

BERRYITE, A CANADIAN OCCURRENCE

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Berryite, $Pb_2(Cu,Ag)_3Bi_5S_{11}$, was first named and described by Nuffield & Harris (1966) from the Nordmark Mines, Sweden and the Missouri Mine, Park County, Colorado. Simultaneously, berryite was described by Karup-Møller (1966) from the cryolite mine at Ivigtut, Greenland. More recently, Borodayev & Mozgova (1971) reported the occurrence of berryite from three deposits of Central Asia: Adrasman, Tari-Ekan and Kaptar-Hana.

The purpose of this paper is to record the first Canadian occurrence of berryite. The mineral was identified during a mineralogical investigation of a Cu-Pb-Ag-Zn ore submitted to the Mineral Processing Division of the Mines Branch for beneficiation tests by Nadina Exploration Limited. The samples originated from a prospect near Owen Lake, 27 miles south of Houston, British Columbia.

Based on the microscopical examination of the head sample, which is more representative of the ore than are hand specimens, the principal ore minerals are pyrite and sphalerite with galena, chalcopyrite, and tennantite occurring in smaller amounts. Other ore minerals which occur in small to trace amounts include tetrahedrite, matildite, native gold, marcasite, aikinite, hematite, rutile, anatase, ilmenite, magnetite, and goethite. The gangue minerals are chiefly quartz and manganese siderite with mica, dolomite, apatite, and barite occurring as inclusions in the quartz. Berryite in the ore is very sparse and was observed only in chalcopyrite-rich samples. Berryite occurs as irregular sheaf-like aggregates and as regularly-developed laths associated with aikinite, intergrown with galena-matildite (Fig. 1), and occasionally as irregular grains in chalcopyrite, tennantite, and gangue. The grain sizes of berryite and aikinite are similar and range from 0.1 to 1.2 mm. The matildite is intergrown with galena and forms both the Widmanstätten-like structures and a myrmekitic texture (Fig. 1). In air, the reflection colour of berryite, in contrast to aikinite, is grey-white. It is almost impossible to distinguish it from matildite. Under

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oil, the colours are more distinct — berryite appears greyish, and aikinite has a slightly cream tint. The pleochroism of berryite is weaker than aikinite but stronger than matildite.

Several grains of berryite and aikinite were analyzed with a Materials Analysis Company's electron microprobe using, as standards, pure silver, copper, and bismuth metals, and synthetic lead sulphide. The x -ray intensities were processed with a computer program of Rucklidge (1967). Results of the analysis are given in Table 1. The original formula of berryite, based on x -ray spectrographic analysis and cell contents, was proposed by Nuffield & Harris (1966) as $Pb_2(Cu,Ag)_3Bi_5S_{11}$. Karup-Møller suggested that the best formula for berryite, based on microprobe analysis, was $Pb_3(Cu_{3.5}Ag_{1.5})Bi_7S_{16}$. The analysis of berryite in this study favours

TABLE 1. ELECTRON MICROPROBE ANALYSIS OF BERRYITE AND AIKINITE FROM OWEN LAKE, B.C.

	Berryite		Aikinite	
	Wt. %	At. Prop.	Wt. %	At. Prop.
Pb	20.9 ± .5	2.00	36.2 ± .5	1.00
Cu	5.3 ± .1	1.65	10.8 ± .2	0.97
Ag	7.4 ± .3	1.36	—	—
Bi	49.5 ± .5	4.69	35.6 ± .5	0.97
S	17.0 ± .5	10.51	16.9 ± .5	3.01
	100.1		99.5	

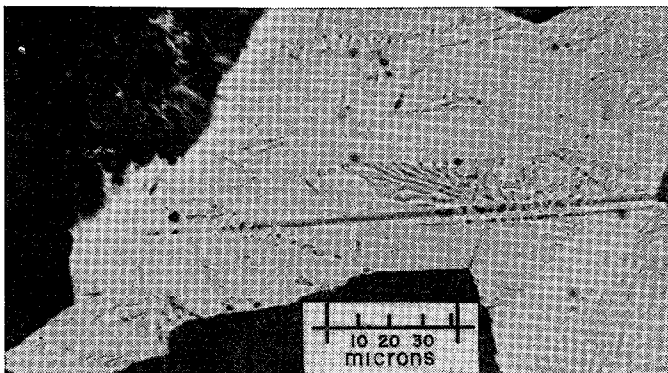


Fig. 1. Photomicrograph showing laths of berryite associated with a myrmekitic intergrowth of galena (grey) and matildite.

the original formula, although it should be pointed out that there is very little difference in composition for either formula.

The *x*-ray powder diffraction pattern of berryite from British Columbia is identical to that from the Nordmark Mines, Sweden and is, therefore, not given in this paper.

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THE SILVER-ARSENIDE DEPOSITS OF THE COBALT-GOWGANDA REGION, ONTARIO

ERRATA : volume 11, part 1

- p. 72, line 27 : for *forms* read *form* ; for *as* read *an*
 p. 141, Table 13 : for C.O read CaO
 p. 300 : the equations were calculated with 0.08% MnO rather than 0.08% Mn
 p. 320, 4th line from bottom : for *Coldwell* read *Colwell*
 p. 347, caption to Fig. 217 : for *interested* read *intersected*
 p. 407, line 1 : for *Tables 91 and 101* read *Table 94 (p. 357) and 108 (p. 415)*

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