Acta Mineralogica–Petrographica, Szeged, XLI, Supplementum, 2000

WHAT DO WE CALL CHERT? A MINERALOGICAL CASE STUDY FROM ÖRDÖGOROM HILL, BUDAPEST, HUNGARY

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Chert can frequently be found in Hungarian Mesozoic formations. From the mineralogical point of view this material is traditionally considered to be microcrystalline quartz. This affirmation is generally based on data gained with polarized light microscopy (PLM) and X-ray powder diffractometry (XPD).

The investigation of the microstucture of chert is warranted by new pieces of information recently appeared in international literature. In 1992, MIEHE *et al.* determined the crystal structure of a new natural silica modification called moganite. In the same year a report in Science spoke about the widespread distribution of this silica polymorph in microcrystalline quartz varieties (HEANEY & POST, 1992). Since then several new data were publicated about moganite and the IMA is actually working on its approval as a valid mineral species.

The aim of our work was to examinate microcrystalline silica samples of different ages and genesis from Hungarian localities. In this poster we present the results of the measurements made on the chert nodules of the Upper Triassic cherty dolomite of the Ördögorom (Devil's Cliff).

The methods we mainly used were electron microscopy (SEM, TEM, SAED, HRTEM) and X-ray powder diffractometry (XPD). Morphological examinations were made with SEM on etched and natural fracture surfaces.

Structural properties were investigated with TEM. SAED patterns reveal the presence of an ordered quartz phase and a disordered phase with several streak systems and satellite reflections, which imply superstructures. The HRTEM images made of the quartz crystals show a cavernous surface and a strongly dislocated mosaic structure. The images made about the disordered crystals contain areas which are characterised by a lattice spacing periodicity of 6.6 Å. Probably the peak appearing on the XPD profiles at the same d-spacing (6.5–6.7 Å) is related with this periodicity, which is not consistent neither with the symmetry of quartz nor with that of the supposed moganite phase. All these observations motivate us to do XPD structure refinement which should provide further information.

Based on our investigations up to now, the chert from Ördögorom is not analogous with microcrystalline quartz, because it has its own structural properties, furthermore it probably consists of the close composition of two phases: quartz and moganite.

References

MIEHE, G. & GRAETSCH, H. (1992). Eur. J. Mineral. 1992: 693–706.
HEANEY, P. J. & POST, J. E. (1992). Science, 255: 441–443.