

## NEW MINERALS

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### Belloite



MONOCLINIC

**Locality:** An abandoned mine about 3 km west southwest of the village of Sierra Gorda, north-east of Antofagasta, 2nd region, northern Chile.

**Occurrence:** In a quartz – feldspar – tourmaline rock. Other associated minerals are: nitratine, montmorillonite, paratacamite, atacamite, gunningite, alunite and natrojarosite.

**General appearance:** Thin encrustations of tiny crystals (about 30  $\mu\text{m}$ , rarely up to 100  $\mu\text{m}$ ).

**Physical, chemical and crystallographic properties:** *Luster:* vitreous. *Diaphaneity:* translucent to transparent. *Color:* yellowish green to olive green. *Streak:* yellowish green. *Luminescence:* nonfluorescent. *Hardness:* soft. *Tenacity:* not given. *Cleavage:* not given. *Fracture:* not given. *Density:* not measured, 3.79  $\text{g}/\text{cm}^3$  (calc.). **Crystallography:** Monoclinic,  $P2_1/a$  (Effenberger 1984, for synthetic material),  $a$  5.552,  $b$  6.668,  $c$  6.124  $\text{\AA}$ ,  $\beta$  115.00°,  $V$  205.47  $\text{\AA}^3$ ,  $Z = 4$ ,  $a:b:c = 0.8326:1:0.9184$ . *Morphology:* no forms were observed. *Twinning:* none mentioned. **X-ray powder-diffraction data:** 5.553(100)(001), 2.785(14)(120,002,20 $\bar{1}$ ), 2.758(52)(11 $\bar{2}$ ,12 $\bar{1}$ ), 2.516(18)(200), 2.241(27)(12 $\bar{2}$ ), 1.851(21)(21 $\bar{3}$ ,003), 1.769(16)(31 $\bar{1}$ ,122), 1.607(15)(32 $\bar{1}$ ), 1.499(13)(11 $\bar{3}$ ,320). **Optical data:** Pleochroic from yellowish green to pale yellowish green. The mean index of refraction calculated from the Gladstone–Dale relationship is 1.84. **Chemical analytical data:** Mean of five sets of electron-microprobe data: CuO 68.84, Cl 26.35, H<sub>2</sub>O 7.47, sum 102.66, less O = Cl 5.96, Total 96.70 wt.%. The amount of H<sub>2</sub>O was established by determining H by CHN analyzer and recalculating to H<sub>2</sub>O. The presence of OH was confirmed by IR. Empirical formula: Cu<sub>1.05</sub>(OH)<sub>1.00</sub>Cl<sub>0.90</sub>O<sub>0.10</sub>. **Relationship to other species:** The natural analogue of synthetic Cu(OH)Cl.

**Name:** After Andrés Bello (1780–1865), founder and first rector of the Universidad de Chile, Santiago, Chile.

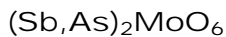
**Comments:** IMA No. 1998–054. In the presence of water, belloite converts within minutes to botallackite and atacamite. The crystal structure of synthetic Cu(OH)Cl was solved by Effenberger (1984).

SCHLÜTER, J., KLASKA, K.-H. & GEBHARD, G. (2000): Belloite, Cu(OH)Cl, a new mineral from Sierra Gorda, Antofagasta, Chile. *Neues Jahrbuch für Mineralogie, Monatshefte*, 67-73.

EFFENBERGER, H. (1984): Verfeinerung der Kristallstruktur von Kupfer(II)-hydroxichlorid, Cu(OH)Cl. *Monatshefte für Chemie* **115**, 725-730.

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## Biehlite



MONOCLINIC

**Locality:** The Tsumeb mine, Tsumeb, Namibia (probably from the third oxidation zone).

**Occurrence:** Associated minerals are: anglesite and wulfenite.

**General appearance:** Irregular aggregates and felted masses of fibrous crystals (up to 1 cm long and only some micrometers in diameter).

