

Katlyn Kelli Meier, Ph.D.

Tenure-track Assistant Professor

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Education/ Training

Stanford University

Stanford, CA

Postdoctoral Research Fellow

July 2015-June 2018 (NIH Ruth L. Kirschstein National Research Service Award Postdoc Fellow)

July 2018-July 2019 (Postdoc in Physical Bioinorganic Chemistry)

Carnegie Mellon University

Pittsburgh, PA

Doctor of Philosophy in Chemistry

August 2010-May 2015

Cumulative GPA: 4.00

University of Pittsburgh & Carnegie Mellon University

Pittsburgh, PA

Molecular Biophysics and Structural Biology

August 2009-Transferred to the CMU Chemistry PhD program in Fall 2010

Allegheny College

Meadville, PA

Bachelor of Science Degree in

Physics Minor: Philosophy

August 2005-May 2009

Personal Narrative

I am a tenure-track Assistant Professor in the Department of Chemistry at the University of Miami. My road to this point hasn't been a straight path. From my Physics and Philosophy undergraduate training to a year in a Molecular Biophysics & Structural Biology Ph.D. program, to a Ph.D. program in Physical Chemistry at Carnegie Mellon University, I have been motivated to seek opportunities that excite and challenge me. My doctoral thesis focused on characterizing synthetic, biomimetic, and biological complexes that are involved in oxygen activation. This training enabled me to gain expertise in physical, spectroscopic techniques that few other researchers in my field have (i.e., high-field Mössbauer spectroscopy and its correlation to electron paramagnetic resonance).

My success and achievements opened the door for me to pursue a postdoc at Stanford University, where I was an NIH NRSA F32 postdoctoral fellow. During this period, I collaborated closely with the lab of Dr. Carolyn Bertozzi as well as an industry partner on projects aimed at defining the O₂-dependent reaction mechanisms of copper enzymes. In my postdoc, it was important to me that I build upon my expertise and that I surround myself with excellent scientists. While a postdoc, I grew to value having a close network of friends and mentors who I could always count on for their knowledge, honesty and loyalty. I firmly believe that nurturing and investing in these relationships gave me a sense of security and allowed me to be creative in terms of the risks I felt I could take.

I joined the University of Miami in Fall 2019. I chose to pursue a career in academia because I want the freedom and independence to pursue challenging problems that interest me and that will lead to tangible improvements for others. Something I felt was missing from my previous research experiences was a connection between my research and the real world. I enjoy digging into a problem to understand its innards and turning this into a solution that will have a real impact. This, in a nutshell, is what attracted me to projects with downstream translational potential.

My group's research focuses on understanding the roles of metals, particularly iron and copper, in neurodegenerative disease, facilitating protein-protein interactions that impact drug metabolism, in antioxidant production. My group utilizes metal-centric spectroscopies to characterize metal-protein and metal-enzyme interactions at the molecular level. This insight is then correlated with characterization of protein secondary and quaternary structures, *in vivo* model systems (through collaboration), and *in silico* models, with the ultimate goal being to utilize our insights to guide the design of more effective and site-selective therapeutic agents/inhibitors.

Research Experience

Assistant Professor

University of Miami, Department of Chemistry

Coral Gables, FL

August 2019-present

Research in the Meier lab takes place at the interface of physical, inorganic, and biological chemistries and utilizes a range of spectroscopic and computational techniques to define the role(s) of metals (copper, heme, and non-heme iron) in the biological systems. More specifically, my research program focuses the roles of these metals as contributors to neurodegenerative disease progression, drug metabolism, and cellular stress response. Our work combines insight into the electronic and geometric structures of metalloproteins, their influence on protein-protein interactions, and their associated mechanistic roles in pathogenesis. Students in my group gain expertise in construct design, protein expression and purification, spectroscopic techniques (CD, EPR, Mössbauer, stopped-flow, etc.), and Density Functional Theory calculations. My lab also collaborates with several groups. These include: (i) the Zhai Lab (Cellular & Molecular Pharmacology, MSOM) to correlate our *in vitro* work on the huntingtin protein with *in vivo* Drosophila disease models, (ii) the Shafaat Lab (UCLA) on Fe₃S₄ and NiFe₃S₄ iron-sulfur clusters, (iii) the Makhlynets Lab (Syracuse University) on EPR measurement and characterization of dimanganese systems, (iv) the Snee Lab (UIC) on EPR measurement and characterization of Mn₄Te₄CdSe cluster seeded quantum dots.

- Frost Junior Research Fellow for my work on Huntington's disease – January 2020 – January 2022.
- Frost Junior Research Award – January 2020 – January 2021
- University of Miami Clinical & Translational Science Institute KL2 Scholar – February 2021 – January 2023
- National Science Foundation CAREER Award - July 2022 (5 yr)
- One-time Funding Opportunity for Junior Faculty Sponsored by the Office of the Vice Provost for Research + Scholarship (OVPRS) – April 2023 – May 31, 2023
- Three collaborative publications to date. Two publications near submission. One manuscript in preparation.

