

NEW MINERAL NAMES*

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Bariosincosite*

A. Pring, U. Kolitsch, W.D. Birch, B.D. Beyer, P. Elliott, P. Ayyappan, A. Raman (1999) Bariosincosite, a new hydrated barium vanadium phosphate, from the Spring Creek Mine, South Australia. *Mineral. Mag.*, 63, 735–741.

The mineral occurs as irregular clusters of radiating to divergent platy crystals, each crystal up to 250 μm across and 5 μm in thickness, on cuprite or native copper within cavities in a quartz-goethite host. Electron microprobe analysis gave BaO 23.20, SrO 4.19, CaO 0.36, VO₂ 31.55, Fe₂O₃ 0.20, Al₂O₃ 0.50, P₂O₅ 28.15, H₂O (calc.) 13.93, sum 102.08 wt%, corresponding to $(\text{Ba}_{0.77}\text{Sr}_{0.20}\text{Ca}_{0.03})_{\Sigma 1.00}[\text{V}_{0.96}^{4+}\text{Al}_{0.03}\text{Fe}_{0.01}^{3+}]_{\Sigma 1.00}\text{O}(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$, simplified as $\text{Ba}(\text{VOPO}_4)_2 \cdot 4\text{H}_2\text{O}$. Pale green with a slight bluish tinge, transparent, vitreous luster, principal forms {001} and {100}, pale green streak, splintery fracture, distinct {001} cleavage, $H = 3$, $D_{\text{calc}} = 3.40 \text{ g/cm}^3$ for the simplified formula and $Z = 4$. Optically uniaxial negative, $\omega = 1.721(2)$, $\epsilon = 1.715(2)$; weakly pleochroic, E colorless, O pale greenish. X-ray powder patterns were indexed with a tetragonal cell by analogy with data for sincosite. Refinement of a 100 mm Guinier–Hägg pattern gave $a = 9.031(6)$, $c = 12.755(8) \text{ \AA}$. Strongest lines of a Gandolfi pattern (114 mm, $\text{CoK}\alpha$ radiation) are 5.722(100,111), 3.192(60,220,004), 2.858(50,222,114), 2.794(50,311), 2.375(70,313,115), and 2.022(50,420,332,116).

The mineral occurs at the abandoned Spring Creek mine, a small Cu deposit near Wilmington at the southern end of the Flinders Ranges, South Australia. A supergene or late-stage, low-temperature hydrothermal origin is inferred. The mineral is the Ba analog of sincosite. Type material is in the South Australian Museum, Adelaide. **J.L.J.**

Cobaltolotharmeyerite*

W. Krause, H. Effenberger, H.-J. Bernhardt, M. Martin (1999) Cobaltolotharmeyerite, $\text{Ca}(\text{Co},\text{Fe},\text{Ni})_2(\text{AsO}_4)_2(\text{OH},\text{H}_2\text{O})_2$, a new mineral from Schneeberg, Germany. *Neues Jahrb. Mineral. Mon.*, 505–517.

Electron microprobe analysis of the mineral from the type locality gave a mean and range (16 analyses) of CaO 12.18 (11.94–12.43), NiO 5.76 (4.04–7.28), CoO 15.70 (14.24–16.50), Fe₂O₃ 11.53 (10.21–12.25), As₂O₅ 49.36 (45.52–51.02), H₂O (calc.) 6.39, sum 100.92 wt%, corresponding to $\text{Ca}_{1.01}(\text{Co}_{0.97}\text{Fe}_{0.67}\text{Ni}_{0.36})_{\Sigma 2.00}(\text{AsO}_4)_{2.00}[(\text{OH})_{0.69}(\text{H}_2\text{O})_{1.31}]_{\Sigma 2.00}$. Solid solution among Co, Fe³⁺, and Ni is common, and some samples have Fe/Ni = <1. Occurs as brown crusts, and as crystal aggregates up to 1 mm in which individuals are rarely up to 0.1 mm. Crystals are tabular on {101}, elongate parallel to [010], and show a lance-like termination at an angle of ~80°. Translucent, vitreous luster, light brown streak, no cleavage, $H = 4\frac{1}{2}$, slowly soluble in warm dilute HCl, nonfluorescent, $D_{\text{calc}} = 4.13 \text{ g/cm}^3$ for $Z = 2$. Optically biaxial positive, $\alpha = 1.78$ (calc.), $\beta = 1.79(1)$, $\gamma = 1.85(2)$, $2V_{\text{meas}} = 48(5)^\circ$, distinct $r > v$ dispersion, γ parallels [010], $X \wedge c = 10^\circ$ (in the obtuse of β), strongly pleochroic, $X = \text{yellow}$, $Y = \text{brown}$, $Z = \text{pale yellow}$. Single-crystal X-ray structure study ($R = 0.016$) indicated monoclinic symmetry, space group $C2/m$, $a = 9.024(1)$, $b = 6.230(1)$, $c = 7.421(1)$, $\beta = 115.15(1)^\circ$ as refined from a diffractometer pattern ($\text{CuK}\alpha$ radiation) with strongest lines of 4.955(66,110), 3.398(54,202), 3.188(85,112), 3.115(51,020), 2.972(82,201), 2.828(88,021), and 2.545(100,221).

