

NEW MINERAL NAMES*

JOHN L. JAMBOR,¹ VLADIMIR A. KOVALENKER,² AND ANDREW C. ROBERTS³

¹Department of Earth Sciences, University of Waterloo, Waterloo, Ontario N2L 3G1, Canada

²IGREM RAN, Russian Academy of Sciences, Moscow 10917, Staromonetnii 35, Russia

³Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario K1A 0G1, Canada

Calcioburbankite*

J. Van Velthuizen, R.A. Gault, J.D. Grice (1995) Calcioburbankite, $\text{Na}_3(\text{Ca,REE,Sr})_3(\text{CO}_3)_5$, a new mineral species from Mont Saint-Hilaire, Quebec, and its relationship to the burbankite group of minerals. *Can. Mineral.*, 33, 1231–1235.

The mineral occurs as subhedral prismatic crystals, to $2 \times 1.8 \times 2$ cm, elongate [001] and showing {100} and {001}. Deep orange to light pink color, translucent, white streak, vitreous luster, $H = 3-4$, indistinct {100} cleavage, conchoidal fracture, brittle, nonfluorescent, rapidly soluble in HCl, $D_{\text{meas}} = 3.45(3)$, $D_{\text{calc}} = 3.46$ g/cm³ for $Z = 2$. Optically uniaxial negative, $\omega = 1.636(1)$, $\epsilon = 1.631(1)$, nonpleochroic. Electron microprobe analysis gave Na_2O 15.17, CaO 11.81, BaO 0.46, SrO 7.65, La_2O_3 9.30, Ce_2O_3 14.38, Pr_2O_3 1.26, Nd_2O_3 3.76, Sm_2O_3 0.48, CO_2 (calc.) 35.13, sum 99.40 wt%, corresponding to $\text{Na}_{3.06}(\text{Ca}_{1.31}\text{-Ce}_{0.55}\text{Sr}_{0.46}\text{La}_{0.36}\text{Nd}_{0.14}\text{Pr}_{0.05}\text{Sm}_{0.02}\text{Ba}_{0.02})_{22.92}(\text{CO}_3)_5$, ideally $\text{Na}_3(\text{Ca,REE,Sr})_3(\text{CO}_3)_5$. Single-crystal X-ray study indicated hexagonal symmetry, space group $P6_3mc$, $P6_3mmc$, or $P\bar{6}2c$; $a = 10.447(3)$, $c = 6.318(3)$ Å as refined from powder patterns (114 mm Debye Scherrer, $\text{CuK}\alpha$ radiation) with strongest lines of 5.20(40,110), 3.68(30,201), 3.01(50,300,211), 2.601(100,220), 2.130 (60,401), and 1.649(30,421).

The mineral occurs in a quarry at Mont Saint-Hilaire, Rouville County, Quebec. The new name reflects the Ca-dominant chemistry within the burbankite group. Type material is in the Canadian Museum of Nature, Ottawa, Canada. J.L.J.

Dzharkenite*

Yu.V. Yashunsky, E.G. Ryabeva, M.A. Abranov, S.D. Rasulova (1995) Dzharkenite FeSe_2 —A new mineral. *Zapiski Vseross. Mineral. Obshch.*, 124(1), 85–90 (in Russian, English abs.).

The mineral occurs as octahedral crystals, mostly 10–100 μm and up to 500 μm , in Se-U ores at the Suluchekinskoye deposit (Dzharkenskaya depression, southeastern Kazakhstan), where it forms intergrowths with goethite, ferroselite, and an unnamed selenide of Cu, Co, Ni, and

Fe. Electron microprobe analyses of six grains gave an average and range of Fe 26.70 (26.32–26.85), Co 0.01 (0.00–0.05), Cu 0.04 (0.00–0.13), Se 73.32 (72.33–74.21), sum 100.07 (99.07–100.63) wt%, corresponding to $\text{FeSe}_{1.94}$, ideally FeSe_2 . Opaque, metallic to adamantine luster, isotropic; reflectance percentages in air (Si standard) are 44.6 (440), 43.1 (460), 41.7 (480), 40.8 (500), 41.3 (520), 42.6 (540), 43.8 (560), 45.1 (580), 46.4 (600), 47.7 (620), 49.0 (640), 50.2 (660), 51.5 (680), and 52.8 (700). X-ray powder data (diffractometer, $\text{FeK}\alpha$ radiation) indicated cubic symmetry, space group $Pa\bar{3}$, $a = 5.783(4)$ Å, $D_{\text{calc}} = 7.349$ g/cm³ for $Z = 4$; strongest lines (16 lines given) are 2.888(50,200), 2.588(100,210), 2.364(80,211), 2.045(40,220), 1.743(50,311), 1.546(60,321), 1.2559(30,421), and 1.1131(40,511). The new name is for the locality. Type material is in the Fersman Mineralogical Museum, Moscow. V.A.K.

