

NEW MINERAL NAMES

MICHAEL FLEISCHER

Unnamed Lead-Bismuth Telluride

J. C. RUCKLIDGE (1967) Electron probe studies of some Canadian telluride minerals. (abstr.) *Can. Mineral.*, 9, 305.

A new Pb-Bi telluride has been found as minute inclusions in chalcopyrite from the Robb Montbray mine, Montbray Township, Quebec. The probable formula is $(\text{Pb,Bi})_3\text{Te}_4$.

J. A. Mandarino

Sakuraiite

AKIRA KATO (1965) Sakuraiite, a new mineral. *Chigaku Kenkyu (Earth Science Studies)*, Sakurai Vol. 1-5 [in Japanese].

Electron microprobe analyses of two grains with different texture gave Cu 23 ± 2 , 21 ± 2 ; Zn 10 ± 1 , 14 ± 1 ; Fe 9 ± 1 , 5 ± 0.5 ; Ag 4 ± 0.5 , 3.5 ± 0.5 ; In 17 ± 2 , 23 ± 2 ; Sn 9 ± 1 , 4 ± 0.5 ; S 31 ± 3 , 30 ± 2 ; total 103 ± 10.5 , 100.5 ± 9.5 , corresponding to $(\text{Cu}_{1.6}\text{Zn}_{0.7}\text{Fe}_{0.7}\text{Ag}_{0.2})(\text{In}_{0.7}\text{Sn}_{0.3})\text{S}_{4.2}$ and $(\text{Cu}_{1.4}\text{Zn}_{0.9}\text{Fe}_{0.4}\text{Ag}_{0.1})(\text{In}_{0.9}\text{Sn}_{0.1})\text{S}_{4.1}$ respectively or A_3BS_4 , with $\text{A} = \text{Cu, Zn, Fe, Ag}$ ($\text{Cu} > \text{Zn} > \text{Fe} > \text{Ag}$) and $\text{B} = \text{In, Sn}$ ($\text{In} > \text{Sn}$). This is the indium analogue of kesterite.

Spectrographic analysis of the ore containing sakuraiite, stannite, sphalerite, chalcopyrite and quartz gave Cu, In, Zn, Sn as major, Fe, Ag as subordinate, Bi as minor and Pb, Ga and Cd as trace constituents.

The X-ray powder data are very close to those for zincian stannite [L. G. Berry and R. M. Thompson, *Geol. Soc. Amer. Mem.* 85, 52-53 (1962)] and give 3.15(100)(112), 1.927(40)(220,024), 1.650(20)(132, 116), 2.73(10)(020,004) as the strongest lines. The indexing is based on tetragonal (pseudocubic) cell with a 5.455 Å. and c 10.9 Å. respectively, giving $Z=2$.

Colour greenish steel gray, luster metallic, streak lead gray with olive tint, $H=4$, $G=4.45$ (calc.), cleavage none.

Optically nearly isotropic, the reflection color purplish olive gray without pleochroism, the reflectivity intermediate between stannite and sphalerite, hardness (polishing and scratching) very a little lower than stannite. Etched by conc. HNO_3 .

It occurs in a banded-structured vein of the Ikuno mine, Hyogo Prefecture, Japan forming an exsolution-like texture with stannite up to 0.5 mm. \times 0.03 mm. in size in the polished section. The associated minerals are stannite, sphalerite, chalcopyrite, cassiterite, matildite, danaita, quartz and calcite.

The name is for Dr. Kin-ichi Sakurai, amateur mineralogist of Japan.

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

Akiro Kato

Madocite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 1. *Can. Mineral.*, 9, 7-24.

In 1962 (abstr. *Amer. Mineral.*, 47, 1485), Jambor described in a preliminary paper the discovery of at least four new sulfosalts from Madoc, Ontario. These, as well as some others, have been studied in detail and now are named.