**Physical, chemical and crystallographic properties:** *Luster:* silky (but probably adamantine). *Diaphaneity:* translucent. *Color:* white. *Streak:* white. *Luminescence:* nonfluorescent. *Hardness:* soft. *Tenacity:* flexible. *Cleavage:* not mentioned. *Fracture:* not mentioned. *Density:* could not be measured, 5.23 g/cm<sup>3</sup> (calc.). **Crystallography:** Monoclinic, *C2/c*, *a* 18.076, *b* 5.920, *c* 5.083 Å, β 96.97°, *V* 539.91 Å<sup>3</sup>, *Z* = 4, *a:b:c* = 3.0534:1:0.8586. *Morphology:* no forms were mentioned; fibers are elongate [001]. *Twinning:* none mentioned. **X-ray powder-diffraction data:** 5.622(65)(110), 3.376(39)( $\bar{3}$ 11), 3.104(61)(311), 2.990(100)(600), 2.960(100)(020), 2.104(42)(620), 1.962(32)(130). **Optical data:** no data could be measured, but the mean index of refraction calculated from the Gladstone–Dale relationship is 2.13. **Chemical analytical data:** Mean of five sets of electron-microprobe data: Sb<sub>2</sub>O<sub>3</sub> 60.99, As<sub>2</sub>O<sub>3</sub> 4.95, MoO<sub>3</sub> 33.76, Total 99.70 wt.%. Empirical formula: (Sb<sub>1.79</sub>As<sub>0.21</sub>)<sub>Σ2.00</sub>Mo<sub>1.00</sub>O<sub>6.00</sub>. **Relationship to other species:** None apparent.

**Name:** After Friedrich Karl Biehl (b. 1887), a mineralogist from Münster, Germany, the first to carry out research on Tsumeb species.

**Comments:** IMA No. 1999–019a.

SCHLÜTER, J., KLASKA, K.-H., ADIWIDJAJA, G., FRIESE, K. & GEBHARD, G. (2000): Biehlite, (Sb,As)<sub>2</sub>MoO<sub>6</sub>, a new mineral from Tsumeb, Namibia. *Neues Jahrbuch für Mineralogie, Monatshefte*, 234-240.

## Cabalzarite



MONOCLINIC

**Locality:** The abandoned manganese mine near Falotta, Graubünden, Switzerland.

**Occurrence:** In manganese ore consisting of braunite, rhodonite, spessartine, tizenite, parsettensite, sursassite and strontian piemontite in radiolarites. Associated minerals are: quartz, sursassite, "adularia", kutnohorite, tilasite, grischunite, arseniosiderite, tripuhyite, ranciéite-takanelite and arsenogoyazite.

**General appearance:** Isolated crystals (up to 1 mm), polycrystalline aggregates (up to 2 mm), fibrous to tabular crystals (up to 3 mm) forming radiating aggregates (up to 5 mm in diameter) and aggregates of parallel needles (up to 2 mm thick).

