

## NEW MINERAL NAMES

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## Raguinite

YVETTE LAURENT, PAUL PICOT, ROLAND PIERROT, FRANCOIS PERMINGEAT, AND T. IVANOV (1969) La raguinite,  $\text{TlFeS}_2$ , une nouvelle espece minerale et le probleme d'allcharite. *Bull. Soc. Franc. Mineral. Cristallogr.* **92**, 38-48.

Analyses of the mineral gave:

	1	2	3	4
S	19.50	19.7	20.4	20.5
Fe	17.10	21.4	18.6	19.2
Tl	62.50	60.9	61.4	61.6
	99.10	102.0	100.4	101.3

1—by J. Fritsche on 40 mg. sample

2—4 probe analyses by R. Giraud

These correspond closely to  $\text{TlFeS}_2$ . The compound was synthesized by passing  $\text{H}_2\text{S}$  through a solution containing  $\text{Fe}(\text{OH})_2$  and thallium acetate at pH 6, boiling 1 hour, and drying. Very slowly attacked by dilute  $\text{HNO}_3$ .

X-ray study gave  $b = 5.25 \pm 0.05 \text{ \AA}$  (direction of elongation). X-ray powder data (22 lines) are given; the strongest lines are 4.17 (s), 3.35 (s), 3.26 (ms), 2.89 (vvs), 2.64 (ms). From the optical data, probably orthorhombic or monoclinic.

The mineral occurs in pseudohexagonal plates, pseudomorphs after an unknown mineral; these consist of bundles of fibers intimately mixed with pyrite (removable with dilute  $\text{HNO}_3$ ). Color brilliant bronze.  $\rho$  (on 40 mg)  $6.4 \pm 0.2$ . In reflected light, pleochroic. Creamy grayish-white perpendicular to the fibers ( $R'_p$ ), rose-colored parallel to fibers ( $R'_g$ ). Reflectivity was measured at 12 wave lengths (420–640 nm) on 3 samples:  $R'_p$  increases with increasing wave length: 24.0–26.5, 25.2–27.9, 24.8–26.0,  $R'_g$  goes through a max. at about 460 nm., a minimum at about 500 nm. and then rises rapidly; at 640 nm., values were 34.0, 40.6, 26.3. Under crossed nicol it shows very strong polarization colors with orange dominant.

The mineral occurs at Allchar, Macedonia, associated with lorandite, orpiment, realgar, and vrbaita. The name (pronounced rägñite) is for Professor E. Raguin, Ecole Nationale Supérieure de Mines, Paris. It was approved before publication by the Commission on New Minerals and Mineral Names, IMA. Type material is preserved at the Ecole Natl. Supérieure des Mines, Paris.

## Stannoidite

AKIRA KATO, (1969) Stannoidite,  $\text{Cu}_5(\text{Fe,Zn})_2\text{SnS}_8$ , a new stannite-like mineral from the Konjo Mine, Okayama Prefecture, Japan. *Bull. Nat. Sci. Mus. (Tokyo)* **12**, 165–172.

Electron microprobe analysis gave Cu 37.2, Ag 0.1, Fe 12.5, Zn 1.2, Sn 16.5, S 31.2, sum 98.7%, corresponding to  $(\text{Cu}_{4.83}\text{Ag}_{0.01})(\text{Fe}_{1.96}\text{Zn}_{0.15})\text{Sn}_{1.15}\text{S}_{8.03}$ , or  $\text{Cu}_5(\text{Fe,Zn})_2\text{SnS}_8$ . This is close to the composition of some "yellow stannites."

X-ray study showed the mineral to be orthorhombic; space group  $I222$ ,  $I2_12_12_1$ ,  $Immm$ , or  $Imm2$ ,  $a$   $10.76 \pm 0.02$ ,  $b$   $5.40 \pm 0.01$ ,  $c$   $16.09 \pm 0.04 \text{ \AA}$ . A pseudocubic cell with  $a' = \frac{1}{2}a$ ,  $b' = b$ ,  $c' = \frac{1}{2}c$ , is close to  $\sigma = 5.4 \text{ \AA}$  of sphalerite. The strongest lines (18 given) are 5.40(5) (200), 4.83 (10)(103), 3.11 (100)(213), 2.70 (15)(020), 1.906 (70)(420), 1.621 (20b)(233).