At the type locality, Schneeberg, Saxony, the mineral occurs in dump material as fan-shaped aggregates and crusts on quartz in association with alumopharmacosiderite, bariumpharmacosiderite, arseniosiderite, zeunerite, olivenite, rooseveltite, and other minerals. Other occurrences are in dump material from the Rappold and Pucher mines, both near Schneeberg. Rather than cobaltolotharmeyerite, the predominant mineral at the Pucher mine is the unnamed Ni-dominant analog. The new name cobaltolotharmeyerite was chosen to indicate that the mineral is the Co analog of lotharmeyerite and ferrilotharmeyerite. Type material is at the Bergakademie Freiberg, in Saxony, Germany. **J.L.J.**

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

Coparsite*

L.P. Vergasova, G.L. Starova, S.V. Krivovichev, S.K. Filatov, V.E. Ananiev (1999) Coparsite, $\text{Cu}_4\text{O}_2[(\text{As},\text{V})\text{O}_4]\text{Cl}$, a new mineral species from the Tolbachik volcano, Kamchatka Peninsula, Russia. *Can. Mineral.*, 37, 911–914.

The mineral occurs as tabular crystals, to $0.1 \times 0.2 \times 0.4$ mm, included within euchlorine. Electron microprobe analysis gave CuO 69.03, Fe_2O_3 0.17, As_2O_5 15.50, V_2O_5 7.72, SO_3 0.57, Cl 8.47, $\text{O} \equiv \text{Cl}$ 1.91, sum 99.55 wt%, corresponding to $\text{Cu}_{3.89}\text{Fe}_{0.01}\text{O}_{1.93}[(\text{As}_{0.60}\text{V}_{0.38}\text{S}_{0.03})\text{O}_4]\text{Cl}_{1.07}$. Crystals are tabular plates on (100), elongate [010], with well-developed {100}, {110}, and {101}. Black or dark gray color, metallic luster, brown streak, very brittle, H undeterminable, perfect {100} cleavage, nonfluorescent, stable at room temperature, $D_{\text{calc}} = 4.76(1)$ g/cm³ for $Z = 4$. Single-crystal X-ray structure study (see *Am. Mineral.*, 84, p. 1685, 1999) indicated orthorhombic symmetry, space group *Pbcm*, $a = 5.440(1)$, $b = 11.154(2)$, $c = 10.333(2)$ Å. Strongest lines of the powder pattern (57 mm Debye-Scherrer, $\text{CoK}\alpha$ radiation) are 4.69(40,110), 3.03(60,310), 2.62(100,312), and 2.39(40,022,221).

The mineral is associated with euchlorine, tolbachite, kamchatkite, klyuchevskite–alumoklyuchevskite, and pomarevite in fumarolic deposits at the Tolbachik Great fissure eruption, Kamchatka Peninsula, Russia. The new mineral name alludes to the composition *copper, arsenic*. Type material is in the Mining Museum of the Saint Petersburg Mining Institute, Russia. **J.L.J.**

Itoigawaite*

H. Miyajima, S. Matsubara, R. Miyawaki, K. Ito (1999) Itoigawaite, a new mineral, the Sr analogue of lawsonite, in jadeitite from the Itoigawa-Ohmi district, central Japan. *Mineral. Mag.*, 63, 909–916.

