



Heui Beom Lee
Assistant Professor
Department of Chemistry and Biochemistry

PROFESSIONAL APPOINTMENTS

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|---|-----------|
| Assistant Professor , University of South Carolina | 2025– |
| Postdoctoral Scholar , Seoul National University
Advisor: Prof. Yunho Lee | 2024–2025 |
| Postdoctoral Scholar , University of California Berkeley
Advisor: Prof. Jonathan Rittle | 2019–2022 |

EDUCATION

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| California Institute of Technology
Ph.D. in Inorganic Chemistry
Advisor: Prof. Theodor Agapie
Dissertation: “Electronic Structure and Spectroscopy of Tetranuclear Mn_4O_4 and CaMn_3O_4 Complexes as Models of the Oxygen Evolving Complex in Photosystem II” | 2013–2019 |
| University of Pennsylvania
B.S.E. in Chemical and Biomolecular Engineering and Chemistry
Advisor: Prof. Eric J. Schelter | 2009–2013 |

PUBLICATIONS († equal contribution; see [Google Scholar profile](#))

22. Kim, M., Oh, J., Park, S., Lee, H., Kim, Z. H., Kim, J., **Lee, H. B.**, Choi, J.* , Lee, Y.* “Reductive N_2 Cleavage and Nitride Insertion Reactivity at Molybdenum Complexes Supported by a Rigid PNP Pincer” *Angew. Chem. Int. Ed.* **2025**, e202511887.
21. Yoo, D., Brannan, A. C., Lim, S., **Lee, H. B.***, Lee, Y.* “Reversible CO Binding at a Nickel Complex Supported by an Ambiphilic PBiP Pincer Ligand” *Chem. Commun.* **2025**, 61, 11453–11456.
20. Paik, J., Choe, J. H., Padmanaban, S., Seo, M., Yoo, C., **Lee, H. B.***, Lee, Y.* “Thermodynamic Hydricity of a Ruthenium CO_2 Hydrogenation Catalyst Supported by a Rigid PNP Pincer” *JACS Au* **2025**, 5, 811–821.
19. **Lee, H. B.**†, Ciolkowski, N.†, Field, M. J., Marchiori, D. A., Britt, R. D., Green, M. T., Rittle, J.* “In *Crystallo* O_2 Cleavage at a Preorganized Triiron Cluster” *J. Am. Chem. Soc.* **2025**, 147, 770–779.
18. Bhandari, A., Park, G. M., **Lee, H. B.**, Hong, S., Kim, S. H., Byon, H. R., Lee, Y.* “A Stable Radical within a N–Co–N Core” *Chem. Commun.* **2024**, 60, 9970–9973.
17. Shiau, A. A., **Lee, H. B.**, Oyala, P. H.* , Agapie, T.* “Coordination Number in High-spin Low-spin Equilibrium in Cluster Models of the S_2 State of the Oxygen Evolving Complex” *J. Am. Chem. Soc.* **2023**, 145, 14592–14598.

