

## **New occurrences of bauxite-filled paleokarst in Slovak Karst area near Čoltovo: The first report**

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In the Slovak Karst area, close to the contact with Neogene filling of the South Slovakian Basin, three quarries are situated opposite to the Čoltovo village. The northernmost one is still active and two more southern ones are abandoned. In these three quarries, Triassic limestone succession of the Silica Nappe is outcropped. The southern quarry was excavated in the Anisian succession from Steinalm platform limestones, Zámotie black basin limestones and allodapic Harmanec limestones. The middle quarry is mostly formed by platform Wetterstein Limestone of Ladinian-Carnian age and the northernmost quarry reveals mostly Dachstein reefal limestone of Norian to Rhaetian age.

Recently, paleokarst clefts and cavities were revealed in the southernmost quarry. They contain yellowish sinter filling with flowstone draperies, small stalactites and stalagmites. The rest of sinter filling is followed by yellowish (in some clefts also whitish to redish) sedimentary material, which was first considered to be Lower Miocene schliers. However, first dating attempts revealed neither any presence of marine microfauna nor palynoflora. On the other hand, the analysis revealed that this material is non-calcareous.

One cleft was sampled for the sedimentary filling. The sample was subjected to the PXRD analysis (Powder X-Ray Diffraction), which indicated that the material is represented purely by diaspore, which is aluminium oxide hydroxide mineral,  $\alpha$ -AlO(OH). This means that the yellowish material most likely represents a remnant bauxitic lateritic weathering crust.

Unlike in more southern countries, there have been only a few occurrences of bauxite revealed so far in Slovakia. They are situated mostly in the Strážovské vrchy Mts. (Mojtín, Domaniža, Pružina) within the Choč and Strážov nappe dolomites and limestones and at the toe of the Galmus Zone (in the vicinity of Markušovce village) which is formed by limestones Silicicum s.l. Some small occurrences were registered also in the Slovak Karst itself (Silica nappe, Silicicum s.s.), e.g. in the Miglinc Valley. All these bauxitic occurrences are invariably related to the emersion and karstification period that occurred after the main nappe thrusting phase in the West Carpathian internides, i.e. their age spans

from the Late Cretaceous to Paleocene. In this time period there was the West Carpathian area was in the humid tropical climate zone, which was able to promote lateritic weathering. Later periods were not suitable for such a weathering.

Therefore, it is substantiated to presume similar age for the bauxites revealed at Čoltovo. However, it is not yet known, whether the bauxitic material rests in its original position or it was reworked and resedimented to younger clefts and cavities. The extent of Čoltovo bauxite occurrences also has not been verified yet. There are clefts in all three quarries, samples of which are now being analysed. Some of them are clefts filled with Terra-Rossa and similar materials, which are obviously younger, as revealed by mammal remnants. Further research is necessary to verify the age and extent of these newly discovered bauxite occurrences.

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