**Physical, chemical and crystallographic properties:** *Luster:* vitreous. *Diaphaneity:* transparent. *Color:* light brownish to brownish pink, orange-brown. *Streak:* white. *Luminescence:* nonfluorescent. *Hardness:*  $\text{VHN}_{50}$  429  $\text{kg/mm}^2$ , Mohs ~5. *Tenacity:* not given. *Cleavage:* none observed. *Fracture:* irregular. *Density:* 3.89  $\text{g/cm}^3$  (meas.), 3.73  $\text{g/cm}^3$  (calc.) (for the analytical data given here). **Crystallography:** Monoclinic,  $C2/m$ ,  $a$  8.925,  $b$  6.143,  $c$  7.352 Å,  $\beta$  115.25°,  $V$  364.6 Å<sup>3</sup>,  $Z = 2$ ,  $a:b:c = 1.4529:1:1.1968$ . *Morphology:* only {001} was recognized. *Twinning:* none mentioned. **X-ray powder-diffraction data:** 4.895(59) (110), 4.544(35) ( $\bar{1}11$ ), 3.373(54) (02), 3.159(100) ( $\bar{1}12$ ), 2.942(67) (201), 2.684(55) ( $31\bar{1}$ ), 2.519(81) ( $22\bar{1}$ ). **Optical data:** Because of inhomogeneity, data were difficult to measure;  $n_{||}$  to fiber elongation 1.76,  $n_{\perp}$  to fiber elongation 1.70; mean  $n$  calculated from the Gladstone–Dale relationship 1.77; nonpleochroic. **Chemical analytical data:** Mean of four sets of electron-microprobe data: MgO 7.54, CaO 13.64, SrO 0.49, Al<sub>2</sub>O<sub>3</sub> 9.84, Mn<sub>2</sub>O<sub>3</sub> 0.55, Fe<sub>2</sub>O<sub>3</sub> 4.38, SiO<sub>2</sub> 0.05, As<sub>2</sub>O<sub>5</sub> 55.57, H<sub>2</sub>O 7.11, Total 99.17 wt.%. Empirical formula:  $(\text{Ca}_{1.00}\text{Sr}_{0.02})_{\Sigma 1.02}(\text{Al}_{0.80}\text{Mg}_{0.77}\text{Fe}_{0.23}\text{Mn}_{0.03})_{\Sigma 1.83}(\text{AsO}_4)_2[(\text{H}_2\text{O})_{1.24}(\text{OH})_{0.76}]_{\Sigma 2.00}$ . **Relationship to other species:** A member of the tsumcorite group, with Mg and Al at the M2 site.

**Name:** After Walter Cabalzar (b. 1919), an amateur mineralogist of Chur, Switzerland, who contributed to the mineralogy of the canton Graubünden.

**Comments:** IMA No. 1997–012. Note that the crystal structure has been solved.

BRUGGER, J., MEISSER, N., SCHENK, K., BERLEPSCH, P., BONIN, M., ARMBRUSTER, T., NYFELER, D. & SCHMIDT, S. (2000): Description and crystal structure of cabalzarite  $\text{Ca}(\text{Mg,Al,Fe})_2(\text{AsO}_4)_2(\text{H}_2\text{O,OH})_2$ , a new mineral of the tsumcorite group. *American Mineralogist* **85**, 1307–1314.

## Cerchiaraitite



TETRAGONAL

**Locality:** The Cerchiarait mine, near Faggiona village, val di Vara, La Spezia, northern Apennines, eastern Liguria, Italy.

**Occurrence:** Filling microfractures and veins (from 0.1 to some millimeters in width) in Jurassic cherts of the "Diaspra di Monte Alpe" Formation. Associated minerals are: quartz, pectolite, orientite and calcite. Other new minerals found at the locality are mozartite,  $\text{CaMn}(\text{OH})\text{SiO}_4$ , and caoxite,  $\text{CaC}_2\text{O}_4 \cdot 3\text{H}_2\text{O}$ .

**General appearance:** Scattered individual prismatic to acicular crystals elongated along [001] (up to  $2 \times 0.1$  mm) and as a few radiating aggregates (up to about 3 mm in diameter).

