DATA ON FELSŐBÁNYAITE

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The felsőbányaite is one of the very rare minerals discovered in Hungary during the middle of the past century (Haidinger, 1853). Owing to its rarity it belongs to the minerals not well known till up to date, even it is denoted in some handbooks as a not well identified, uncertain mineral species.

Its locality — shown by its name too — is Felsőbánya *(Baia Sprie, Roumania)*. To mention Kapnikbánya (Capnic, Roumania) as locality of felsőbányaite is a mistake. The mineral occurred here and taken erroneously as felsőbányaite was really a variety of wawellite named "capnicite" as it was stated already in 1855 by Kenngott [1]. Kapnikbánya as the locality of felsőbányaite is mentioned neither by V. Zepharovich [2] nor by M. Tóth [3]. In the 2nd edition (1864) of J. Szabó's Mineralogy [4] Felsőbánya is mentioned as the locality of felsőbányaite, however, in the 3rd edition (1875) Kapnikbánya and in the 4th one (1893) Felsőbánya and Kapnikbánya are noted as localities of felsőbányaite. The locality is erroneously given also in Hintze's Handbuch der Mineralogie [5] as well as in some Hungarian mineralogical handbooks as e. g. in Mineralogy by Mauritz and Vendl and in Mineralogy by Koch and Sztrókay or in Sztrókay's Determinative Mineralogy.

Felsőbányaite has never occurred in Kapnikbánya only in Felsőbánya could it be found during the middle of the past century as rarity in the oxidation zone of the main lode of the eastern part of the Bányahegy. This was the most beautiful occurrence of this mineral in form of spherulites, 5 mm in diameter grown on thin quartz crust. It could be found also in spherulites of 1—2 mm in size grown on yellowish tabular crystals of baryte and on antimonite crystals of 1—2 cm in length. Specimens of mode of occurrence last mentioned were not at disposal of the authors for investigation.

Since Kenngott's [1], Haidinger's [6] and Hauer's [7] investigations carried out more than a hundred years ago, only Krenner [8] has dealt more detailed with this rare mineral. The material of minute spherulites separated from the thin quartz crust of the most beautiful felsőbányaite specimen was investigated by Krenner [8]. The fire in the Mineral Collection of the Hungarian National Museum in 1956 caused unfortunately the perdition of this specimen too, but the optical data and an excellent drawing of this felsőbányaite specimen remained published by Krenner in his work mentioned above. The

chemical composition of felsőbányaite is known only from HAUER's analysis published in 1854 [7] giving also the chemical formula.

One of the authors received in the early years of this century a number of smaller pieces of felsőbányaite as a gift of S. FIZÉLY, one-time manager of the

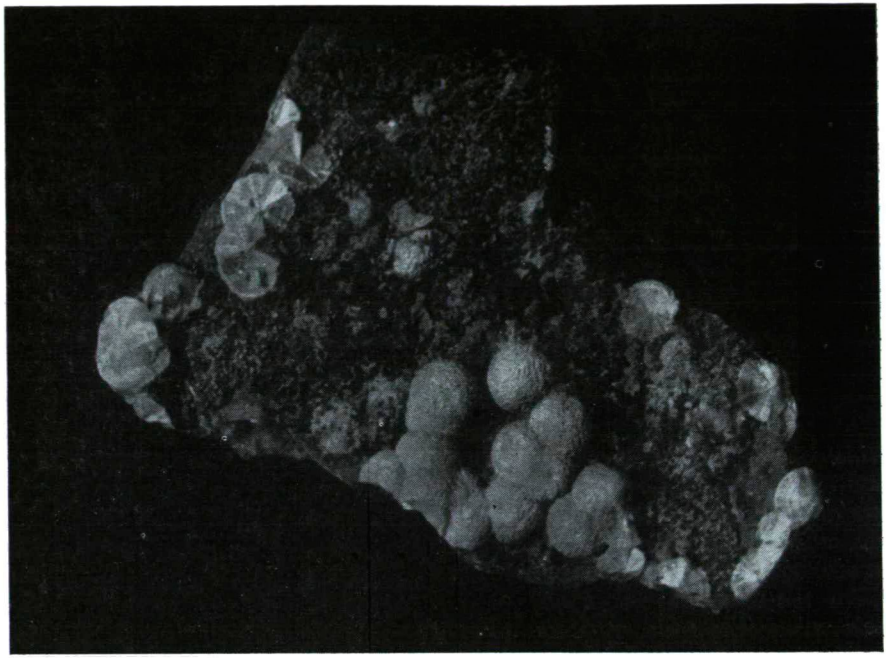

Fig. 1. Globular-radial aggregates of felsőbányaite on quartz crust. 2× natural size.

mine Felsőbánya. These specimens are to day in the Mineral Collection of the Institute for Mineralogy and Petrography of the University at Szeged. The material investigated by the present authors was taken from these specimens of undoubtedly authentic locality.