Fluorbritholite-(Ce)*

Jiexiang Gu, G.Y. Chao, Suren Tang (1994) A new mineral—Fluorbritholite-(Ce). *Jour. Wuhan University of Technology*, 9(3), 9–14.

The mineral is present in vugs in nepheline syenite, marble xenoliths, sodalite syenite xenoliths, and pegmatite dikes at Mont Saint-Hilaire, Quebec. Occurs as pale yellow, tan, or reddish brown aggregates and patches consisting of radiating to subparallel groups in which crystals are prismatic (to 0.5 mm) to nearly equant. Colorless to pale brown streak, adamantine luster, opaque to translucent, brittle, even to conchoidal fracture, perfect {0001} cleavage, $H = 5$, nonfluorescent, $D_{\text{meas}} = 4.66(1)$, $D_{\text{calc}} = 4.66$ g/cm³ for $Z = 2$. Pale yellow in transmitted light, nonpleochroic, uniaxial negative, $\omega = 1.792(5)$, $\epsilon = 1.786(5)$. Electron microprobe analyses of three grains gave Ce_2O_3 29.17, 28.70, 33.14, La_2O_3 15.80, 20.21, 19.78, Pr_2O_3 3.52, 1.69, 1.20, Nd_2O_3 8.83, 4.62, 8.78, Sm_2O_3 0.67, 0.25, —, FeO —, —, 0.10, CaO 13.96, 12.87, 1.92, SrO 0.45, 1.18, 3.74, MgO 0.02, —, —, MnO —, 1.39, 1.48, Na_2O 0.01, 0.85, 3.04, ThO_2 1.74, 1.84, 1.09, U_3O_8 0.30, 0.11, 0.31, SiO_2 20.61, 16.92, 16.59, Al_2O_3 —, —, 0.08, P_2O_5 2.84, 7.25, 5.21, F 2.38, 2.58, 2.70, F \equiv O 1.00, 1.09, 1.14, sum 100.56, 99.73, 99.20 wt%; these correspond to, respectively: $(\text{Ca}_{1.95}\text{Ce}_{1.39}\text{La}_{0.76}\text{Nd}_{0.31}\text{Pr}_{0.17}\text{Y}_{0.09}\text{Th}_{0.05}\text{Sr}_{0.03}\text{Sm}_{0.03})_{24.78}(\text{Si}_{2.68}\text{P}_{0.31})_{22.99}\text{O}_{12.02}\text{F}_{0.98}$, $(\text{Ca}_{1.77}\text{Ce}_{1.35}\text{La}_{0.96}\text{Nd}_{0.21}\text{Na}_{0.21}\text{Mn}_{0.15}\text{Sr}_{0.09}\text{Pr}_{0.08}\text{Th}_{0.05}\text{Y}_{0.02}\text{Sm}_{0.01})_{24.90}(\text{Sr}_{2.17}\text{P}_{0.79})_{22.96}\text{O}_{11.95}\text{F}_{1.05}(\text{Ce}_{1.69}\text{La}_{1.02}\text{Na}_{0.82}\text{Nd}_{0.44}$

* Before publication, minerals marked with an asterisk were approved by the Commission on New Minerals and Mineral Names, International Mineralogical Association.

$\text{Sr}_{0.30}\text{Ca}_{0.29}\text{Mn}_{0.17}\text{Y}_{0.09}\text{Th}_{0.03}\text{Fe}_{0.01}\text{Zr}_{0.92}(\text{Si}_{2.32}\text{P}_{0.61})_{\Sigma 2.93}\text{O}_{11.81}\text{F}_{1.19}$. Single-crystal X-ray study indicated hexagonal symmetry, space group $P6_3/m$; for the above compositions, $a = 9.537(5), 9.517(5), 9.537(6), c = 6.999(4), 6.983(4), 7.008(5)$ Å. Strongest lines of the powder pattern (114 mm Gandolfi, $\text{CuK}\alpha$ radiation) are 2.845(100,211), 2.822(40,112), 2.747(30,300), 1.970 (30,222), and 1.870(40,213) (corresponding to the first analysis, after heating the sample to 800 °C for 3 h); for the third composition (unheated sample), 2.840(100), 2.818(30), 2.748(30), and 1.868(30).