Postdoctoral Research Fellow

Stanford University Chemistry Department

Stanford, CA

July 2015-August 2019

My research in the Solomon lab focused on characterizing copper-containing enzymes involved in biological dioxygen activation with an emphasis on understanding the mechanisms of O₂ activation in systems including the polysaccharide monooxygenases and the formylglycine generating enzyme.

- Ruth L. Kirschstein National Research Service Award (NRSA) - F32 – recipient from July 2015 – July 2018
- Characterized Cu/O₂ reactive species in two enzyme systems – defining new reaction mechanisms.
- Co-authored five publications, lead author on a special topic *Chemical Review* article, with one more manuscript in preparation.

Graduate Student Researcher

Carnegie Mellon University Chemistry Department

Pittsburgh, PA

June 2010-May 2015

My research in the Münck lab focused on characterization of high-valent iron complexes, both enzymatic and synthetic models, proposed for applications in environmental and biomedical chemistry.

- Co-authored a paper on the first biologically relevant Fe^V=O complex to be reported in the literature in 2012.
- Published nineteen papers during my doctoral research tenure in the Münck lab (Fall 2010-Summer 2015).
- Thesis committee: Prof. Catalina Achim (chair), Prof. Eckard Münck (advisor), Prof. Emile Bominaar, and Prof. Michael P. Hendrich.

Internship

University of Pittsburgh School of Medicine, MBSB department

Pittsburgh, PA

Summer 2008/ 2009

- Assisted Dr. Rieko Ishima and post-doctoral fellow Joseph Walsh researching effects on protein structure and backbone dynamics in the presence and absence of alignment medium.
- I was involved in all stages of this research including protein expression, purification, sample preparation, NMR data collection and NMR data analysis and interpretation.
- Research presented at the University of Pittsburgh Summer Undergraduate Research Conference and later published in Fall 2010.

Senior Comprehensive Project
Allegheny College Physics Department

Meadville, PA
Fall 2008-Spring 2009

- Collaborated with Dr. Doros Petasis in a two-semester long study using electron paramagnetic resonance spectroscopy and UV-Vis spectrophotometry to probe effects of temperature perturbations and solvent additions to spin crossover systems of Prussian Blue analogs with Fe-Ru cores.
- Presented research at the March 2009 APS Conference in Pittsburgh, PA.

Funding (last five years)

- One-Time Funding Opportunity for Junior Faculty: “Defining the role of C99 and C103 in the interaction of copper with the huntingtin protein” K.K.M. as P.I.; \$5,000
- “CAREER: Spectroscopic Studies of Functionally Significant Interactions in Iron-dependent Proteins and Enzymes” – funded by the NSF, CHE – Chemistry of Life Processes - Award No. 2144239; K.K.M. as P.I.; \$670,000
- The Miami Clinical Translational Science Institute (CTSI) Mentored Translational Research Scholars Program Awards (KL2) for the fiscal years FY2021-2022; 75% protected research time, \$65,000; K.K.M as P.I.
- Frost Junior Fellows Program; K.K.M. as P.I. and R. Grace Zhai as co-P.I.; \$30,000
- Ruth L. Kirschstein National Research Service Award F32GM116240; K.K.M. as P.I.; \$157,290

Funding (submitted/pending/planned)

- “Collaborative Research: Doping the dopants: Multinuclear cluster-in-dot semiconductor nanoparticles” – Submitted to National Science Foundation - Division of Materials Research: Topical Materials Research Programs – Role: Co-PI

Honors and Awards

- Awarded “Lab of the Year” by the University of Miami Biosafety Department - 2023
- Recipient of the One-Time Funding Opportunity for Junior Faculty Sponsored by the Office of the Vice Provost for Research + Scholarship (OVPRS) (April 15, 2023 – May 31, 2023)
- NSF CAREER Awardee – Chemistry of Life Processes (July 2022 – present)
- Miami Clinical & Translational Research Institute KL2 Mentored Translational Research Scholar (February 2021- July 2022)
- Frost Junior Fellow (January 2020-January 2022)
- Recipient, travel award to attend the Gordon Research Conference on Metallocofactors (June 2018)
- Recipient, Ruth L. Kirschstein National Research Service Award (NRSA) - F32 Fellowship for Postdoctoral Scholars (July 2015-July 2018)
- Recipient, GSA/Provost Conference Funding Travel Award (Summer 2014)
- Recipient, GSA/Provost Conference Funding Travel Award (Summer 2013)
- Recipient, Edwin N. Lassetre Fund for Chemistry Graduate Student Travel Award (Summer 2013)
- Recipient, GSA/Provost Conference Funding Travel Award (Summer 2011)
- Jonathan Lee Rusk Memorial Prize for the outstanding senior research project in experimental Physics (2009)
- Member, National Physics Honor Society, Sigma Pi Sigma (2007-2009)
- Member, National Philosophy Honor Society, Phi Sigma Tau (2007-2009)
- Allegheny College Alden Scholar (2006-2009)
- Academic Excellence Achievement Scholarship Recipient (2005-2009)

