

## NEW MINERAL NAMES\*

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### Belovite-(La)\*

I.V. Pekov, I.M. Kulikova, Yu.K. Kabalov, O.V. Eletskaya, N.V. Chukanov, Yu.P. Menshikov, A.P. Khomyakov (1996) Belovite-(La), Sr<sub>2</sub>Na(La,Ce)[PO<sub>4</sub>]<sub>3</sub>(F,OH) —A new rare earth mineral of the apatite group. Zapiski Vseross. Mineral. Obshch., 125(3), 101–109 (in Russian).

Electron microprobe analyses (two given) gave Na<sub>2</sub>O 4.09, CaO 0.50, SrO 40.09, BaO 2.35, Y<sub>2</sub>O<sub>3</sub> 0.01, La<sub>2</sub>O<sub>3</sub> 13.08, Ce<sub>2</sub>O<sub>3</sub> 8.15, Pr<sub>2</sub>O<sub>3</sub> 0.30, Nd<sub>2</sub>O<sub>3</sub> 0.30, Sm<sub>2</sub>O<sub>3</sub> 0.03, Gd<sub>2</sub>O<sub>3</sub> 0.01, ThO<sub>2</sub> 0.43, SiO<sub>2</sub> 0.24, P<sub>2</sub>O<sub>5</sub> 23.80, SO<sub>3</sub> 0.03, F 2.04, H<sub>2</sub>O (by Penfield method) 0.22, O = F 0.86, sum 99.31 wt%, corresponding to (Sr<sub>2.86</sub>Ba<sub>0.12</sub>Ca<sub>0.06</sub>)<sub>Σ3.04</sub>Na<sub>0.98</sub>(La<sub>0.59</sub>Ce<sub>0.37</sub>Pr<sub>0.01</sub>Nd<sub>0.01</sub>Th<sub>0.01</sub>)<sub>Σ0.99</sub>[(P<sub>2.95</sub>Si<sub>0.03</sub>)<sub>Σ2.98</sub>O<sub>11.97</sub>](F<sub>0.80</sub>OH<sub>0.18</sub>)<sub>Σ0.98</sub>. Occurs as crystals up to 3 cm long, and as irregular grains and aggregates. The crystals are well formed, equant to elongate [001], most commonly with {10 $\bar{1}$ 0} and {0001}, less commonly also with {10 $\bar{1}$ 1}, {10 $\bar{1}$  $\bar{1}$ }, {11 $\bar{2}$ 1}, {11 $\bar{2}$  $\bar{1}$ } and {11 $\bar{2}$ 0}. Greenish yellow to bright yellow color, transparent, vitreous luster,  $VHN_{30} = 450$ ,  $H = \sim 5$ , very brittle, no cleavage, conchoidal fracture,  $D_{\text{meas}} = 4.19$ ,  $D_{\text{calc}} = 4.05 \text{ g/cm}^3$  for  $Z = 2$ . Optically uniaxial negative,  $\omega = 1.653$ ,  $\epsilon = 1.635$ . Rietveld X-ray study ( $R = 0.029$ ) showed the mineral to be isostructural with belovite-(Ce), space group  $P\bar{3}$ ,  $a = 9.647(1)$ ,  $c = 7.170(1) \text{ \AA}$ . Strongest lines on the diffractogram (CuK $\alpha_1$ , 56 lines given) are 3.59(87,002), 3.30(65,102), 2.897(100,211), 2.884(100,112), and 2.790(54,300). The infrared spectrum of the mineral is identical to that of belovite-(Ce).

The mineral occurs in pegmatites of the Khibiny alkaline massif, Kola Peninsula, Russia, in association with natrolite, pectolite, sphalerite, galena, molybdenite, lamprophyllite, gaidonnayite, gerasimovskite, and epistolite; also noted to occur in a natrolite vein in association with analcime, murmanite, and safflorite. The new name alludes to the composition, the La analog of belovite-(Ce). Type material is in the Fersman Mineralogical Museum, Moscow, and in the Museum of the Saint Petersburg Mining Institute. **J.P.**

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

### Chromomphacite

Xiaochun Liu (1996) Chromomphacite in orthopyroxenite from Maowu, Dabie Mountains, and its significance. Chinese Sci. Bull., 41(8), 659–662.