Type material is in the Canadian Museum of Nature, Ottawa. The mineral has been described previously from other localities, and the new name has been introduced to distinguish the F-rich and OH-rich members, analogous to that for the apatite and apophyllite groups. The authors suggest that britholite-(Ce) and britholite-(Y) be renamed hydroxylbritholite-(Ce) and hydroxylbritholite-(Y). The authors also recognize that in the Mont Saint-Hilaire material the third composition given above is Ca-rich, but no distinction is made because the structural significance of the Ca contents is not known.

Discussion. A formal proposal to the IMA concerning the renaming of britholite-(Ce) and britholite-(Y) has not been made. The authors give the simplified formula of Mont Saint-Hilaire fluorbritholite-(Ce) as $(\text{REE,Ca})_3(\text{Si,P})_3\text{O}_{12}\text{F}$, which is a correct generalization, but the cation dominance is $\text{Ca} > \text{Ce} > \text{La}$ for two of the samples, and $\text{Ce} > \text{La} \gg \text{Ca}$ for the third; despite the authors' caution concerning the structural role of Ca, it is confusing that all of the compositions apparently pertain to fluorbritholite-(Ce). **J.L.J.**

Odintsovite*

A.A. Konev, E.I. Vorobjev, A.N. Saposhnikov, L.R. Piskunov, Z.F. Ushchapovskaya (1995) Odintsovite— $\text{K}_2\text{Na}_4\text{Ca}_3\text{Ti}_2\text{Be}_4\text{Si}_{12}\text{O}_{38}$ —A new mineral from the Murunsky massif. *Zapiski Vseross. Mineral. Obshch.*, 124(5), 92–96 (in Russian).

The mineral was abstracted as unnamed $\text{K}_2(\text{Na,Li})_4\text{Ca}_3\text{Ti}_2\text{Be}_4\text{Si}_{12}\text{O}_{38}$ in *Am. Mineral.*, 80, p. 1332 (1995). The X-ray powder pattern (57 mm Debye-Scherrer, $\text{FeK}\alpha$ radiation) was indexed with $a = 12.778(4), b = 14.343(3), c = 33.69(1)$ Å; strongest lines are 9.23(90,111), 4.15(10,224,133), 3.30(100,044), 3.16(100,228), 2.53(100,1.3.11), 2.42(100,157,2.2.12), 1.668(80,4.6.10), 1.632(80,719,3.5.15), 1.582(90,662), and 1.309(80,937,6.4.18). The new name is for M.M. Odintsova. Type material is in the Fersman Mineralogical Museum, Moscow. **J.L.J.**

Orthowalpurkite*

W. Krause, H. Effenberger, F. Brandstätter (1995) Orthowalpurkite, $(\text{UO}_2)\text{Bi}_4\text{O}_4(\text{AsO}_4)_2 \cdot 2\text{H}_2\text{O}$, a new mineral from the Black Forest, Germany. *Eur. Jour. Mineral.*, 7, 1313–1324.

Electron microprobe analysis gave UO_3 17.86, Bi_2O_3 64.21, As_2O_5 16.11, H_2O (calc.) 2.43, sum 100.61 wt%, corresponding to $(\text{UO}_2)_{0.92}\text{Bi}_{4.06}\text{O}_{3.89}(\text{AsO}_4)_{2.07} \cdot 1.99\text{H}_2\text{O}$. Occurs as transparent yellow crystals, to 0.3 mm, that form fan-shaped aggregates to 1 mm. Crystals are tabular on {010}, commonly elongate [100], with forms {010}, {001}, {100}, and {104}. Pale yellow streak, adamantine luster, $H = 4\frac{1}{2}$, $VHN_{25} = 330$, nonfluorescent, brittle, conchoidal fracture, indistinct {001} cleavage, soluble in warm, dilute HCl, $D_{\text{calc}} = 6.51$ g/cm³ for $Z = 4$. Optically biaxial negative, $\alpha = 1.91(2), \beta = 2.00(2), \gamma_{\text{calc}} = 2.05, 2V = 70(3)^\circ$, nonpleochroic, $X = c, Y = a, Z = b$. Single-crystal X-ray structure study ($R = 0.080$) indicated orthorhombic symmetry, space group $Pbcm$, $a = 5.492(1), b = 13.324(2), c = 20.685(3)$ Å as refined from a powder pattern (diffractometer, $\text{CuK}\alpha$ radiation) with strongest lines of 10.354(94,002), 5.610(40,022), 3.277(56,124,132), 3.208(100,115), 3.088(76,133), 2.999(50,043), and 2.852(46,134,116).