Color and streak are metallic gray-black. There is perfect {010} cleavage and conchoidal fracture. Talmage hardness is B^+ , Vickers hardness with a 50-gram load is 155 (141-171). In

polished section madocite is strongly pleochroic from white to gray with an intensity slightly less than that of boulangerite. Strong anisotropism, again slightly less than that of boulangerite. The maximum reflectivity for madocite varies from 44.5% at 470 nm to 37.9% at 650 nm. Madocite is negative to HgCl_2 , FeCl_3 , KCN, and HCl. Prolonged reaction with 40% KOH produces an iridescent tarnish. Concentrated HNO_3 and 1:1 HNO_3 produce iridescent tarnishes which turn black.

Three electron microprobe analyses (G. R. Lachance, analyst) yielded the following averages: Pb 55, Sb 22.8, As 3.1, S 19.9, total 100.8. This gives an ideal formula of $17 \text{PbS} \cdot 8(\text{Sb,As})_2\text{S}_8$ with the average Sb:As ratio about 9:2. With $Z=4$ (true cell) the calculated density is 5.98 as compared to the predicted value of 5.99.

Madocite occurs as small grains elongated and striated along [001]. The mineral is orthorhombic; $a=27.2 \pm 0.2$, $b=34.1 \pm 0.2$, $c=8.12 \pm 0.05$ Å, $a:b:c=0.7977:1:0.2381$. There is a strong pseudoperiod with $c'=\frac{1}{2}c$. The space group of the pseudocell is *Pba2* or *Pbam*. The X-ray powder data (for $\text{CuK}\alpha$) consist of 27 indexed spacings and 28 unindexed spacings; strongest lines: 3.396 (10), 3.355 (9), 2.720 (8), 3.67 (7), and 2.925 (6).

Madocite is closely associated with boulangerite and jamesonite in Precambrian marbles near Madoc, Ontario. The mineral has been identified also in specimens labeled "robinsonite" from Owyhee County, Idaho. The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Veenite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 1. *Can. Mineral.*, 9, 7-24.

Veenite is the most abundant new sulfosalt at Madoc and occurs in masses up to 2 cm in diameter. The mineral is steel-gray and resembles tetrahedrite. The streak is black with a faint brownish tint. Veenite has a pronounced and characteristic conchoidal fracture and is very brittle.

In polished section veenite is white with weak pleochroism from white to pale gray. Anisotropism is moderate. Twin lamellae are prominent with partly crossed nicols. Minimum values of reflectivity vary from 39.5% at 470 m μ to 34.3% at 650 m μ ; maximum values vary from 45.5% at 470 nm to 39.9% at 650 nm. The Talmage hardness is C- and the Vickers hardness with a 50-gram load is 164(156-172). KOH(40%) produces an iridescent tarnish. HNO_3 tarnishes veenite black.

Chemical analyses of two samples (Sydney Abbey, analyst) gave the following results after deduction of 0.9% and 0.4% calcite respectively: Pb 50.76, 50.61; Sb (by difference) 21.39, 20.58; As 7.76, 8.43; S 20.18, 20.38. These data give respectively, the following formulae: $2\text{PbS} \cdot (\text{Sb,As})_{2.27} \text{S}_{3.14}$ and $2\text{PbS} \cdot (\text{Sb,As})_{2.31} \text{S}_{3.21}$. The average of three electron microprobe analyses (G. R. Lachance, analyst) gave Pb 52.5, Sb 19.7, As 6.8, S 21.2, total 100.2. The formula derived from this is $2\text{PbS} \cdot (\text{Sb,As})_{2.00} \text{S}_{3.14}$. The ideal formula of veenite is thus: $2\text{PbS} \cdot (\text{Sb,As})_2\text{S}_3$ with Sb:As about 5:3. Chemically, the mineral is the antimony analogue of dufrenoyite.

Veenite has an orthorhombic pseudocell with $a'=\frac{1}{2}a=4.22$, $b=26.2$, $c=7.90$ Å, $a:b:c=0.322:1:0.304$. Space group of the pseudocell is *P2₁cn* or *Pmcn*. The X-ray powder pattern closely resembles that of dufrenoyite. The data for $\text{CuK}\alpha$ (35 indexed and 22 unindexed spacings) give the following strong lines: 3.81 (10), 3.03 (9), 3.42 (8), 3.26 (8), 2.76 (7), all in Å. The measured density is 5.92 g/cc (5.96 calculated for $Z=8$).

