

**NAME, POSITION, ACADEMIC DEPARTMENT**

Eunsuk Kim

Associate Professor

Department of Chemistry, Brown University

**EDUCATION:**

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Sangmyung University, Seoul, Korea	B.S.	1994	Chemistry
Korea University, Seoul, Korea	M.S.	1996	Inorganic Chemistry
Johns Hopkins University, Baltimore, MD	Ph.D.	2004	Inorganic Chemistry
Harvard University, Boston, MA	Postdoctoral	2004-2005	Biological Chemistry
MIT, Cambridge, MA	Postdoctoral	2005-2008	Biological Chemistry

*PhD dissertation topic:* Dioxygen Reactivity of Synthetic Analogues for the Active Sites of Heme-Copper Oxidases: Copper-Ligand Influences in Iron(II)/Cu(I)/O<sub>2</sub> Chemistry  
(Advisor: Prof. Kenneth D. Karlin)

**PROFESSIONAL APPOINTMENTS:**

2004-2005	Postdoctoral Fellow, Harvard University, School of Public Health, Department of Genetics and Complex Diseases, Boston, MA (Advisor: Prof. Bruce Dimple)
2005-2008	Postdoctoral Fellow, Massachusetts Institute of Technology, Department of Biological Engineering, Cambridge, MA (Advisor: Prof. John M. Essigmann)
2008-2015	Assistant Professor, Brown University, Department of Chemistry, Providence, RI
2015-present	Associate Professor, Brown University, Department of Chemistry, Providence, RI

**ACADEMIC HONORS, FELLOWSHIPS**

2015	Deans' Award for Excellence in Teaching in the Physical/Life Sciences
2013	NSF CAREER Award
2013	American Chemical Society (ACS) GREET Award
2010	NSF ADVANCE Award (Career Development Award), NSF-Brown University
2009	Richard B. Salomon Research Award, Brown University
2008	Camille and Henry Dreyfus New Faculty Award

- 2007-2010 Life Sciences Research Foundation (LSRF) Postdoctoral Fellowship (w/ early retirement in 2008)
- 2002-2003 Martin & Mary Kilpatrick Fellowship, Johns Hopkins University
- 2002 Society of Porphyrins and Phthalocyanines (SPP) Student Award
- 2002 Alexander Kossiakoff Award, Johns Hopkins University
- 2001 International Conference on Biological Inorganic Chemistry (ICBIC) Travel Grant from Arnold and Mabel Beckman Foundation

