

**MS18-2-1 Texture and microstructure of the outer layer of a brachiopod fossil from the Terebratulida order (-155 My)**

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**Abstract**

Quantitative analysis of the crystallographic texture and microstructure of the biomineral layers of some invertebrates provide a better understanding of the species' phylogenetic placement, as well as they specify the purely mineral impact on their shell growth. For example, in current molluscs, the phylogenetic signal due to the strong and varied textures of the aragonitic layers helps to specify certain hypotheses [1], and in extinct fossilized species with calcitic layers to establish possible kinship relations [2]. The textures of the biomineral layers of the mollusc clade have been extensively studied, unlike to the brachiopod and bryozoan clades.

In this contribution, we present the outer calcitic layer of a fossilised brachiopod species of the Upper Jurassic (Kimmeridgien stage), belonging to the order Terebratulida. The sample was collected in Loix-en-Ré, Charente-Maritime, France. The layer was measured using 4-circles X-ray diffraction, then the texture was estimated by using the Combined Analysis method [3]. It exhibits a fibre texture with the  $\langle 001 \rangle$  fibre axis perpendicular to the layer plane. The absence of preferred orientations perpendicular to  $\langle 001 \rangle$  indicates a behaviour already observed in the fossil calcite layers and current molluscs, as well as in bryozoans.

**References**

- [1] D. Chateigner et al., Materials Science and Engineering A, 528, (2010), 37-51
- [2] D. Chateigner et al., Materials Science Forum, 408, (2002), 1687-1692
- [3] D. Chateigner (Ed.), Combined Analysis, ISTE-Wiley (2010).

{0012} and {300} pole figures of calcite.