Professional and Honorary Organizations

- Member, US Mössbauer Community; (as PI) Fall 2020 - present
- Member, Clinical Translational Science Institute (CTSI) Connections Group 2020-present
- Member, American Chemical Society; 2010-present; Inorganic Division 2021-present
- Member, South Florida Section of the American Chemical Society; 2021-present
- Member, Association for Women in Science, Palo Alto Chapter; 2017 - 2019
- Member, Women Chemists Committee; 2012, 2014
- Member, National Physics Honor Society, Sigma Pi Sigma; 2007-2009
- Member, National Philosophy Honor Society, Phi Sigma Tau; 2007-2009

Manuscripts Submitted/in Preparation

1. Badve, P.; Meier, K.K. "Spectroscopic characterization of heme binding in PGRMC1 and its impact on dimerization" – *submitted, under review*
2. Neupane, D.; Meier, K.K. "Defining the role of copper in promoting the aggregation of huntingtin protein with non-pathological repeat expansion" – *estimated submission in January 2024*

Publications

1. Lobato, A.G., Ortiz-Vega, N., Zhu, Y., Neupane, D., **Meier, K.**, Zhai, R.G. "Copper enhances aggregational toxicity of mutant huntingtin in a *Drosophila* model of Huntington's disease." ***Biochimica et Biophysica Acta (BBA) – Molecular Basis of Disease***. **2024**, *1870*, 1, 166928. (Published online now: doi.org/10.1016/j.bbadis.2023.166928)
2. Lim, H.; Brueggemeyer, M.; Transue, W.; **Meier, K.**; Jones, S.; Kroll, T.; Sokaras, D.; Kelemen, B.; Hedman, B.; Hodgson, K.; Solomon, E. "K β X-ray Emission Spectroscopy of Cu(I)-Lytic Polysaccharide Monooxygenase: Direct Observation of the Frontier Molecular Orbital for H₂O₂ Activation" ***J. Am. Chem. Soc.*** **2023**, *145*, 29, 16015-16025.
3. El Metwally A. E., Goodarzi, F., **Meier, K. K.**, Zahran, E. M., Rayat, S., Kegnæs, S., Knecht, M. R., Bachas, L. G. "Cu₂S@Bi₂S₃ Double-Shelled Hollow Cages as a Nanocatalyst with Substantial Activity in Peroxymonosulfate Activation for Atrazine Degradation" ***ACS Applied Nano Materials*** **2021**, *4*, 12222-12234.
4. Paulino, V.; Mukhopadhyay, A., Tsironi, I.; Liu, K.; Husainy, D.; Liu, C.; **Meier, K.***; Olivier, J.-H.* "Molecular Engineering of Water-Soluble Oligomers to Elucidate Radical π -Anion Interactions in n-doped Nanoscale Objects" ***J. Phys. Chem. C*** **2021**, *125*, 10526-10538. *Corresponding author
5. Jones, S. M.; Transue, W. J.; **Meier, K. K.**; Kelemen, B.; Solomon, E. I. "Kinetic Analysis of Amino Acid Radicals Formed in H₂O₂-Driven Cu(I) LPMO Reoxidation Implicates Dominant Homolytic Reactivity." ***Proc. Natl. Acad. Sci.*** **2020**, *117*, 11916-11922.
6. Appel, M. J.*; **Meier, K. K.***; Lafrance-Vanasse, J.; Lim, H.; Tsai, C.-L.; Tainer, J. A.; Solomon, E. I.; Bertozzi, C. R. "The formylglycine-generating enzyme binds substrate directly at a mononuclear Cu(I) center to initiate O₂ activation" (*co-first authors) ***Proc. Natl. Acad. Sci.*** **2019**, *116*, 5370-5375. (Highlighted in: Schilter, D. ***Nature Reviews Chemistry*** **2019**, *3*, 203.)
7. **Meier, K.**; Jones, S.; Kaper, T.; Hansson, H.; Koetsier, M.; Sarkehabadi, S.; Solomon, E.; Sandgren, M.; Keleman, B. "Oxygen activation by Cu LPMOs in recalcitrant carbohydrate polysaccharide conversion to monomer sugars." ***Chem. Rev.*** **2018**, *118*, 2593-2635.
8. Hansson, H.; Karkehabadi, S.; Mikkelsen, N.; Douglas, N.; Kim, S.; Lam, A.; Kaper, T.; Kelemen, B.; **Meier, K. K.**; Jones, S. M.; Solomon, E. I.; Sandgren, M. "A lytic polysaccharide monooxygenase from *Hypocrea jecorina* with a structurally defined linker sequence." ***J. Biol. Chem.*** **2017**, *292*, 19099-19109.
9. **Meier, K. K.**; Rogers, M.; Kovaleva, E. G.; Lipscomb, J. D.; Münck, E. Bominaar, E. "Enzyme Substrate Complex of the H₂O₀C Variant of Homoprotocatechuate 2,3-Dioxygenase: Mossbauer and Computational Studies." ***Inorganic Chemistry***. **2016**, *55*, 5862-5870.
10. **Meier, K. K.**; Rogers, M.; Kovaleva, E. G.; Bominaar, E.; Lipscomb, J. D.; Münck, E. "A Long-Lived Fe(III)- (Hydroperoxo) Intermediate in the Active H₂O₀C Variant of Homoprotocatechuate 2,3-Dioxygenase: Characterization by Mossbauer, Electron Paramagnetic Resonance, and Density Functional Theory Methods." ***Inorganic Chemistry***. **2015**, *54*, 10269-10280.

