

USING SULFATE SULFUR AND OXYGEN ISOTOPES TO UNDERSTAND MICROBIALITE FORMATION

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Microbialites appear to provide the earliest evidence for life on Earth and are the most conspicuous evidence for life throughout the Precambrian. They are an important part of carbonate platforms from the Archean through the Phanerozoic. Additionally, in cases, microbialite-rich carbonates are important reservoir rocks. Therefore, studying formation and alteration of microbialites is appealing from an evolutionary, sedimentological, and economic perspective. I am undertaking a combined petrographic and geochemical study in order to improve our understanding of the relationship between microbial sulfur cycling carbonate precipitation and dissolution in modern Bahamian microbialites. More specifically, I will conduct solid phase and dissolved S isotopic work on modern microbial carbonates from the Bahamas, which should allow for the development of a rigorous model for their formation. I will directly correlate geochemical signatures with specific microbial fabrics. This work will improve our understanding of the Bahamian microbialites, which can serve as a guide for interpreting the formation and alteration of ancient microbialites.