Uranium and Thorium content in bone phases studies – a step to U-series dating of fossil bones

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Direct dating of fossil bones using the U-series method is considered impossible because of the processes of accumulation and diffusion of uranium during the time when bone is buried in sediment. Commonly applied mathematical models allow the evaluation of the environmental influences and capability of bone, as a whole, to exchange uranium isotopes. In our research, a different solution of Uranium uptake problem has been elaborated. By considering a bone as a complex system of organic and inorganic phases, an attempt to estimate the capacity of the Uranium and Thorium uptake of the phases was made. This method showed that collagen, in comparison with other bone phases, has extremely low values of uranium content and, additionally, that these values do not exceed the range of uranium concentrations in recent bones (i.e., less than 0.2 ppm). According to this data, we presume that pure fossil collagen is not subject to uranium accumulation. Furthermore, some U-series dates of fossil collagen extracted from *Ursus spelaeus* bones colected in Magurska Cave (Tatra Mts, Poland) were calculated, and comparison of these dates with radiocarbon ones seems to show acceptable accordance.

Recognition and decay of the Upper Devonian dolomite lithological morphological types in Architectural Heritage

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In Latvia local dolomite has been used for architectural buildings that nowadays are a significant part of Cultural Heritage. However there is a lack of scientifically founded and approbate methodology on recognition of dolomite lithological types in Architectural Heritage. The current work is aimed to evaluate application in situ of methodology on recognition and identification of the Upper Devonian dolomite lithological types and to study decay forms of individual lithological type in order to evaluate decay processes of dolomite in Architectural Heritage. Methodology is based on structurally genetic classification system according to in situ simply readable complex of rock's macroscopic features: texture, fabric, colour and related physical/mechanical and durability properties. Expression of results is based on cartographical method used in conservation practice. Methodology on recognition and identification of lithological types of the Upper Devonian dolomite has been approbate and could be recommended as the non-destructive preliminary rock's investigation method in Architectural Heritage Monuments. Study of decay forms of individual lithological dolomite type concludes that correlation between rock's intrinsic properties could be establish, however up to date obtained results are insufficient to recommend this methodology for evaluation of weatherability of lithological dolomite types.