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NEW MINERAL NAMES

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Banstnaesite—(Y)

D. A. Mineev, T. I. Lavrishcheva, and A. V. Bykova (1970) Yttrian bastnaesite, a product of the alteration of gagarinite. *Zap. Vses. Mineral. Obshch.* **99**, 328–332 (in Russian).

Analysis by AVB gave RE_2O_3 60.00, ThO_2 0.72, CaO 4.09, K_2O 0.40, CO_2 18.99, F 7.28, H_2O^+ 0.74, H_2O^- 4.36, Al_2O_3 0.40, Fe_2O_3 3.3, SiO_2 3.00, sum 103.22 − (O = F_2) = 100.12%. The rare earth (RE_2O_3) consisted of La 1.4, Ce 7.0, Pr 1.8, Nd 6.2, Sm 5.3, Eu 0.6, Gd 6.8, Tb 1.6, Dy 11.0, Ho 2.6, Tm 1.1, Yb 5.3, Lu 1.7, Y 40.1%. After deducting 2.3% microcline, 3.3% hematite, 3% fluorite, and 1.5% quartz, the formula is:

$$[(\mathrm{Y, Dy, Gd})_{0.90}\mathrm{Ca}_{0.09}\mathrm{Th}_{0.01})(\mathrm{CO_3})_{1.00}\mathrm{F}_{0.73}(\mathrm{OH})_{0.19}]\cdot 0.5\mathrm{H_2O} \text{ or } \mathrm{YFCO_3}.$$

The DTA curve shows an endothermic break at 480°. Most of the water is lost at 160–200°.

X-ray powder data are indexed on a hexagonal cell with *a* 6.57, *c* 9.48Å., c/a = 1.441. The strongest lines are 3.43 (7.5)($11\bar{2}0$), 2.78 (10)($11\bar{2}2$), 1.976 (7.5)($30\bar{3}0$), 1.948 (10)($11\bar{2}4$), 1.822 (7.5)($30\bar{3}2$), 1.260 (5)($41\bar{5}2$).

Color brick-red, in section brown. The fine-grained character and high dispersion made it difficult to measure optical properties. Apparently optically positive with high birefringence. *G.* 3.9–4.0.

The mineral occurs as pseudomorphs up to 8 cm. long after gagarinite in microcline-quartz pegmatite, Kazakhstan. The name is according to the Levinson notation.

Murgocite

V. Ianovici and Ch. Neacsu (1970) La murgocite, un nouveau minéral du groupe des hydrosilicates magnésiens. *Rev. Roum. Geol., Geophys., Geogr., Ser. Geol.* **14**, 3–11.

Analysis by Vasilica Neacsu gave SiO_2 36.36, Al_2O_3 4.37, Fe_2O_3 0.56, MgO 33.91, CaO 3.55, Na_2O 0.09, K_2O 0.002, Li_2O 0.001, H_2O^+ 7.06, H_2O^- 14.31, sum 100.21%. The interchangeable cations and cation exchange capacity is given as: Ca^{2+} 116.68: Mg^{2+} 3.43, Na^+ 4.78, K^+ 0.53, total 125.42 meq./100g. The formula is given as:

$$(\mathrm{Mg}_{8.80}\underset{\underset{0.11(\mathrm{Na}, \frac{1}{2}\mathrm{Ca})}{\downarrow}}{\mathrm{Fe}^{3+}_{0.06}})(\mathrm{Si}_{7.34}\underset{\underset{0.66(\mathrm{Na}, \frac{1}{2}\mathrm{Ca}).}{\downarrow}}{\mathrm{Al}_{0.66}}\mathrm{O}_{20})(\mathrm{OH})_{8.65}\cdot n\mathrm{H_2O}$$

The mineral consists of 1:1 interstratified saponite and swelling chlorite, plus admixed sheets of stevensite (about 20%).

The DTA curve shows a large endothermic effect at 130–150°, a lesser endothermic effect at 250°, a small one at 820°, and a larger double peak at 860°.