## PUBLICATIONS:

### (Peer-Reviewed Journal Articles):

1. Kim, E.; Lee, K-B.; Jang, H.G. "Dioxygen Binding to the Singly Alkoxo-Bridged Diferrous Complex: Properties of  $[\text{Fe}^{\text{II}}_2(\text{N-Et-HPTB})\text{Cl}_2]\text{BPh}_4$ ." *Bull. Korean. Chem. Soc.*, **1996**, *17*, 1127-1131.
2. Liang, H-C.; Kim, E.; Incarvito, C.D.; Rheingold, A.L.; Karlin, K.D. "A Bis-Acetonitrile Two-Coordinate Copper(I) Complex: Synthesis and Characterization of Highly soluble  $\text{B}(\text{C}_6\text{F}_5)_4^-$  Salts of  $[\text{Cu}(\text{MeCN})_2]^+$  and  $[\text{Cu}(\text{MeCN})_4]^+$ ." *Inorg. Chem.*, **2002**, *41*, 2209-2212.
3. Zhang, C.X.; Liang, H.-C.; Kim, E.-i.; Shearer, J.; Helton, M.E.; Kim, E.; Kaderli, S.; Incarvito, C.D.; Zuberbühler, A.D.; Rheingold, A.L.; Karlin, K.D. "Tuning Copper-Dioxygen Reactivity and Exogenous Substrate Oxidation via Alterations in Ligand Electronics" *J. Am. Chem. Soc.*, **2003**, *125*, 634-635.
4. Kim, E.; Helton, M.E.; Wasser, I.M.; Karlin, K.D.; Lu, S.; Huang, H-w.; Moënne-Loccoz, P.; Incarvito, C.D.; Rheingold, A.L.; Honecker, M.; Kaderli, S.; Zuberbühler, A.D. "Superoxo,  $\mu$ -peroxo and  $\mu$ -oxo complexes from heme/ $\text{O}_2$  and heme-Cu/ $\text{O}_2$  reactivity: Copper-ligand influences in cytochrome *c* oxidase models." *Proc. Natl. Acad. Sci. USA*, **2003**, *100*, 3623-3628.
5. Kamaraj, K.; Kim, E.; Galliker, B.; Zakharov, L.N.; Rheingold, A.L.; Zuberbühler, A.D.; Karlin, K.D. "Copper(I) and Copper(II) Complexes Possessing Cross-Linked Imidazole-Phenol Ligands: Structures and Dioxygen Reactivity." *J. Am. Chem. Soc.*, **2003**, *125*, 6028-6029.
6. Karlin, K.D.; Kim, E. "Ligand influences in heme-copper  $\text{O}_2$ -chemistry as synthetic models for cytochrome *c* oxidase." *Chem. Lett.*, **2004**, *33*, 1226-1231.
7. Kim, E.; Chufán, E.E.; Kamaraj, K.; Karlin, K.D. "Synthetic Models for Heme-Copper Oxidases." *Chem. Rev.*, **2004**, *104*, 1077-1133.
8. Kim, E.; Shearer, J.; Lu, S.; Moënne-Loccoz, P.; Helton, M.E.; Kaderli, S.; Zuberbühler, A.D.; Karlin, K.D. "Heme/Cu/ $\text{O}_2$  Reactivity: Change in  $\text{Fe}^{\text{III}}-(\text{O}_2^{2-})-\text{Cu}^{\text{II}}$  Unit Peroxo Binding Geometry Effected by Tridentate Copper Chelation." *J. Am. Chem. Soc.*, **2004**, *126*, 12716-12717.
9. Kim, E.; Kamaraj, K.; Galliker, B.; Rubie, N.D.; Moënne-Loccoz, P.; Kaderli, S.; Zuberbühler, A.D.; Karlin, K.D. "Dioxygen Reactivity of Copper and Heme-Copper Complexes Possessing an Imidazole-Phenol Cross-Link." *Inorg. Chem.*, **2005**, *44*, 1238-1247.

