

## New Mineral Names\*

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### Franzinite\*

Stefano Merlino and Paolo Orlandi (1977) Franzinite, a new mineral phase from Pitigliano, Italy. *Neues Jahrb. Mineral. Monatsh.*, 163-167.

Microchemical analysis gave SiO<sub>2</sub> 32.44, Al<sub>2</sub>O<sub>3</sub> 25.21, Fe<sub>2</sub>O<sub>3</sub> 0.04, MgO 0.14, CaO 12.08, Na<sub>2</sub>O 11.50, K<sub>2</sub>O 4.24, SO<sub>3</sub> 10.65, CO<sub>2</sub> 1.54, Cl 0.36, H<sub>2</sub>O 1.88, sum 100.08 - (O=Cl<sub>2</sub>) 0.08 = 100.00 percent. "SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> were determined by X-ray fluorescence, account being taken of the proper correction factor for S and Cl and assuming that the weight percentages sum up to 100.0." This gives the unit-cell content: (Na<sub>21.53</sub>Ca<sub>12.50</sub>Mg<sub>0.20</sub>Fe<sub>0.03</sub>)(Si<sub>31.32</sub>Al<sub>28.68</sub>O<sub>120</sub>(SO<sub>4</sub>)<sub>7.72</sub>(CO<sub>3</sub>)<sub>2.03</sub>(OH)<sub>9.48</sub>Cl<sub>0.59</sub>·4.31H<sub>2</sub>O. It is a member of the cancrinite group, compositionally similar to davynite but differing in having sulfate as the dominant anion.

Weissenberg and precession photographs show the mineral to be hexagonal, space group  $P\bar{3}m1$ ,  $P3m1$ , or  $P321$ ,  $a$  12.884 ± 0.009,  $c$  26.580 ± 0.021 Å. The strongest X-ray lines (32 given) are 3.81 (42)(213), 3.72 (100)(300), 3.59 (43)(107), 3.56 (39)(214), 2.148 (29)(330).

The mineral occurs as squat pearly white prisms up to 1 cm in diameter.  $G$  2.49 meas, 2.52 calc.  $H = 5$ . Optically uniaxial positive,  $\omega$  1.510,  $\epsilon$  1.512. It occurs with afghanite and liottite [*Am. Mineral.*, 62, 321, (1977)] in ejected blocks in a pumice deposit, Pitigliano Tuscany, Italy. The name is for Marco Franzini, professor of mineralogy, University of Pisa, Italy. Type material is at the University of Pisa and University of Modena. M.F.

### Hexahydroborite\*

M. A. Simonov, N. A. Yamnova, E. V. Kazanskaya, Yu. K. Egorov-Tismenko and N. V. Belov (1976) Crystal structure of a new natural calcium borate, hexahydroborite, CaB<sub>2</sub>O<sub>4</sub>·6H<sub>2</sub>O = Ca[B(OH)<sub>4</sub>]<sub>2</sub>·2H<sub>2</sub>O *Doklady Akad. Nauk SSSR*, 228, 1337-1340 (in Russian).

X-ray study showed the mineral to be monoclinic, space group  $P2_1/a$ ,  $a$  8.006,  $b$  8.012,  $c$  6.649 Å,  $\gamma$  104.21°,  $Z = 2$ ,  $G$  calc 1.88. Structural details but no powder data are given. Crystals are colorless. They occur with pentahydroborite [*Am. Mineral.*, 47, 1482 (1962)] at the Solongo deposit, Urals.

#### Discussion

It would be better to publish the full description of the mineral. M.F.

### Keyite\*

P. G. Embrey, E. E. Fejer and A. M. Clark (1977) Keyite: a new mineral from Tsumeb. *Mineral. Record*, 8, 87-90.

\*Minerals marked with an asterisk after the name were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association.

Six microprobe analyses gave (range and av.): As<sub>2</sub>O<sub>3</sub> 44.96-45.68, 45.36; CuO 16.84-20.22, 18.81; ZnO 16.78-18.57, 17.90; CdO 13.58-14.93, 14.08; CaO 0.41-1.11, 0.80; PbO 0.14-1.42, 0.63; MnO 0.79-1.27, 1.07; sum 97.81-99.54, 98.65 percent, corresponding to (Cu,Zn,Cd)<sub>3</sub>(AsO<sub>4</sub>)<sub>2</sub> with Cu:Zn:Cd = 1.19:1.11:0.55. The mineral is readily dissolved by concentrated acids.

