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**NASA Astrobiology Early Career Collaboration Award Report: Determining the biogenic characteristics and preservation of halophilic microorganisms within evaporite minerals**

My Early Career Collaboration Award evolved into something greater than initially anticipated. The funds were very useful in expanding our initial collaboration beyond just Scott and I. Based on proof of concept experiments conducted at UCSB, we sought an understanding of chemical biogenic signatures preserved within halite minerals in the form of gasses. At the Natural History Museum in Los Angeles, we were successful in meeting our goals of learning how to apply Raman Spectroscopy in the analysis of fluid inclusions within halite minerals to understand relative abundances of gas species captured by the formation of the mineral. We obtained our initial figures and spectra for our upcoming publication related to this effort.

The second part of our work was based on learning and applying Mass Spectrometry with a custom built system at the University of Western Ontario while I visited Dr. Nigel Blamey. This instrument is equipped with sample crushers that are used to incrementally crush milligram sized mineral samples to release the preserved gasses while the vacuum pressure carries the gasses to the Mass Spec for analysis. The purpose of this was to compare the concentrations of gasses in lab grown halite minerals from environmental samples by variables such as mass, depth, and chemical composition in order to assess the ability for halite to serve as a stable material capable of preserving chemical biomarkers over geologic timescales. Our goal in completing this effort is to contribute to a broader understanding of planetary habitability and atmospheric evolution.

I am grateful to the NASA Astrobiology Program for supporting me in this opportunity to analyze shared samples. The collaboration between Scott and I has grown to include a great team of researchers that have provided us access to instrumentation key to our work. This team has exposed me to analytical techniques that I have not had the opportunity to utilize beforehand, expanding my skillset and I anticipate this experience will have a positive impact on my research career.