The average of seven listed electron microprobe analyses is SiO_2 32.98, TiO_2 0.25, Al_2O_3 27.67, FeO 0.10, MgO 0.11, CaO 0.46, SrO 27.71, H_2O (by difference) 10.72, sum 100 wt%, corresponding to $(\text{Sr}_{0.97}\text{Ca}_{0.03}\text{Mg}_{0.02})_{\Sigma 1.02}(\text{Al}_{1.97}\text{Ti}_{0.04}\text{Fe}_{0.02})_{\Sigma 2.03}\text{Si}_{1.99}\text{H}_{3.89}\text{O}_{10}$, ideally $\text{SrAl}_2\text{Si}_2\text{O}_7(\text{OH})_2 \cdot \text{H}_2\text{O}$. The mineral occurs as irregular aggregates of blue, tabular crystals, each up to ~50 μm across; these form the central part of a veinlet, <0.8 mm wide, within which the margins are jadeite. Vitreous luster, transparent, good cleavage in one direction, white streak, $H = 5\text{--}5\frac{1}{2}$, $D_{\text{calc}} = 3.37$ g/cm³ for $Z = 4$, nonfluorescent in short-wave UV light. Colorless in transmitted light, biaxial positive, $\alpha = 1.664(2)$, $\beta = 1.674(2)$, $\gamma = 1.688(2)$, $2V_{\text{calc}} = 81^\circ$. The X-ray powder pattern is like those of lawsonite and hennomartinite; indexing gave $a = 6.031(2)$, $b = 8.945(2)$, $c = 13.219(4)$ Å, and by analogy, space group *Cmcm*. Strongest lines of the powder pattern (114 mm Gandolfi, $\text{CuK}\alpha$ radiation) are 4.26(vs,021), 3.31(vs,113), 2.75(vs,114,202), and 2.68(vvs,130).

The mineral is associated with jadeite and interstitial natrolite that occur within jadeitite boulders and pebbles on the seashore of Oyashirazu, near Itoigawa Station, Itoigawa–Ohmi district, Niigata Prefecture, central Japan. The jadeitite is considered to be of local derivation, and the new mineral name

refers to the locality. Type material is in the National Science Museum, Tokyo, and at the Fossa Magna Museum, Itoigawa, Niigata, Japan. **J.L.J.**

Khomyakovite*, manganokhomyakovite*

O. Johnsen, R.A. Gault, J.D. Grice, T.S. Ercit (1999) Khomyakovite and manganokhomyakovite, two new members of the eudialyte group from Mont Saint-Hilaire, Quebec, Canada. *Can. Mineral.*, 37, 893–899.

The minerals occur as orange to orange-red, pseudo-octahedral crystals in miarolitic cavities in nepheline syenite at the Poudrette quarry, Mont Saint-Hilaire. Vitreous luster, transparent to translucent, brittle, white streak, no cleavage or parting, uneven fracture, $H = 5\text{--}6$, nonfluorescent.

Khomyakovite

Only two crystals, <0.5 mm in diameter, have been found. Electron microprobe analysis gave Na_2O 11.35, K_2O 0.52, MgO 0.04, CaO 10.42, MnO 1.63, FeO 4.33, SrO 8.45, Al_2O_3 0.09, La_2O_3 0.21, Ce_2O_3 0.18, SiO_2 43.70, TiO_2 0.11, ZrO_2 10.62, HfO_2 0.18, Nb_2O_5 1.33, Ta_2O_5 0.02, WO_3 3.80, Cl 0.67, H_2O (calc.) 0.87, $\text{O} \equiv \text{Cl}$ 0.15, sum 98.37 wt%, corresponding to $(\text{Na}_{12.26}\text{K}_{0.38}\text{Ca}_{0.33}\text{Sr}_{0.13}\text{REE}_{0.08})_{\Sigma 13.05}(\text{Sr}_{2.78}\text{Na}_{0.22})_{\Sigma 3.00}\text{Ca}_6(\text{Fe}_{2.05}\text{Mn}_{0.78}\text{Mg}_{0.03})_{\Sigma 2.86}(\text{Zr}_{2.94}\text{Ti}_{0.05}\text{Hf}_{0.03})_{\Sigma 3.02}(\text{W}_{0.56}\text{Nb}_{0.34})_{\Sigma 0.90}(\text{Si}_{24.78}\text{Al}_{0.06})_{\Sigma 24.84}\text{O}_{73}(\text{O},\text{OH},\text{H}_2\text{O})_{3.70}(\text{OH}_{1.36}\text{Cl}_{0.64})_{\Sigma 2.00}$ for 78.70 anions, ideally $\text{Na}_{12}\text{Sr}_3\text{Ca}_6\text{Fe}_2\text{Zr}_3\text{W}(\text{Si}_{25}\text{O}_{73})(\text{O},\text{OH},\text{H}_2\text{O})_3(\text{OH})_2$. $D_{\text{calc}} = 3.14$ g/cm³ for $Z = 3$. Optically uniaxial negative, $\omega = 1.6279(5)$, $\epsilon = 1.6254(5)$; moderately pleochroic, $O = \text{yellow-orange}$, $E = \text{pale yellow}$. Single-crystal X-ray structure study ($R = 0.049$) indicated trigonal symmetry, space group *R3m*, $\alpha = 14.2959(8)$, $c = 30.084(3)$ Å. The powder pattern is like that of manganokhomyakovite. Associated minerals are analcime, annite, calcite, natrolite, pyrite, and titanite. The new name is for mineralogist Alexander P. Khomyakov (b. 1933), who has contributed extensively to studies of alkaline rocks.