The most Cr-rich of eight electron microprobe analyses (Cr<sub>2</sub>O<sub>3</sub> range 7.72–9.17 wt%) gave SiO<sub>2</sub> 54.82, TiO<sub>2</sub> 0.10, Al<sub>2</sub>O<sub>3</sub> 3.89, Cr<sub>2</sub>O<sub>3</sub> 9.17, Fe<sub>tot</sub> as FeO 2.50, MnO 0.00, MgO 9.45, CaO 13.66, Na<sub>2</sub>O 5.72, K<sub>2</sub>O 0.06, sum 99.37 wt%, corresponding to (Ca<sub>0.536</sub>Na<sub>0.406</sub>K<sub>0.003</sub>)<sub>Σ0.945</sub>(Mg<sub>0.516</sub>Cr<sub>0.265</sub>Al<sub>0.168</sub>Fe<sub>0.077</sub>Ti<sub>0.003</sub>)<sub>Σ1.029</sub>Si<sub>2.006</sub>O<sub>6</sub>. The mineral occurs as 0.05–0.3 mm inclusions in orthopyroxene in a mafic-ultramafic complex in the southeastern Dabie Mountains, China.

**Discussion.** The name chromomphacite is illustrated in a triangular diagram as applying to that portion of the series diopside (CaMgSi<sub>2</sub>O<sub>6</sub>)–kosmochlor (NaCrSi<sub>2</sub>O<sub>6</sub>) extending from Di<sub>75</sub>Ko<sub>25</sub> to Di<sub>25</sub>Ko<sub>75</sub>. The proposal and new name have not been submitted to the CNMMN for a vote. **J.L.J.**

### Clerite\*

V.V. Murzin, A.F. Bushmakin, S.G. Sustavov, D.K. Shcherbachev (1996) Clerite MnSb<sub>2</sub>S<sub>4</sub>—A new mineral from the Vorontsovskoye gold deposit in the Urals. Zapiski Vseross. Mineral. Obshch., 125(3), 95–101 (in Russian).

The average of five electron microprobe analyses gave Mn 13.1, As 4.4, Sb 51.2, S 30.8, sum 99.5 wt%, corresponding to Mn<sub>1.00</sub>(Sb<sub>1.75</sub>As<sub>0.25</sub>)<sub>Σ2.00</sub>S<sub>4.00</sub>. Occurs as irregular, equant grains 0.01–0.2 mm, brittle,  $VHN_{15} = 252$  (224–262). Opaque in reflected light, light grey with pale pink-yellow tint, nonpleochroic, distinct birefractance, strong yellow-brown anisotropy. Reflectance percentages are given in 20 nm steps from 420 to 700 nm; representative values for  $R_{\text{max}}$  and  $R_{\text{min}}$  are 35.2, 24.5 (440), 35.2, 23.9 (480), 36.0, 23.8 (540), 36.7, 24.6 (580), and 36.4, 25.7 (660). The X-ray powder pattern is similar to that of Mn-rich berthierite. By analogy with berthierite and synthetic MnSb<sub>2</sub>S<sub>4</sub>, orthorhombic symmetry,  $a = 11.47(2)$ ,  $b = 14.36(3)$ ,  $c = 3.81(1) \text{ \AA}$ ,  $D_{\text{calc}} = 4.48 \text{ g/cm}^3$  for  $Z = 4$ . Strongest lines of the powder pattern (57 mm Debye-Scherrer, Fe radiation, 33 lines given) are 3.69(90,310), 3.23(70,121), 2.90(80,221), 2.65(100,231), and 1.813(50,122,531).

The mineral occurs typically as intergrowths with realgar in limestones of the Vorontsovskoye gold deposit, northern Urals, Russia. The limestones also contain As-bearing pyrite, cinnabar, orpiment, stibnite, greigite, albandite, sphalerite, tennantite-tetrahedrite, zinkenite, chalcostibite, aktashite, routhierite, and native gold. The name is for Onisim Yegorovitsch Kler (1845–1920), honorary member of the Russian Mineralogical Society. Type material is in the Ural Mineralogical Museum, Ekaterinburg, Russia.