The mineral is associated with preisingerite, quartz, and anatase on a specimen from the dump of the Schmiedestollen, Wittichen, Germany. The new name alludes to the orthorhombic symmetry and the relationship to walpurkite (triclinic). Type material is in the Institut für Mineralogie, Ruhr-Universität Bochum, Germany. **J.L.J.**

Sabelliite*

F. Olmi, A. Santucci, R. Trosti-Ferroni (1995) Sabelliite, a new copper-zinc arsenate-antimonate mineral from Sardinia, Italy. *Eur. Jour. Mineral.*, 7, 1325–1330.

F. Olmi, C. Sabelli, R. Trosti-Ferroni (1995) The crystal structure of sabelliite. *Eur. Jour. Mineral.*, 7, 1331–1337.

The mineral occurs as emerald-green crystals that are tabular {001} and rounded, having the shape of a coin. Individuals are up to 200 μm across and 15 μm thick; clusters rarely exceed 400 μm . Transparent, adamantine luster, light green streak, brittle, no cleavage, $H = 4\frac{1}{2}$, $VHN_{15} = 386$ (322–469), nonfluorescent, $D_{\text{calc}} = 4.65$ g/cm³ for $Z = 3$. Optically uniaxial negative, $\omega = 1.802(2), \epsilon = 1.797(2)$, nonpleochroic. Electron microprobe analyses of four crystals gave a mean of Cu 34.80, Zn 15.65, Si 0.33, As 15.04, Sb 4.96, O 28.00, $H_{\text{calc}} = 0.67$, sum 99.45 wt%, corresponding to $\text{Cu}_{2.19}\text{Zn}_{0.96}(\text{As}_{0.80}\text{Sb}_{0.16}\text{Si}_{0.05})_{\Sigma 1.01}\text{O}_{4.31}(\text{OH})_{2.69}$, ideally $(\text{Cu,Zn})_2\text{Zn}[(\text{As,Sb})\text{O}_4](\text{OH})_3$. Single-crystal X-ray structure study ($R = 0.046$) indicated trigonal symmetry, space group $P\bar{3}$; $a = 8.201(1), c = 7.315(1)$ Å as refined from a Gandolfi powder pattern (114 mm camera, $\text{CuK}\alpha$ radiation) with strongest lines of 4.11(55,110), 2.522(100,121), 2.166(88,122), 1.805(92,123), 1.550(100,410), 1.513(85,124), and 1.320(55,241).

The mineral is associated with theisite, malachite, azurite, and tetrahedrite in quartz near the abandoned Is Murvonis fluorite mine, Domusnovas, Sardinia; also reported to occur in mine dumps near Schwaz, Austria. The new name is for C. Sabelli of the Consiglio Nazionale delle

Ricerche. Type material is in the Museum of Natural History of the University of Florence, Italy. J.L.J.

Stalderite*

S. Graeser, H. Schwander, R. Wulf, A. Edenharter (1995) Stalderite $\text{TlCu}(\text{Zn}, \text{Fe}, \text{Hg})_2\text{As}_2\text{S}_6$ —A new mineral related to routhierite: Description and crystal structure determination. *Schweiz. Mineral. Petrogr. Mitt.*, 75, 337–345.