The strongest X-ray lines (19 given) are in kX 14.98 (100)(002), 4.57 (11)(020), 2.998 (15)(00.10), 2.523 (27)(200). The unit cell has *a* 5.29, *b* 9.16 kX,

$c \sin \beta$ variable 24.48–33.6 kX. The (002) spacing is 16.80 kX after treatment with ethylene glycol, 12.24 kX after heating to 500°

The mineral occurs as earthy masses, usually pale green, rarely rose, resembling talc, greasy to the touch. Soft. Dispersed with difficulty in water. *G.* not given. No optical data.

The mineral occurs at Moldova Noua, southern Banat, Roumania, in a hydrothermally altered zone at the contact of banatite rocks (with ?). It is generally pseudomorphous after grossular and diopside (of which relicts remain), rarely after talc, sepiolite, or chrysotile. Crystals of calcite are present.

The origin of the name is not stated.

Discussion—The data are inadequate to characterize a new phase.

Mrazekite

G. H. Neacsu (1970) La mrazekite-un nouveau montmorillonoide magnésien. *Rev. Roum. Geol., Geophys., Geogr., Ser. Geol.* 14, 24–34.

Analysis gave SiO_2 51.77, Al_2O_3 0.30, Fe_2O_3 0.27, MgO 21.54, CaO 1.54, Na_2O 0.13, K_2O 0.02, Li_2O 0.08, H_2O^+ 9.26, H_2O^- 15.22, sum 100.13%. The ion-exchange capacity was Ca^{2+} 55.29, Mg^{2+} 7.14, Na^+ 4.21, K^+ 0.56, total 67.20 mequiv/100 g. The structural formula derived is 77%

$$\begin{array}{l} (Mg_{5.61}Fe_{0.02}Li_{0.04})(Si_{7.98}Al_{0.02}O_{20})(OH)_{3.34}\cdot nH_2O \quad + \quad 23\%(SiO_{2.5}) \\ \quad\downarrow \\ 0.47Ca/2 \;\; 0.05Mg/2 \;\; 0.03Na. \end{array}$$

The DTA curve shows a large composite endothermic peak (140°,160°) and small endothermic peaks at 220°, 770°, and 820°. "Dissolves with difficulty in water".

The strongest X-ray lines (45 given) are in kX 15.19 (100)(001), 5.18 (3)(003), 5.17 (5)(100), 4.53 (6)(020), 4.46 (3), 3.087 (3), 3.057 (4), 1.515 (4), 1.511 (6)(060). After dispersion in H_2O, $d(001) = 14.37$; after treatment with ethylene glycol 16.62, after heating at 500° 9.38 kX. The unit cell is given as a 5.24, b 9.08, $c \sin \beta$ 9.38–16.67 kX.

The mineral resembles saponite, stevensite, and talc. It occurs as earthy masses, white on fresh fracture, turning rose and then brown on exposure. It occurs frequently as pseudomorphs after chrysotile, stevensite, sepiolite, saponite, and talc, relicts of which are often found. *H.* and *G.* higher than those of stevensite and saponite. No optical data are given. Occurs with murgocite, see preceding abstract.

The origin of the name is not stated.

Discussion—The data are inadequate to characterize a new phase. The indexing of the line at 5.17Å as (100) seems very doubtful.

Unnamed Pt, Pd, Sn mineral

L. V. Razin and V. P. Bykov (1971) New natural solid solutions of Pt, Pd, Sn, and Pb in the ores of the Noril'sk deposit. *Zap. Vses Mineral. Obshch.* 100, 171–177 [in Russian].

A Pt-rich and a Pd-rich mineral are described from the disseminated sulfide ores of the Noril'sk I Cu-Ni deposit. The authors suggest the general formulas to be $(Pt, Pd)_5Sn_2$ and $(Pd, Pt)_7(Sn, Pb)_2$, but stress that they are tentative. They occur as aggregates and sometimes as cubic crystals, usually 15 × 80μm, but attain 1 × 2 mm in size. The grains have a metallic luster, steel-gray color, are malleable, nonmagnetic.

The Pt-rich mineral is more common, found within chalcopyrite or pyrrhotite and associated with ferroplatinum, sperrylite, gold, stannopalladinite, zvyagintsevite, niggliite, and stibiopalladinite.