10. Kim, E.; Helton, M.E.; Lu, S.; Moënne-Loccoz, P.; Incarvito, C.D.; Rheingold, A.L.; Kaderli, S.; Zuberbühler, A.D.; Karlin, K.D. "Tridentate Copper Ligand Influences on Heme-Peroxo-Copper Formation and Properties: Reduced, Superoxo, and  $\mu$ -Peroxo Fe/Cu Complexes." *Inorg. Chem.*, **2005**, *44*, 7014-7029.
11. Chufán, E.E.; Mondal, B.; Gandhi, T.; Kim, E.; Rubie, N; Moënne-Loccoz, P.; Karlin, K.D. "Reactivity Studies on  $\text{Fe}^{\text{III}}\text{-(O}_2^{2-})\text{-Cu}^{\text{II}}$  Compounds: Influence of the Ligand Architecture and Copper Ligand Denticity" *Inorg. Chem.*, **2007**, *46*, 6382-6394.
12. Kim, E.; Rye, P.T.; Croy, R.G.; Essigmann, J.M. "Programmable Platinum Antitumor Agents for Ovarian and Breast Cancers" *J. Inorg. Biochem.*, **2009**, *103*, 256-261.
13. Tran, N.G.; Kalyvas, C.; Skodje, K.M; Hayashi, T.; Moënne-Loccoz, P.; Callan, P. E.; Shearer, J.; Kirschenbaum, L.J.; Kim, E. "Phenol Nitration Induced by an  $\{\text{Fe}(\text{NO})_2\}^{10}$  Dinitrosyl Iron Complex" *J. Am. Chem Soc.* **2011**, *133*, 1184-1187.
14. Liu, C.; Kim, E.; Demple, B.; Seeman, N. C. "A DNA-Based Nanomechanical Device Used To Characterize the Distortion of DNA by Apo-SoxR Protein" *Biochemistry*, **2012**, *51*, 937-943.
15. Skodje, K. M.; Williard, P. G.; Kim, E. "Conversion of  $\{\text{Fe}(\text{NO})_2\}^{10}$  Dinitrosyl Iron to Nitrate Iron(III) Species by Molecular Oxygen" *Dalton Trans.*, **2012**, *41*, 7849-7851.
16. Seo, J.; Kim, E. "O-Atom Exchange between  $\text{H}_2\text{O}$  and  $\text{CO}_2$  Mediated by a Bis(dithiolene)tungsten Complex" *Inorg. Chem.* **2012**, *51*, 7951-7953.
17. Tran, C. T.; Kim, E. "Acid-dependent Degradation of a  $[\text{2Fe-2S}]$  Cluster by Nitric Oxide" *Inorg. Chem.*, **2012**, *51*, 10086-10088.
18. Fitzpatrick, J.; Kalyvas, H.; Shearer, J.; Kim, E. "Dioxygen mediated conversion of  $\{\text{Fe}(\text{NO})_2\}^9$  dinitrosyl iron complexes to Roussin's red esters" *Chem. Commun.*, **2013**, *49*, 5550-5552.
19. Seo, J.; Williard, P. G.; Kim, E. "Deoxygenation of Mono-oxo Bis(dithiolene) Mo and W Complexes by Protonation" *Inorg. Chem.* **2013**, *52*, 8706-8712.
20. Tran, C. T.; Skodje, K. M.; Kim, E. "Monomeric Dinitrosyl Iron Complexes: Synthesis and Reactivity." in *Progress in Inorganic Chemistry*, K. D. Karlin ed., Vol. 58. Wiley. 2014, pp 339-379.
21. Skodje, K. M.; Kwon, M.-Y.; Chung, S. W.; Kim, E. "Coordination-triggered NO release from a dinitrosyl iron complex leads to anti-inflammatory activity" *Chem. Sci.* **2014**, *5*, 2374-2378.
22. Fitzpatrick, J.; Kalyvas, H.; Filipovic, M. R.; Ivanovic-Burmazović, I.; MacDonald, J. C.; Shearer, J.; Kim, E. "Transformation of a Mononitrosyl Iron Complex to a  $[\text{2Fe-2S}]$  Cluster by a Cysteine Analogue" *J. Am. Chem. Soc.* **2014**, *136*, 7229-7232.
23. Tran, C.T.; Williard, P. G.; Kim, E. "Nitric Oxide Reactivity of  $[\text{2Fe-2S}]$  Clusters Leading to  $\text{H}_2\text{S}$  Generation" *J. Am. Chem. Soc.* **2014**, *136*, 11874-11877.