11. Prakash, J.; Rohde, G. T.; **Meier, K. K.**; Munck, E.; Que Jr., L. "Upside Down! Crystallographic and Spectroscopic Characterization of an $[\text{Fe}^{\text{IV}}(\text{Osyn})(\text{TMC})]^{2+}$ Complex." *Inorganic Chemistry*. **2015**, *54*, 11055-11057.
12. Serrano-Plana, J.; Oloo, W. N.; Acosta-Rueda, L.; **Meier, K. K.**; Verdejo, B.; Garcia-Espana, E.; Basallote, M. G.; Munck, E.; Que, Jr., L.; Company, A.; Costas, M. "Trapping a Highly Reactive Nonheme Iron Intermediate That Oxygenates Strong C-H Bonds with Stereoretention." *J. Am. Chem. Soc.* **2015**, *137*, 15833-15842.
13. Prakash, J.; Rohde, G. T.; **Meier, K. K.**; Jasniewski, A. J.; Van Heuvelen, K. M.; Munck, E.; Que, Jr., L. "Spectroscopic identification of an Fe(III) center, not Fe(IV), in the crystalline Sc-O-Fe adduct derived from $[\text{Fe}(\text{IV})(\text{O})(\text{TMC})]^{2+}$." *J. Am. Chem. Soc.* **2015**, *137*, 3478-3481.
14. Biswas, A. N.; Puri, M. **Meier, K. K.**; Oloo, W. N.; Rohde, G. T.; Munck, E.; Que, Jr., L. "Modeling TauD-J: a high-spin nonheme oxoiron(IV) complex with high reactivity toward C-H bonds." *J. Am. Chem. Soc.* **2015**, *137*, 2428-2431.
15. Makris, T. M.; Vu, V. V.; **Meier, K. K.**; Komor, A. J.; Rivard, B. S.; Munck, E.; Que, Jr., L.; Lipscomb, J. D. "An Unusual Peroxo Intermediate of the Arylamine Oxygenase of the Chloramphenicol Biosynthetic Pathway." *J. Am. Chem. Soc.* **2015**, *136*, 1608-1617.
16. *Liu, J.; **Meier, K.**; Tian, S.; Zhang, J.; Guo, H.; Schulz, C. E.; Robinson, H.; Nilges, M. J.; Munck, E.; Lu, Y. "Redesigning an Electron Transfer Protein into a Mononuclear Non-heme Iron Enzyme: Preparation and Study of Fe(II)-M121E Azurin." *J. Am. Chem. Soc.* **2014**, *136*, 12337-12344. *Co-first authors
17. Chiang, C.-W.; Kleespies, S. T.; Stout, H. D.; **Meier, K. K.**; Li, P.-Y.; Bominaar, E. L.; Que, Jr., L.; Munck, E.; Lee, W.-Z. "Characterization of a Paramagnetic Mononuclear Nonheme Iron-Superoxo Complex." *J. Am. Chem. Soc.* **2014**, *136*, 10846-10849.
18. England, J.; Bigelow, J.O.; Van Heuvelen, K.M.; Farquhar, E.R.; Martinho, M.; **Meier, K.K.**; Frisch, J.R.; Munck, E.; Que, Jr., L. "An Ultra-Stable Oxoiron(IV) Complex and Its Blue Conjugate Base." *Chem. Sci.* **2014**, *5*, 1204-1215.
19. Oloo, W.N.; **Meier, K.K.**, Munck, E., Que Jr., L. "Identification of a low-spin acylperoxoiron(III) intermediate in bio-inspired non-heme iron-catalysed oxidations." *Nature Commun.* **2014**, *5*, 3046.
20. Li, F.; Van Heuvelen, K.M.; **Meier, K.K.**; England, J.; Münck, E.; Que, Jr., L. "Sc³⁺ triggered oxoiron(IV) formation from O₂ and its nonheme iron(II) precursor via a Sc³⁺-peroxo-Fe³⁺ intermediate." *J. Am. Chem. Soc.* **2013**, *135*, 10198-10201.
21. Banerjee, R.; **Meier, K.K.**; Münck, E.; Lipscomb, J.D. "Intermediate P* from Soluble Methane Monooxygenase Contains a Diferrous Cluster." *Biochemistry*. **2013**, *52*, 4331-4342.
22. Mbughuni, M.M.; **Meier, K.K.**; Münck, E.; Lipscomb, J.D. "Substrate-Mediated Oxygen Activation by Homoprotocatechuate 2,3-Dioxygenase: Intermediates Formed by a Tyrosine 257 Variant." *Biochemistry*. **2012**, *51*, 8743-8754.
23. Cranswick, M.A.; **Meier, K.K.**; Shan, X.; Stubna, A.; Kaizer, J.; Mehn, M.P.; Münck, E.; Que, Jr., L. "Protonation of a Peroxodiiron(III) Complex and Conversion to a Diiron (III/IV) Intermediate: Implications to Proton-assisted O-O Bond Cleavage in Nonheme Diiron Enzymes." *Inorganic Chemistry*. **2012**, *5*, 10417-10426.
24. Van Heuvelen, K.M.; Fiedler, A.T.; DeHont, R.; Shan, X.; **Meier, K.K.**; Bominaar, E.; Münck, E.; Que, Jr. L. "One-electron oxidation of an oxoiron(IV) complex to form an $[\text{O}=\text{Fe}^{\text{V}}=\text{NR}]^+$ center." *Proc. Ntl. Acad. Sci.* **2012**, *109*, 11933-11938.
25. Mbughuni, M.M.; Chakrabarti, M.; Hayden, J.A.; **Meier, K.K.**; Dalluge, J.J.; Hendrich, M.P.; Münck, E.; Lipscomb, J.D. "Oxy-intermediates of homoprotocatechuate 2,3-dioxygenase: facile electron transfer between substrates." *Biochemistry*. **2011**, *50*, 10262-10274.
26. Li, F.; **Meier, K.K.**; Cranswick, M.A.; Chakrabarti, M.; Van Heuvelen, K.M.; Münck, E.; Que, Jr., L. "Characterization of a High-Spin Non-Heme Fe^{III}-OOH Intermediate and Its Quantitative Conversion to an Fe^{IV}=O Complex." *J. Am. Chem. Soc.* **2011**, *133*, 7256-7259.
27. Walsh, J.D.; **Meier, K.**; Ishima, R.; Gronenborn, A.M. "NMR Studies on Domain Diffusion and Alignment in Modular GB1 Repeats." *Biophysical Journal*. **2010**, *99*, 2636-2646.

