

## **Rare earth element patterns of modern stromatolites from Hamelin Pool, Shark Bay, Western Australia**

Stromatolites are critical evidence of the earliest traces of life on Earth, yet consensus has not yet been reached regarding the mechanisms by which stromatolites form. This study had two objectives: [1] analyze and interpret previously collected REY data analyzed by LA-ICP-MS and sequential leach analysis from modern and ancient stromatolites to determine the most effective method of extraction, and [2] analyze eight samples from Hamelin Pool using the selected method of rare earth element extraction identified in my first project objective to assess whether different morphologies across the eight Hamelin Pool Stromatolite Provinces display different rare earth element patterns. Understanding the significance of Rare Earth Element (La-Lu), Yttrium, and Thorium (REY + Th) records in stromatolites may represent a breakthrough in the understanding of the processes by which stromatolites form and provide insight into the ancient depositional environments in which the stromatolites formed.