**Discussion.** A mineral of similar composition, but apparently not isostructural with berthierite, was abstracted in *Am. Mineral.*, 75, p. 935, 1990. **J.P.**

#### Fettelite\*

N. Wang, A. Paniagua (1996) Fettelite, a new Hg-sulfosalt mineral from Odenwald. *Neues Jahrb. Mineral. Mon.*, 313–320.

Electron microprobe analyses of five crystals gave As 9.80, Cu 0.07, S 16.79, Fe 0.04, Ag 67.55, Tl 0.13, Sb 0.23, Hg 5.21, Pb 0.07, sum 99.88 wt%, corresponding to  $\text{Ag}_{24}\text{Hg}_{1.0}\text{Cu}_{0.04}\text{Fe}_{0.03}\text{Tl}_{0.02}\text{Pb}_{0.01}\text{Sb}_{0.07}\text{As}_{5.01}\text{S}_{20.07}$ , ideally  $\text{Ag}_{24}\text{HgAs}_5\text{S}_{20}$ . Occurs as clusters consisting of hexagonal flakes up to  $10 \times 200 \mu\text{m}$ , and as compact, subparallel aggregates of hexagonal tablets up to  $50 \mu\text{m}$  thick. Dark violet to scarlet color, dark vermilion streak, submetallic to adamantine luster, brittle, irregular fracture, perfect {0001} cleavage,  $VHN_{20} = 158$  (138–174),  $D_{\text{calc}} = 6.29 \text{ g/cm}^3$  for  $Z = 3$ . Gray with a slight greenish tint in reflected light; bireflectance barely perceptible in air, strong red internal reflection, weak anisotropism. Reflectance percentages (SiC standard) are given in 20 nm steps from 420 to 700 nm;  $R_{\text{max}}$  and  $R_{\text{min}}$  in air and in oil, respectively, are 31.0, 30.3, 14.2, 13.8 (470), 29.2, 27.6, 13.1, 12.0 (546), 27.6, 26.0, 11.7, 10.8 (589), and 24.8, 23.9, 10.3, 9.6 (650). Single-crystal X-ray study indicated trigonal symmetry (diffraction symmetry  $\bar{3}m$ ), with hexagonal cell dimensions  $a = 15.00$ ,  $c = 15.46 \text{ \AA}$ . Strongest lines of the powder pattern (57 mm Debye-Scherrer,  $\text{CuK}\alpha$ ) are 3.175(60,401), 3.091(100,005), 2.998(40,402), 2.755(30,043), and 1.878(80,440).

The mineral occurs within calcite-quartz-prehnite veins containing native silver, cinnabar, and silver sulfosalts at the Nieder-Beerbach mine near Darmstadt, Odenwald, southwestern Germany. The new name is for M. Fettel, who has contributed to the geology of the Odenwald, and who first collected the mineral. Type material is in the Institute of Mineralogy, University of Heidelberg, Germany. **J.L.J.**

#### Intersilite\*

A.P. Khomyakov, A. Roberts, G.N. Nechelyustov, N.A. Yamnova, D.Yu. Pushcharovsky (1996) Intersilite  $\text{Na}_6\text{MnTi}[\text{Si}_{10}\text{O}_{24}(\text{OH})](\text{OH})_3 \cdot 4\text{H}_2\text{O}$ —A new mineral with a new type of band-layered silicon-oxygen radi-

cal. *Zapiski Vseross. Mineral. Obshch.*, 125(4), 79–85 (in Russian, English abs.).