The mean of three electron microprobe analyses gave Tl 25.80, Cu 7.20, Ag 0.23, Pb 2.25, Zn 9.16, Fe 30.2, Hg 8.90, As 18.48, S 24.48, sum 99.52 wt%, corresponding to $\text{Tl}_{1.02}\text{Cu}_{0.91}(\text{Zn}_{1.13}\text{Fe}_{0.44}\text{Hg}_{0.36})_{21.93}\text{As}_{1.99}\text{S}_{8.16}$. Occurs as black, euhedral, pseudoisometric crystals to 0.5 mm, showing {110}, {100}, {101}, {112}, and {121}; metallic luster, blue to red slight tarnish, opaque, $H = 3\frac{1}{2}$ –4, $VHN_{10} = 132$ –138, brittle, uneven fracture, no cleavage, brown-red streak, $D_{\text{calc}} = 4.97 \text{ g/cm}^3$ for $Z = 4$. Grayish white in reflected light, no birefractance, very weak anisotropism, rare deep red internal reflection; reflectance percentages (WTiC standard, air) are 27.0–30.5 (480 nm), 27.0–28.0 (546), 25.0–27.0 (589), and 24.4–25.5 (656). Single-crystal X-ray and synchrotron structure study ($R = 0.047$) indicated tetragonal symmetry, space group $I\bar{4}2m$; $a = 9.855(3)$, $c = 10.937(7) \text{ \AA}$, as refined from a Debye-Scherrer powder pattern (114 mm, $\text{FeK}\alpha$ radiation) with strongest lines of 4.086(51,211), 3.417(34,103), 1.940(100,222), 2.541(20,114), 2.436(39,303), 1.8060(22,521), and 1.7431(23,440).

The mineral, which is the Zn analog of routhierite, is associated with other Tl and As minerals such as hutchinsonite, hatchite, realgar, and orpiment in druses in Triassic dolomite at Lengenbach, Binntal, Switzerland. The new name is for H.A. Stalder (b. 1925) of the Natural History Museum of Berne. Type material is in the Natural History Museum and Mineralogical Institute, University of Basel, Switzerland.

Discussion. A preliminary description was abstracted in *Am. Mineral.*, 78, p. 846, 1993. J.L.J.

Manganoean taenite

M.E. Generalov, G.F. Tananaeva, S.F. Glovatskikh (1995) The manganese analog of taenite from natural mineral associations. *Doklady Akad. Nauk.*, 341(4) 511–515 (in Russian).

The mineral occurs as lamellar grains, up to 0.8 mm long, in eruptive breccia at South Primorie, Russia, and as a high-temperature exhalative product at the Bolshoy Tolbachik volcano, Kamchatka, Russia. Electron microprobe analysis (mean for six grains) gave Fe 83.91, Mn 13.01 (range 11.82–15.17), Cr 0.24, Si 0.73, sum 97.90 wt%, corresponding to Fe_6Mn . Opaque, metallic luster, $VHN = 780$ –860, white in reflected light, isotropic. Reflectance percentages in air are given in 20 nm steps from 420 to

700 nm. The X-ray powder pattern (South Primorie) has lines at 2.10(100,111), 1.821(70,200), 1.285(50,220), 1.094(60,311), and 1.046 Å (40,220), corresponding to a cubic cell, space group $Fm\bar{3}m$, $a = 3.63(1) \text{ \AA}$.

Discussion. The formula of taenite is generally written as (Fe, Ni) ; the formula of the Tolbachik mineral is (Fe, Mn) , which is manganoean taenite rather than the Mn analog of taenite. V.A.K.

Viaeneite*

H. Kucha, W. Osuch, J. Elsen (1995) Calculation and refinement of cell parameters of viaeneite from electron diffraction patterns. *Neues Jahrb. Mineral. Mon.*, 433–443.

The mineral occurs as polycrystalline aggregates to 200 μm , in which individual crystallites are $\leq 30 \mu\text{m}$. The formula determined by electron microprobe analysis (not given except for Pb 3.80–4.40) is $(\text{FePb})_4\text{S}_8\text{O}_4$. Yellow color, $VHN_{200} = 252$, $D_{\text{meas}} = 3.81$, $D_{\text{calc}} = 3.65 \text{ g/cm}^3$. In reflected light, distinct pleochroism and strongly anisotropic, reflectance 23.8–36.8% in air at 546 nm. Electron diffraction patterns indicated a monoclinic cell, with $a = 9.717(8)$, $b = 7.280(6)$, $c = 6.559(7) \text{ \AA}$, $\beta = 95.00(3)^\circ$ as refined from a Gandolfi pattern ($\text{CoK}\alpha$ radiation) with strongest lines of 3.43(50,120), 2.709(100,221), 2.419(80,400), 2.323(70,122), 1.92(60,203), 1.758(80,511,041), and 1.595(50,114,014). The new name is for W. Viaene of the Afdeling fysico-chemische geologie, Katholieke Universiteit, Leuven, Belgium. Type material is in the Specimen Library of the Katholieke Universiteit, Leuven, and in the Faculty of Geology, Academy of Mining and Metallurgy, Krakow, Poland.