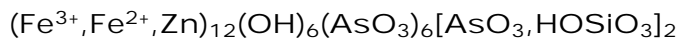
**Physical, chemical and crystallographic properties:** *Luster:* vitreous. *Diaphaneity:* transparent. *Color:* deep green. *Streak:* pale green. *Luminescence:* nonfluorescent. *Hardness:*  $\text{VHN}_{50}$  296  $\text{kg}/\text{mm}^2$ . *Tenacity:* brittle. *Cleavage:* none. *Fracture:* uneven. *Density:* 3.62  $\text{g}/\text{cm}^3$  (meas.), 3.69  $\text{g}/\text{cm}^3$  (calc.). *Crystallography:* Tetragonal,  $I4/mmm$ ,  $a$  14.223,  $c$  6.141 Å,  $V$  1242.3 Å<sup>3</sup>,  $Z = 2$ ,  $c:a = 0.4318$ . Morphology: tetragonal prisms are present but not identified. Twinning: none mentioned. **X-ray powder-diffraction data:** 10.15(M) (110), 5.63(M) (101), 4.417(M) (211), 3.319(S) (321), 3.011(VS) (411), 2.619(S) (222), 2.577(M) (501), plus five other lines with intensities of M. **Optical data:** Uniaxial (+),  $\omega$  1.745,  $\varepsilon$  1.765. **Chemical analytical data:** Mean of 42 sets of electron-microprobe data: BaO 43.29, Al<sub>2</sub>O<sub>3</sub> 1.02, Fe<sub>2</sub>O<sub>3</sub> 2.09, Mn<sub>2</sub>O<sub>3</sub> 19.57, SiO<sub>2</sub> 26.18, H<sub>2</sub>O (4.81), Cl 3.93, sum 100.89, less O = Cl 0.89, Total (100.00) wt.%. The amount of H<sub>2</sub>O was calculated by difference. Empirical formula:  $\text{Ba}_{3.83}(\text{Mn}^{3+}_{3.36}\text{Fe}^{3+}_{0.35}\text{Al}_{0.27})_{\Sigma 3.98}\text{Si}_{5.91}\text{O}_{17.26}[(\text{OH})_{7.24}\text{Cl}_{1.50}]_{\Sigma 8.74}$ . **Relationship to other species:** It is a cyclosilicate.

**Name:** After the locality.

**Comments:** IMA No. 1999–012. Some of the subscripts derived here for the empirical formula differ from those given by the authors.

BASSO, R., LUCCHETTI, G., ZEFIRO, L. & PALENZONA, A. (2000): Cerchiaraitite, a new natural Ba–Mn–mixed-anion silicate chloride from the Cerchiarait mine, northern Apennines, Italy. *Neues Jahrbuch für Mineralogie, Monatshefte*, 373–384.

## Ekatite



HEXAGONAL

**Locality:** Tsumeb, Namibia.

**Occurrence:** Associated minerals are quartz (etched) and chalcocite.

**General appearance:** Sprays of striated, fine needles (up to 2 mm long and less than 0.2 mm in diameter).

**Physical, chemical and crystallographic properties:** *Luster:* given as bright vitreous, but the indices of refraction indicate adamantine. *Diaphaneity:* translucent. *Color:* brownish black. *Streak:* brown. *Luminescence:* nonfluorescent. *Hardness:* about 3. *Tenacity:* brittle. *Cleavage:* none. *Fracture:* not given. *Density:* not measured, 4.11 g/cm<sup>3</sup> (calc.). **Crystallography:** Hexagonal,  $P6_3mc$ ,  $a$  12.773,  $c$  5.051 Å,  $V$  713.7 Å<sup>3</sup>,  $Z = 1$ ,  $c:a = 0.3954$ . *Morphology:* indistinct  $\{hk0\}$  forms are mentioned. *Twinning:* none mentioned. **X-ray powder-diffraction data:** 11.11(30)(100), 6.37(50)(110), 3.220(100)(211,220), 2.766(30)(400), 2.420(70)(401,410), 1.867(30)(402), 1.672(30)(521), 1.507(30)(701,531). **Optical data:** Uniaxial (+),  $\omega \sim 1.99$ ,  $\varepsilon \sim 2.08$ , pleochroism: O dark brownish black, E medium brown. **Chemical analytical data:** Mean of two sets of electron-microprobe data: FeO 21.19, ZnO 3.80, Fe<sub>2</sub>O<sub>3</sub> 27.26, As<sub>2</sub>O<sub>3</sub> 42.56, SiO<sub>2</sub> 2.12, H<sub>2</sub>O 3.42, Total 100.35 wt.%. The structure determination was the basis for calculating the proportion of Fe<sup>3+</sup> and Fe<sup>2+</sup> from the total Fe; the number of OH groups was derived from the H<sub>2</sub>O determination. Empirical formula:  $(\text{Fe}^{3+}_{6.02}\text{Fe}^{2+}_{5.20}\text{Zn}_{0.82})_{\Sigma 12.04}(\text{OH})_{6.07}(\text{AsO}_3)_{6.06}[(\text{AsO}_3)_{1.52}(\text{HOSiO}_3)_{0.62}]_{\Sigma 2.14}$ . **Relationship to other species:** Structurally related to phosphoellenbergerite, ellenbergerite and holtedahlite.