The mineral is brass brown, luster metallic. Streak dark brown gray. No cleavage, fracture uneven to subconchoidal).  $H$  about 4.  $\rho$  (calc). 4.29. In reflected light, distinctly pleochroic from light salmon brown to brown. Reflectivity close to that of stannite, polishing and scratching hardness a little lower than that of stannite. Etched only by dilute and concd.  $\text{HNO}_3$ .

The mineral occurs with chalcopyrite and quartz, surrounding stannite, which replaces and surrounds stannite.

The mineral and name were approved before publication by the Commission on New Minerals and Mineral Names, IMA.

DISCUSSION.—Differs from the incompletely described hexagonal hexastannite (see *Amer. Mineral.* **46**, 1204 [1961]).

### Unnamed Niobium Hydroxide

E. I. SEMENOV (1967) The mineralogy of niobium and tantalum in the crust of weathering. *In*, *Mineralogy of pegmatites and hydrothermalites of alkalic massifs*. Izdat. "Nauka", p. 30–35 [in Russian].

Analysis by L. E. Novorossova gave  $\text{Nb}_2\text{O}_5$  41.22,  $\text{Ta}_2\text{O}_5$  3.89,  $\text{TiO}_2$  2.45, (U, Th) $\text{O}_2$  2.73,  $\text{RE}_2\text{O}_3$  3.0,  $\text{Fe}_2\text{O}_3$  3.00,  $\text{CaO}$  4.43,  $\text{H}_2\text{O}$  18.69%, corresponding to  $\text{Nb}_2\text{O}_5 \cdot 5\text{H}_2\text{O}$  or  $\text{Nb}(\text{OH})_5$ . (No indication is given of what the missing 20% might be! M.F.). Nearly amorphous to X-rays giving only traces of lines in the regions 9, 4.7, 2.8, 2.2, 1.78, and 1.70 Å. The infra-red absorption spectrum is given; a band at  $1460 \text{ cm}^{-1}$  may indicate the presence of hydroxyl.

Occurs as lemon-yellow crusts formed by the alteration of fergusonite in quartz-fluorite pegmatites of Betpakdal, S. W. Kazakhstan. Translucent,  $n$  about 1.70.

### Monsmedite

A. GÖRTZ, ST. MIHALKA, I. IONITA, AND Z. TOTH (1968) Monsmedite, a new thallium mineral from Baia Sprie. *Rev. Minéral (Bucharest)* **19**, 154–159 [in Roumanian] *Chem. Abstr.* **70**, no. 13334g (1969)].

A preliminary report was abstracted in *Amer. Mineral.*, **53**, 2104 (1968). New data are as follows:

Analysis on 0.1 g. gave  $\text{Tl}_2\text{O}_3$  28.70 (av. of 29.67, 26.93),  $\text{K}_2\text{O}$  5.45,  $\text{Fe}_2\text{O}_3$  1.16 (av. of 3),  $\text{SO}_3$  47.54,  $\text{H}_2\text{O}$  16.17,  $\text{MnO} + \text{ZnO} + \text{CaO} + \text{BaO} + \text{Al}_2\text{O}_3$  (spectrographic) 0.50, sum 99.52%, corresponding to  $\text{K}_2\text{O} \cdot \text{Tl}_2\text{O}_3 \cdot 8\text{SO}_3 \cdot 15\text{H}_2\text{O}$ . Spectrographic analysis also showed Pb, Cd, Mg, Sb, Cu, As, Si 0.001–0.01%. DTA study showed two very large endothermic breaks, 260–340° with peak at 310°, and 660–780° with peak at 730°. Infra-red absorption data are given.