Discussion. The locality is not given. A more complete description is reported by the authors to be in press, but the description should have preceded this paper. J.L.J.

Zlatogorite*

E.M. Spiridonov, F.M. Spiridonov, Yu.K. Kabalov, N.I. Karataeva, E.V. Skokova (1995) Zlatogorite CuNiSb_2 —A new mineral from the listwanite in rodingite at the Zolotaya Gora deposit (Middle Ural). *Vestnik Moscow Univ.*, ser. 4, no. 5, 57–64 (in Russian).

Electron microprobe analysis of 24 grains gave an average and range of Cu 17.31 (14.50–18.94), Ni 16.02 (13.79–17.96), Co 0.18 (tr.–0.62), Fe 0.23 (tr.–2.57), Sb 65.22 (62.11–65.75), As 0.84 (0.24–3.82), sum 99.80 wt%, corresponding to $\text{Cu}_{0.991}(\text{Ni}_{0.993}\text{Co}_{0.011}\text{Fe}_{0.015})_{21.019}(\text{Sb}_{1.949}\text{As}_{0.041})_{21.990}$, ideally CuNiSb_2 . Occurs as round to short prismatic inclusions to 0.3 mm in native antimony, and as monomineralic aggregates to 2 mm; silver-white color, opaque, metallic luster, $VHN_{50} = 283$ (195–340), $D_{\text{meas}} = 8.21(6)$, $D_{\text{calc}} = 8.269 \text{ g/cm}^3$ for $Z = 1$. Light yellow to pinkish yellow in reflected light, weak birefractance, distinctly anisotropic; reflectance percentages in air (R_{max} and

R_{\min}) are 59.3–52.4 (470 nm), 63.0–56.8 (546), 65.6–60.9 (589), and 68.6–64.9 (650). Rietveld refinement ($R_F = 0.035$) indicated trigonal symmetry, space group, $P\bar{3}m1$, $a = 4.0489(2)$, $c = 5.1358(3)$ Å. Strongest lines of the X-ray powder pattern (diffractometer, Cu radiation, 23 lines listed) are 2.901(100,101), 2.572(10,002), 2.074(65,102), 2.026(51,110), 1.660(11,201), and 1.284(10,004,211).

The mineral occurs with ullmannite, gudmundite, nishite, and cuprostibite in altered yellowish green schistose rock (listwanite) in the Zolotaya Gora deposit, from which the new name is derived. Type material is in the Fersman Mineralogical Museum, Moscow.

Discussion. A report on the crystal structure of the then-unnamed mineral was abstracted in *Am. Mineral.*, 80, p. 1076, 1995. V.A.K.

Pt-Pd alloys

I. McDonald, D.J. Vaughan, M. Tredoux (1995) Platinum mineralization in quartz veins near Naboomspruit, central Transvaal. *S. Afr. Tydskr. Geol.*, 98(2), 168–175.

Quartz veins, which transect felsites and sandstones, contain hematite, monazite, titanite, rutile, pyrite, native platinum, stibiopalladinite, and two Pt-Pd alloys.

(Pt,Au)_{0.66}Pd_{0.34}

Occurs as chemically homogeneous, reniform masses to 350 μm. Electron microprobe analysis gave Pt 71.36, Pd 21.38, Au 4.38, Cu 1.34, sum 98.46 wt%, corresponding to Pt_{0.60}Pd_{0.33}Au_{0.04}Cu_{0.03}. Some of the grains are partly rimmed by Pt_{0.84}Pd_{0.16}.

Pt_{0.84}Pd_{0.16}

Occurs intimately associated with native platinum, in large reniform masses with globular to flamelike textures. Electron microprobe analysis gave Pt 87.20, Pd 9.33, Au 1.85, sum 98.38 wt%, corresponding to Pt_{0.82}Pd_{0.16}Au_{0.02}.

Discussion. X-ray study is needed to demonstrate that the phases are unique. The simplified metal ratio for Pt_{0.66}Pd_{0.34} is Pt₂Pd, and Pt_{0.84}Pd_{0.16} is equivalent to Pt_{5.25}Pd or Pt_{5.00}Pd_{0.95}. J.L.J.