X-ray study shows the mineral to be monoclinic, space group  $I2$ ,  $Im$ , or  $I2/m$ ,  $a$  11.65,  $b$  12.68,  $c$  6.87 (all ± 0.01 Å),  $\beta$  98.95 ± 0.05°,  $Z = 6$ ,  $G$  calc 4.95. The strongest X-ray lines (46 given) are 6.41 (MS) (020, 10 $\bar{1}$ ), 3.29 (VS)(11 $\bar{2}$ ), 2.876 (VS)(400), 2.795 (VVS) (22 $\bar{2}$ , 321, 240), 1.644 (MS).

The mineral occurs as crystals (max. 0.25 × 0.1 × 0.04 mm), prismatic {001} to tabular {010}, showing forms {010}, {210}, {011}, perhaps {201}. Cleavage {001} good. Color deep sky-blue, streak pale blue.  $H$  3 ½-4. Optically biaxial, sign and  $2V$  not determined,  $\alpha$  1.80,  $\gamma$  1.87,  $Y=b$ , strongly pleochroic,  $X$  pale blue,  $Y$  greenish blue,  $Z$  deep blue, absorption  $Z>Y>X$ . Dispersion strong,  $X\Delta c = 10\frac{1}{2}^\circ$  (Cd red),  $11\frac{1}{2}^\circ$  (Hg yellow),  $12\frac{1}{2}^\circ$  (Hg green),  $9\frac{1}{2}^\circ$  (Hg violet).

The mineral occurs in cavities in tennantite ore from Tsumeb, S.W. Africa, associated with schultenite and zincian olivenite.

The name is for Charles L. Key, mineral dealer, of Canton, Connecticut, who first called attention to the mineral. Type material is in the British Museum, London.

Note Keyite is similar in composition and appearance to stranskiite [*Am. Mineral.*, 45, 1315 (1960)], but the symmetry and strongest X-ray lines are different. M.F.

### Leiteite\*

F. P. Cesbron, R. C. Erd, G. K. Czamanske and Helene Vachey (1977) Leiteite, a new mineral from Tsumeb. *Mineral. Record*, 8, 95-97.

Electron probe analyses gave Zn 23.6, 23.6, As 53.7, 53.4 percent; microchemical analysis gave ZnO 28.5, FeO 0.5, As<sub>2</sub>O<sub>3</sub> 71.4 percent, corresponding to ZnAs<sub>2</sub>O<sub>4</sub> (zinc arsenite). DTA and TGA curves are given. When the mineral is heated, part of the As<sub>2</sub>O<sub>3</sub> is lost, part is oxidized [formation of Zn<sub>3</sub>(AsO<sub>4</sub>)<sub>2</sub>]. The DTA curve in air shows a small endothermic peak at 507° (loss of As<sub>2</sub>O<sub>3</sub>) and a large one at 576°; in N<sub>2</sub> there are 2 endothermic peaks at 500° and 546°. Incongruent melting occurs at 900-1000°C.

The mineral is monoclinic, pseudo-orthorhombic, space group  $P2_1/a$ ,  $a$  17.645,  $b$  5.019,  $c$  4.547 Å,  $\beta$  90°59',  $Z = 4$ ,  $G$  calc 4.61, obs 4.31. The strongest X-ray lines (30 given) are 4.833 (31)(110), 3.320(39)( $\bar{1}11$ ), 3302 (32)(111), 3163 (76)( $\bar{2}11$ ), 3.133 (100)(211), 1.685 (49)(911).

The mineral occurs as a single specimen in cleavable masses, 7 × 4 × 0.3 cm. It is colorless to brown, luster pearly on cleavages,  $H$  1 ½-2. Cleavage {100} perfect, cleavage lamellae flexible, inelastic, somewhat sectile. Optically biaxial,  $\alpha$  1.87,  $\beta$  1.880,  $\gamma$  1.98,  $2V = +26\frac{1}{2}^\circ$ ,  $Y = b$ ,  $X\Delta a = 11^\circ$ ,  $Z\Delta c = 10^\circ$ ,  $r < v$  very strong.