Manganokhomyakovite

Crystals are up to 5 mm and show {0001}, {1120}, {0221}, {1011}, and {0112}. $D_{\text{meas}} = 3.13(3)$, $D_{\text{calc}} = 3.17$ g/cm³ for $Z = 3$. Uniaxial negative, $\omega = 1.629(1)$, $\epsilon = 1.626(2)$, moderately pleochroic, $O = \text{orange-yellow}$, $E = \text{yellow}$. Electron microprobe analysis gave Na_2O 10.37, K_2O 0.41, CaO 10.20, MnO 4.21, FeO 2.58, SrO 9.17, Al_2O_3 0.02, La_2O_3 0.12, Ce_2O_3 0.20, SiO_2 42.98, TiO_2 0.02, ZrO_2 10.43, HfO_2 0.17, Nb_2O_5 1.58, Ta_2O_5 0.03, WO_3 4.48, Cl 0.84, H_2O (calc.) 0.83, $\text{O} \equiv \text{Cl}$ 0.19, sum 98.45 wt%, corresponding to $(\text{Na}_{11.51}\text{K}_{0.30}\text{Ca}_{0.25}\text{Sr}_{0.04}\text{REE}_{0.07})_{\Sigma 12.17}\text{Sr}_3\text{Ca}_6(\text{Mn}_{2.04}\text{Fe}_{1.23})_{\Sigma 3.27}(\text{Zr}_{2.91}\text{Hf}_{0.03}\text{Ti}_{0.01})_{\Sigma 2.95}(\text{W}_{0.66}\text{Nb}_{0.41}\text{Ta}_{0.01})_{\Sigma 1.08}(\text{Si}_{24.60}\text{Al}_{0.01})_{\Sigma 24.61}\text{O}_{73}(\text{O},\text{OH},\text{H}_2\text{O})_{3.70}(\text{OH}_{1.91}\text{Cl}_{0.81})_{\Sigma 2.00}$ for 78.70 anions, ideally $\text{Na}_{12}\text{Sr}_3\text{Ca}_6\text{Mn}_3\text{Zr}_3\text{W}(\text{Si}_{25}\text{O}_{73})(\text{O},\text{OH},\text{H}_2\text{O})_3(\text{OH})_2$. Strongest lines of the X-ray powder pattern (114 mm Debye-Scherrer, $\text{CuK}\alpha$ radiation, 52 lines listed) are 11.50(90,101), 9.530(70,012), 2.980(100,315), and 2.856 Å (80,404); by analogy with khomyakovite, trigonal symmetry, space group *R3m*, $a = 14.282(3)$, $c = 30.12(1)$. Associated minerals are aegirine, albite, analcime, annite, cerussite, galena,

kupletskite, microcline, natrolite, and several others. The new mineral name alludes to the Mn-analog relationship to khomyakovite. Type specimens of khomyakovite and manganokhomyakovite are in the Canadian Museum of Nature, Ottawa. **J.L.J.**

Laforêtite*

N. Meisser, P. Thelin, P.-J. Chiappero, C. Maurel (1999) Laforêtite, AgInS_2 , a new mineral of the chalcopyrite group from the Montros mine, Haute-Loire, France. *Eur. J. Mineral.*, 11, 891–897.

The mineral occurs as anhedral inclusions, $<30 \mu\text{m}$, in galena. The mean of eight listed electron microprobe analyses for two grains is Ag 37.68, Cu 0.04, In 40.22, Fe 0.02, S 22.42, Se 0.01, sum 100.39 wt%, corresponding to $\text{Ag}_{0.99}\text{In}_{1.00}\text{S}_{2.00}$. The synthetic analog is megascopically brown, metallic luster, chocolate-brown streak, $VHN_{100} = 183$ (176–193), no cleavage, $D_{\text{calc}} = 4.93(1) \text{ g/cm}^3$ for $Z = 4$. In reflected light in oil, the mineral is brownish gray, weakly pleochroic from brown to brown-gray, strongly anisotropic, polarization colors brick-red with an orange tint to bluish-gray purplish, abundant strawberry-red internal reflections, typically polysynthetically twinned. Mean reflectance percentages are given in 20 nm steps from 400 to 800 nm; representative values are 26 (480 nm), 24.6 (540), 24.2 (580), and 24.6 (640). X-ray microdiffractometry of an in-situ grain, $20 \times 30 \mu\text{m}$, gave 11 diffraction lines, and these agree with data for synthetic tetragonal AgInS_2 ; refinement of the powder pattern gave $a = 5.880(2)$, $c = 11.21(1) \text{ \AA}$, possible space group $I\bar{4}2d$. The synthetic analog has strongest lines of 3.351(100,112), 2.942(80,200), 2.082(75,220), 2.030(75,204), and 1.768(80,312).