**Name:** After Dieter Ekat (1935–1996), a Namibian mining engineer and former owner of the Rubicon mine, Namibia.

**Comments:** IMA No. 1998–024. The subscripts of the empirical formula given here are slightly different from those given in the paper.

KELLER, P. (2001): Ekatite,  $(\text{Fe}^{3+}, \text{Fe}^{2+}, \text{Zn})_{12}(\text{OH})_6[\text{AsO}_3]_6[\text{AsO}_3, \text{HOSiO}_3]_2$ , a new mineral from Tsumeb, Namibia, and its crystal structure. *European Journal of Mineralogy* **13**, 769–777.

# Henrymeyerite



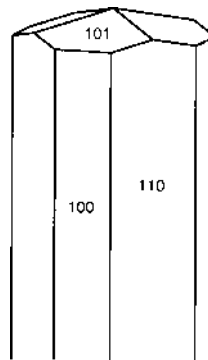
TETRAGONAL

**Locality:** The Kovdor alkaline ultramafic complex, Kola Peninsula, Russia (Lat.  $\sim 67^\circ 3'N$ , Long.  $\sim 30^\circ 3'E$ ).

**Occurrence:** In a late-stage mineral assemblage associated with carbonatitic rocks. Associated minerals are: tetra-ferriphlogopite, calcite, dolomite, fluorapatite, niobian anatase (?), rimkorolgitite, catapleiite, collinsite and pyrite.

**General appearance:** Well-developed acicular crystals (up to  $0.2 \text{ mm} \times$  several tens of  $\mu\text{m}$ ).

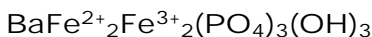
**Physical, chemical and crystallographic properties:** Luster: adamantine. Diaphaneity: opaque. Color: black. Streak: reddish brown. Hardness: 5 to 6. Tenacity: very brittle. Cleavage: not mentioned. Fracture: not mentioned. Density:  $4.0 \text{ g/cm}^3$  (meas.),  $4.23 \text{ g/cm}^3$  (calc.). **Crystallography:** Tetragonal,  $I4/m$ ,  $a$  10.219,  $c$  2.963 Å,  $V$  309.4 Å<sup>3</sup>,  $Z = 1$ ,  $c:a = 0.2900$ . Morphology: probably {100}, {110} and {101}. Twinning: none mentioned. **X-ray powder-diffraction data:** 3.232(100) (310), 2.486(34) (211), 2.236(40) (301), 1.901(31) (411), 1.703(22) (600), 1.598(33) (521), 1.405(26) (541). **Optical data:** In reflected light: grayish brown, weak bireflectance in shades of brown.  $R_w$ ,  $R_s$ : (12.0, 13.0%) 460 nm, (11.6, 12.6%) 540 nm, (11.4, 12.7%) 580 nm, (11.3, 13.8%) 660 nm. **Chemical analytical data:** Mean of eight sets of electron-microprobe data: Na<sub>2</sub>O 0.40, K<sub>2</sub>O 0.05, CaO 0.02, FeO 9.20, BaO 18.25, La<sub>2</sub>O<sub>3</sub> 0.50, Ce<sub>2</sub>O<sub>3</sub> 0.56, SiO<sub>2</sub> 0.37, TiO<sub>2</sub> 67.78, Nb<sub>2</sub>O<sub>5</sub> 1.00, Total 98.13 wt.%. Empirical formula:  $(\text{Ba}_{0.96}\text{Na}_{0.10}\text{K}_{0.01})_{\Sigma 1.07} \text{Fe}_{1.03}(\text{Ti}_{6.81}\text{Nb}_{0.06}\text{Si}_{0.05}\text{Ce}_{0.03}\text{La}_{0.02})_{\Sigma 6.97}\text{O}_{16.00}$ . **Relationship to other species:** A member of the cryptomelane group, specifically the Ba-Fe-dominant member.