24. Fitzpatrick, J.; Kim, E. "New Synthetic Routes to Iron–Sulfur Clusters: Deciphering the Repair Chemistry of [2Fe–2S] Clusters from Mononitrosyl Iron Complexes" *Inorg. Chem.* **2015**, *54*, pp 10559–10567. Selected for "Editor's Choice" and featured on the journal cover
25. Fitzpatrick, J.; Kim, E. "Synthetic Modeling Chemistry of Iron–Sulfur Clusters in Nitric Oxide Signaling" *Acc. Chem. Res.*, **2015**, *48*, 2453–2461.
26. Speelman, A. L.; Zhang, B.; Silakov, A.; Skodje, K. M.; Alp, E. E.; Zhao, J.; Hu, M. Y.; Kim, E.; Krebs, C.; Lehnert, N. "Unusual Synthetic Pathway for an {Fe(NO)<sub>2</sub>}<sup>9</sup> Dinitrosyl Iron Complex (DNIC) and Insight into DNIC Electronic Structure via Nuclear Resonance Vibrational Spectroscopy" *Inorg. Chem.*, **2016**, *55*, pp 5485–5501.
27. Cao, R.; Elrod, L. T.; Lehane, R. L.; Kim, E.; Karlin, K. D. "A Peroxynitrite Dicopper Complex: Formation via Cu–NO and Cu–O<sub>2</sub> Intermediates and Reactivity via O–O Cleavage Chemistry" *J. Am. Chem. Soc.* **2016**, *138*, 16148–16158.
28. Elrod, L. T. and Kim, E. "Lewis Acid Assisted Nitrate Reduction with Biomimetic Molybdenum Oxotransferase Complex" *Inorg. Chem.* **2018**, *57*, 2594–2602.
29. Arcadia, C.; Tann, H.; Dombroski, A.; Ferguson, K.; Chen, S.-L.; Kim, E.; Rose, C.; Rubenstein, B. M.; Reda, S.; Rosenstein, J. "Parallelized Linear Classification with Volumetric Chemical Perceptrons" *Proceedings of the IEEE International Conference on Rebooting Computing 2018*.

**(Abstracts – conference presentations):**

1. 9th International Conference on Biological Inorganic Chemistry (ICBIC 9), Minneapolis, Minnesota, United States, July 11-16, 1999. Kim, E; Kopf, M-A; Karlin, K.D. "Dioxygen reactivity of a structural analogue of the Fe/Cu active site of cytochrome c oxidase". *J. Inorg. Biochem.*, **1999**, *74*, 191.
2. 220th ACS National Meeting, Washington, DC, United States, August 20-24, 2000. Kim, E; Kopf, M-A; Karlin, K.D. "Dioxygen reactivity of structural analog of the heme-copper active site of cytochrome c oxidase". 79-INOR
3. 10th International Conference on Biological Inorganic Chemistry (ICBIC 10), Florence, Italy, August 26-31, 2001. Kim, E; Kopf, M-A; Karlin, K.D. "Dioxygen reactivity of reduced heme-copper complexes utilizing tetraarylporphyrinates tethered with a tridentate ligand". *J. Inorg. Biochem.*, **2001**, *86*, 294.
4. 2nd International Conference on Porphyrins and Phthalocyanines (ICPP-2), Kyoto, Japan, June 30-July 5. Kim, E.; Helton, M.E.; Kamaraj, K.; Huang, H-W; Moëne-Loccoz, P.; Kaderli, S.; Zuberbühler, A.D.; Karlin, K.D. "Dioxygen reactivity of synthetic models for cytochrome c oxidase". S-98.
5. 224th ACS National Meeting, Boston, MA, United States, August 18-22, 2002. Kim, E.; Helton, M.E.; Kamaraj, K.; Huang, H-W; Moëne-Loccoz, P.; Kaderli, S.; Zuberbühler, A.D.; Karlin, K.D. "Synthetic models for cytochrome c oxidase and their dioxygen reactivity". 003-INOR.