The spherulites are aggregates of concentrically arranged thin tabular crystals. The surface of the spherulites is covered with a weathered, whitish coloured layer of 0,5 mm in thickness. The platelets have rhombic holohedral habit. The platelets are colourless, having a vitreous luster. The dominating planes of (001) are termined by narrow planes of (hkl). The cleavage is perfect according to the plane of 001 but cleavage can also be observed according to the planes 100 and 010, respectively. These three cleavage directions are perpendicular to each other, the extinction is straight. The plane of optical axes is parallel to the longitudinal axis of the platelets. Birefringence is +. Specific gravity of selected crystals is 2,35.

The result of the analysis is as follows:

Al_2O_3	37,27%
SO_3	14,50
H_2O	31,53
Fe_2O_3	1,49
SiO_2	15,13
	99,92%

Subtracting the impurities:

Al_2O_3	44,70%
SO_3	17,39
H_2O	37,82
	99,91%

TABLE 1

X-RAY POWDER SPACINGS FOR FELSŐBÁNYAITE FROM FELSŐBÁNYA

Cu -K_α RADIATION, NI FILTER, CAMERA RADIUS 57,3 mm

No.	d_{kx}	I/I_0	No.	d_{kx}	I/I_0
1	5,95	3	19	1,67	0,5
2	5,32	2	20	1,62	3
3	4,78	10	21	1,54	0,5
4	4,63	10	22	1,45	2
5	3,85	1	23	1,43	3
6	3,66	4	24	1,38	1
7	3,39	2	25	1,34	0,5
8	2,92	1	26	1,30	0,5
9	2,87	1	27	1,22	0,5
10	2,70	4	28	1,18	0,8
11	2,45	4	29	1,10	0,5
12	2,27	5	30	1,07	1
13	2,19	3	31	0,919	0,5
14	2,07	1	32	0,899	0,5
15	1,96	1	33	0,861	0,5
16	1,89	3	34	0,840	0,6
17	1,83	1	35	0,821	0,5
18	1,76	2			

The formula calculated from the data of analysis is:

$$Al_4(SO_4)\cdot(OH)_{10}\cdot 5\,H_2O.$$

Dipl. Ing. JAROSLAV BAUER (Prague) was so kind to carry out the X-ray investigation of selected felsőbányaite. The data are summarised in Table 1. The authors express their gratitude to Mr. Dipl. Ing. J. BAUER for his kindness.

On the basis of the investigations mentioned above — in accordance with the results of the older investigations — the felsőbányaite has a definite composition and it can not be considered as an uncertain mineral species.

Fig. 2. Globular-radial aggregates of felsőbányaite. 2× natural size.

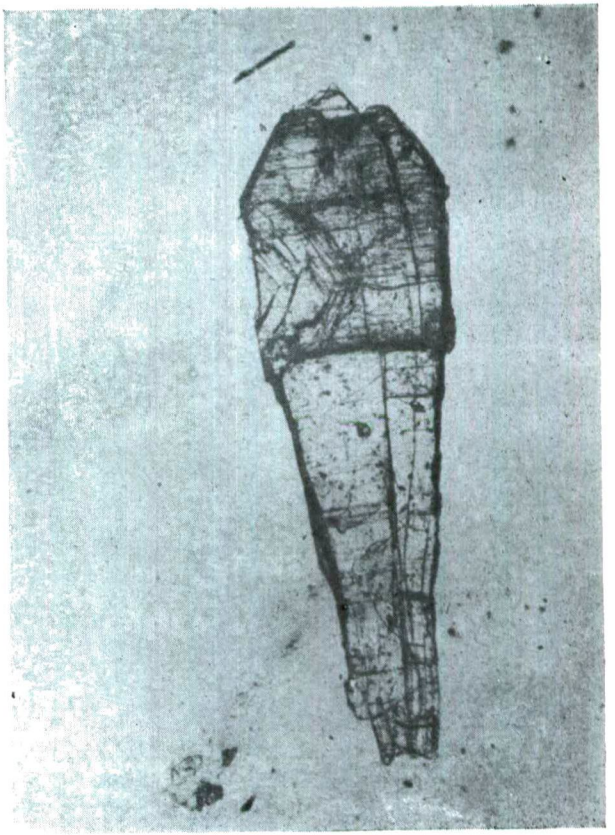

Fig. 3. Crystal of felsőbányaite with two cleavage directions. Magnif. 25×.

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