

**Cole Stern**, The Pennsylvania State University, State College, PA, for his project: *Constraining the Effect of Mineralogy on Phosphate Coprecipitation with Carbonate Minerals*

Cole Stern is a dual title Geology-Biogeochemistry PhD candidate at Penn State University originally hailing from Ogden, UT. Cole previously studied Hungarian political theatre at Columbia University and the water chemistry of Great Salt Lake at Weber State University before joining Miquela Ingalls' Lab in 2023. Cole has been a University Graduate Fellow at Penn State since 2023 with research focused on experimentally constraining the Carbonate Associated Phosphate (CAP) proxy and using this proxy to describe phosphorus availability in the Neoproterozoic Era.

The Mineralogy, Geochemistry, Petrology, and Volcanology Division Student Research Grant Award will fund Raman micro-spectroscopic analyses of experimentally precipitated samples at a variety of solution pHs and ionic activities.

Samples will be precipitated in test solutions and then brought to University of Colorado-Boulder to use their Raman micro spectrometer and collaborate with local experts in carbonate mineral spectroscopy. These scans will help characterize the relationship between carbonate and phosphatic minerals during the coprecipitation of carbonate and phosphate from the water column. These results could provide another avenue for identifying nutrient availability at the time of mineral formation, a critical question in the evolution of life in the Proterozoic.