Microprobe analyses gave Pt 54.6–56.5, 55.3; Pd 19.9–20.9, 20.3; Sn 22.5–23.0, 22.8; Rh 0.4–0.5, 0.4; Cu 0.5–0.6, 0.5; sum of averages 99.3%, corresponding to

$$(Pt_{2.95}Pd_{1.99}Cu_{0.08}Rh_{0.04})Sn_{2.00} = (Pt, Pd, Cu, Rh)_{5.06}Sn_{2.00}$$

The X-ray powder pattern (8 lines) is similar to synthetic Pd_3Pb; strongest lines are 2.29(10)(111), 1.984(8)(200), 1.404(7)(220), and 1.196(6)(311), $a = 3.97 \pm 0.01$ Å.

In polished section the mineral is white but distinguished by a weak cream-colored hue, especially against ferroplatinum, isotropic, reflectance (%) 460nm 61.2, 490nm 62.6, 540nm 63.9, 580nm 65.2, 620nm 65.9, 700nm 67.3. $VHN_{50} =$ 436–454, av. 445 kg/mm². Negative to standard etch reagents, including aqua regia.

Discussion—This is a new mineral but since the details of the micro-analysis are not given it is not possible to judge the accuracy of the proposed Pt_5Sn_2 formula. The Pt-Sn system has Pt_3Sn reported, space group *Pm3m*, same as for Pd_3Pb; therefore it seems reasonable to assign this mineral to the Pt_3Sn end member. The mineral described is thus palladian Pt_3Sn. Study of the Pt-Pd-Sn system would be helpful, as well as better X-ray data for the mineral.

L. J. Cabri

Unnamed Pd, Pt, Sn, Pb Mineral

L. V. Razin and V. P. Bykov (1971) New natural solid solutions of Pt, Pd, Sn and Pb in the ores of the Noril'sk deposit. *Zap. Vses. Mineral. Obshch.* 100, 171–177 [in Russian].

Occurrence, size, macroscopic habit, and properties same as for unnamed Pt, Pd, Sn mineral above.

The Pd-rich mineral, tentative formula $(Pd, Pt)_7(Sn, Pb)_2$, was found only in picrite or contact gabbro-dolerites. Associated with chalcopyrite, cubanite, pyrrhotite, galena, chalcocite, pentlandite, and replacing the $(Pt, Pd)_5Sn_2$ mineral and ferroplatinum.

Microprobe analyses gave Pd 45.2–51.0, 48.0; Pt 20.0–21.1, 20.7; Sn 12.7–14.1, 13.5; Pb 11.8–13.1, 12.4; Rh 1.1–1.4, 1.3; Cu 0.7–1.0, 0.8; Au 1.1–1.4, 1.3; Ag 0.5–0.8, 0.7; sum of averages 98.7% corresponding to

$$(Pd_{5.20}Pt_{1.22}Rh_{0.14}Cu_{0.14}Au_{0.08}Ag_{0.07})(Sn_{1.31}Pb_{0.69}) = (Pd, Pt)_{6.85}(Sn, Pb)_{2.00}$$

The X-ray powder data (10 lines) similar to synthetic Pd_3Pb, strongest lines are 2.30 (10)(111), 1.994 (8)(200), 1.409 (7)(220), 1.205 (6)(311), and 1.150 (5)(222), $a = 3.99 \pm 0.01$ Å.

In polished section the mineral is white, but with a faint yellow hue especially against Pt-bearing minerals, isotropic, reflectance (%) 460nm 57.0, 490nm 60.8, 540nm 62.5, 580 nm 63.6, 620nm 63.6, 700nm 64.3 VHN_{50}360–382, av. 367 kg/mm^2. Negative to all standard etch reagents except for aqua regia which etches rapidily; it sometimes shows a granular structure and zoning.