The mineral occurs associated with tennantite, chalcocite, smithsonite, and schneiderhöhnite at Tsumeb, S. W. Africa. The

name (pronounced lā'tīt) is for Luis Teixeira-Leite, mineralogist, Pretoria, S.W. Africa, who first found it. Type material is at the Smithsonian Institution, British Museum, and the Paul and Marie Curie University, Paris. **M.F.**

#### Machatschkiite\*

K. Walenta (1977) Machatschkiit, ein neues Arsenmineral aus der Grube Anton im Heubachtal bei Schiltach (Schwarzwald, Bundesrepublik Deutschland).

*Tschermaks Mineral. Petrogr. Mitt.*, 24, 125–132.

Chemical analysis, following recalculation, gave CaO 29.5, As<sub>2</sub>O<sub>5</sub> 40.8, SO<sub>3</sub> 0.5, H<sub>2</sub>O 29.2, sum 100.0 percent, in good agreement with the formula Ca<sub>3</sub>(AsO<sub>4</sub>)<sub>2</sub>·9H<sub>2</sub>O. Machatschkiite is rhombohedral, the characteristic form being {10 $\bar{1}$ 2}; the dimensions of the hexagonal unit cell are *a* 15.10, *c* 22.59 Å, *Z* = 12, *G* = 2.50. The diffraction symbol is *R*\*\*<sup>†</sup>. The strongest lines in the powder pattern are 8.59 (10)(01 $\bar{1}$ 2), 5.34 (8)(11 $\bar{2}$ 3), 3.59 (8)(13 $\bar{4}$ 1).

Machatschkiite dissolves readily in dilute HCl or HNO<sub>3</sub>. There is no cleavage, fracture is conchoidal, *H* = 2–3. The mineral is colorless, translucent to transparent, weakly biaxial negative,  $\epsilon = 1.585(2)$  ( $\omega = 1.593(2)$ ). It occurs as a secondary mineral in crusts on granite with gypsum, pharmacolite, picropharmacolite, and sainfeldite.

The name is for the late Felix Machatschki, professor of mineralogy successively at Tübingen, Munich, and Vienna. **A.P.**

#### Majakite\*

A. D. Genkin, T. L. Evstigneeva, N. V. Troneva and L. N. Vyal'sov (1976) Majakite, PdNiAs, a new mineral from copper-nickel sulfide ores. *Zap. Vses. Mineral Obshch.*, 105, 698–703 (in Russian).

Microprobe analyses of two grains gave Pd 41.3, 41.2; Ni 27.0, 27.4; As 31.0, 30.9; sums 99.3, 99.5, corresponding to Pd<sub>0.93</sub>Ni<sub>1.09</sub>As<sub>0.98</sub> and Pd<sub>0.92</sub>Ni<sub>1.10</sub>As<sub>0.98</sub> (recalculated on basis of 3 atoms by L.J.C.) The ideal formula is either PdNiAs or (Pd,Ni)<sub>2</sub>As. Traces of Bi were found (not quantified) and other elements, with detection limits 0.1–1 weight percent, were not detected.

The X-ray powder pattern compares closely with that of synthetic PdNiAs and was indexed as hexagonal *a* = 6.066, *c* = 7.20Å: strongest lines for the mineral are 2.65 (10)(20 $\bar{2}$ 0), 2.30(5)(11 $\bar{2}$ 2), 2.19(7)(10 $\bar{1}$ 3), 1.988(10)(12 $\bar{3}$ 0). For *Z* = 6,  $\rho$ (calc) = 10.5 g/cm<sup>3</sup> and  $\rho$ (meas) = 9.33 g/cm<sup>3</sup> for synthetic PdNiAs.

