MORDENITE IN OPHIOLITES FROM THE METALIFERI MTS., ROMANIA

KRISTÁLY, F. & SZAKÁLL, S.
Department of Mineralogy and Petrology, University of Miskolc, H-3515 Miskolc-Egyetemváros, Hungary
E-mail: askkf@gold.uni-miskolc.hu

Mordenite is a common zeolite, with sedimentary (by diagenesis in volcanic tuffs) or hydrothermal origin. Mordenite is usually found in radial aggregates of acicular or fibrous crystals. Mordenite of hydrothermal origin is a frequent member in hydrothermal mineral assemblages of ophiolites, or ocean-floor type metamorphosed rocks.

Today's known fibrous zeolites of the Metaliferi Mts. are natrolite (?) (SZAKÁLL, 2002) and mesolite (BEDELEAN, 1971; SZAKÁLL, 2002); mordenite has not been mentioned to date. The two studied occurrences of mordenite in the ophiolite type rocks of Metaliferi Mts are at Săliştioara (an abandoned basalt quarry, sample S1) and in the Bodii valley at Techereu (TB1 sample).

At Săliştioara mordenite appears as fine fibrous aggregates filling amygdales of the altered basalt, up to 5 mm in diameter. The amygdales are white to pale rose and reddish, due to the hematite inclusions that are usually associated with reddish clinoptilolite.

At Techereu mordenite appears as white, fibrous aggregates. The aggregates are nested in the calcite veins filling in the voids between heulandite crystals. In contrast with the Săliştioara occurrence, in this case the colour of mordenite does not vary, but heulandite crystals show a white to reddish colour zoning.

The presence of mordenite was confirmed by X-ray powder diffraction (Table 1).

Five chemical analyses (Table 2) were carried out with EPMA (by Giovanna Vezzalini, at the University of Modena, Italy). H_2O could not be determined due to the paucity of available material. The results are similar to those published by PASSAGLIA (1975). The analyzed samples are Ca-Na dominant, with a low content of K and light variation of exchangeable cations.

Samples of the investigated mordenite are deposited in the mineral collection of the Herman Ottó Museum (Miskolc, Hungary).

References

BEDELEAN, I. (1971): Zeoliții din Munții Apuseni. Doctoral theses, Manuscript. Babeş–Bolyai University, Cluj-Napoca.

PASSAGLIA, E. (1975): Contributions to Mineralogy and Petrology, 50, 65–70.

SZAKÁLL, S. (ed., with the contributions of UDUBAŞA, G., ĎUĎA, R., SZAKÁLL, S., KVASNYTSYA, V., KOSZOWSKA, E. & NOVÁK, M.) (2002): Minerals of the Carpathians. Prague: Granit.

Table 1: Strongest reflections of mordenite observed on the XRPD pattern of the samples.

TB1		S1		ICDD 29-1257		
d (Å)	*I* (%)	*d* (Å)	*I* (%)	*d* (Å)	*I* (%)	*hkl*
8.809	23.9	8.924	100	9.060	100	200
3.968	2.8	3.967	41	4.000	70	150
3.490	0.3	3.465	24	3.480	45	202
3.374	2.7	3.375	39	3.390	35	350
3.267	0.2	3.199	35	3.220	40	511

Table 2: Chemical composition of the samples (EPMA).

S1						
FeO	K_2O	CaO	Na_2O	SiO_2	Al_2O_3	Sum
0.45	1.17	3.77	2.74	68.52	13.09	89.81
0.20	0.93	3.78	2.69	68.72	13.50	90.05
0.30	0.58	4.05	2.59	69.16	13.35	90.21
0.57	0.67	5.02	2.17	66.93	14.22	90.55
0.42	0.59	4.20	2.42	68.40	13.42	90.56