\text{Ce}(\text{CCPh})(\text{bdmmp})_3]$  ( $\text{bdmmp}^- = \text{bis}(\text{dimethylamino})\text{methyl-4-phenolate}$ ).
- First model complex with structural characterizations in carbonyl addition reactions with cerium metal.
- Explored *Imamoto's organocerium reagent* ( $\text{CeCl}_3/\text{RLi}$ ) for conversion of carbonyl groups to tertiary alcohols.
- Structural variations on the secondary coordination sphere by the sterics of the ligands on trivalent cerium metal complexes.
  - Thorough solid state characterizations and electrochemical analysis.

#### **b. Stabilizing tetravalent lanthanide metal complexes using bidentate nitroxide ligands.**

- Stabilization of tetravalent lanthanide complex by electron-rich bidentate nitroxide ligands.
  - Developed and synthesized a novel bidentate electron-rich nitroxide ligand sets using organic synthesis.
  - Isolated and characterized one of the most strongly reducing tetravalent cerium and Ln(IV) synthon metal complexes, which its redox potentials were measured by cyclic voltammetry technique.

- 2006 – 2010 **Chung-ang University** Seoul, South Korea  
Research Advisor: Dr. Il Woon Shim
- Synthesis of precursor for thin-film solar cell.
  - Simple nanoparticle synthesis by a sonochemical method.

## PUBLICATIONS & CONFERENCE

---

- **Kim, J. E.**, Zabula, A. V., Carroll, P. J. and Schelter, E. J., 1,2-Addition or Enolization? Variable Reactivity of a Cerium Acetylide Complex toward Carbonyl Compounds, *Organometallics*, **2016**, DOI: 10.1021/acs.organomet.6b00290.
- **Kim, J. E.**, Bogart, J. A., Carroll, P. J. and Schelter, E. J., Rare Earth Metal Complexes of Bidentate Nitroxide Ligands: Synthesis and Electrochemistry, *Inorg. Chem.*, **2016**, *55*, 775-784.
- **Kim, J. E.**, Carroll, P. J. and Schelter, E. J., Bidentate Nitroxide Ligands Stable Toward Oxidative Redox Cycling and their Complexes with Cerium and Lanthanum, *Chem. Commun.*, **2015**, *51*, 15047-15050.
- **Kim, J. E.**, Carroll, P. J. and Schelter, E. J., Structural Variation in Cerium Aryloxy Complexes Templated by Hemilabile K<sup>+</sup>-Amine Interactions, *New J. Chem.*, **2015**, *39*, 6076-6084.
- Behrle, A. C., Levin, J. R., **Kim, J. E.**, Drewett, J. M., Barnes, C. L., Schelter, E. J. and Walensky, J. R., Stabilization of M<sup>IV</sup> = Ti, Zr, Hf, Ce, and Th using a selenium bis(phenolate) ligand, *Dalton Trans.*, **2015**, *44*, 2693-2702.
- **Kim, J. E.**, Weinberger, D. S., Carroll, P. J. and Schelter, E. J., Synthesis, Structural Characterization and Carbonyl Addition Reactivity of a Terminal Ce(III) Acetylide Complex, *Organometallics*, **2014**, *33*, 5948-5951
- Le Roy, J. J., Korobkov, I., **Kim, J. E.**, Schelter, E. J. and Murugesu, M., Structural and magnetic conformation of a cerocene [Ce(COT<sup>''</sup>)<sub>2</sub>]<sup>-</sup> exhibiting a uniconfigurational f<sup>1</sup> ground state and slow-magnetic relaxation, *Dalton Trans.*, **2014**, *43*, 2737-2740
- Park, J. P., Park, J.-Y., Hwang, C. H., Choi, M. H., **Kim, J. E.**, Ok, K. M., Kwak, H.-Y., and Shim, I.-W., Synthesis of LiCoO<sub>2</sub> Nanoparticles by a Sonochemical Method under the Multibubble Sonoluminescence Conditions, *Bull. Korean Chem. Soc.*, **2010**, *31*, 327-330.
- Park, J. P., Kim, S. K., Park, J.-Y., Hwang, C. H., Choi, M. H., **Kim, J. E.**, Ok, K. M., Kwak, H.-Y., and Shim, I.-W., Syntheses of Mn<sub>3</sub>O<sub>4</sub> and LiMn<sub>2</sub>O<sub>4</sub> nanoparticles by a simple sonochemical method, *Mater. Lett.*, **2009**, *63*, 2201-2204
- Park, J.-Y., Park, J. P., Hwang, C. H., **Kim, J. E.**, Choi, M. H., Ok, K. M., Kwak, H.-Y., and Shim, I.-W., The Synthesis of CuInS<sub>2</sub> Nanoparticles by a Simple Sonochemical Method, *Bull. Korean Chem. Soc.*, **2009**, *30*, 2713-2716
- **Presentations in Chemistry Meetings**
  - 2015 ACS national meeting, Denver, *Isolation of a Terminal Organocerium Acetylide Complex and its Reactivity with Enolizable Ketones*, **Kim, J. E.**, Carroll, P. J. and Schelter, E. J.
  - 2014 MASIS meetings in Philadelphia, *Isolation of a terminal trivalent organocerium acetylide and its reactivity with highly enolizable ketones*, **Kim, J. E.**, Carroll, P. J. and Schelter, E. J.
  - 2012 ACS national meeting, Philadelphia, *Synthesis of Heterobimetallic Complexes Towards Functionalized Cerium(III) and Cerium(IV) Complexes and a Study of Their Redox Properties*, **Kim, J. E.**, Carroll, P. J. and Schelter, E. J.

## TECHNICAL SKILLS

---

- NMR, FTIR, GC/MS, LC/MS, HPLC, TLC, UV-Vis, Electrochemical analysis, X-ray Crystallography and Gaussian structure calculation.

## PROFESSIONAL EXPERIENCE

---

- 2013 – 2014      **Member, Penn Biotech Group**  
*University of Pennsylvania*
- Volunteering graduate student groups to address business problems with companies
  - Engaged in two consulting projects:
    - Entering the radiology market with a newly developed product. Cost analysis on the market based on present health insurance coverage and provided potential market price with analysis of regulatory barriers.
    - Current market research for a new adherence method for diabetes patients. Thorough understanding of troubles and inconvenience for diabetes patients in current adherence methods and technologies. Interviews with companies, doctors in terms of medications and procedures.
- 2013 – 2014      **Secretary, The electrochemical society chapter for UPenn & Drexel University**
- Organized monthly meeting to discuss electrochemical techniques and methods
- 2013 – 2014      **Member, Women in Chemistry Professional Advancement Committee**  
*Department of Chemistry, University of Pennsylvania*
- Organized workshops focused on job and career skills for student.