Veenite is named for R. W. van der Veen. The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Launayite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 2-Mineral descriptions. *Can. Mineral.*, 9, 191-213.

Launayite, which has been observed only in polished sections, occurs with veenite and boulangerite. The mineral is metallic lead-gray, has a black streak, and had two perfect {100} and {001}.

In polished section it shows fairly strong pleochroism from white to gray. The minimum reflectivity varies from 38.6% at 470 nm to 35.5% at 650 nm; maximum reflectivity values vary from 46.2% at 470 nm to 40.9% at 640 nm. Talmage hardness is C, Vickers hardness with a 50-gram load is 179 (171-197). KOH give a characteristic light brown tarnish. Other standard etch tests are negative except for 1:1 HNO₃ which produces a rapid iridescent tarnish which turns black.

The average of two electron microprobe analyses (G. R. Lachance, analyst) gave Pb 48.5, Sb 29.5, As 1.5, S 21.25, total 100.75%. This agrees well with 9PbS·5Sb₂S₃ but 22PbS·13Sb₂S₃ is considered more satisfactory. With the latter formula and $Z=2$, the calculated density of 5.83 compares favorably with the predicted value of 5.75.

Launayite is monoclinic with $a=42.6\pm 0.8$, $b=2b'=8.04\pm 0.05$, $c=32.3\pm 0.6$ Å, $\beta=102^{\circ}05'\pm 45'$ ($a:b:c=5.299:1:4.017$ J.A.M.). The space group of the pseudocell is $C2$, Cm , or $C2/m$. The X-ray powder data (CuK α , 14 indexed and 42 unindexed spacings) contain the following strongest lines: 3.45(10), 4.17(8), 2.92(8), 2.010(7), and 3.40(6), all in Å.

Launayite is named for L. de Launay in recognition of his contributions in the nineteenth century concerning the origin of mineral deposits. The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Sterryite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 2-Mineral descriptions. *Can. Mineral.*, 9, 191-213.

Sterryite has been found only with veenite. Loose fragments are plumose and occur as bundles of fibers (elongated parallel to [001]). The mineral is black in color and streak. Talmage hardness is B. Sterryite shows strong reflection pleochroism from white to gray. One grain showed very fine lamellar twinning. Reflectivity values vary from 40.4% and 37.6% at 470 nm to 36.3 and 33.9 at 650 nm. The mineral does not react with the standard etch reagents.

Two electron microprobe analyses (G.R. Lachance, analyst) gave, respectively: Pb 44.5, 47; Ag <0.5,-; Cu tr, -; Sb 21, 23; As 5.5, 6; S 21.5, 20.5; total 92.5, 96.5. The low summations are considered due to physical destruction of the plumose fragments by the electron beam. Optical spectrographic analyses of the mineral showed no other major or minor elements. Jambor proposes the tentative formula 12PbS·5(Sb,As)₂S₃. With $Z=4$ in the pseudocell, this gives a calculated density of 5.91 and a predicted density of about 6.00.

Sterryite is orthorhombic with $a=28.4\pm 0.5$, $b=42.6\pm 0.6$, $c=2c'=8.20\pm 0.05$ Å ($a:b:c=0.667:1:0.192$ J.A.M.). Strongest lines in the X-ray powder pattern (CuK α , 23 indexed and 23 unindexed spacings) are: 3.26(10), 3.68(9), 2.836(7), 3.54(6), 2.965(6), 2.353(6), and 2.049(6) Å.

Sterryite is named for T. Sterry Hunt (1826-1892) first mineralogist with the Geological Survey of Canada. The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Playfairite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 2-Mineral descriptions. *Can. Mineral.*, **9**, 191-213.

