

Aragonitic rostra of the Turonian belemnite *Goniocamax*: Arguments from diagenesis

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The hypothesis that belemnite rostra are formed by primary biogenic low-Mg calcite is widespread. However, the coexistence in the same rostrum of both aragonitic and calcitic components has been reported in true belemnites (*Goniocamax*, Turonian). A combined microstructural and chemical composition study of the comparison of shells with undisputed mineralogy from the same site as the Turonian *Goniocamax*, shows that these aragonitic shells display the effects of diagenetic alteration. These observations favour the hypothesis that belemnite rostra are composed of primary aragonite, rather than low-Mg calcite, and are consistent with all other cephalopod shells. Calcitic and aragonitic rostra are also known in other Dibranchiata such as Triassic Aulacocerida and Eocene *Belopterina*. Diagenetic changes such as shown here may clearly affect palaeo-environmental interpretations based on carbonate shells.

Key words: Cephalopoda, Belemnitida, *Goniocamax*, palaeo-environment, aragonite, calcite, diagenesis, Turonian, Piasina River, Siberia.

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