**Name:** After Henry O.A. Meyer (1937–1995) for his contributions to the petrology and mineralogy of mantle-derived xenoliths and kimberlitic rocks and for his services to the mineralogical community. **Comments:** IMA No. 1999–016. The crystal drawing presented here was produced from the crystallographic data and the SEM image given in the paper.

MITCHELL, R.H., YAKOVENCHUK, V.N., CHAKHMOURADIAN, A.R., BURNS, P.C. & PAKHOMOVSKY, YA.A. (2000): Henrymeyerite, a new hollandite-type Ba-Fe titanate from the Kovdor complex, Russia. *Canadian Mineralogist* **38**, 617–626.

# Johntomaite



MONOCLINIC

**Locality:** On the dumps of the Spring Creek copper mine near Wilmington, southern Flinders Ranges, South Australia, Australia (Lat. 32° 41' S, Long. 138° 07' E).

**Occurrence:** From a heavily brecciated hydrothermal vein. Associated minerals are: quartz, libethenite, pseudomalachite, mitridatite, goethite, cuprite and copper.

**General appearance:** Clusters of radiating to subparallel prismatic crystals (0.3 to 1 mm long).

**Physical, chemical and crystallographic properties:** *Luster:* given as vitreous, greasy to subadamantine, but the optical data indicate adamantine. *Diaphaneity:* opaque. *Color:* greenish black. *Streak:* dark grayish green. *Luminescence:* nonfluorescent. *Hardness:* 4½. *Tenacity:* brittle. *Cleavage:* {100} perfect. *Fracture:* irregular. *Density:* 4.05 g/cm<sup>3</sup> (meas.), 4.08 g/cm<sup>3</sup> (calc.). **Crystallography:** Monoclinic,  $P2_1/m$ ,  $a$  9.199,  $b$  12.359,  $c$  5.004 Å,  $\beta$  100.19°,  $V$  559.9 Å<sup>3</sup>,  $Z = 2$ ,  $a:b:c = 0.7443:1:0.4049$ . Morphology: {001}, {101}, {021} and {131}. Twinning: none observed. **X-ray powder-diffraction data** 3.159(100) (031,221), 2.983(50) (211), 2.749(50b) (221,311), 4.573(40) (011), 3.091(40) (131). **Optical data:** Biaxial (-),  $\alpha$  1.817,  $\beta$  1.829,  $\gamma$  1.837,  $2V$ (meas.) 85°,  $2V$ (calc.) 78°; dispersion  $r \ll v$ , strong; pleochroism strong,  $X$  bluish green,  $Y$  dark brownish green,  $Z$  brownish, absorption  $Y > X \geq Z$ ;  $Z = b$ . **Chemical analytical data:** Mean of ten sets of electron-microprobe data: Na<sub>2</sub>O 0.07, MgO 0.05, CaO 3.28, MnO 2.67, FeO 13.34, CuO 0.07, ZnO 0.06, BaO 21.96, Al<sub>2</sub>O<sub>3</sub> 0.25, Fe<sub>2</sub>O<sub>3</sub> 22.62, SiO<sub>2</sub> 0.13, P<sub>2</sub>O<sub>5</sub> 30.45, H<sub>2</sub>O 3.73, F 0.36, sum 99.04, less O = F 0.15, Total 98.89 wt.%. Empirical formula: Ba<sub>1.00</sub>(Fe<sub>1.29</sub>Ca<sub>0.41</sub>Mn<sub>0.26</sub>Na<sub>0.02</sub>Mg<sub>0.01</sub>Cu<sub>0.01</sub>Zn<sub>0.01</sub>)<sub>Σ2.01</sub>(Fe<sup>3+</sup><sub>1.97</sub>Al<sub>0.03</sub>)<sub>Σ2.00</sub>[(P<sub>2.99</sub>Si<sub>0.02</sub>)O<sub>4</sub>]<sub>3.00</sub>[(OH)<sub>2.88</sub>F<sub>0.13</sub>]<sub>Σ3.01</sub>. **Relationship to other species:** A member of the bjarebyite group, specifically the ferric-iron-dominant analogue of kulanite, BaFe<sup>2+</sup><sub>2</sub>Al<sub>2</sub>(PO<sub>4</sub>)<sub>3</sub>(OH)<sub>3</sub>.