X-ray powder data are given (15 lines)(Cu radiation, Ni filter). The strongest lines are 3.560 (s), 3.403 (vs), 2.860 (s), 2.320 (s), 2.081 (s), 1.569 (s). The mineral occurs as cubes, from tenths of a mm. to 1 cm., mostly 0.25–0.50 cm. The forms (111) and (110) were also noted.  $\rho$  (pycnometer) 3.00,  $H$  2. Cleavage cubic, rarely octahedral. Dark green in section, average  $n$  1.6081,  $2V$  variable, about 52°, optically biaxial neg., birefringence 0.011.

The mineral occurs as geodes with marcasite, barite, and Fe sulfates in the oxidation zone of a hydrothermal deposit containing pyrite, sphalerite, galena, and accessory pyrrargyrite, stephanite, chalcopyrite, and stibnite.

Type material is preserved at the Mineralogical Museum of the Mining Combine, Baia Mare; the total quantity is 10–15 g.

### Unnamed Silicate

E. I. SEMENOV, (1967) Zeolites of the Lovozero alkalic massif. *In, Mineralogy of pegmatites and hydrothermalites of alkalic massifs*. Izdat. "Nauka", p. 14-29 [abstr. *Zap Vses. Mineral. Obshch.* **96**, 619 (1968)].

Analysis by A. M. Bykova gave SiO<sub>2</sub> 37.19, TiO<sub>2</sub> 0.18, Fe<sub>2</sub>O<sub>3</sub> 0.83, Al<sub>2</sub>O<sub>3</sub> 31.70, MgO 0.28, MnO 0.05, CaO 0.46, Na<sub>2</sub>O 16.80, K<sub>2</sub>O 2.74, H<sub>2</sub>O<sup>+</sup> 8.10, H<sub>2</sub>O<sup>-</sup> 1.69, sum 100.02%. This corresponds to NaAlSiO<sub>4</sub>·H<sub>2</sub>O. DTA showed endotherms at 190° and 320°.

The strongest X-ray lines (kX) are 6.04 (6), 4.47 (5), 3.48 (7), 2.97 (10), 2.88 (10). Color blue. Optically uniaxial, positive (?), *n* 1.49, birefringence low, elongation positive. Faintly pleochroic, *X* colorless, *Z* bluish.

Occurs in the Lovozero massif as fine acicular and platy aggregates as pseudomorphs after nepheline and sodalite in poikilitic sodalite syenites.

Perhaps identical with "nepheline hydrate", synthesized by various authors in the past.

### NEW DATA

#### Safflorite-Loellingite

DENNIS RADCLIFFE AND L. G. BERRY (1968) The safflorite-loellingite solid solution series. *Amer. Mineral.*, **53**, 1856-1881.

It is shown in this paper by X-ray study and electron microprobe analyses that the orthorhombic series CoAs<sub>2</sub>-FeAs<sub>2</sub> is essentially a complete series, contrary to previous work. "The name safflorite is retained for natural (Co, Fe, Ni)As<sub>2</sub> compositions from 3-100% CoAs<sub>2</sub>."

DISCUSSION.—The proposal seems to me to be very confusing. Would it not be simpler to name the orthorhombic series as safflorite with Co > Fe and as loellingite with Fe > Co, *i.e.* divide the series 50-50 as usual, rather than 97-3? The authors do not state clearly whether they intend the term safflorite to include monoclinic CoAs<sub>2</sub>. If further study verifies this as a distinct natural phase, it should be renamed.

#### Wallisite

WERNER NOWACKI (1967) Über neue Mineralien aus dem Lengenbach. *Jahrb. Naturhist. Mus. Bern*, 1963-1965, 293-299.

WERNER NOWACKI, G. BURRI, PETER ENGEL, AND F. MARUMO (1967) Über einige Mineralstufen aus dem Lengenbach (Binnatal). II. *Neues Jahrb. Mineral., Monatsh.* **1967**, 43-48.