The mineral, which is the Ag analog of roquesite, occurs in a hand-size specimen of galena collected from vein material in the dumps of the former Montgros Pb-Zn mine near Langeac, Haute-Loire, France; also reported to occur with hocartite and pyrrargyrite at the Toyoha mine, Hokkaido, Japan (*Am. Mineral.*, 80, p. 406, 1995). The new name is for Claude P. Laforêt (b. 1936), metallographer at BRGM, France. Type material is in the Geological Museum of Lausanne, Switzerland, and in the Museum National d'Histoire Naturelle in Paris, France. **J.L.J.**

Nabiasite*

J. Brugger, M. Bonin, K.J. Schenk, N. Meisser, P. Berlepsch, A. Ragu (1999) Description and crystal structure of nabiasite, $\text{BaMn}_9[(\text{V,As})\text{O}_4]_6(\text{OH})_2$, a new mineral from the Central Pyrénées (France). *Eur. J. Mineral.*, 11, 879–890.

The mineral occurs as dark red, anhedral grains, up to $100 \mu\text{m}$ in diameter. Electron microprobe analyses gave SrO 0.07, As_2O_5 6.03, V_2O_5 35.91, BaO 11.83, MnO 47.92, H_2O (calc.) 1.36, sum 103.12 wt%, corresponding to $\text{Ba}_{1.05}(\text{Mn}_{9.02}\text{Sr}_{0.01}\text{V}_{5.27}\text{As}_{0.70})_{\Sigma 9.97}\text{O}_{24}(\text{OH})_2$. Transparent, vit-

reous luster, conchoidal fracture, no cleavage, dark yellow streak (almost orange), $VHN_{25} = 465$ (363–536), $D_{\text{calc}} = 4.31$ – 4.33 g/cm^3 for the ideal formula with $V/(\text{As} + \text{V}) = 0.853$ – 0.899 and $Z = 4$. Optically isotropic to slightly anisotropic, $n = >2.0$. Single-crystal X-ray structure study ($R = 0.0263$) indicated cubic symmetry, space group $Pa\bar{3}$, $a = 12.832(2) \text{ \AA}$. Strongest lines of the powder pattern (114 mm Gandolfi, $\text{FeK}\alpha$ radiation, calculated intensities) are 3.01(87,411), 2.790(100,241), 2.608(100,422), 2.332(44,521), and 2.134(53,600).

The mineral occurs in veinlets, $<2 \text{ mm}$ wide in the holotype specimen, that variably also contain rhodochrosite, friedelite, welinite, barite, and other minerals. The veinlets cut Mn ores at the historic Pla de Labasse deposit near the hamlet of Nabias (hence the new mineral name). Formation of the veinlets is attributed to hydrothermal remobilization that accompanied intrusion of Hercynian granite. Type nabiasite is in the Musée Cantonal de Géologie at Lausanne, Switzerland. **J.L.J.**

Nickelphosphide*

S.N. Britvin, V.D. Kolomensky, M.M. Boldyreva, A.N. Bogdanova, Yu.L. Kretzer, O.N. Boldyreva, N.S. Rudashevsky (1999) Nickelphosphide $(\text{Ni,Fe})_3\text{P}$, the nickel analog of schreibersite. *Zapiski Vseross. Mineral. Obshch.*, 128(3), 64–72 (in Russian, English abs.).