6. 224th ACS National Meeting, Boston, MA, United States, August 18-22, 2002. Kamaraj, K.; Kim, E.; Karlin, K.D. "Modeling the Cu<sub>B</sub> site of cytochrome c oxidase with covalently linked imidazole-phenol containing copper complexes". 132-INOR.
7. 224th ACS National Meeting, Boston, MA, United States, August 18-22, 2002. Chufan, E.E.; Kim, E.; Karlin, K.D. "Reactivity studies of a recently discovered heme-peroxo-Cu complex: Implications for O<sub>2</sub>-activation". 042-INOR.
8. 11th International Conference on Biological Inorganic Chemistry (ICBIC 11), Cairns, Australia, July 19 – 23, 2003. Karlin, K.D.; Kim, E.; Ghiladi, R.A.; Helton, M.E.; Shearer, J.; Huang, H-W; Moëne-Loccoz. "Copper ligand influences in synthetic model studies of the cytochrome c oxidase binuclear active site". *J. Inorg. Biochem.*, **2003**, 96, 163.
9. 11th International Conference on Biological Inorganic Chemistry (ICBIC 11), Cairns, Australia, July 19 – 23, 2003. Helton, M.E.; Kim, E.; Karlin, K.D.; Honecker, M.; Kaderli, S.; Neuhold, Y-M.; Lahti, D.; Zuberbühler, A.D. "Oxygenation kinetics of iron and copper protein active site model complexes". *J. Inorg. Biochem.*, **2003**, 96, 65.
10. 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004. Chufan, E.E.; Kamaraj, K.; Kim, E.; Karlin, K.D. "Biomimetic studies on the enigmatic "A" to "P" step of heme-copper oxidases". 005-INOR.
11. 13th International Conference on Biological Inorganic Chemistry (ICBIC 13), Vienna, Austria, July 15-20, 2007. Kim, E.; Croy, R.G.; Essigmann, J.M. "Design of programmable platinum antitumor agents for breast and ovarian cancers". *J. Biol. Inorg. Chem.*, **2007**, 12 (Suppl 1), S36.
12. 234th ACS National Meeting, Boston, MA, United States, August 19-23, 2007. Kim, E.; Croy, R.G.; Essigmann, J.M. "Programmable platinum antitumor agents for breast and ovarian cancers". 153-INOR.
13. 14th International Conference on Biological Inorganic Chemistry (ICBIC 14), Nagoya, Japan, July 25-30, 2009. Seo, J; Aron, A; Kim, E. "Biomimetic catalysts for carbon dioxide conversion". *J. Biol. Inorg. Chem.*, **2009**, 14 (Suppl 1), S229.
14. 239th ACS National Meeting, San Francisco, CA, March 21-25, 2010. Tran, N.G.; Kalyvas, H.; Hayashi, T.; Moëne-Loccoz, P.; Kirschenbaum, L.J.; Kim, E. "Dioxygen Reactivity of Dinitrosyl Iron Complexes"
15. 10th European Biological Inorganic Chemistry Conference (Eurobic-10), Thessaloniki, Greece, June 22-26, 2010. Kalyvas, H.; Kim, E. "Thiol oxidation induced by Dinitrosyl Iron Complexes and Dioxygen"
16. 240th ACS National Meeting, Boston, MA, August 22-26, 2010. Kalyvas, H.; Kim, E. "Reactivity of thiolate dinitrosyl iron complexes with dioxygen" 146-INOR.
17. 240th ACS National Meeting, Boston, MA, August 22-26, 2010. Skodje, K.M.; Tran, N.G.; Kim, E. "Synthesis and dioxygen reactivity of N-bound dinitrosyl iron complexes" 147-INOR.
18. 240th ACS National Meeting, Boston, MA, August 22-26, 2010. Tran, C.T.; Kim, E. "Characterization and carbon dioxide reactivity of dinuclear molybdenum complexes" 252-INOR.
19. 240th ACS National Meeting, Boston, MA, August 22-26, 2010. Seo, J.; Kim, E. "Activation of CO<sub>2</sub> by bis(dithiolene)tungsten complexes relevant to DMSO reductase" 253-INOR.