Invited Talks

1. **Meier, K.K.** (17 November 2023) "Defining the interaction of metals with the huntingtin protein" University of St. Thomas, Chemistry Department Seminar
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2. **Meier, K.K.** (16 November 2023) "Defining the interaction of metals with the huntingtin protein" Macalester College, Chemistry Department Seminar
3. **Meier, K.K.** (2 October 2023) "Defining the interaction of metals with the huntingtin protein" University of Miami, Biology Department Seminar
4. **Meier, K.K.** (24 March 2023) "Defining the Roles of Metals in Mediating Structural Changes and Protein-Protein Interactions" Carnegie Mellon University, Chemistry Department Seminar
5. **Meier, K.K.** (5 December 2022) "Defining the Roles of Metals in Mediating Structural Changes and Protein-Protein Interactions" University of Georgia, Inorganic Chemistry Seminar
6. **Meier, K.K.** (23 August 2022) "Elucidating the role of multi-scale metal-protein interactions in Huntington's Disease", **Fall 2022 ACS National Meeting and Exposition**, Inorganic Division held in Chicago, Illinois. *Also served as session presider.
7. **Meier, K.K.** (13 May 2022) "Bridging STEM Disciplines to Tackle Big Problems in Human Health", Freedom Area High School - Keynote speaker for Spring 2022 Science Conference.
8. **Meier, K.K.** (1 April 2022) "Multi-tasking metals: Defining the functional roles of copper in enzymes and proteins", Florida International University, Chemistry Department Spring Seminar Series.
9. **Meier, K.K.** (15 November 2021) "Defining the Functional Roles of Copper in Enzymes and Proteins", South Florida Section of the American Chemical Society, Fall Seminar Series (virtual)
10. **Meier, K.K.** (26 October 2021) "Elucidating the role of metal-protein interactions in Huntington's Disease", University of Miami, 5th Annual Neural Engineering Research Symposium (virtual)
11. **Meier, K.K.** (4 June 2020) "Defining the Role of Copper in Neurodegenerative Disease Progression and Exploring its Potential as a Druggable Target", University of Miami, Frost Junior Fellows Symposium
12. **Meier, K.K.** (4 February 2019) "Spectroscopic characterization of unique iron and copper active sites in biology", Northwestern University, Chemistry Department Seminar
13. **Meier, K.K.** (15 January 2019) "Spectroscopic characterization of unique iron and copper active sites in biology", University of Washington, Chemistry Department Seminar
14. **Meier, K.K.** (7 January 2019) "Spectroscopic characterization of unique iron and copper active sites in biology", University of Wisconsin, Milwaukee, Chemistry Department Seminar
15. **Meier, K.K.** (17 December 2018) "Spectroscopic characterization of unique iron and copper active sites in biology", University of North Carolina, Chapel Hill, Chemistry Department Seminar.
16. **Meier, K.K.** (13 December 2018) "Spectroscopic characterization of unique iron and copper active sites in biology", University of Miami, Coral Gables, Chemistry Department Seminar
17. **Meier, K.K.** (10 December 2018) "Spectroscopic characterization of unique iron and copper active sites in biology", West Virginia University, Chemistry Department Seminar
18. **Meier, K.K.** (6 December 2018) "Spectroscopic characterization of unique iron and copper active sites in biology", University of Chicago, Chemistry Department Seminar
19. **Meier, K.K.** (4 December 2018) "Spectroscopic characterization of unique iron and copper active sites in biology", University of Illinois, Chicago, Chemistry Department Seminar
20. **Meier, K.K.** (29 November 2018) "Spectroscopic characterization of unique iron and copper active sites in biology", University of Michigan, Chemistry Department Seminar
21. **Meier, K.K.** (23 August 2017) "New Insight Into the Reaction Mechanism of the Formylglycine Generating Enzyme: A spectroscopic perspective." **254th ACS National Meeting and Exposition**, Inorganic Division held in Washington, D.C.
22. **Meier, K.K.** (6 December 2013) "Studies of an Fe(II) dioxygenase and its intermediates using Mössbauer Spectroscopy and DFT." 9th Annual Mini-Symposium on Metals in Biological Systems held at Duquesne University, Pittsburgh, PA.
23. **Meier, K.K.** (20 June 2013) "At the Frontier of Oxygen Activation Chemistry: The hunt for Fe^V=O Centers." **Chemistry Graduate Student Seminar Series at Carnegie Mellon University**, Pittsburgh, PA.
24. **Meier, K.K.** (2 November 2012) "The New Frontier: Novel Fe^V=O Centers." Research was presented in a **60-minute lecture** as part of the **joint Physics/Chemistry seminar series at Allegheny College**, Meadville, PA.
25. **Meier, K.K.** (June 2012) "Spectroscopic Characterization of Novel Fe^V=O Centers." Research was presented at the **Pennsylvania State University Bioinorganic Training Workshop** in an **invited**