The mineral is present in numerous iron meteorites: Butler (holotype specimen), Cañon Diablo, Carlton, Edmonton (Kentucky), Kenton County, Lenarto, Monahans, Oktibbeha County; also in the Efremovka carbonaceous chondrite, and in an unnamed ataxite (Aldran River, 1997). In the Butler meteorite, the mineral occurs as idiomorphous isometric grains, to $30 \mu\text{m}$, in kamacite lamellae (type 1), and as xenomorphous elongate inclusions, up to $200 \mu\text{m}$ long, in the larger kamacite spindles (type 2). Electron microprobe analyses of seven type 1 and seven type 2 grains gave means of Fe 33.4, 35.3, Ni 52.9, 49.6, Co 0.0, 0.2, P 14.6, 15.3, sum 100.9, 100.6 wt%, corresponding to $(\text{Ni}_{1.83}\text{Fe}_{1.21})_{\Sigma 3.04}\text{P}_{0.96}$ and $(\text{Ni}_{1.71}\text{Fe}_{1.28}\text{Co}_{0.01})_{\Sigma 3.00}\text{P}_{1.00}$. Opaque, no cleavage, brittle, no internal reflection, $VHN_{25} = 874$ (841–905), $D_{\text{calc}} = 7.61 \text{ g/cm}^3$ for $Z = 8$. In reflected light, white with a pink-yellow tint; no anisotropy observed in air, but weakly anisotropic in yellowish-pinkish colors in oil ($n = 1.515$), no birefractance. Reflectance percentages (Si standard, air) are given in 20 nm steps from 440 to 700 nm; representative R_{max} and R_{min} values are 44.6, 43.0 (480), 48.3, 46.8 (560), 49.1, 47.6 (580), and 52.5, 51.3 (660). Indexing of the X-ray powder pattern, by analogy with those of synthetic Fe_3P and Ni_3P , conforms to tetragonal symmetry, space group $I\bar{4}$, $a = 8.99(1)$, $c = 4.396(7) \text{ \AA}$. Strongest lines of the X-ray powder pattern (114 mm Debye-Scherrer, Fe radiation) are 2.48(20,031), 2.17(100,321), 2.13(50,330), 2.08(50,112), 2.01(20,420), and 1.995(70,411).

The mineral is associated with kamacite, taenite, carlsbergite, schreibersite, and barringerite. The new name alludes to the composition. Type material is in the Mining Museum of the Saint Petersburg Mining Institute, Russia. **V.A.K.**

Palladodymite*

S.N. Britvin, N.S. Rudashevsky, A.N. Bogdanova, D.K. Shcherbachov (1999) Palladodymite (Pd,Rh)₂As, a new mineral from a placer of the Miass River, Urals. *Zapiski Vseross. Mineral. Obshch.*, 128(2), 39–42 (in Russian, English abs.).

The mineral occurs as inclusions, up to 30 × 70 μm, in native ruthenium. Electron microprobe analysis (average and range of four) gave Ru 2.4 (2.1–2.8), Rh 27.6 (26.7–28.9), Pd 33.5 (32.3–34.4), Ir 1.7 (1.3–2.0), Os 1.0 (0.7–1.3), Pt 4.4 (3.7–5.1), Ni 3.0 (2.8–3.1), As 26.5 (26.1–27.0), sum 100.1 wt%, corresponding to (Pd_{0.90}Rh_{0.77}Ni_{0.15}Ru_{0.07}Pt_{0.06}Ir_{0.03}Os_{0.02})Σ_{2.00}As_{1.01}, simplified as (Pd,Rh)₂As. Opaque, no cleavage or parting, brittle, $VHN_{20} = 566$ (546–611), $D_{\text{calc}} = 11.3$ g/cm³ for $Z = 4$. In reflected light, brownish gray with a bluish tint, distinctly anisotropic from bluish gray to reddish brown. Reflectance percentages (Si standard, air) are given in 20 nm steps from 440 to 700 nm; representative R_{max} and R_{min} values are 51.6, 45.8 (480), 54.8, 46.9 (560), 56.2, 48.0 (580), and 59.1, 50.2 (660). The X-ray powder pattern is similar to that of the synthetic analog, which is orthorhombic, space group $Pnma$; $a = 5.91(2)$, $b = 3.90(1)$, $c = 7.34(2)$ Å as determined from an X-ray powder pattern (114 mm Debye-Scherrer, Fe radiation) with strongest lines of 2.43(100,112), 2.24(50,211), 2.06(10,013), and 1.838(30,004).