(Pd,Ag)₂(Te,Pb,Sb,Sn)

N.S. Rudashevsky, V.V. Knauf, N.I. Krasnova, V.N. Rudashevsky (1995) First description of gold and platinum group minerals in ores and carbonatites of alkaline-ultramafic complex (Kovdorsky massif, Russia). *Zapiski Vseross. Mineral. Obshch.*, 124(5), 1–15 (in Russian, English abs.).

Associated with numerous other PGMs (seven Pt minerals and nine of Pd), which occur as grains up to 70 × 125 μm, is a telluride for which electron microprobe analysis gave Pd 56.2, Ag 5.5, Sb 4.6, Sn 3.5, Pb 9.4, Te 20.2, sum 99.4 wt%, corresponding to (Pd_{1.86}Ag_{0.18})_{22.04}(Te_{0.56}Pb_{0.16}Sb_{0.13}Sn_{0.11})_{20.96}. J.L.J.

Ag₃TeS

A. Piestrzyński, S.Th. Schmidt, H. Franco (1994) Pd minerals in the Sto. Tomas II porphyry copper deposit, Tuba Benguet, Philippines. *Mineral. Polonica*, 25(2), 21–31.

Electron microprobe analysis gave Ag 65.35, Te 26.61, S 6.99, Bi 1.05, sum 100.00 wt%, corresponding to Ag_{2.932}Te_{1.009}S_{1.034}Bi_{0.024}, simplified as Ag₃TeS. Four grains, ranging from 2 to 18 μm, have been observed; apparently isotropic, reflectance >30%. The mineral is associated with argentian gold and sopcheite in a PGM-bearing porphyry copper deposit. J.L.J.

Cu₄Pb₁₁Bi₁₆S₃₇

E. Marcoux, Y. Moëlo, J.M. Leistel (1996) Bismuth and cobalt minerals as indicators of stringer zones to massive sulphide deposits, Iberian Pyrite Belt. *Mineral. Deposita*, 31, 1–26.

Electron microprobe analysis of a sulfosalt occurring in the stringer zone of the Algaré deposit gave Cu 3.4, Pb 32.6, Bi 46.5, S 16.4, Se 1.1, sum 100.1 wt%, corresponding to Cu_{3.80}Pb_{11.20}Bi_{15.80}S_{36.32}Se_{1.04}, and to phase AG synthesized by Mariolacos (*Neues Jarhb. Mineral. Mon.*, 73–80, 1979). J.L.J.

(Pd,Cu)O

G.R. Olivo, M. Gauthier (1995) Palladium minerals from the Cauê iron mine, Itabira district, Minas Gerais, Brazil. *Mineral. Mag.*, 59, 455–463.

An electron microprobe analysis (one of 19 listed for five grains, generally <100 μm across), gave PdO 95.81, CuO 4.51, HgO 0.46, AuO 0.53, Fe₂O₃ 1.28, SeO₂ 0.07, Sb₂O₅ 0.02, sum 102.68 wt%; the ranges are PdO 87.67–95.81, CuO 4.51–8.40, HgO 0.05–1.57, and Fe₂O₃ 0.29–1.28 wt%. Medium to dark gray (darker than hematite) in reflected light, slightly anisotropic, typically finely zoned (mainly Pb-Cu variations). Occurs with native gold, palladium, palladseite, and arsenopalladinite in hydrothermally altered, carbonate-bearing oxide facies of iron formation.

Discussion. The mineral is recognized by the authors as corresponding to palladinite, ideally PdO, which is a mineral name not in good standing. J.L.J.

K₂Cr₄Al₂Si₆O₂₀(OH)₄

Z. Johan, V. Johan, B. Scharm, Z. Pouba (1995) Mineralogy and geochemistry of REE and Cr in Proterozoic cherts at Kokšín, Czech Republic. *Comptes Rendu Acad. Sci. Paris, ser. IIA*, 321, 1127–1138 (in French, extended English abs.).

