Nanoobjects microscopy

Nanostructure of phosphorites (Volyno-Podillia, Ukraine)

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Phosphorites (sedimentary formations enriched in Ca-phosphate minerals) are known to have formed in Pre-Cambrian (Ediacaran, 590±50 Ma) and Cretaceous (Alb-Cenomanian, 100±5 Ma) deposits of Volyno-Podillia, Ukraine. Various types of fossilized microbial forms and biogenic microstructures have been identified in many phosphorites throughout geological history [1, etc.]. But the biogenic vs. abiotic origin of some of phosphorites is debated and the exact role of microbes in process mediation remains uncertain. SEM study of phosphorites nanostructure from Volyno-Podillia have been aimed at searching for traces of microbial activity and identifying biotic/abiotic features of textures transformation. As a result, main nanostructure peculiarities of the Ediacaran and Cretaceous phosphates have been revealed for the first time, and their nanostructures main genetic types (microbial, biomorphic, diagenetic, hypergenetic ets.) have been distinguished Fig.

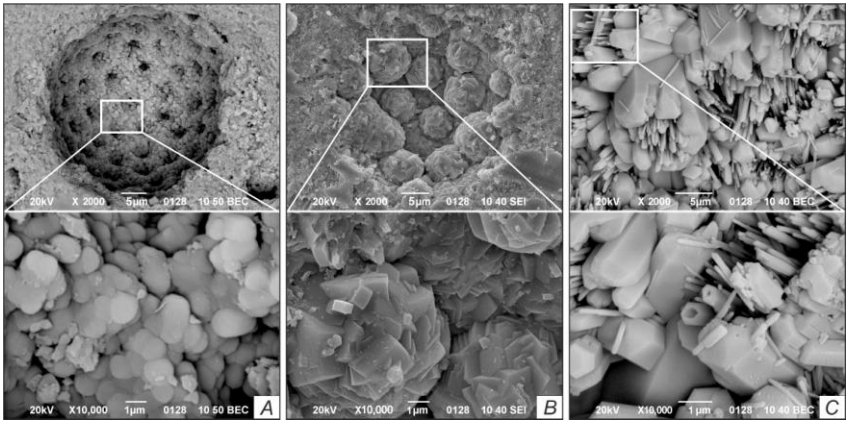

Fig. Nanostructures of phosphorites: *A* – Inframicron bacterial (coccoid-like) phosphate microglobules (Upper Cenomanian); *B* – Globular biomorphic phosphate with crystallomorphic surface; *C* – Crystalomorphic diagenetic phosphate, prismatic, needle-like crystals and their aggregates (Ediacaran).

1. Phosphorites of the West of Ukraine / V.V. Glushko, A.Yu. Senkovsky – Kiev. Nauk. Dumka, 1989. – 130 p.