The mineral is associated with ruthenium, isoferroplatinum, cherepanovite, irarsite, hongshiite, sperrylite, tulameenite, and unnamed IrAsTe in a small, unnamed placer deposit in the upper Miass River, southern Urals, Russia. The new name alludes to the chemical composition and relationship to the Rh analog, rhodarsenide (*palladium* and *dymos*, the latter the Greek for twin). Palladodymite is isostructural with rhodarsenide and is polymorphous with palladoarsenide and palladobismutharsenide. Type material is in the Mining Museum of the Saint Petersburg Mining Institute, Russia. **V.A.K.**

REESi, (Al,Fe)Si, FeSi₂

V.M. Kachalovskaja, T.N. Chvileva, B.S. Osipov, T.L. Evstigneeva, I.V. Kononov, N.G. Nazarenko (1999) REE-bearing silicides from the Fazenda-Brazileiro gold ore deposit, Brazil. *Zapiski Vseross. Mineral. Obshch.*, 128(2), 80–88 (in Russian).

REESi and REE-bearing (Al,Fe)Si and FeSi₂ are present with silicon in processed samples of gold ore from the Fazenda-Brazileiro gold deposit.

REESi

The mean of three electron microprobe analyses listed is La 24.26, Ce 36.92, Pr 4.73, Nd 8.92, Gd 3.25, Si 16.75, Fe 0.44, Al 1.12, Ca 3.61, sum 100.00 wt%, corresponding to La_{0.18}Ce_{0.26}Pr_{0.03}Nd_{0.06}Gd_{0.02}Ca_{0.09}Si_{0.60}Fe_{0.01}Al_{0.04} or (REE_{0.85}Ca_{0.14})Σ_{0.99}(Si_{0.92}Al_{0.06}Fe_{0.02})Σ_{1.00}, ideally REESi. The mineral occurs as round, droplike, dendritic, and xenomorphic grains, up to 50 μm, in aggregates of FeSi₂, (Al,Fe)Si, and silicon. Opaque, no cleavage, brittle, no internal reflection, $VHN_{50} = 618$ (511–645). White color with a weak cream-colored tint

in reflected light, visible anisotropism in faded colors, weakly bireflectant. Reflectance percentages (Si standard, in air) are given in 20 nm steps from 400 to 700 nm; representative R_g , and R_p , values are 52.1, 46.7 (480), 54.1, 49.4 (560), 54.5, 50.0 (580), and 56.8, 52.3 (660). Other physical properties are not described. Indexing of the X-ray powder pattern, by analogy with that synthetic of LaSi₂, gave orthorhombic symmetry, space group $Imma$, $a = 4.272$, $b = 4.118$, $c = 14.02$ Å, $Z = 4$. Strongest lines of the powder pattern (57 mm camera, Fe radiation) are 3.49(30,004), 3.13(20,103), 2.76(100,112), 2.32(50,105,006), 2.13(30,200), 2.10(50,020), 1.908(30,211), 1.867(30,121), 1.841(50,116), 1.813(40,204,107), and 1.296(20,132).

(Al,Fe)Si

The mean of three electron microprobe analyses listed is La 3.68, Ce 7.90, Pr 1.03, Nd 2.65, Gd 0.63, Si 32.63, Fe 32.34, Al 17.29, Ca 1.85, sum 100.00 wt%, corresponding to La_{0.03}Ce_{0.06}Pr_{0.01}Nd_{0.02}Gd_{0.02}Ca_{0.09}Si_{1.16}Fe_{0.58}Al_{0.64} or (Al_{0.55}Fe_{0.50})Σ_{1.05}Si_{1.00}REE_{0.10}Ca_{0.04}, ideally (Al,Fe)Si. The mineral occurs as xenomorphic grains, up to 20 μm, in aggregates of FeSi₂, REESi, and silicon. Opaque, $VHN_{50} = 824$ (753–893). White in reflected light, isotropic. Reflectance percentages (Si standard, in air) are given in 20 nm steps from 400 to 700 nm; representative R values are 46.7 (480), 48.9 (560), 49.0 (580), and 49.3 (660). Other physical properties are not described.

FeSi₂

The mean of two electron microprobe analyses listed is La 0.46, Ce 1.12, Pr 0.14, Nd 0.25, Gd 0.07, Si 50.97, Fe 44.98, Al 2.06, Ca 0.01, sum 100.00 wt%, corresponding to REE_{0.01}Si_{1.81}Fe_{0.81}Al_{0.08} or (Fe_{0.90}Al_{0.09})Σ_{0.99}Si_{2.00}, ideally FeSi₂. The mineral occurs as dendritic and xenomorphic grains in aggregates of REESi, (Al,Fe)Si, and silicon. Opaque, no cleavage, $VHN_{50} = 872$ (845–893). Pink to light gray color in reflected light, distinctly anisotropic, weakly bireflectant. Reflectance percentages (Si standard, in air) are given in 20 nm steps from 400 to 700 nm; representative R_g and R_p values are 42.5, 44.5 (480), 43.1, 43.4 (560), 43.4, 43.1 (580), and 45.3, 42.0 (660). Other physical properties are not described.

