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Chemical analysis of the growth rings in the bamboo corals

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Bamboo corals are common in the Indo-Pacific and Atlantic Ocean. These corals (family Isididae) are among the most easily recognized deep-water octocorals due to their articulated skeleton comprised of non-sclerite calcareous internodes alternating with proteinaceous nodes. Colonies live in seas below 800 m [1] and are shaped in different way, as a rule they are branched, bushy or fan-like and can range in size from tens of centimeters to even a few meters. Bamboo corals form large underwater, very fertile meadows and forests populated by individuals up to 10 m high and with bases as wide as 3 m. The sequence of consecutive light inorganic and dark organic parts along the length of the branch gives the organisms a bamboo-like appearance. The ring structure similar to growth rings in trees is clearly visible on a transverse cross section of internodes. Chemical composition and state of Keratoisis coral skeletons (bamboo corals) have been analyzed by the Scanning Electron Microscopy coupled with Energy Dispersive X-ray (SEM/EDX) and photoelectron spectroscopy (XPS). Raman microspectroscopy has been shown to be very powerful technique for the identification and distribution an organic groups and compounds.

Mappings of the chemical composition of inorganic and organic parts of the coral rings show diversity in the location and concetration of elements and a specific microzones inside growth rings (see Fig 1) correlated with aminoacids distribution.

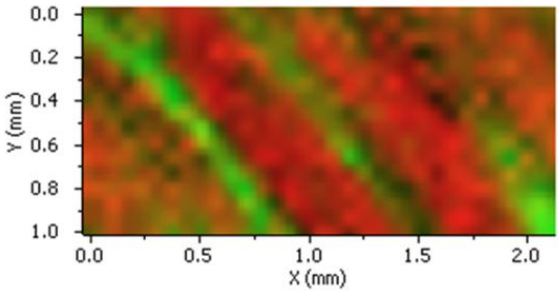

Figure 1. XPS mapping of Ca and Br in the coral growth rings. Signal Ca 2p is green whilst Br 3d5 is red.

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