75- minute talk including real-time tutorials for an audience of 70+ graduate students and post-docs and 10+ faculty, State College, PA.

26. **Meier, K.K.**; Van Heuvelen, K.M.; Fiedler, A.T.; DeHont, R.; Shan, X.; Bominaar, E.; Münck, E.; Que, Jr., L. (27 January 2012) "One-electron Oxidation of an Oxoiron(IV) Complex." Research was presented at the **Gordon Research Seminar** as a **30-minute talk**, Ventura, CA.
27. **Meier, K.K.** (6 October 2011) "Enhancing the Information Content of EPR Using High-Frequency Techniques." Presented in the Graduate Seminar series as a **45-minute talk**, Carnegie Mellon University, Pittsburgh, PA.
28. **Meier, K.K.**; Walsh, J.; Ishima, R. (1 August 2008) "Determination of Backbone Dynamics in Single and Dual Domain Protein GB1: Comparison in the Presence and Absence of Alignment Media." Research was presented at the University of Pittsburgh Summer Undergraduate Research Conference held in Pittsburgh, PA.

Posters

1. **Meier, K. K.**; Appel, M. J.; Lim, H.; Bertozzi, C. R.; Solomon, E. I. (12 June 2018) "New Insight Into the Reaction Mechanism of the Formylglycine Generating Enzyme and its Requirements for O₂ Activation." 2018 Metallocofactors Gordon Research Conference. Mount Holyoke College, South Hadley, MA.
2. **Meier, K. K.**; Rogers, M.; Kovaleva, E. G.; Bominaar, E.; Munck, E.; Lipscomb, J.D. (10 August 2014) "Characterization of a new, long-lived intermediate in H₂O₂ homoprotocatechuate 2,3 dioxygenase by Mossbauer, EPR, and DFT methods." 248th ACS National Meeting and Exposition – Inorganic Division, San Francisco, CA.
3. **Meier, K. K.**; Mbughuni, M.M.; Munck, E.; Lipscomb, J.D. (3 April 2014) "Mössbauer and Density Functional Theory Characterization of Two Short-Lived Intermediates in the Catalytic Cycle of Y257F Homoprotocatechuate 2,3-Dioxygenase." Innovation with Impact Research Exhibition, Carnegie Mellon University, Pittsburgh, PA.
4. **Meier, K.K.**; Mbughuni, M.M.; Munck, E.; Lipscomb, J.D. (22-27 July 2013) "Probing the Reaction Cycle of Y257F Homoprotocatechuate 2,3 Dioxygenase: Mössbauer and Density Functional Theory characterization of two short-lived intermediates." **16th International Conference on BioInorganic Chemistry**, Grenoble, France.
5. **Meier, K.K.**; Van Heuvelen, K.M.; Fiedler, A.T.; DeHont, R.; Shan, X.; Bominaar, E.; Münck, E.; Que, Jr., L. (31 May 2012-9 June 2012) "Spectroscopic Characterization of Novel Fe^V=O Centers." The Pennsylvania State University Bioinorganic Training Workshop, State College, PA.
6. **Meier, K.K.**; Li, F.; Cranswick, M.A.; Chakrabarti, M.; Van Heuvelen, K.M.; Münck, E.; Que, Jr., L. (5 April 2012) "Characterization of a High-Spin Nonheme Fe^{III}-OOH Intermediate and Its Conversion to an Fe^{IV}=O Complex." Innovation with Impact Research Exhibition, Carnegie Mellon University, Pittsburgh, PA.
7. **Meier, K.K.**; Van Heuvelen, K.M.; Fiedler, A.T.; DeHont, R.; Shan, X.; Bominaar, E.; Münck, E.; Que, Jr., L. (25-28 January 2012) "One-electron Oxidation of an Oxoiron(IV) Complex." Gordon Research Seminar, Ventura, CA.
8. **Meier, K.K.**; Li, F.; Cranswick, M.A.; Chakrabarti, M.; Van Heuvelen, K.M.; Münck, E.; Que, Jr., L. (10 August 2011) "Characterization of a High-Spin Nonheme Fe^{III}-OOH Intermediate and Its Conversion to an Fe^{IV}=O Complex." **15th International Conference on Bio Inorganic Chemistry**, Vancouver, BC Canada.
9. **Meier, K.K.**; Nocera, T.; Abood, R.; Chen, M.; Hilfiger, M.; Petasis, D.; Achim, C.; Dunbar, K. (16-20 March 2009) "Electron Paramagnetic Resonance Spectroscopic Studies of Cyanide-Bridged Fe/Os and Fe/Ru Clusters." 2009 APS March Meeting, Pittsburgh, PA.
10. **Meier, K.K.**; Walsh, J.; Ishima, R. (17 October 2008) "Determination of Backbone Dynamics in Single and Dual Domain Protein GB1: Comparison in the Presence and Absence of Alignment Media." Allegheny College Inaugural Symposium, Meadville, PA.