Playfairite is metallic lead-gray to black with a black streak. It has a perfect {100} cleavage. Talmage hardness is B+ to C- and the Vickers hardness with a 50-gram load is 145 (150-171). Playfairite shows strong reflection pleochroism from white to brownish gray. Very fine twin lamellae were observed in several grains. Reflectivities varied from 42.3% and 38.3% at 470 nm to 37.7% and 34.0% at 650 nm. The mineral is negative to standard etch reagents except for KOH and 1: HNO₃ both of which rapidly produce an iridescent tarnish. Playfairite usually occurs at the peripheries of other Pb-Sb sulfosalts.

The average of three electron microprobe analyses (G. R. Lachance, analyst) gave Pb 51.0, Sb 28.0, As 2.4, S 18.8, total 100.2. The formula is given as 16PbS·9Sb₂S₃. With $Z = 4$, this gives a calculated density of 5.72 as compared to the predicted value of 5.80.

Playfairite is monoclinic with $a = 45.4 \pm 0.5$, $b = 2b' = 8.29 \pm 0.06$, $c = 21.3 \pm 0.5$ Å, $\beta = 92^\circ 30' \pm 30'$ ($a:b:c = 5.476:1:2.569$, J.A.M.). The pseudocell has a probable space group of $P2$, Pm , or $P2/m$ or $P2_1$ or $P2_1/m$. The X-ray powder data (CuK α , 17 indexed and 46 unindexed spacings) have the following strongest lines: 3.39(10), 3.32(10), 2.785(7), and 2.086(6) Å.

The mineral is named for John Playfair (1748-1819), author of "Illustrations of the Huttonian Theory of the Earth". The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Twinnite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 2-Mineral descriptions. *Can. Mineral.*, **9**, 191-213.

Only four microscopic grains and two megascopic grains (one about 1.5 mm in diameter) of twinnite have been found. The mineral is metallic black and has black streak with a slight brownish tint. Twinnite has a perfect {100} cleavage and is brittle. The Talmage hardness is B and the Vickers hardness with a 50-gram load is 147 (131-152). The mineral is white in polished section. Pleochroism is strong and twin lamellae are present. Reflectivity values vary from 45.6% and 38.7% at 470 nm to 39.6% and 34.6% at 560 nm. Standard etch tests are negative except for KOH (rapidly produces an iridescent tarnish and leaves a characteristic brownish gray color when the reagent is rubbed off) and 1:1 HNO₃ (produces a black tarnish).

An electron microprobe analysis (G. R. Lachance, analyst) gave: Pb 41, Sb 28, As 11, S 23, total 103. The ideal formula PbS·(Sb,As)₂S₃ with $Z = 8$ gives a calculated density of 5.323 compared with the predicted value of 5.26.

Twinnite has $a = 19.6 \pm 0.2$, $b = 7.99 \pm 0.05$, and $c = 2c' = 8.60 \pm 0.05$ Å ($a:b:c = 2.453:1:1.076$ J.A.M.). The pseudocell is orthorhombic with space group $Pnmm$. The strongest lines in the X-ray powder pattern (CuK α , 31 indexed and 43 unindexed) are: 3.51(10), 2.344(8), 2.78(7), 4.18(5), 3.91(5), 2.689(5), 2.645(5), and 2.154(5) Å.

Twinnite is named in honor of the late R. M. Thompson of the University of British Columbia. "The appellation Thompson is 'son of Thomas', the latter being Aramaic, 'a twin'." The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Sorbyite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 2-Mineral descriptions. *Can. Mineral.*, 9, 191-213.

The mineral is metallic black with a black streak. It has a perfect [001] cleavage and crystal fragments are elongated parallel to [010]. In polished section sorbyite is white with irregular twin lamellae. Pleochroism is relatively strong. Reflectivity values vary from 45% and 39% at 470 μ m to 40% and 34% at 650 μ m. The Vickers hardness with a 50-gram load is 175 (172-186). KOH produces a brown to iridescent tarnish; 1:7 HNO₃ brown; and 1:1 HNO₃ iridescent to black.

Two electron microprobe analyses (G. R. Lachance, analyst) gave: Pb 46, 47; Sb 25, 25.5; As 6,5; S 21, 21.5; total 98, 99. The assigned formula of 17PbS·11(Sb,As)₂S₃ with $Z = 2$ gives a calculated density of 5.52 compared to a predicted value of 5.59.

