

# The uranium isotopic composition of modern stromatolites forming in Shark Bay, Western Australia

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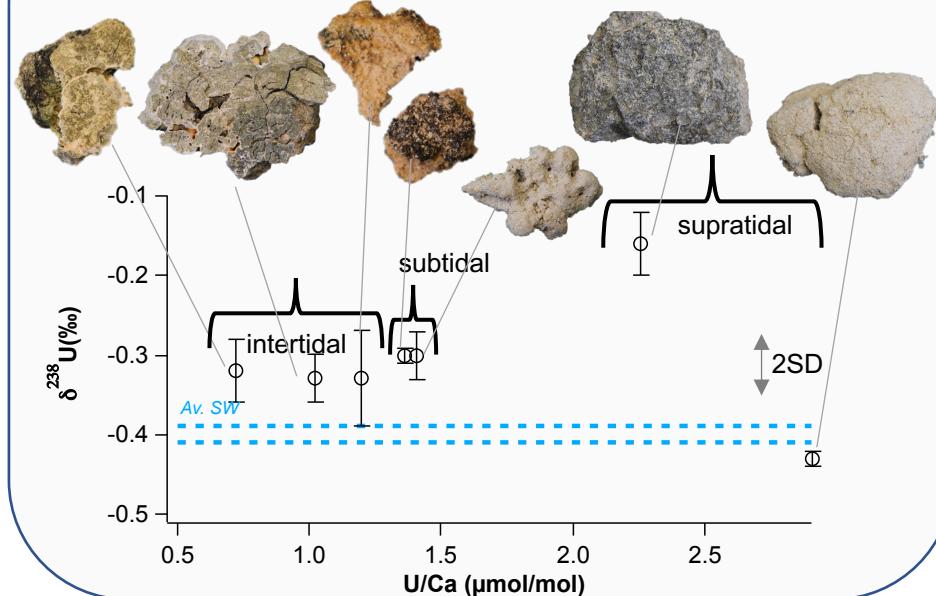
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**Research aims:** Stromatolitic carbonates commonly occur in the Precambrian record, but are they useful geochemical archives for paleoredox proxies, such as  $\delta^{238}\text{U}$ ? We assess here if modern stromatolites record seawater-like  $\delta^{238}\text{U}$ .

## Box 1: Syndepositional $\delta^{238}\text{U}$ offset of ~0.1‰ from seawater for modern stromatolite crusts

$$\delta^{238}\text{U} (\text{in } \text{\textperthousand}) = \left[ \frac{(^{238}\text{U}/^{235}\text{U})_{\text{sample}}}{(^{238}\text{U}/^{235}\text{U})_{\text{CRM112A}}} - 1 \right] * 1000$$



## Main findings:

- Offset from  $\delta^{238}\text{U}_{\text{seawater}}$  for modern stromatolite crusts (Box 1)
- Additional offset in older stromatolite layers (Box 2).
- To avoid spurious interpretation of  $^{238}\text{U}/^{235}\text{U}$  data from ancient carbonates, must consider pore water redox conditions, OM content and possible post-deposition alteration

## Box 2: U reduction in older stromatolite layers driven by microbial respiration of organic C during early diagenesis?

