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Nanosized and nanostructured mineral phases from recent sediments and soils of the Adriatic region

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This presentation aims to demonstrate the appearance of nanosized and nanostructured mineral phases determined in different modern marine and lacustrine sediments of the Adriatic region (Fig. 1) and in soils situated on carbonate rocks along the Adriatic coast. Special attention was paid to determining the type of nanominerals and nanosized mineral phases and their unique structural and morphological features at the nanoscale. The results obtained show that their appearance in sediments and soils can be used to determine the physico-chemical conditions that prevailed in the environment during their formation. In addition, the occurrence of newly formed nanomineral particles allow us to determine the early diagenetically driven changes that govern formation and phase transformation of nanosized mineral particles in environment. The role of nanomineral phases in the cycling of trace elements in investigated sediments will be also addressed. Biologically induced formation of submicron-sized, nanostructured and hierarchically organized biomineral structures built up of anhydrous carbonates, particularly aragonite and calcite will be presented. Finally, the role of reaffirmed non-classical crystal-growth mechanisms, especially the particle-mediated, nanoscale aggregation route where nanostructured mineral phases are formed through the aggregation of preformed nanosized particles will be discussed.

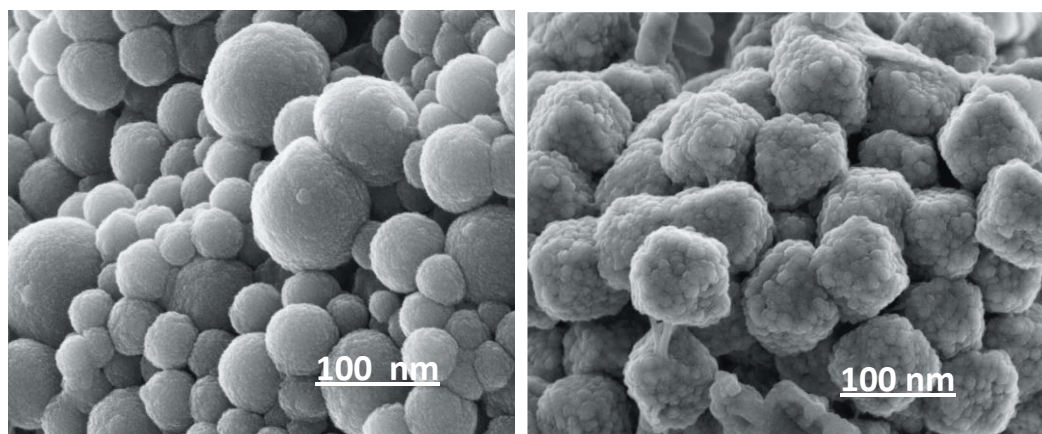


Figure 1. FESEM photomicrographs showing morphological features of the authigenically precipitated nanosized vaterite prevailing in the Kuti Lake sediments, the Neretva River Delta (left) and nanosized framboidal pyrite clusters from the Malo jezero, Mljet island (right).

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