

Is lamination in inoceramid shells as a result of paleoenvironment changes in the Late Cretaceous? Study case from the Skole Unit (Eastern Carpathians, Poland).

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According to modern paleoenvironmental analysis, in the Late Cretaceous climate in the area of average geographical latitudes was rather stable, without seasons and seasonality influence. Additionally there was no sea currents and deep water circulation in the northern Tethys or smaller basins connected to it, like Skole Basin. These conditions supposed to be reflected by structure or chemical composition in shells or skeletons of marine organisms as a continuous record. The aim of presented study is to find a reason of presence of heterogeneous lamination characterized by different laminae thickness in inoceramid shells. Samples of benthic bivalves were collected from the Inoceramid Layers from the profile located near Rybotycze village, South-East of Poland. This profile consists of flysch rocks of the Upper Cretaceous - Paleogene (Turonian – Thanetian) Ropianka Formation (fm). Research is based on the analysis of cross sections of shells by polarized microscope, cathodoluminescence (CL), and Scanning Electron Microscope (SEM) with microanalysis using energy dispersive spectrometer (EDS). All the collected bivalve samples scrutinized under CL represent low to medium - low influence of diagenetic processes. CL reveals variety of lamination occurring in cross sections. SEM observations indicate no differences in crystal structures in reference to shells lamination. Additionally no presence of bacterial relicts in laminae were observed using SEM. Analysis shows evident reduction of calcite prism sizes and lengths from the inner shell layer to the outer shell layer in a cross-section. The lamination is not connected with location in a cross-section of shell and size of prisms. The EDS analyses do not indicate significant changes between layers. The intensity and occurrence of lamination shows no connection with chemical composition, presence of bacteria or diagenetic influence.