Sorbyite is monoclinic with $a = 44.9 \pm 0.5$, $b = 2b' = 8.28 \pm 0.1$, $c = 26.4 \pm 0.5$ Å, $\beta = 113^\circ 25' \pm 30'$ ($a:b:c = 5.423:1:3.188$ J.A.M.), space group $C2$, Cm , or $C2/m$. Strongest lines in the X-ray powder pattern (CuK α , 18 indexed and 41 unindexed) are: 3.44(10), 3.38(9), 4.13(6), 2.96(6), and 2.099(5) Å.

Sorbyite is named for Henry Clifton Sorby (1825-1908). The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Guettardite

J. L. JAMBOR (1967) New lead sulfantimonides from Madoc, Ontario. Part 2-Mineral descriptions: *Can. Mineral.*, 9, 191-213.

Guettardite is metallic grayish black and has a black streak with a brown tint. The mineral is very brittle, has perfect cleavage and conchoidal fracture. In polished section, guettardite is white and shows relatively strong pleochroism. Nearly all grains are polysynthetically twinned. Talmage hardness is B and the Vickers hardness with a 50 gram load is 187 (180-197). Reflectivity values vary from 44.2% and 36.3% at 470 μ m to 39.0% and 32.2% at 650 μ m. HNO₃ produces a black tarnish. KOH gives an iridescent tranish and leaves a brownish gray color when the reagent is rubbed off. All other standard etch tests are negative.

Two electron microprobe analyses (G. R. Lachance, analyst) gave: Pb 44.5, 43.5; Sb 22, 22; As 12, 12; S 21.5, 20.5; total 100.5, 98 (actually 100.0 and 98 J.A.M.). The formula is given as 9PbS·8(Sb,As)₂S₃. With $Z = 1$, the calculated density is 5.49 and the predicted value is 5.31.

Guettardite is monoclinic with $a = 20.0 \pm 0.4$, $b = 7.94 \pm 0.03$, $c = 8.72 \pm 0.06$ Å, $\beta = 101^\circ 35' \pm 30'$, $a:b:c = 2.519:1:1.098$ J.A.M.), space group $P2_1/a$. Strongest lines in the X-ray powder pattern (CuK α , 24 indexed and 36 unindexed spacings) are: 3.52(10), 2.795(9), 4.19(5), 3.90(5), 2.670(5), and 2.653(5) Å.

Guettardite is named for Jean Etienne Guettard (1715-1786), French geologist. The name was approved by the Commission on New Minerals and Mineral Names, IMA. Type specimens are in the National Mineral Collection, Ottawa.

J. A. Mandarino

Unnamed Monoclinic Chlorapatite

G. Y. CHAO AND A. W. HOUNSLOW (1967) Monoclinic chlorapatite from Bob's Lake, Ontario. (abstr) *Can. Mineral.*, 9, 286.

Analysis of an apatite gave the following results: CaO 53.4, P₂O₅ 41.2, Cl₂ 6.18, F₂ 0.13, H₂O⁺ 0.09, H₂O⁻ 0.00, total 101.00 - 1.45(O = F₂ + Cl₂) = 99.55. This gives the formula

$\text{Ca}_{4.96}\text{P}_{3.03}\text{O}_{12.02} [\text{Cl}_{1.91}\text{F}_{0.04}(\text{OH})_{0.03}]$. The mineral is monoclinic with $a = 2a_{\text{hex}} = 2 \times 9.638$, $b = c_{\text{hex}} = 6.794$, $c = a_{\text{hex}} = 9.638 \text{ \AA}$, $\beta = 120^\circ$, space group $P2/a$. The monoclinic form is interpreted as the form with ordering of the Cl ions.

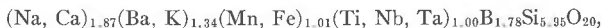
Discussion: This mineral should receive a name or at least a prefix to distinguish it from the hexagonal form. The precedent certainly is well established.