**Name:** After John Toma (b. 1954), the amateur mineralogist who found the mineral and provided the type specimen.

**Comments:** IMA No. 1999-009.

KOLITSCH, U., PRING, A. & TIEKINK, E.R.T. (2000): Johntomaite, a new member of the bjarebyite group of barium phosphates: description and structure refinement. *Mineralogy and Petrology* **70**, 1-14.

## Juanitaite



TETRAGONAL

**Locality:** The Gold Hill mine, Tooele County, Utah, U.S.A.

**Occurrence:** On the 9-meter level, coating surface and filling thin fractures in limonitic gossan, associated with calcian mixite, conichalcite, chrysocolla, azurite, gold and quartz. On the 46-meter level, as fine-grained coatings on cavity walls in quartz veins, associated with connellite, tyrolite and azurite.

**General appearance:** Square crystal plates (25 to 150  $\mu\text{m}$  across and 1  $\mu\text{m}$  thick), with rounded corners; also as sheaf-like subparallel aggregates and rosettes.

**Physical, chemical and crystallographic properties:** *Luster:* resinous to dull. *Diaphaneity:* translucent. *Color:* olive-green to grass-green; reflections from {001} often appear bronzy. *Streak:* pale greenish yellow. *Luminescence:* nonfluorescent. *Hardness:* very soft, estimated at about 1. *Tenacity:* flexible but not elastic. *Cleavage:* {001} and {110} perfect, {100} good. *Fracture:* not observed. *Density:* 3.61  $\text{g}/\text{cm}^3$  (meas.), 3.56  $\text{g}/\text{cm}^3$  (calc.). **Crystallography:** Tetragonal,  $P4_2/nnm$ ,  $a$  9.961,  $c$  29.19 Å,  $V$  2896 Å<sup>3</sup>,  $Z = 4$ ,  $c:a = 2.9304$ . Morphology: {001}, {110} and {310}. Twinning: none observed. **X-ray powder-diffraction data:** 14.6(100)(002), 7.04(50)(110), 6.34(70)(112), 5.07(50)(114), 3.146(60)(310,303), 2.535(50)(228). **Optical data:** Uniaxial (–), subparallel aggregates show an anomalous biaxial figure with  $2V \approx 20^\circ$ ,  $\omega$  1.785,  $\varepsilon$  1.705, pleochroism O olive brown, E olive green. **Chemical analytical data:** Mean of seven sets of electron-microprobe data: CaO 8.64, FeO 2.32, CuO 35.97, Bi<sub>2</sub>O<sub>3</sub> 14.82, As<sub>2</sub>O<sub>5</sub> 29.35, H<sub>2</sub>O (8.90), Total (100.00) wt.%. Empirical formula:  $(\text{Cu}_{7.03}\text{Ca}_{2.39}\text{Fe}_{0.50})_{\Sigma 9.92}\text{Bi}_{0.99}(\text{AsO}_4)_{3.97}(\text{OH})_{10.90} \cdot 2.22\text{H}_2\text{O}$ . **Relationship to other species:** It is chemically similar to mixite,  $\text{Cu}_6\text{Bi}(\text{AsO}_4)_3(\text{OH})_6 \cdot 3\text{H}_2\text{O}$ .

**Name:** After Juanita Curtis (b. 1917), who found the mineral.

**Comments:** IMA No. 1992–022.

KAMPF, A.R., WISE, W.S. & ROSSMAN, G.R. (2000): Juanitaite, a new mineral from Gold Hill, Utah. *Mineralogical Record* **31**, 301-305.