Majakite was found only as intergrowths with other platinum-group minerals in the chalcopyrite and talnakhite ores of the Majak mine, Talnakh deposit. Majakite often occurs as rounded or oval inclusions (0.001–0.1mm) in polarite and also as intergrowths with stannopalladinite. In some cases it occurs as part of more complex intergrowths containing a large number of platinum-group minerals. In reflected light majakite appears grayish-white, but it is lilac-gray when intergrown with native silver, distinctly rosy with a soft lilac tint with polarite, and grayish-white with a greenish tint with stannopalladinite. Birefringence was not observed in air or in oil. It is weakly anisotropic, with no visible color effects. Reflectance (percent) 440nm 47.4, 460nm 49.0, 480nm 50.5, 500nm 51.2, 520nm 52.3, 540nm 52.8, 560nm 54.4, 580nm 55.2, 600nm 55.8, 620nm 56.1, 640nm 56.7, 660nm 58.0, 680nm 57.9, 700nm 58.5, 720nm 59.0, 740nm 59.2. VHN<sub>50</sub> = 520 (av. for 3 samples and 14 meas). Hardness on Mohs scale ~5.

The mineral is named after the Majak mine, Talnakh deposit, to

honor mining enterprise in the Noril'sk region. Majakite samples are preserved in the Mineralogical Museum, Academy of Sciences, U.S.S.R., and in the mineralogical laboratory, IGEM, Academy of Sciences, U.S.S.R.

#### Discussion

It is not clear whether the calculated density of 10.5 g/cm<sup>3</sup> is for the mineral or synthetic PdNiAs, using the cell parameters of the mineral. Recalculation gives 10.3, 10.2, and 10.4 g/cm<sup>3</sup> for analysis No. 1, analysis No. 2, and synthetic PdNiAs. Also *d*(calc) (002) = 3.60 and (110) = 3.03Å, slightly different from reported values. **L.J.C.**

#### Sarabauite

Izumi Nakai, Kichiro Koto, Kozo Nagashima and Nobuo Morimoto (1977) The crystal structure of sarabauite, CaSb<sub>10</sub>O<sub>10</sub>S<sub>6</sub>, a new oxide sulfide mineral. *Chemistry Letters (Japan)*, 275–276 (in English).

The mineral, from the Sarabau mine, Sarawak, Malaysia, is monoclinic, *a* 25.33, *b* 5.655, *c* 16.88Å,  $\beta$  117.51°, *Z* = 4, space group *C2/c*, *G* calc 4.99. Atomic coordinates are given.

#### Discussion

See comments under velikite. **M.F.**

#### Velikite

L. N. Kaplunnik, E. A. Pobedimskaya and N. V. Belov (1977) The crystal structure of velikite, Cu<sub>3.75</sub>Hg<sub>1.75</sub>Sn<sub>2</sub>S<sub>8</sub>. *Kristallografiya*, 22, 175–177 (in Russian).

Microprobe analysis by V. S. Gruzdev gave the formula (Cu<sub>3.18</sub>Hg<sub>1.53</sub>Zn<sub>0.44</sub>)(Sn<sub>1.90</sub>As<sub>0.08</sub>Sb<sub>0.02</sub>)S<sub>9.94</sub> (analysis not given). Single-crystal study showed the mineral to be tetragonal, space group *I4/mmm*, *a* 5.542 ± 0.003, *c* 10.908 ± 0.007Å, *G* meas 5.59, *G* calc 5.48, *Z* = 1. The structure is that of stannite, with Hg occurring in ⅔ of the Fe positions. The strongest X-ray lines (46 given) are 3.17 (100)(112), 1.958 (23)(220), 1.941 (80)(204), 1.671 (40)(312), 1.646 (35)(303), 1.264 (25)(413). The mineral is dark gray, with metallic luster.

#### Discussion

This is another example of the recent tendency to publish the crystallography of a new mineral without the description of the mineral, as recently done for christite, slawsonite, bahianite, sarabauite, and hexahydroborite. The present example is particularly unsatisfactory; no explanation is given of the divergence of the formula derived from probe analysis and that deduced from the structure, and nothing is said of the occurrence, except that it is from the Khaidarkan deposit. **M.F.**

#### Urvantsevite\*

N. S. Rudashevskii, V. N. Makarov, E. M. Mededeva, V. V. Ballakh, Y. I. Permyakov, G. A. Mitenkov, A. M. Karpenkov, I. A. Budk'ko and N. N. Shishkin (1976) Urvantsevite, Pd(Bi, Pb)<sub>2</sub>, a new mineral in the system Pd–Bi–Pb. *Zap. Vses. Mineral Obshch.*, 105, 704–709 (in Russian).

