

AMMONIUM BEARING CLAYS CONNECTED WITH HIGH SULPHIDATION HYDROTHERMAL ACTIVITY FROM CENTRAL SLOVAKIA

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High sulphidation hydrothermal events are considered to be the first phase of a hydrothermal activity of the Stiaavnica stratovolcano situated in Central Slovakia (Western Carpathians). They are connected with base metal stockwork mineralisation, formation of large amounts of secondary quartzite and intensive clay alteration.

Aluminium rich hydrothermal alteration lead to the origin of different clays, mostly: 2M1 illite, pyrophyllite, kaolinite, rectorite and Al-chlorite. Analyses of the clay alteration products show that the high sulphidation fluids were enriched in ammonium. Ammonium was detected in illite and rectorite-like minerals by both FTIR spectroscopy and chemical analysis. Occurrence of ammonium bearing minerals is spread over larger area and it is not concentrated on one spot only. Ammonium is not the dominant cation of the illite interlayers, it occupies in average 10% of the interlayer cation sites. The dominant interlayer cation is potassium. Rectorite from the region has also significant part of sodium in the non-expanding interlayers (up to 35%). Ammonium seems to be a general feature of high sulphidation fluids in the Carpathian

Arch. It was reported from similar geological environments in Vihorlat volcanic region (Slovakia) and Harghita volcanic region (Romania).

An interesting feature was observed during XRD analyses of air-dried samples of rectorite. The series of 00l peaks represents a mixture of two sets of reflections. One set can be assigned to rectorites with expandable interlayers with one layer of water molecules and the second set to rectorites with two water layers. Difference disappears when the specimens are saturated with ethylene glycol. During physical separation of the size fractions using centrifuge the particles with two water layers in the interlayer are concentrated in the finer fraction (< 0.2 mm). Particles with one water layer are dominant in the fraction 0.2–2 mm. Clear difference in the water content between two fractions was determined gravimetrically but no difference in chemical composition was found. Different behaviour of two size fractions is regarded as a result of different layer charge connected with the existence of two generations of illite-smectite crystals.