



# SoFlacs



Vol. 31, No. 7

South Florida Section American Chemical Society

November 2021



## Virtual Section Meeting

Monday, November 15, 5:30 PM

Join via Zoom Meeting

<https://american-chemical-society.zoom.com/j/86202021632>

**Dr. Katlyn Meier**

Department of Chemistry University of Miami

### *Defining the Functional Roles of Copper in Enzymes and Proteins*

Redox-active metals help to maintain proper structure and function in many proteins and enzymes. In this seminar, I will present work from two examples that highlight the diverse roles of copper: the formylglycine-generating enzyme (FGE) and the huntingtin protein. FGE utilizes a mononuclear copper active site in combination with  $O_2$  to convert a substrate cysteine to C $\alpha$ -formylglycine, which is essential for proper sulfatase function. We utilized x-ray crystallography, electron paramagnetic resonance (EPR), and high-energy x-ray techniques to define the structural and electronic properties of the resting and substrate-bound (ES) states as well as changes in the spectral signatures upon reaction with  $O_2$ . The second example focuses on understanding the role of elevated copper levels in Huntington's disease via interaction with the huntingtin protein. This highly collaborative work aims to connect our molecular level insight with *in vivo* disease models to understand the effect of copper on protein oligomerization and generation of reactive oxygen species.

Katlyn received her B.S. in Physics from Allegheny College in 2009, where she conducted research with Doros Petasis to spectroscopically characterize (via electron paramagnetic resonance, EPR) Fe/Ru spin cross-over complexes. She received her Ph.D. in Physical Chemistry from Carnegie Mellon University in 2015 under the direction of Professor Eckard Münck. During her graduate research she utilized EPR in combination with variable temperature and variable field (VTVH) Mössbauer spectroscopies and density functional theory (DFT) studies to define the structural and electronic properties of biological, biomimetic, and synthetic systems that are involved in  $O_2$ -activation. After earning her Ph.D., Katlyn went on to join the lab of Professor Edward Solomon at Stanford University as a NIH Ruth L. Kirschstein National Research Service Award fellow. During this time, she expanded her expertise to include VTVH magnetic circular dichroism (MCD), CD, stopped-flow absorption kinetics, and protein expression and purification. Since starting her independent career in 2019 at the University of Miami Chemistry Department, Katlyn has been named a Frost Junior Research Fellow, and she has received funding support from the University of Miami College of Arts & Sciences and the Miami Clinical and Translational Science Institute KL2 program for her work to elucidate the interaction of the huntingtin protein with copper and commercially available chelators.

## ELECTION OF SoFL-ACS 2022 OFFICERS

You will soon receive via US mail the bios and position statements of the nominees for SoFL-ACS 2022 officers. Electronic voting will begin Monday, November 15 for those members with email, or you can vote using the paper ballot that you will receive via US mail. Please VOTE.