Microprobe analyses of seven grains gave Pd 20.0–20.9, av. 20.5; Bi 64.1–65.0, av. 64.6; Pb 15.1–15.7, av. 15.3, sums 99.4–101.4, av.

100.4 percent, corresponding to  $\text{Pd}_{1.00}\text{Bi}_{1.61}\text{Pb}_{0.38}$ , or  $\text{Pd}(\text{Bi},\text{Pb})_2$ .

The X-ray powder pattern (18 lines) was indexed on a hexagonal cell  $a$  13.82(1),  $c$  6.53(1) Å with strongest reflections 2.643(10) (21 $\bar{3}$ 2), 2.372(8)(22 $\bar{4}$ 2), 2.043(5)(51 $\bar{1}$ 1), 1.420(7)(71 $\bar{3}$ 2), 1.335(5)(72 $\bar{9}$ 2), 1.166(6)(5.5. $\bar{1}$ 0.3), 1.111(7)(9.2. $\bar{1}$ 1.2).

Urvantsevite was found in the massive pentlandite-cubanite-chalcopyrite ores in the roof of the zoned sulfides of the Majak mine, Talnakh deposit, at the contact with taxitic gabro-dolerite. These sulfide ores are enriched in lead minerals (galena, altaite, shadlunite) and in platinum-group minerals. Urvantsevite occurs in irregular polymineralic intergrowths up to 4 mm in size. The central part of such intergrowths usually consists of unnamed  $(\text{Pd},\text{Pt},\text{Cu})_3\text{Sn}$  bordered by consecutive intergrowths of froodite and urvantsevite (as irregular rounded or elongated grains 0.1–0.4 mm), sobolevskite(?), followed by paolovite, native silver and an outer rim of intergrown altaite and galena.

Urvantsevite polishes well and has a very perfect cleavage in one direction.  $\text{VHN}_5 = 53(4)$ ,  $\text{VHN}_{10} = 50(2)$ ,  $\text{VHN}_{30} = 38(3)$ . In polished section urvantsevite is grayish-white, usually darker than froodite, and when intergrown with sobolevskite(?) a greenish-yellow tint is noted. Urvantsevite is weakly birefractant and slightly anisotropic, with no visible color effects. Reflectance (%) for  $R'g$  and  $R'p$  440nm 48.7 and 50.5, 460nm 53.2 and 54.9, 480nm 54.6 and 53.8, 500nm 54.1 and 53.3, 520nm 54.8 and 53.7, 540nm 55.2 and 54.0, 560nm 56.2 and 54.9, 580nm 56.7 and 55.2, 600nm 57.6 and 56.1, 620nm 58.3 and 56.8, 640nm 59.2 and 57.8, 660nm 60.1 and 58.6, 680nm 60.9 and 59.6, 720nm 61.3 and 59.6. The mineral is etched by  $\text{HNO}_3(1:1)$  to an intense dark brown, blackens with concentrated  $\text{HNO}_3$ . 10 percent  $\text{FeCl}_3$  blackens the mineral while a 10 percent KCN + 5 percent NaOH solution browns it slightly.

The mineral is named after Professor N. N. Urvantsev who first discovered the Noril'sk deposits. Polished sections with urvantsevite are preserved in the Mining Museum of the Leningrad Mining Institute.

#### Discussion

The calculated density is  $9.6\text{g}/\text{cm}^3$ , but was not reported by the authors. This value is rather low when compared to froodite ( $11.5\text{g}/\text{cm}^3$ ). The mineral's powder pattern was indexed without single-crystal studies, as single crystals were not available. This is unfortunate in view of the close chemical relationship to froodite, especially since synthetic experiments were not made to determine whether, indeed, the mineral is a new species in the ternary Pd–Bi–Pb system. The following are corrections which should be made to the powder data:  $d(\text{calc})(0002) = 3.265$ ,  $(3250) = 2.746$ ,  $(8080) = 1.496$  Å, and  $hkl$  for 1.187 Å is (44 $\bar{8}$ 4) not (44 $\bar{8}$ 2). L.J.C.

