Cortical fabrics in ooids of the Tamengo Formation, Brazil: further evidence for widespread late Ediacaran aragonite precipitation in shallow marine settings

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The Tamengo Formation is a mixed carbonate-siliciclastic unit in west Brazil, precisely dated to the late Ediacaran (555.2 to 541.8 Ma). It comprises sedimentary facies along a shallow to intermediate setting and presents a rich fossil record, including the first biomineralizing organisms (*Corumbella* sp., *Cloudina* sp.). A proximal carbonate section essentially composed of oolitic limestones was sampled in high resolution for petrographic, isotopic and geochemical analyses to better constrain the shallow marine environment and its implications for the related biota. The ooids have tangential, brick-like cortices with length-fast crystals elongated parallel to ooid laminae, sometimes with dissolution textures, suggesting an aragonitic precursor. This is further corroborated by high Sr contents (up to 5000 ppm) in the same rocks. The increase in [Sr] is accompanied by the appearance of reworked fragments of *Cloudina* sp. The high concentrations of Sr could be a consequence of the discharge of Sr-enriched fluxes due to the increase in continental weathering and/or to high rates of aragonite precipitation above the Ca^{2+} saturation line in a stratified ocean. These observations represent additional evidence for high alkalinity in the late Ediacaran marine environment, as reported for other *Cloudina*-bearing successions worldwide. High concentrations of Ca in marine environments at the late Ediacaran may be linked to the emergence of carbonate biomineralization in animals.