Service

University Committee and Administrative Responsibilities

- Spokesperson/Moderator for the Department of Chemistry Chairmanship decision 2020/2021
- Member of the Graduate Student Admissions Committee – 2019–present
- Member of the Graduate Student Committee – 2020–present
- Member of the Graduate Student Recruitment Committee – 2021–present
- Member of the 2019-2020 Polymer Chemistry Faculty Search Committee
- Member of the 2021-2022 Materials Chemistry Faculty Search Committee
- Member of the 2022-2023 Materials Chemistry Faculty Search Committee
- Member of the 2023-2024 Materials Chemistry Faculty Search Committee
- Reviewer for the Maytag Graduate Student Fellowship – 2021, 2022, 2023
- Reviewer for the 2023-2024 College of Arts & Sciences Dean's Summer Research Fellowship
- Reviewer for the 2023-2024 College of Arts & Sciences Dean's Academic Year Dissertation Awards
- Reviewer for the 2020-2021 Provost Research Award proposals
- Reviewer for the 2024 Pew Scholars Program in the Biomedical Sciences (Internal Review)
- Faculty Advisor for the Kappa Gamma Delta sorority – Spring 2023-present

Community Activities

- Judge for the College of Arts & Sciences Internal 3MT Competition; November 20, 2019, and December 12, 2023.
- Judge for the 2023 University of Miami Graduate and Postdoctoral Research Symposium
- Member of the Scientific Advisory Board – Applied Photophysics – 2021 – present
- Member of the University of Miami Institute for Data Science & Computing network
- Reviewer for *Biochemistry*
- Reviewer for *Journal of the American Chemical Society*
- Reviewer for *Frontiers in Chemical Biology*
- Served on review panel for a national funding agency
- Contributed to promotional content for University of Miami College of Arts & Sciences – International Women in Science Day 2022
- Contributor to the Beckman Scholars Proposal
- Contributor to the NSF REU Proposal submitted Fall 2020
- Founder of the Chemistry Graduate Student Mentoring Program (Fall 2022 – present); associated with NSF CAREER award
- Co-organizer of the first annual University of Miami Chemistry Invitational – Fall 2022
- Panelist on the University of Miami NSF CAREER webinar
- Outreach: CHEM ELECTIVE with Beis Chana High School students
- Outreach: Mentor for the University of Miami Young Scholar Program – Summer 2022, 2023
- Outreach: Provided lab tours for college admissions personnel in collaboration with Emily Long - 20 admissions recruiters interested in touring lab spaces to discuss the opportunities for mentorship between undergraduates and faculty in research areas. – Summer 2022
- Career Champion partner with the University of Miami Toppel Career Center – Fall 2023 – present
- Member of the American Chemical Society
- Member of the American Chemical Society, Inorganic Division
- Member of the South Florida American Chemical Society Chapter
- Session Co-President for for the **Fall 2022 ACS National Meeting and Exposition**, Inorganic Division: Bioinorganic Chemistry: Proteins & Enzymes & Model Systems session held in Chicago, Illinois
- Participant in Platform for Excellence in Teaching & Learning (PETAL) – Multiweek program on teaching large enrollment courses
- Participant in Institutional Academy for Teaching and Excellence – Fall 2019