#### Unnamed Na-U-borate sulfates, unnamed Mg-borate

Kurt Walenta (1976) Uranium minerals from the Schildmauer gypsum deposit near Admont, Styria. *Mitteilungsbl., Landesmuseums "Joanneum", Abt. Mineral., 44*, 35–41 (in German).

The minerals were found as incrustations on anhydrite, gypsum, hexahydrate, starkeyite, and loewite.

The magnesium borate occurs in more or less colorless crystals, apparently orthorhombic. Microchemical tests showed borate, Mg, and a little Na. Optically biaxial, neg.,  $2V \sim 30^\circ$ ,  $r < v$ ,  $\alpha$  1.442,  $\gamma$  1.504, both  $\pm 0.002$ . The strongest X-ray lines (31 given) are 12.08 (9), 7.60 (10, d), 5.29 (7), 3.93 (8, d), 3.09 (6), 2.68 (9).

Uranium mineral A contains Na, Mg, U, borate, and sulfate. It

is yellow and fluoresces bright yellow-green in UV. It is decomposed by water. Optically negative, nearly uniaxial,  $\alpha$  1.496,  $\gamma$  1.512 (both  $\pm 0.002$ ), pleochroism weak,  $X$  colorless,  $Z$  yellowish. The strongest X-ray lines (50 given) are 10.84 (10), 9.80 (8), 9.08 (5), 7.89 (9), 7.03 (7), 4.85 (7).

Uranium mineral B may be a variety of or a different hydrate of mineral A, which it resembles in form, color, fluorescence, and qualitative chemistry. Optically biaxial, neg.,  $2V \sim 30^\circ$ ,  $\alpha$  1.476,  $\gamma$  1.496 (both  $\pm 0.002$ ), pleochroism weak,  $X$  colorless,  $Z$  yellowish. The strongest X-ray lines (58 given) are 10.79 (9), 9.80 (10), 8.52 (7), 7.70 (9,d), 6.42 (6), 5.27 (5) 4.85 (7,d), 4.29 (6), 3.06 (6), 2.88 (5).

Uranium mineral C occurs in pale yellow long-prismatic crystals, apparently triclinic. Twinned. Fluorescence like that of minerals A and B. Optically biaxial, neg.,  $2V$  17–27°, variable, extinction  $\sim 28^\circ$ ,  $\alpha$  1.473,  $\gamma$  1.490 (both  $\pm 0.002$ ). Microchemical tests also show Na, Mg, U, borate, sulfate. The strongest X-ray lines (48 given) are 9.88 (10, d), 7.98 (8), 7.42 (6), 4.87(6), 3.91 (6), 3.67 (5), 2.84 (5,d). M.F.

#### Unknown (Pd,Ni,As) mineral

L. J. CABRI *et al.* (1975) *ibid.*

One grain of this mineral was found in a complex intergrowth with kotulskite, an "unnamed (Pd,Cu,As) mineral", and palladoarsenide from the Stillwater Complex, Montana. It is light yellow to grayish under reflected light in oil immersion. It is either isotropic or weakly anisotropic. Electron microprobe analysis gave: Pd 48.6, Ni 17.4, As 32.7, Te 0.38, total 99.08 weight percent. These data suggest a formula of  $(\text{Pd},\text{Ni})_2(\text{As},\text{Te})$  or  $\text{PdNi}(\text{As},\text{Te})$ .

#### Discussion

I would like to object to the use of terms such as "unknown (Pd,Ni,As) mineral" or "unnamed (Pd,Cu,As) mineral" on several grounds. First, if the mineral is being studied it is not *unknown*; it is perhaps *unidentified*. The term "unknown" is used in this way by many mineralogists (this abstractor included), but it should be avoided. A much more important objection is the form in which the elemental symbols are given. At first glance, the expression (Pd,Ni,As) implies a native palladium with minor nickel and arsenic in substitution. I would suggest that "unidentified Pd–Ni–As mineral" might better convey the proper relationship.

