

Tube microstructure of Recent and Jurassic serpulid polychaetes and the question of the Palaeozoic 'spirorbids'

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'Ordered' and 'unordered' chevron structures in serpulid tubes comprise minute calcite lath-like crystals. In ordered chevron structure (*Pomatoceros triqueter*) the crystals parallel each other within each chevron layer, whilst between layers the alignment direction alternates. The laths have no alignment in unordered chevron structure (*Spirorbis* and locally in *Pomatoceros triqueter*). In 'homogeneous chevron structure' (found in Jurassic pomatocerids) the layers comprise a granular or homogeneous fabric. This structure possibly represents a diagenetic replacement of lath-like crystals. Serpulid chevron structures are quite dissimilar from any shell microstructures described in molluscs or lophophorates. The secretion of microstructures comprising lath-like crystals may have allowed rapid tube growth. Spherulitic prismatic structure is identified in *Spirorbis*; the structure occurs locally in the outer part of the tube. The microstructure of Recent spirorbids is quite dissimilar to that of Palaeozoic fossils (microconchids) previously assigned to the genus *Spirorbis*.

Key words: serpulids, microstructure, biomineralization, ordered chevron structure, unordered chevron structure, homogeneous chevron structure, spherulitic prismatic structure.

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