20. 240th ACS National Meeting, Boston, MA, August 22-26, 2010. Aron, A.; Seo, J.; Kim, E. "Carbon dioxide reduction with biomimetic molybdenum catalysts" 557-INOR.
21. 15th International Conference on Biological Inorganic Chemistry (ICBIC 15), Vancouver, Canada, August 7-12, 2011. Skodje, K.M; Callan, P. E.; Shearer, J.; Hayashi, T.; Moënnelocoz, P.; Kim, E. "Phenol nitration induced by an  $\{\text{Fe}(\text{NO})_2\}^{10}$  dinitrosyl iron complexes"
22. 245th ACS National Meeting, New Orleans, Louisiana, April 7-11, 2013. Skodje, K. M.; Kim, E. " $\{\text{Fe}(\text{NO})_2\}^{10}$  DNICs with novel dioxygen reactivity and NO-donor capabilities" INOR 1257.
23. 245th ACS National Meeting, New Orleans, Louisiana, April 7-11, 2013. Tran, C. T.; Kim, E. "Formation of Hydrogen Sulfide from Degradation of [Fe-S] Clusters by NO" INOR 1258.
24. 5th International Meeting on the Role of Nitrite and Nitrate in Physiology, Pathophysiology, and Therapeutics, Pittsburgh, PA, Canada, May 4-5, 2013. Skodje, K. M.; Tran, N. G.; Kim, E. "Dinitrosyl Iron Complexes with Dioxygen Reactivity Leading to Phenol Nitration"
25. Medicinal Redox Inorganic Chemistry Conference 2013, Erlangen-Nürnberg, Germany, July 20-22, 2013. Tran, C. T.; Kim, E. "Nitric Oxide Reactivity of [2Fe-2S] Clusters Leading to H<sub>2</sub>S Generation"
26. 16th International Conference on Biological Inorganic Chemistry (ICBIC 16), Grenoble, France, July 22-26, 2013. Tran, C. T.; Kim, E. "Investigation of the Fate of Bridging Sulfides during NO Degradation of [Fe-S] Clusters"
27. 247th ACS National Meeting, Dallas, Texas, March 16-20, 2014. Tran, C. T.; Kim, E. "Formation of Hydrogen Sulfide from Degradation of [Fe-S] Clusters by NO".
28. 247th ACS National Meeting, Dallas, Texas, March 16-20, 2014. Fitzpatrick, J.; Kim, E. "Novel reactivity of  $\{\text{Fe}(\text{NO})_2\}^9$  dinitrosyl iron complexes and its implications in protein post-translational modification"
29. 45th World Chemistry Congress and 48th General Assembly Meeting of the International Union of Pure and Applied Chemistry (IUPAC-2015), Busan, Korea, August 9-14, 2015. Kim, E. "Synthetic Modeling Chemistry of Iron-Sulfur Clusters in Nitric Oxide Signaling"
30. 8th International ChemComm Symposium, Ulsan-Seoul, Korea, August 12-13, 2015. Kim, E. "Synthetic Modeling Chemistry of Iron-Sulfur Clusters in Nitric Oxide Signaling"
31. International Chemical Congress of Pacific Basin Societies, Hawaii, December 15-20, 2015. Kim, E. "Synthetic Modeling Chemistry of Iron-Sulfur Clusters in Nitric Oxide Signaling"
32. 256th ACS National Meeting, Boston, Massachusetts, August 19-23, 2018. Elrod, L. T.; Chen, S.-L. Kim, E. "Lewis Acid Assisted Oxygen Atom Transfer Chemistry with Biomimetic Molybdenum Complexes"
33. 256th ACS National Meeting, Boston, Massachusetts, August 19-23, 2018. Ferguson, K.; Lehane, R. L.; Kim, E. "Synthesis and reactivity of new [2Fe2S] clusters to study the role of mitoNEET proteins"
34. 256th ACS National Meeting, Boston, Massachusetts, August 19-23, 2018. Chen, S.-L.; Elrod, L. T.; Kim, E. "Nitrate and perchlorate reduction via Lewis acid assisted oxygen atom transfer by biomimetic Mo complexes"