J. A. Mandarino

Tianshanite

V. D. DUSMATOV, A. F. EFIMOV, V. YU. ALKHAZOV, M. E. KAZAKOVA, AND N. G. MUMYATSKAYA (1967) Tianshanite, a new mineral: *Dokl. Akad. Nauk SSSR*, **177**, 678–680 [in Russian].

Analysis by M.E.K. gave SiO_2 43.24, B_2O_3 7.50, TiO_2 6.90, Nb_2O_5 4.14, Ta_2O_5 0.84, Fe_2O_3 1.00, MnO 7.80, MgO trace, CaO 1.95, BaO 18.00, Na_2O 5.93, K_2O 2.12, H_2O none, sum 99.42%. This gives the formula



or nearly $\text{Na}_2\text{BaMnTiB}_2\text{Si}_5\text{O}_{20}$. The mineral fuses at 840° .

X-ray study showed the mineral to be hexagonal, space group $P6/m$, $P6$, or $P6$, probably $P6/m$ because no piezo-electricity was found. Oscillation data gave $a = 16.755 \pm 0.010$, $c = 10.435 \pm 0.007 \text{ \AA}$, $c/a = 0.623$. The strongest X-ray lines (34 given) are 4.19(10)(2240), 3.474(8)(0003), 3.177(9)(2351), 2.803(5)(2352), 2.419(5)(0680).

Color, pistachio-green; luster, vitreous; cleavage, distance (001). Brittle, H. 6–6.5. G. 3.29. Optically uniaxial, negative, $n_s \epsilon = 1.653$, $\omega = 1.666$.

The mineral occurs in a narrow vein of quartz-aegirine-microcline pegmatite, cutting alkali syenite of a massif of the Turkestan-Alai alkalic province, southern Tianshan. It consists of finely crystalline aggregates up to 5×6 cm in size. Associated minerals include pyrochlore, astrophyllite, bafertisite, stillwellite, danburite, datolite, galena, sphene, and calcite; datolite replaces the mineral.

The name is for the locality. The mineral was approved before publication by the Commission on New Minerals and Mineral Names, IMA.

Ericssonite, joesmithite, parwelite, eveite, stenhuggarite, jugoldite, unnamed manganese arsenate, unnamed calcium-magnesium-antimony silicate

P. B. MOORE (1967) Eleven new minerals from Långban, Sweden. (abstr) *Can. Mineral.*, **9**, 301.

Of the eleven minerals noted in this abstract, three have been abstracted from the complete descriptions. These are wickmanite, welinite, and gabrielsonite (see *Amer. Mineral.*, **53**, 1063 (1968)).

The following six names were approved by the Commission on New Minerals and Mineral Names, IMA.:

Ericssonite, $\text{Mn}_3\text{Fe}^{+3}\text{Ba}(\text{Si}_2\text{O}_7)(\text{OH})$, $a = 20.32$, $b = 7.03$, $c = 5.34 \text{ \AA}$, $Immm$, $Z = 4$, related to lamprophyllite.

Joesmithite, $(\text{Ca}, \text{Pb})_{2-3}\text{Mg}_4\text{Fe}_2^{+3}\text{Si}_7(\text{O}, \text{OH})_{22}(\text{OH})_6$, $a = 9.88$, $b = 17.87$, $c = 5.227 \text{ \AA}$, $\beta = 105^\circ 40'$, $P2/a$ or Pa , a new kind of amphiboloid.

Parwelite, $\text{Mn}_5\text{Sb}(\text{Si}, \text{As})_2\text{O}_{12-x}$, $a = 9.76$, $b = 19.32$, $c = 10.06 \text{ \AA}$, $\beta = 95^\circ 54'$, $I2/m$ or $I2$ (subcell): $a/2$, $b/2$, $c/2$, $P2_1/m$ or $P2_1$, may be related to braunite.

Eveite, $\text{Mn}_3(\text{OH})(\text{AsO}_4)$, $a = 8.57$, $b = 8.77$, $c = 6.27 \text{ \AA}$, $Pnmm$, $Z = 4$, the manganese analogue of adamite.