Teaching Specialization

- Instructor – Principles of Spectroscopic Techniques (CHM565 and 665)** Coral Gables, FL
University of Miami, Chemistry Department Fall 2023
- 10-student enrollment, hybrid format; 7 undergraduates, 3 graduate
 - Designed course lectures, assignments, and exams.
 - Taught 50-minute lectures three-times per week and held two office hours per week as well as upon request.
 - Incorporated more hands-on/lab-based components to better understand select spectroscopic techniques (i.e., CD, EPR, etc.).
- Instructor – Principles of Chemistry (CHM121-E)** Coral Gables, FL
University of Miami, Chemistry Department Spring 2021, '22, '23, '24
- 150-student enrollment, in-person (2021)/ 189-student enrollment, in-person (2022)/ 210-student enrollment, in-person (2023)
 - Designed course lectures, and exams, provided feedback to students, graded exams.
 - Taught 50-minute lectures three-times per week and held 3+-hours of office hours per week as well as 2.5 hours of 20-minute one-on-one appointments per week.
- Instructor – Principles of Spectroscopic Techniques (CHM565 and 665)** Coral Gables, FL
University of Miami, Chemistry Department Fall 2020
- 6-student enrollment, hybrid format
 - Designed course lectures, assignments, and exams.
 - Taught 50-minute lectures three-times per week and held two office hours per week as well as upon request.
- Instructor – Principles of Spectroscopic Techniques (CHM565 and 665)** Coral Gables, FL
University of Miami, Chemistry Department Fall 2019
- 13-student enrollment, in-person
 - Designed course lectures, assignments, and rubrics for student presentations and writing.
 - Taught 50-minute lectures three-times per week and held two office hours per week as well as upon request.
- Teaching Assistant – Mathematical Methods for Chemists** Pittsburgh, PA
Carnegie Mellon University, Chemistry Department Fall 2010, 2011, 2012
- Designed course assignments, provided feedback to students, graded all materials.
 - Taught weekly recitation sessions in addition to holding office hours and tutoring upon request.
 - Lead instructor for several classes in years two and three.
- Teaching Assistant – Physical Chemistry for Biologists** Pittsburgh, PA
Carnegie Mellon University, Chemistry Department Spring 2012
- Designed course assignments and quizzes, provided feedback to students, graded all materials.
 - Taught two recitation sessions per week in addition to holding office hours and tutoring upon request.
- Teaching Assistant – Physical Chemistry Thermodynamics** Pittsburgh, PA
PA Carnegie Mellon University, Chemistry Department Spring 2011
- Designed course assignments, designed weekly quizzes, provided feedback to students, graded all materials.
 - Taught weekly recitation sessions in addition to holding office hours and tutoring upon request.

Mentoring

Thesis advisor to: Deepa Neupane – Graduate student – “Defining the role of copper in neurodegenerative disease progression – a look at the interaction of copper with huntingtin protein.”
Prajakta Badve – Graduate student – “Spectroscopic characterization of heme protein-protein interactions promoting chemoresistance.”
Kassidy Rodriguez – Graduate student – “Spectroscopic and Biophysical Characterization of *CthEgtB* – Defining the impact of tertiary structure on reactivity and enzyme mechanism”
Opeyemi Isaac – Graduate Student – *Thesis title TBD*

Research advisor to: Elliott Cleven – Undergraduate student – *Now Chemistry PhD at Univ. Miami*

Alfred Shomar – Undergraduate student – Chemistry
Allison Kelley – Undergraduate student – Biomedical Engineering
Alyssa Francis – Undergraduate student
Rahul Kumar – Undergraduate student – Pre-medicine/ Biology
Emirose Thattil – Undergraduate Student – Biomedical Engineering
Jacqueline Kerry Koerwitz – Undergraduate Student – Psychology, Chemistry (minor)
Nina Ally – Undergraduate Student – Chemistry/International Studies
Jordan Garber – Undergraduate Student – Chemistry
Saisavat Phommavongsa Aguiar – Undergraduate Student from Florida International University, Research Volunteer Spring 2023

Thesis committee member for: Brianna Bernard – Leblanc Group, Chemistry

Nermina Brljak – Knecht Group, Chemistry – Defended Fall 2022
Caroline Velez – Acevedo Group, Chemistry – Defended Spring 2023
Ifigeneia Anais Tsironi Tzinious – Olivier Group, Chemistry
Emel Kirbas Cilingir – Leblanc Group, Chemistry – Defended Spring 2023
Braulio Carrera Loureiro B Ferreira – Leblanc Group, Chemistry
Yuliana Perdomo – Knecht Group, Chemistry – Defended Summer 2023
Justin Domena – Leblanc Group, Chemistry
Lukun Wang – Prabhakar Group, Chemistry
Leonardo Farias Serafim – Prabhakar Group, Chemistry – Spring 2022
Andrea Tomassini - Raymo Group, Chemistry
Kyle Meerbott – Knecht Group, Chemistry
Annu Joji – Leblanc Group, Chemistry
Shiwei Fu – Zhang Group, Chemistry
Sreerag Moorkannur, Prabhakar Group, Chemistry
Elliott Cleven – Walls Group, Chemistry

Summer research mentor for: Esmeralda Swietelsky – Ransom Everglades High School - via the University of Miami Young Scholar Program

Braylen Washington – Northeast High School – via the University of Miami Young Scholar Program