Discussion. In the opinion of the authors, the natural origin of these phases remains questionable. For other reports of the natural occurrence of silicides, see *Am. Mineral.*, 76, p. 301 (1991); 77, p. 1118 (1992); “ferdisilicite” FeSi₂, 79, p. 188 (1994). **V.A.K.**

CaSiO₃, CaSi₂O₅

W. Joswig, T. Stachel, J.W. Harris, W.H. Baur, G.P. Brey (1999) new Ca-silicate inclusions in diamonds—tracers from the lower mantle. *Earth Planet. Sci. Lett.*, 173, 1–6.

Inclusions in diamonds from the Kankan district in Guinea, western Africa, consist of larnite, orthopyroxene, coesite, pyrrhotite, olivine, periclase, CaSi₂O₅, and CaSiO₃. Two electron microprobe analyses of each of the unnamed minerals are listed. In-situ single-crystal X-ray study of three inclusions of CaSi₂O₅ showed it to be monoclinic, space group $C2c$, $a = 6.31$ – 6.32 , b

= 8.37–8.38, $c = 6.50$ – 6.52 Å, $\beta = 112.78$ – 112.88° , isostructural with titanite. Results for a single inclusion of the CaSiO_3 mineral showed it to be triclinic, space group $P\bar{1}$, $a = 6.5894$, $b = 9.2089$, $c = 6.5485$ Å, $\alpha = 83.76$, $\beta = 77.30$, $\gamma = 70.06^\circ$, isostructural with walstromite. **J.L.J.**

New data

Kettnerite

J.D. Grice, M.A. Cooper, F.C. Hawthorne (1999) Crystal-structure determination of twinned kettnerite. *Can. Mineral.*, 37, 923–927.

Single-crystal X-ray structure study ($R = 0.016$) of kettnerite, $\text{CaBi}(\text{CO}_3)\text{OF}$, gave a new orthorhombic cell with $a = 3.7976(5)$, $b = 3.7976(5)$, $c = 13.569(4)$ Å, space group $Pmmn$, $Z = 2$. The mineral has previously undetected merohedral twinning.

Discussion. $D_{\text{calc}} = 5.837$ g/cm³ for the ideal formula, in good agreement with $D_{\text{meas}} = 5.80$ g/cm³. **J.L.J.**

Labuntsovite group

N.V. Chukanov, I.V. Pekov, R.K. Rastsvetaeva, A.N. Nekrasov (1999): Labuntsovite: solid solutions and features of the crystal structure. *Can. Mineral.*, 37, 901–910.

Numerous single-crystal X-ray structure studies of the labuntsovite group, which is monoclinic whereas the

nenadkevichite group is orthorhombic, have established the formula to be $\text{A}_1\text{A}_2\text{A}_3\text{A}_{3-2x}[\text{M}_2(\text{H}_2\text{O})_{2x}][\text{M}_1\text{O}_8(\text{O},\text{OH})_8][\text{Si}_4\text{O}_{12}]_4 \cdot n\text{H}_2\text{O}$, where $0 < x < 2$, $n \approx 8$, and $\text{A}_1 = \text{Na}, \text{Ca}, \square$; $\text{A}_2 = \text{K}, \text{Na}, \text{H}_3\text{O}, \square$; $\text{A}_3 = \text{K}, \text{Ba}, \text{Sr}, \text{H}_3\text{O}, \square$; $\text{M}_1 = \text{Ti}, \text{Nb}$; $\text{M}_2 = \text{Mn}^{2+}, \text{Fe}^{2+}, \text{Mg}, \text{Zn}, \square$. Cation proportions are listed for 44 samples, and it is already evident that unnamed minerals are present within the group.

Discussion. Because of the large number of distinct sites, the potential for the introduction of a substantial number of new mineral names is there; it is to be hoped, however, that some type of simplified nomenclature system which avoids trivial names will be adopted for the group. **J.L.J.**

Discredited Minerals

Coutinite, coutinhite, neodymite

D. Atencio (1999) 'Coutinite', 'coutinhite' and 'neodymite' discredited as identical to lanthanite-(La) and/or lanthanite-(Nd). *Mineral. Mag.*, 63, 761–762.

Coutinite, coutinhite, and neodymite were introduced as mineral names in 1981 without CNMMN approval. Optical, chemical, and X-ray powder data indicate that the minerals are identical to lanthanite-(Nd) and lanthanite-(La). The CNMMN has approved the discreditations. **J.L.J.**