Stenhuggarite, $\text{CaFe}(\text{SbO})(\text{AsO}_3)_2$, $a = 16.12$, $c = 10.70 \text{ \AA}$, $I4_1/amd$, $Z = 16$, brilliant orange pseudo-cotahedral crystals.

Jugoldite, $\text{Ca}_2\text{Fe}^{+2}\text{Fe}^{+3}(\text{SiO}_4)(\text{Si}_2\text{O}_7)(\text{OH})_2(\text{H}_2\text{O})$, $a = 8.92$, $b = 6.09$, $c = 19.37 \text{ \AA}$, $\beta = 97^\circ 30'$, $A2/m$, $Z = 4$, the Fe^{+2} - Fe^{+3} analogue of pumpellyite.

Two other minerals are as yet unnamed pending approval by the Commission on New Minerals and Mineral Names, IMA.:

- (1) $\text{Mn}_3(\text{AsO}_3)_2$, $a = b = 19.32$, $c = 19.71 \text{ \AA}$, $\beta = 90^\circ$, $Z = 48$, nearly $I4/mmm$ but symmetry and optics require it to be monoclinic, may be related to parwelite.
- (2) $\text{Ca}_2(\text{Mg}, \text{Fe})_4\text{SbSi}_4\text{O}_{12}(\text{OH})_8$, $a = 9.68$, $b = 14.77$, $c = 5.14 \text{ \AA}$, $\beta = 101^\circ 30'$, $C2/m$, $Z = 2$, presently undergoing crystal structure analysis.

J. A. Mandarino

Hemihedrite

S. A. WILLIAMS AND J. W. ANTHONY (1967) Hemihedrite, a new mineral from Arizona. (abstr) *Can. Mineral.*, 9, 310.

The mineral occurs as orange to almost black crystals. The hardness is 3, specific gravity 6.42 (meas.) and 6.32 (calc.). Hemihedrite has been found at the Florence lead-silver mine in Pinal County, Arizona, and at the Pack Rat claim near Wickenburg, Maricopa County, Arizona.

Chemical analyses by atomic absorption, ion specific electrode, and X-ray fluorescence suggest the formula $\text{ZnPb}_5(\text{CrO}_4)_3\text{F}_4\text{O}$. CrO_4^{+2} was confirmed by the IR spectrum.

Hemihedrite is triclinic with space group $P1$, $a = 9.497 \pm 0.001$, $b = 11.443 \pm 0.002$, $c = 10.841 \pm 0.002 \text{ \AA}$, $\alpha = 120^\circ 30'$, $\beta = 92^\circ 6'$, $\gamma = 55^\circ 50'$. The reduced cell is $a' = 9.954$, $b' = 10.841$, $c' = 9.497 \text{ \AA}$, $\alpha = 92^\circ 6'$, $\beta' = 107^\circ 58'$, $\gamma' = 123^\circ 16'$. $Z = 2$.

The mineral forms in the oxide zone of lead-bearing veins. Associated minerals are: cerussite, phoenicochroite, vauquelinite, willemite, and wulfenite.

The name is in allusion to the morphology of the mineral.

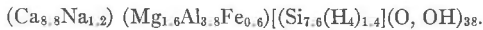
J. A. Mandarino

NEW DATA

Cebollite

O. H. J. CHRISTIE (1964) A contribution to the mineralogy of the melilite group. *Skr. Norsk. Videnskaps-Akad. Oslo I. Mat.-Nat. Kl.* no. 15, p. 1-77 (1964).

Cebollite was described from Iron Hill, Colorado, by Larsen and Schaller as $\text{Ca}_5\text{Al}_2\text{Si}_3\text{O}_{12}(\text{OH})_4$ (see *Dana's System 6th Ed. App. 3*, p. 18). X-ray study of type material showed that the pattern was mainly that of a phase corresponding to synthetic "hydrovesuvianite" plus weak lines of melilite. The original analysis is recalculated to the vesuvianite type as follows:



The *ns* are much lower than those for vesuvianite and slightly lower than those of synthetic "hydrovesuvianite" prepared by the hydrothermal decomposition of melilites.