With regard to the formulae given by the authors, some other interpretations are possible. If As + Te is taken as 1.00, then the formula is  $\text{Pd}_{1.04}\text{Ni}_{0.67}\text{As}_{0.99}\text{Te}_{0.01}$ . The value for Ni suggests that a better sum for As + Te would be 3.00, which gives a formula of  $\text{Pd}_{3.12}\text{Ni}_{2.02}\text{As}_{2.98}\text{Te}_{0.01}$ . This could be interpreted as either  $\text{Pd}_3\text{Ni}_2\text{As}_3$  or  $(\text{Pd},\text{Ni})_5\text{As}_3$ . J.A.M.

#### Discredited Minerals

##### Nenadkevite = a mixture

E. V. KOPCHENOVA, A. S. AVDONIN, G. A. SIDORENKO AND G. A. DUBINCHUK (1976) The problem of nenadkevite as a mineral species. *Sbornik Nauchn. Trud., Mosk. Otdel. Vses. Mineral. Obshch.*, March, 1974, 38–40 (in Russian).

Nenadkevite, a uranium silicate, was described in 1956 [*Am. Mineral.*, 42, 441–442(1957)], where I commented "an unnecessary name for what is probably a variety of coffinite." Reexamination of "ore and museum samples of nenadkevite from several Precambrian ore showings" by microprobe analyses (13) and X-ray

data show them to be mixtures of uraninite (relict), boltwoodite, and "uranium hydroxides."

#### Discussion

It is not stated whether any of these samples is from the never-identified type locality. **M.F.**

### New Data

#### Deerite

H.-R. WENK, R. N. BIAGIONI, J. HSIAO, D. L. LEE, F. L. TANZELLA, S. M. YEH, K. HODGSON AND H. U. NISSEN (1976) Deerite,  $(\text{Fe,Mn})_{12}\text{Si}_8(\text{O,OH})_{32}$ , yet another type of chain silicate. *Naturwissenschaften*, 63, 433-434.

"The pseudosymmetric space group of deerite in which the average structure has been determined is *Pnma* ( $a = 18.872$ ,  $b = 3.186$ ,  $c = 10.278\text{Å}$ ). By a superstructure,  $b$  is tripled (9.558Å) and the cell shows a slight monoclinic distortion ( $\alpha = 90.43^\circ$ ), suggesting that the true space group may be *P2<sub>1</sub>* or *P2<sub>1</sub>/n* (notice that the monoclinic axis is not  $y = \text{fiber axis}$ , as previously suggested). From new microprobe analyses we came up with a tentative formula  $\text{Fe}_{11.39}\text{Mn}_{0.61}\text{Si}_8(\text{O,OH})_{32}$  (considering a density of 3.837  $\text{g/cm}^3$ ). In contrast to the original description, no Mg and only traces of Al could be detected."

#### Ktenasite

G. Raade, C. J. Elliott and E. E. Fejer (1977) New data on ktenasite. *Mineral. Mag.*, 41, 65-70.

#### Discussion

The probe analysis is not given. The formula as given is unsatisfactory since it does not indicate that approximately equal amounts of  $\text{Fe}^{2+}$  and  $\text{Fe}^{3+}$  are present. **M.F.**

Ktenasite from Glomsrudkollen zinc mine, Modum, Norway, is monoclinic, space group *P2<sub>1</sub>/c*, with  $a$  5.598,  $b$  6.121,  $c$  23.762 Å,  $\beta$  95.55°. The formula, calculated from an analysis, is  $(\text{Cu}_{3.8}\text{Zn}_{1.5})(\text{SO}_4)_2(\text{OH})_6 \cdot 6\text{H}_2\text{O}$ ;  $Z = 2$ ,  $G$  (calc) 2.96, (meas) 2.94. Ktenasite is biaxial negative with  $\alpha$  (colorless) 1.574,  $\beta$  (bluish green) 1.615,  $\gamma$  (light green) 1.628,  $2V_\gamma$  59°. The strongest lines of the powder pattern are 11.82 (100), 5.93 (85), 4.85 (90), 2.955 (50), 2.785 (60), 2.688 (60), 2.655 (50), and 2.584 (70). In the initial description (*Am. Mineral.*, 36, 381) the  $a$  axis dimension was double that now reported and the record of the powder pattern included many lines not attributable to ktenasite. **A.P.**

#### Wolframo-ixiolite

I. D. BORNEMAN-STARYNKEVICH, E. S. RUDNITSKAYA, T. I. LOSEVA AND V. S. AMELINA (1976) Once again, wolframo-ixiolite. *Sbor-*

