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## THE SECOND WORLD OCCURRENCE OF MOPUNGITE FROM THE PERETA MINE, TUSCANY, ITALY

**Riassunto** — *La seconda segnalazione nel mondo di mopungite dalla miniera di Pereta (Toscana, Italia).* Viene segnalato il ritrovamento di mopungite  $\text{NaSb(OH)}_6$  a Pereta (Gr). Piccoli cristalli di mopungite si rinvencono, associati a limonite, senarmontite, valentinite, gesso, solfo, klebelsbergite e peretaite, su antimonite alterata.

**Abstract** — Mopungite,  $\text{NaSb(OH)}_6$  from Pereta mine is reported. Few little crystals (about 0.05 mm on edge) associated with limonite, senarmontite, valentinite, gypsum, native sulfur, klebelsbergite and peretaite, occur on altered stibnite.

**Key words** — Mopungite - Stibnite - Tuscany - Pereta.

Pereta is a locality in Southern Tuscany, in a sulfide minerals rich area. On the site, there is an abandoned stibnite mine, which has been untouched for forty years. Recently, new drill holes have brought new material to the surface, more interesting from a mineralogical point of view than economic. The mineralization is located inside highly silicified limestone («Calccare Cavernoso» - Tuscan Nappe).

Stibnite is superficially encrusted with various kinds of oxidized products as limonite, senarmontite, valentinite, gypsum and native sulfur and rare species as klebelsbergite and peretaite (CIPRIANI *et*

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al., 1980). Other new antimony sulfates are still on the way to be characterized (ORLANDI and SABELLI, personal communication).

The genesis of mopungite and other antimony basic sulfates and oxides is due to oxidation of stibnite on the superficial part of the deposit.

The mopungite specimen from the Pereta mine measures 5 mm in length and consists of massive stibnite with approximately ten microscopic-sized vitreous transparent colourless pseudocubic crystals of mopungite (Fig. 1). Individual crystals measure 0.05 mm on edge.

Mopungite, originally described by WILLIAMS (1985) and named after the type locality of Mopung Hills, Nevada, U.S.A., is a sodium

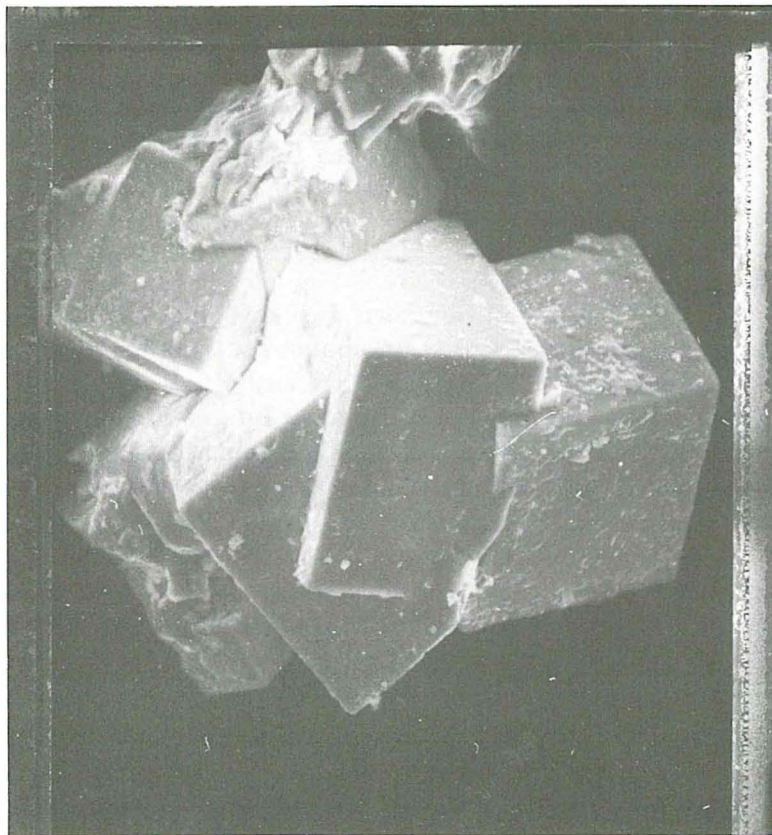


Fig. 1 - Aggregate of prismatic crystals of mopungite from the Pereta mine, Tuscany, Italy. SEMZ-PHOTO 500 x.

antimony hydroxide, with ideal formula  $\text{NaSb(OH)}_6$ . The synthetic counterpart was previously studied by TERREIL (1866) and by SCHREWELIUS (1938), who also determined the crystal structure.

Mopungite from Pereta was identified by X-ray powder diffraction carried out with a 114.6 mm Gandolfi camera employing  $\text{CuK}\alpha$  radiation. Refined unit-cell parameters, based on the measured powder data, and precession single-crystal studies gave  $a = 8.031$  (3),  $c = 7.899$  (4) Å, space group  $\text{P4}_2/\text{n}$ , consistent with the data published by WILLIAMS (1985).

The refractive indices for Na light are:  $n_\omega = 1.614$ ,  $n_\epsilon = 1.605$ , identical to those previously reported by WILLIAMS (1985).

A qualitative analysis of the sample carried out by EDS analysis employing a SEM showed the presence of Na and Sb only. The research of F, usually present in this kind of compounds, was unsuccessful.

Electron microprobe analysis of Pereta mopungite, using albite, native antimony and fluorite as standards, is reported in table 1,

TABLE 1 - *Chemical analysis of mopungite. All values are weight percent.*

	(1)	(2)
$\text{Na}_2\text{O}$	9.43	12.56
$\text{Sb}_2\text{O}_3$	67.53	65.54
CaO	0.00	—
F	0.00	—
$\text{H}_2\text{O}$	n.d.	21.90

(1) Pereta mopungite

(2) synthetic  $\text{NaSb(OH)}_6$  (calc.)

along with the theoretical weight percent values. The low  $\text{Na}_2\text{O}$  total and the correspondingly higher value for  $\text{Sb}_2\text{O}_3$  are due in part to the volatilization of Na under the electron beam (AUTEFAGE and CONDRE, 1980). The  $\text{H}_2\text{O}$  content was not determined owing to the paucity of available material.

The mopungite specimen is now within the systematic mineral

collection at the Department of Earth Sciences in Pisa, Italy, under catalogue number 4698.

We thank Mr. B. Turconi who supplied the sample in order to be studied.

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