Y. TAKEUCHI, M. OHMASA, AND WERNER NOWACKI (1968) The crystal structure of wallisite, PbTiCuAs<sub>2</sub>S<sub>5</sub>, The Cu analogue of hatchite, PbTiAgAs<sub>2</sub>S<sub>5</sub>. *Z. Kristallogr.* **127**, 349-365.

Preliminary data were abstracted in *Amer. Mineral.*, **51**, 532 (1966). A new probe analysis by G. Burri gave Pb 25.2, Ti 26, Ag 2.7, Cu 6.9, As 20.5, S 19, sum 100.3%. The mineral is triclinic, *P* $\bar{1}$ , with reduced cell *a* 8.98<sub>3</sub>, *b* 7.76<sub>1</sub>, *c* 7.98<sub>0</sub> Å. (all ± 0.01 Å),  $\alpha$  65°33',  $\beta$  = 65°30', (all ± 6'),  $\rho$  (calc) 5.71. Unindexed X-ray data are given (36 lines): the strongest lines are 3.55<sub>2</sub> (25), 4.23<sub>3</sub> (25), 3.33<sub>9</sub> (100), 2.87<sub>9</sub> (30), 2.83<sub>4</sub> (40), 2.66<sub>7</sub> (28), 2.43<sub>3</sub> (26), 2.98<sub>5</sub> (25). The mineral is the Cu analogue of hatchite, which it is isostructural.

#### Nowackiite

F. MARUMO (1967) The crystal structure of nowackiite: *Z. Kristallogr.*, **124**, 352-368.

The formula Cu<sub>2</sub>Zn<sub>2</sub>As<sub>4</sub>S<sub>12</sub> [see *Amer. Mineral.*, **51**, 532 (1966)] was confirmed by detailed study of the structure. Unindexed X-ray powder data are given (21 lines); the stron-

gest are 3.12<sub>7</sub> (61), 1.88<sub>7</sub> (63), 1.60<sub>5</sub> (61), 1.21<sub>6</sub> (52, broad), 1.08<sub>1</sub> (75 broad), 1.01<sub>9</sub> (100, broad).

#### Liveingite (Rathite-II = Liveingite)

M.-TH. LE BIHAN (1962) Etude structurale de quelques sulfures de plomb et d'arsenic naturels du gisement de Binn. *Bull. Soc. Franc. Mineral. Cristallogr.*, **85**, 15–47.

WERNER NOWACKI (1967) Über die mögliche Identität von "Liveingit" mit Rathit-II. *Neues Jahrb. Mineral. Monatsh.* **1967**, 353–354.

Liveingite (Solly and Jackson, 1901, in *System of Mineralogy of Dana 7th Ed.*, v. 1, p. 462) was described as a monoclinic sulfosalt of composition  $Pb_5As_8S_{17}$ . Le Bihan in 1962 gave crystallographic data for three sulfosalts which were called:

Rathite-I, monoclinic,  $a$  8.43,  $b$  25.80,  $c$  7.91 Å;  $\beta$  90°, composition  $Pb_{14}As_{18}S_{40}$  [later shown by Marumo and Nowacki, *Z. Kristallogr.*, **122**, 433–456 (1965) to be monoclinic (possibly triclinic),  $P2_1/a$ ,  $a$  25.16,  $b$  7.94,  $c$  8.47 Å.,  $\beta$  100°28', containing  $4(Pb,Tl)_3As_4(As,Ag)S_{10}$ ].

Rathite-II, monoclinic,  $a$  8.43,  $b$  70.9,  $c$  7.91 Å.,  $\beta$  90°, composition  $Pb_9As_{13}S_{28}$ ;

Rathite-III, monoclinic,  $a$  24.52,  $b$  7.91,  $c$  8.43 Å.,  $\beta$  90°, composition  $Pb_{12}As_{20}S_{40}$ .