*nik Nauchn. Trud., Mosk. Otdel. Vses. Mineralog. Obshch.*, March, 1974, 25-28 (in Russian)

T. M. AMICHBA AND L. S. DUBAKINA, Wolframo-ixiolite in ores of tin-tungsten deposits of Yakutia. *Ibid.*, 11-18.

Wolframo-ixiolite was described in 1969 [*Am. Mineral.*, 55, 318-319 (1970)]; the mineral was not accepted by the IMA Commission. The first paper cited above reexamines type material and gives infrared data, indicating the presence of hydroxyl ion and of molecular water. It also gives electron microprobe traverses that show small amounts of microcline, ilmenite, zircon, and rutile, and of a major phase containing Nb, Ta, and Mn, but no W. The conclusion: "As to whether wolframo-ixiolite is a new mineral with formula  $(\text{Fe}_{0.5}\text{Mn}_{0.3}\text{Nb}_{0.3}\text{Ta}_{0.1}\text{W}_{0.5})\text{O}_4$  or an unusually close intergrowth of two minerals,  $(\text{Fe,Mn})\text{WO}_4$  and  $(\text{Mn,Fe})(\text{Nb,Ta})_2\text{O}_6$ , remains an open question."

The second paper gives two electron probe analyses of homogeneous inclusions in cassiterite from a Sn-W deposit of Yakutia. One of these, referred to as wolframo-ixiolite, containing  $\text{Nb}_2\text{O}_5$  38.1,  $\text{Ta}_2\text{O}_5$  10.9,  $\text{Sc}_2\text{O}_3$  4.0,  $\text{WO}_3$  27.9,  $\text{TiO}_2$  0.6,  $\text{SnO}_2$  2,  $\text{MnO}$  12.0,  $\text{FeO}$  3.5,  $\text{UO}_2$  1 percent, leading to the formula  $(\text{Nb}_{0.68}\text{Ta}_{0.12}\text{W}_{0.29}\text{Sc}_{0.14}\text{Mn}_{0.41}\text{Sn}_{0.03}\text{U}_{0.01})\text{O}_4$ .

#### Discussion

X-ray data are required, but even if this is an ixiolite, it is a tungstenian variety, and the name is unnecessary. **M.F.**

#### Yuksporite

E. V. Vlasova and L. V. Kozyreva (1976) The infra-red spectrum of yuksporite and the position of the mineral in the titanosilicate group. *Sbornik Nauchn. Trudov, Mosk. Otdel, Vses. Mineral. Obshch.*, March 1974, 29-31 (in Russian).

Yuksporite was described by Fersman (1923) [*Am. Mineral.*, 12, 58 (1927)] as a hydrous silicate of Ca, Na, and K. Four later analyses by Kostyleva (*Mineralog Abstr.* 3, 111-112; 6, 285), show considerable variation of  $\text{SiO}_2$  (37.2-55.4),  $\text{TiO}_2$  (4.1-15.4),  $\text{CaO}$  (18.8-23.4),  $\text{Na}_2\text{O}$  (5.1-12.9),  $\text{K}_2\text{O}$  (2.5-8.0), and  $\text{H}_2\text{O}$  (7.8-5.6%). The present paper gives a new complete analysis ( $\text{SiO}_2$  39.16,  $\text{TiO}_2$  9.04,  $\text{CaO}$  14.70,  $\text{SrO}$  3.39,  $\text{BaO}$  7.52,  $\text{Na}_2\text{O}$  6.16,  $\text{K}_2\text{O}$  7.13,  $\text{H}_2\text{O} + 2.84\%$ ). The infrared spectrum indicates that yuksporite is not related to pectolite nor to xonotlite, but may be related to the astrophyllite group and bafertisite. The formula is given as  $(\text{Na,K})_{1.08}(\text{Ca,Sr,Ba})_{1.06}(\text{Ti,Al,Fe})_{0.65}\text{Si}_2\text{O}_4(\text{F,Cl})_{0.51} \cdot 0.79\text{H}_2\text{O}$ .

#### Discussion

Apparently a valid species. Better X-ray powder data and a unit-cell determination are needed. **M.F.**