**(Invited Lectures):**

- Jun. 2001 34th Middle Atlantic Regional Meeting of the American Chemical Society (MARM 2001) in Towson, MD
- Jul. 2002 2nd International Conference of Porphyrins and Phthalocyanines (ICPP-2) in Kyoto, Japan
- Aug. 2002 224th National Meeting of the American Chemical Society in Boston, MA
- Aug. 2007 234th National Meeting of the American Chemical Society in Boston, MA
- Oct. 2008 Brown University, Chemistry DUG (Departmental Undergraduate Group)
- May 2009 Brown University, Brown Energy Forum
- Mar. 2010 Brown University, Institute for Molecular and Nanoscale Innovation (IMNI)
- Mar. 2010 University of Rhode Island, Department of Chemistry
- Sept. 2010 Brown University, Department of Chemistry
- July 2011 15<sup>th</sup> International Conference on Biological Inorganic Chemistry (ICBIC 15), Vancouver, Canada, August 7-12, 2011.
- Oct. 2011 University of Massachusetts, Dartmouth, Department of Chemistry
- Oct. 2011 26<sup>th</sup> Boston Regional Inorganic Colloquium (BRIC), Clark University
- Nov. 2011 Roger Williams University, Department of Chemistry
- Oct. 2012 Clemson University, Department of Chemistry
- Dec. 2012 Ewha Womans University, Seoul, Korea
- Feb. 2013 Worcester Polytechnic Institute, Department of Chemistry & Biochemistry
- July 2013 Medicinal Redox Inorganic Chemistry Conference 2013, Erlangen-Nürnberg, Germany, July 20-22, 2013.
- Sep 2013 University of Georgia, Department of Chemistry
- Oct 2013 North Carolina State University, Department of Chemistry
- Oct 2013 Duke University, Department of Chemistry
- Dec 2013 Boston University, Department of Chemistry
- Jan 2014 Gordon Research Conference (GRC)–Metals in Biology, Ventura, CA, Jan 26-31
- Feb 2014 Dartmouth College, Department of Chemistry

Mar 2014 Stanford University, Department of Chemistry

Mar 2014 University of California, Berkeley, Department of Chemistry

Mar 2014 University of Michigan, Ann Arbor, Department of Chemistry

Apr 2014 Texas A&M University, Department of Chemistry

Apr 2014 University of Texas, Austin, Department of Chemistry

May 2014 Texas Christian University, Department of Chemistry

May 2014 Baylor University, Department of Chemistry

Jun 2014 University of California, Santa Barbara

Aug 2014 248th American Chemical Society (ACS) National Meeting, San Francisco, CA, August 10-14, 2014.

Aug 2015 45th World Chemistry Congress and 48th General Assembly Meeting of the International Union of Pure and Applied Chemistry (IUPAC-2015), Busan, Korea, August 9-14, 2015.

Aug 2015 8th International ChemComm Symposium, Ulsan-Seoul, Korea, August 12-13, 2015.

Oct 2015 Bridgewater State University, Department of Chemistry

Oct 2015 38<sup>th</sup> Boston Regional Inorganic Colloquium (BRIC), Massachusetts General Hospital

Nov 2015 Colgate University, Department of Chemistry

Dec 2015 International Chemical Congress of Pacific Basin Societies, Hawaii, December 15-20, 2015.

Oct 2015 38<sup>th</sup> Boston Regional Inorganic Colloquium (BRIC), Massachusetts General Hospital

Mar 2016 Johns Hopkins University, Department of Chemistry

Mar 2016 University of Maryland, Baltimore, Dept. of Pharmaceutical Sciences

Apr 2016 University of Nevada, Reno, Department of Chemistry

Apr 2016 University of Rochester, Department of Chemistry

Apr 2016 Rhode Island College, Physical Sciences Department

Jun 2016 National Taiwan Normal University, Department of Chemistry, Taiwan

Jun 2016 Kaohsiung Medical University, Department of Chemistry, Taiwan



Jun 2016 National Tsing Hua University, Department of Medicinal and Applied Chemistry, Taiwan

Jun 2016 Hanyang University, Department of Chemistry, Korea

Sep 2016 Louisiana State University, Department of Biological Sciences

Feb 2018 Notre Dame University, Department of Chemistry

Apr 2018 Middlebury College, Department of Chemistry & Biochemistry

Aug 2018 256th American Chemical Society (ACS) National Meeting, Boston, MA, August 19-23, 2018.

Dec 2018 Dongguk University, Department of Biomedical Engineering, Korea