Discussion—The same difficulty in assessing the validity of the microanalytical data as with the Pt-mineral. May be considered a new mineral [with end member Pd_3Sn, $a = 3.97$Å, comp. range ~24–26 at % Sn, Knight and Rhys (1959) *J. Less-common Metals*, **1**, 292–303], since zvyagintsevite was redefined by Genkin *et al.* [A. D. Genkin, T. L. Estigneeva, N. V. Tronera, and L. N. Vyal'sov, *Zap. Vses. Mineral. Obsheh.* **98**, 708–715 (1969); and see *Amer. Mineral.* **52**, 299 and 1587 (1967) and *Can. Mineral.* **8**, 541 (1966)]. Study of the Pd-Sn-Pb system would also be helpful.

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NEW DATA

Vanalite

F. A. Kurmakaeva (1971) Study of vanalite by electron microscopy and X-ray structural analysis. *Zap. Vses. Mineral. Obshch.* **100**, 523–526 (in Russian).

X-ray study showed vanalite [*Amer. Mineral.* **48**, 1180 (1963)] to be monoclinic, space group *P*2/*m*, *P*2, or *Pm*, *a* 12.591 ± 0.022, *b* 10.70 ± 0.07, *c* 10.923 ± 0.013 Å, β 95°30′ ± 20′, cleavage (010) perfect, also (100). The strongest X-ray lines (42 given) differ considerably from those previously published, the strongest lines are 10.70 (100)(010), 8.52 (42)(101), 7.90 (37)($10\bar{1}$), 6.33 (30)(200, $11\bar{1}$), 5.34 (30)(020), 3.308 (30)(131, 312), 2.252 (27)($42\bar{3}$, 521), 1.518 (21)(625, $62\bar{4}$)

Cliffordite

Jean Galy and Georges Meunier (1971) A propos de la cliffordite, UTe_3O_8. Le systemè UO_3–TeO_2 à 700C. Structure crystalline de UTe_3O_9. *Acta Crystallogr.* **27B**, 608–616.

By heating $UO_3 + TeO_2$ in sealed Vycor tubes, a crystalline yellow powder was obtained. The X-ray pattern is very close to that reported by Gaines (*Amer. Mineral.* **54**, 697–701), for the mineral cliffordite; *a* 11.370 Å, space group *Pa*3; Gaines gave *a* 11.371Å, space group *Pa*3. Determination of the structure, however, indicates the formula UTe_3O_9 rather than UTe_3O_8 as determined by Gaines. Further study is needed.

Brüggenite

Mary E. Mrose, G. E. Ericksen, and J. W. Marinenko (1971) Crystal chemistry of the calcium iodates in the system, $Ca(IO_3)_2$–H_2O. *Geol. Soc. Amer., Abstr. Program,* **1971**, 653.

Brüggenite from the Chilean nitrate deposits, where it occurs with lautarite, is $Ca(IO_3)_2 \cdot H_2O$. Monoclinic, $P2_1/c$, *a* 8.51, *b* 10.00, *c* 7.50 Å, β 95°20′, $Z = 4$, *G.* 4.26. DTA study shows that brüggenite dehydrates to lautarite at 220–325°.

Pellyite

E. P. Meagher (1971) The crystal structure of pellyite, a barium-containing silicate with tetrahedral iron. *Geol. Soc. Amer., Abstr. Program,* **1971**, 644–645.

Pellyite, $Ba_2Ca(Fe,Mg)_2Si_6O_{17}$, is orthorhombic, space group *Cmcm, a* 15.677, *b* 7.151, *c* 14.209 Å, $Z = 4$. Mössbauer study confirmed that all the iron is ferrous.

Aliettite

F. Veniale and H. W. Vander Marel (1969) Identification of some 1:1 regular interstratified trioctahedral clay minerals. *Proc. Int. Clay Conf., Tokyo, 1969,* **1**, 233–244.

The name aliettite is given to a regularly interstratified talc-saponite mineral from Monte Chiaro, Italy, for which X-ray, DTA, and infrared absorption data are given. The mineral had been described from several localities by Alietti (1956, 1958, 1960) and by the present authors [*Beitr. Mineral. Petrogr.* **9**, 198–245 (1963)]. The name is for Professor A. Alietti, University of Modena, Italy.

Rasvumite

In the abstract, *Amer. Mineral.* **56**, 1121 (1971), the hardness, given as 333.9 kg/sq. mm., should be 33.9.