

MORPHOLOGICAL CHARACTERISTICS OF CLAY MINERALS IN DIFFERENT ROCK TYPES OF HUNGARY

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Characteristics of clay minerals in different rock types from the Mátra and Bükk Mountains (North Hungary) were studied in order to find some relation between the genesis and morphological features.

The examined samples were divided into the following groups:

- altered andesites and pyroclasts of the Reck epithermal mineralisation;
- vein-associated altered rocks of the Central Mátra mesothermal mineralisation;
- Mesozoic argillic shales in the Bükk Mountains;
- Oligocene and Miocene argillic sedimentary rocks in the Mátra Mountains;
- Miocene volcano-sediments in the Mátra Mountains.

The clay minerals in the samples were identified by X-ray diffractometry, and thermoanalytical and chemical analysis carried out on separated fractions less than 60 µm in grain size. The morphological characteristics were studied by transmission and scanning electron microscope. The morphological characteristics of clay minerals are as follows.

Almost all examined samples contain illite. The illites of the hydrothermally altered rocks are represented by flawless-edged, lath-shaped crystals with terminal faces. The morphology is shifted towards a squat, hexagonal habit with increasing crystallinity degree. In the sedimentary formations the authi-

genic illites are elongated, rectangular forms, similar to those in hydrothermally altered volcanics but have no terminal faces.

Kaolinites in the hydrothermally altered volcanics are idiomorphic, platy, pseudo-hexagonal crystals with usually perfect edges in stacked structures. Occasionally the edges are jagged as a result of post-genetic effects. In the sedimentary rocks the kaolinites are rounded grains or irregular fragments.

Montmorillonite is characterised by the lack of euhedral forms in all rock types. Montmorillonites are most abundant in the halmyrolised pyroclastics. In the Reck epithermal mineralisation their amount is subordinate but they are more special in the vein-associations of the Central Mátra. The crystals are irregularly shaped, ruggy plates with locally coiled edges.

According to the results, the study of morphological characteristics promotes the solution of genetic questions. However—as clay minerals of different origin can appear in similar forms—the results of other analytical methods and the geological setting also have to be considered.

References

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