Nowacki now shows that liveingite and rathite-II give identical X-ray patterns. Electron probe analyses gave liveingite (USNM R 994) Pb 49.1, As 26.5, S 24, sum 99.6%; rathite-II, Pb 50.5, As 24.6, Sb 0.8, S 24, sum 99.9%, corresponding to  $Pb_9As_{13}S_{28}$ . Single crystal study of liveingite showed it to be monoclinic,  $a$   $8.44 \pm 0.01$ ,  $b$   $69.11 \pm 0.005$ ,  $c$   $7.929 \pm 0.005$ ;  $\beta$  90°, space group  $P2_1$ .

Liveingite and rathite-II are therefore identical.

DISCUSSION.—Nowacki states that it is not opportune to choose the name liveingite because the name rathite-II has become well-entrenched. I disagree. The terms rathite-II and rathite-III were poorly chosen, and since liveingite has clear priority, the name rathite-II should be dropped.

#### Imhofite

WERNER NOWACKI (1967) Über neue Mineralien aus dem Lengenbach: *Jahrb. Naturhist. Mus. Bern* **1963–1965**, 293–299.

Previous data are given in *Amer. Mineral.*, **51**, 531 (1966). Unindexed X-ray powder data are given (32 lines); the strongest are 4.09<sub>6</sub> (40), 3.96<sub>0</sub> (70), 3.67 (65), 3.58<sub>3</sub> (40), 3.18<sub>2</sub> (40), 2.88<sub>3</sub> (90), 2.67<sub>5</sub> (100).

#### DISCREDITED MINERALS

##### Allcharite = Goethite

F. CECHE, AND Z. JOHAN (1969) Identite de l'allcharite et de la goethite. *Bull. Soc. Fr. Mineral. Cristallogr.* **92**, 99–100.

Allcharite (*Dana's System, 7th Ed.*, **1**, 486–487) was named by Jezek in 1912; only crystallographic data were obtained. The type material, long thought lost, was recently found. New goniometric data confirm those by Jezek. Electron probe analysis showed Fe with traces of Ca and S. Weissenberg data show  $a$   $4.61 \pm 0.01$ ,  $b$   $9.94 \pm 0.02$ ,  $c$   $3.03 \pm 0.01$  Å; the mineral is therefore goethite.

##### Gamsigradite (= Hornblende)

See abstract in *Amer. Mineral.*, **53**, 2106 (1968). Professor Maric has kindly called my attention to the fact that the analysis quoted there should also list FeO 8.17%, inadvertently omitted in the cited publication.

**Barsanovite = Eucolite**

- B. E. BORUTSKII, N. I. ORGANOVA, AND E. S. RUDNITSKAYA (1968) The position of barsanovite in the eudialyte-euolite isomorphous series. *Zap. Vses. Mineral. Obshch.*, **97**, 451-460 [in Russian].

Barsanovite was described in 1963 as a monoclinic analogue of eudialyte-euolite [abstr. *Amer. Mineral.*, **49**, 1153-1154 (1964)]. Restudy of type material shows that its X-ray powder pattern and infra-red spectrum are the same as those of euolite. Laue patterns showed trigonal symmetry. Barsanovite is therefore an optically anomalous biaxial euolite; other similar anomalous members of the series have been described.

**ERRATA****Goldfieldite**

*Amer. Mineral.*, **53**, 2105 (1968), Line 42, for *goldfielidite* read *goldfieldite*.

**Rodalquilarite**

*Amer. Mineral.*, **53**, 2104 (1968). Line 38, for  $H_3Fe$  read  $H_3Fe_2$ .  
2105 Line 5, for *alpha and gamma* read *alpha prime and gamma prime*.

**Stannite**

*Amer. Mineral.*, **53**, 2106 (1968). Line 1, for  $x=1$  read  $x=0$ .

**Kesterite**

*Amer. Mineral.*, **23**, 2106 (1968). Line 5, for  $Cu_2ZnS_4$  read  $Cu_2ZnSnS_4$ .

**Sukulaite**

*Amer. Mineral.*, **53**, 2104 (1968). Line 3, for  $Ta_2Sm_2O_3$  read  $Ta_2Sn_2O_7$ .

**Stanfieldite**

*Amer. Mineral.*, **53**, 508 (1968) for the X-ray line 2.187 read 2.817.