Microfissures in chert contain 1–5 μm lamellae and 50 μm globules of a mineral with the composition of the Cr analog of muscovite. Electron microprobe analysis (one

of two listed) gave SiO₂ 42.66, Al₂O₃ 14.63, Cr₂O₃ 25.44, V₂O₅ 0.32, FeO 0.06, MnO 0.03, MgO 1.97, BaO 5.53, SrO 0.02, K₂O 4.69, sum 95.35 wt%, which for 22 O corresponds to (K_{0.877}Ba_{0.318}Sr_{0.002})_{Σ1.197}(Cr_{2.952}Al_{0.790}Mg_{0.432}V_{0.037}Fe_{0.007}Mg_{0.004})_{Σ4.22}(Si_{6.260}Al_{1.740})_{Σ8.00}, ideally K₂Cr₄Al₂Si₆(OH)₄. **J.L.J.**

New Data

Antimonselite

Maoshong Min, Deren Li, Nicheng Shi, Quanlin Liu, Yawen Cao (1995) Some new data on antimonselite. *Acta Mineral. Sinica*, 15(3), 303–304 (in Chinese, English abs.).

Electron microprobe analysis of antimonselite from the Bentou uranium deposit, Hunan Province, China, gave Sb 49.25, Se 50.35, S 0.26, As 0.03, sum 99.89 wt%, corresponding to Sb_{1.88}(Se_{2.96}S_{0.04})_{Σ3.00}. Single-crystal X-ray study gave orthorhombic symmetry, space group *Pbnm*, $a = 11.213$, $b = 11.515$, $c = 3.991$ Å, $Z = 4$. The cell parameters are new. **J.L.J.**

Chiavennite

V. Tazzoli, M.C. Domeneghetti, F. Mazzi, E. Cannillo (1995) The crystal structure of chiavennite. *Eur. Jour. Mineral.*, 7, 1339–1344.

Chiavennite is orthorhombic, $a = 8.729(5)$, $b = 31.326(11)$, $c = 4.903(2)$ Å, and the newly determined space group is *Pnab*. **J.L.J.**

Clay and clay mineral

S. Guggenheim, R.T. Martin (1995) Definition of clay and clay mineral: Joint report of the AIPEA and CMS nomenclature committees. *Clay Minerals*, 30, 257–259.

The nomenclature committees of the Association Internationale pour l'Etude des Argiles (AIPEA) and the Clay Minerals Society (CMS) recommend the following definitions.

Clay is a naturally occurring material composed primarily of fine-grained minerals, which is generally plastic at appropriate water contents and hardens when dried or fired. Although clay usually contains phyllosilicates, it may contain other materials that impart plasticity and harden

when dried or fired. Associated phases in clay may include organic matter and materials that do not impart plasticity.

Clay mineral refers to “phyllosilicate minerals and to minerals which impart plasticity to clay and which harden upon drying or firing.” **J.L.J.**

Duporthite

P.W. Scott, M.R. Power (1995) Duporthite: A mixture of talc and chlorite. *Proc. Ussher Soc.*, 8(4), 445.

Duporthite, an asbestiform mineral not in good standing, was described in 1877 and was named largely because chemical analyses gave results that differed widely from those of other asbestiform minerals. New samples collected from the well-specified type locality (Duporth, Cornwall, U.K.), and matching well the original description, have shown that duporthite is an extremely fine-grained intergrowth of talc and chlorite in variable proportions. **J.L.J.**

Murataite

T.S. Ercit, F.C. Hawthorne (1995) Murataite, a UB₁₂ derivative structure with condensed Keggin molecules. *Can. Mineral.*, 33, 1223–1229.

Single-crystal X-ray structure study ($R = 0.0491$) of murataite showed it to be isometric, space group *F43m*, $a = 14.886$ Å, $Z = 4$. Electron microprobe analysis and the structure indicate that the ideal formula is (Y,Na)₆(Zn,Fe)₅Ti₁₂O₂₉(O,F)₁₀F₄. The space group, cell contents, and formula are new. **J.L.J.**

Sussexite

C. Hoffmann, T. Armbruster (1995) Crystal structure of a (001) twinned sussexite Mn₂B₂O₄(OH)₂ from the Kalahari manganese field, South Africa. *Schweiz. Mineral. Petrogr. Mitt.*, 75, 123–133.

Single-crystal X-ray structure study ($R = 0.0495$) showed that sussexite is monoclinic, space group *P2₁/c*, $a = 3.287(1)$, $b = 10.718(2)$, $c = 12.866(3)$ Å, $D_{\text{calc}} = 3.335$ g/cm³ for $Z = 4$. An observed orthogonal supercell, with $a = 3.287$, $b = 10.718$, $c = 38.50$ Å, is attributed to twinning on (001). The results confirm that sussexite is isostructural with szaibelyite. **J.L.J.**