16. Shiau, A. A., **Lee, H. B.**, Oyala, P. H., Agapie, T.* “Mn^{IV}₄O₄ Model of the S₃ Intermediate of the Oxygen Evolving Complex – Effect of Dianionic Disiloxide Ligand” *Inorg. Chem.* **2023**, 62, 1791-1796.
15. **Lee, H. B.**, Britt, R. D., Rittle, J.* “N–H Bond Dissociation Free Energy of a Terminal Iron Phosphinimide” *J. Coord. Chem.* **2022**, 75, 1804-1814.
14. Winslow, C., **Lee, H. B.**, Field, M. J., Teat, S. J., Rittle, J.* “Structure and Reactivity of a High-Spin, Non-Heme Iron(III)-Superoxo Complex Supported by Phosphinimide Ligands” *J. Am. Chem. Soc.* **2021**, 143, 13686-13693.
13. **Lee, H. B.**, Ciolkowski, N., Winslow, C., Rittle, J.* “High Spin Cobalt Complexes Supported by a Trigonal Tris(Phosphinimide) Ligand” *Inorg. Chem.* **2021**, 60, 11830-11837.
12. **Lee, H. B.**, Shiau, A. A., Marchiori, D. A., Oyala, P. H., Yoo, B. K., Kaiser, J. T., Rees, D. C., Britt, R. D., Agapie, T.* “CaMn₃^{IV}O₄ Cubane Models of the Oxygen Evolving Complex: Spin Ground States $S < 9/2$ and the Effect of Oxo Protonation” *Angew. Chem. Int. Ed.* **2021**, 60, 17671-17679.
11. **Lee, H. B.**[†], Marchiori, D. A.[†], Ruchira, C., Oyala, P. H., Yano, J., Britt, R. D.*, Agapie, T.* “ $S = 3$ Ground State for a Tetranuclear Mn₄^{IV}O₄ Complex Mimicking the S₃ state of the Oxygen Evolving Complex” *J. Am. Chem. Soc.* **2020**, 142, 3753-3761.
10. Mathe, Z., Pantazis, D. A., **Lee, H. B.**, Gnewkow, R., Van Kuiten, B. E., Agapie, T., DeBeer, S.* “Calcium Valence-to-Core X-ray Emission Spectroscopy: A Sensitive Probe of Oxo Protonation in Structural Models of the Oxygen-Evolving Complex” *Inorg. Chem.* **2019**, 58, 16292-16301.
9. **Lee, H. B.**, Agapie, T.* “Redox Tuning via Ligand-Induced Geometric Distortions at a YMn₃O₄ Cubane Model of the Biological Oxygen Evolving Complex” *Inorg. Chem.* **2019**, 58, 14998-15003.
8. **Lee, H. B.**, Oyala, P. H., Agapie, T.* “Synthesis, Electronic Structure, and Spectroscopy of Multinuclear Mn Complexes Relevant to the Oxygen Evolving Complex of Photosystem II” *Oxygen Production and Reduction in Artificial and Natural Systems*; James Barber, Alexander V. Ruban, and Peter J. Dixon, Ed.; World Scientific: Singapore, **2019**, 259-283.
7. **Lee, H. B.**, Shiau, A. A., Oyala, P. H., Marchiori, D., Gul, S., Ruchira, C., Yano, J., Britt, R. D.*, Agapie, T.* “Tetranuclear [Mn^{III}Mn^{IV}₃O₄] Complexes as Spectroscopic Models of the S₂ State of the Oxygen Evolving Complex in Photosystem II” *J. Am. Chem. Soc.* **2018**, 140, 17175-17187.
6. Han, Z., Horak, K. T., **Lee, H. B.**, Agapie, T.* “Tetranuclear Manganese Models of the OEC Displaying Hydrogen Bonding Interactions: Application to Electrocatalytic Water Oxidation to Hydrogen Peroxide” *J. Am. Chem. Soc.* **2017**, 139, 9108-9111.
5. **Lee, H. B.**, Tsui, E. Y., Agapie, T.* “CaMn₄O₂ model of the biological oxygen evolving complex: synthesis by cluster expansion on low symmetry ligand” *Chem. Commun.* **2017**, 53, 6832-6835.
4. Lifschitz, A. M., Hirscher, N. A., **Lee, H. B.**, Buss, J. A., Agapie, T.* “Ethylene Tetramerization Catalysis: Effects of Aluminum-Induced Isomerization of PNP to PPN Ligands” *Organometallics* **2017**, 36, 1640-1648.
3. Bogart, J. A., Lewis, A. J., Boreen, M. A., **Lee, H. B.**, Medling, S. A., Carroll, P. J., Booth, C. H., Schelter, E. J.* “A Ligand Field Series for the 4f-Block from Experimental and DFT Computed Ce(IV/III) Electrochemical Potentials” *Inorg. Chem.* **2015**, 54, 2830-2837.
2. **Lee, H. B.**, Bogart, J. A., Carroll, P. J., Schelter, E. J.* “Structural and Electrochemical Characterization of a Cerium(IV) Hydroxamate Complex: Implications for the Beneficiation of Light Rare Earth Ores” *Chem. Commun.* **2014**, 50, 5361-5363.
1. Bogart, J. A., **Lee, H. B.**, Boreen, M. A., Jun, M., Schelter, E. J.* “Fine-tuning the Oxidative Ability of Persistent Radicals: Electrochemical and Computational Studies of Substituted 2-Pyridyl Hydroxylamines” *J. Org. Chem.* **2013**, 78, 6344-6349.

INVITED SEMINARS

12. Seoul National University, Aug **2025**.
11. Ewha Womans University, July **2025**.
10. Ulsan National Institute of Science and Technology, July **2025**.
9. Korea Advanced Institute of Science and Technology, July **2025**.
8. University of South Carolina, Jan **2025**.
7. University of California Irvine, Jan **2025**.
6. Daegu Gyeongbuk Institute of Science and Technology, Dec **2024**.
5. Pohang University of Science and Technology, Aug **2024**.
4. University of Texas at Arlington, Jan **2024**.
3. University of Kansas, Dec **2023**.
2. University of Houston, Dec **2021**.
1. Rice University. Oct **2021**.

CONFERENCE PRESENTATIONS

6. 258th ACS Meeting – Aug **2019**, San Diego, CA. “Tetranuclear Mn₄O₄ complexes as models of the oxygen evolving complex of photosystem II”
5. 2nd Socal BioInorganic Meeting – Dec **2018**, Caltech. “Structural and spectroscopic models of the oxygen evolving complex in Photosystem II”
4. 1st Socal BioInorganic Meeting – Dec **2017**, UC Irvine. “Amidate-supported high oxidation state [Mn₄O₄] cubane complexes as spectroscopic models of the oxygen evolving complex in Photosystem II”
3. 251st ACS Meeting – Mar **2016**, San Diego, CA. “Tetranuclear complexes as precursors for the rational design of pentanuclear oxido clusters reminiscent of the oxygen evolving complex in Photosystem II”
2. 14th Socal Organometallics Meeting – Feb **2016**, Caltech. “Heterometallic effects on redox potential of metal-oxo clusters and efforts toward an accurate structural and functional model of the Oxygen Evolving Complex in Photosystem II”
1. 248th ACS Meeting – Aug **2014**, San Francisco, CA. “Synthesis and reactivity of heteromultimetallic cobalt-oxido cluster complexes relevant to water oxidation”

HONORS & AWARDS

ACS Award from the Dept. of Chemistry at the Univ. of Pennsylvania	2013
ACS Inorganic Chemistry Award from the Dept. of Chemistry at the Univ. of Pennsylvania	2013
ACS Award from the Dept. of Chem. Eng. at the Univ. of Pennsylvania	2013
Philadelphia Section ACS Scholastic Achievement Award	2013
Josephine DeKarman Fellowship	2012
Korean American Scientists and Engineers Association Scholarship	2011
Kimbo Foundation Scholarship	2010
Korean Honors Scholarship from the Korean Embassy	2010
Korean American Scholarship Foundation	2010
Bronze medal, Guatemalan National Chemistry Olympiad	2007
Bronze medal, Central American Mathematical Olympiad, Guatemalan delegate	2007