ACTA PALAEONTOLOGICA POLONICA

Cyanobacterial origin of microcrystalline cements from Pleistocene rhodoliths and coralline algal crusts of Okierabu-jima, Japan

Józef Kaźmierczak and Yasufumi Iryu
Acta Palaeontologica Polonica 44 (2), 1999: 117-130

Microcrystalline (micritic) Mg-calcite cements generated by in vivo calcified coccoid cyanobacteria have been identified in rhodoliths and coralline algal crusts from the Pleistocene Ryukyu Group of Okierabu-jima (Ryukyu Islands, Japan). The cements occur as: (i) fringes and festoons on ventral surfaces of *Neogoniolithon fosliei*, (ii) coatings on dorsal and ventral surfaces of *Mastophora pacifica*, and (iii) encrustations on tubular thalli of epiphytic and/or chasmolithic green algae. The calcification of the cyanobacteria colonizing spaces within the coralline algal framework was presumably enhanced by a local increase in calcium carbonate saturation due to CO2 uptake by the living red and green algae strengthened by increased alkalinity resulting from decay processes in the framework. Many microcrystalline (micritic) cements described from other modern and ancient reefal limestones may, by analogy, be products of similar in vivo calcified cyanobacteria.

Key words: Cyanobacteria, coralline algae, reefs, biocalcification, carbonate cements, micrite, geomicrobiology.

Józef Kaźmierczak [jkaz@twarda.pan.pl], Instytut Paleobiologii PAN, ul. Twarda 51/55, PL-00-818 Warszawa, Poland. Yasufumi Iryu [iryu@dges.tohoku.ac.jp], Institute of Geology and Paleontology, Graduate School of Science, Tohoku University, Aobayama, Sendai 980-8578, Japan.

Full text (1,110.4 kB)