The mean and ranges of seven electron microprobe analyses ( $\text{H}_2\text{O}$  by weight loss) gave  $\text{Na}_2\text{O}$  16.91 (16.4–17.4),  $\text{K}_2\text{O}$  1.85 (1.8–1.9),  $\text{MnO}$  6.23 (5.9–6.4),  $\text{FeO}$  0.30 (0.3–0.3),  $\text{CaO}$  0.10 (0.1–0.1),  $\text{TiO}_2$  5.59 (5.2–6.0),  $\text{Nb}_2\text{O}_5$  3.02 (2.5–3.4),  $\text{SiO}_2$  56.10 (55.5–56.7),  $\text{H}_2\text{O}$  10.40, sum 100.50 wt%, corresponding to  $(\text{Na}_{5.84}\text{K}_{0.42})_{\Sigma 6.26}(\text{Mn}_{0.94}\text{Fe}_{0.04}\text{Ca}_{0.02})_{\Sigma 1.00}(\text{Ti}_{0.75}\text{Nb}_{0.24})_{\Sigma 0.99}\text{Si}_{10}(\text{OH})_{3.5} \cdot 4.5\text{H}_2\text{O}$ . Occurs as anhedral grains to 2 mm, and as aggregates to 3 mm; bright yellow color, rarely pinkish yellow or pink, brittle, transparent to translucent, vitreous to greasy luster, white streak,  $H = 3–4$ , perfect {100} cleavage, stepped fracture,  $D_{\text{meas}} = 2.42$ ,  $D_{\text{calc}} = 2.42 \text{ g/cm}^3$  for the empirical formula and  $Z = 4$ , readily soluble in 10% HCl or  $\text{HNO}_3$ . The infrared spectrum has numerous absorption bands, including those of moderate intensity at 360 and  $1658 \text{ cm}^{-1}$ , and strong bands at 900 and  $445 \text{ cm}^{-1}$ . Optically biaxial negative,  $\alpha = 1.536(2)$ ,  $\beta = 1.545(2)$ ,  $\gamma = 1.553(2)$ ,  $2V_{\text{meas}} = 87(1)^\circ$ , strong dispersion  $r < v$ , orientation  $b = Z$ ,  $c \perp Y \wedge X = 40^\circ$  in the acute angle  $\beta$ ; pleochroic from pale yellow to yellow:  $Z > Y > X$ . Single-crystal X-ray structure study ( $R = 0.066$ ) indicated monoclinic symmetry, space group  $I2/m$ ,  $a = 13.033(6)$ ,  $b = 18.717(9)$ ,  $c = 12.264(6) \text{ \AA}$ ,  $\beta = 99.62(4)^\circ$ . Strongest lines of the powder pattern (114 mm Debye-Scherrer,  $\text{Co}$  radiation) are 10.56(100,110), 6.38(50,200), 5.55(45,112), 4.78(40,202), 4.253(40,222), 3.196(80,400,321,251), and 2.608(50,262).

The mineral is associated with makatite, villiaumite, aegirine, lomonosovite, serandite, steenstrupine, manganeseptunite, and a zakharovite-like mineral in hyperagpaitic pegmatites of the Lovozero alkaline massif at Mount Al-luaiv, Kola Peninsula, Russia. The new name alludes to the mineral's intermediate position between (= inter in Latin) the banded and layered classes of silicates. Type material is in the Fersman Mineralogical Museum, Moscow.

**Discussion.** Crystal structure aspects of intersilite are reported in *Kristallografia*, 41(2), 257–262, 1996 (unnamed mineral abstracted in *Am. Mineral.*, 81, p. 1516, 1996), and in *Kristallografia*, 41(5), 826–830, 1996. **J.L.J.**

#### Krasnovite\*

S.N. Britvin, Ya.A. Pakhomovskii, A.N. Bogdanova (1996) Krasnovite,  $\text{Ba}(\text{Al,Mg})(\text{PO}_4\text{CO}_3)(\text{OH})_2 \cdot \text{H}_2\text{O}$ —A new mineral. *Zapiski Vseross. Mineral. Obshch.*, 125(3), 110–112 (in Russian).

Electron microprobe analyses (average of three,  $\text{H}_2\text{O}$  by Penfield method,  $\text{CO}_2$  calculated,  $\text{Fe}^{2+}$  proved by  $\text{K}_3\text{Fe}(\text{CN})_6$ ) gave  $\text{K}_2\text{O}$  0.05,  $\text{SrO}$  0.7,  $\text{BaO}$  49.1,  $\text{MgO}$  1.7,  $\text{FeO}$  0.3,  $\text{Al}_2\text{O}_3$  14.3,  $\text{P}_2\text{O}_5$  19.8,  $\text{H}_2\text{O}$  10.5,  $\text{CO}_2$  3.55, sum 100.00 wt%, corresponding to  $(\text{Ba}_{1.00}\text{Sr}_{0.02})_{\Sigma 1.02}(\text{Al}_{0.88}\text{Mg}_{0.13}\text{Fe}_{0.01}^{2+})_{\Sigma 1.02}(\text{PO}_4)_{0.87}(\text{CO}_3)_{0.25}(\text{OH})_{1.85} \cdot 0.90\text{H}_2\text{O}$ , ideally  $\text{Ba}(\text{Al,Mg})(\text{PO}_4\text{CO}_3)(\text{OH})_2 \cdot \text{H}_2\text{O}$ . Forms spherulites, up to

3 mm across, consisting of pale blue fibers elongate [010], silky luster, translucent, white streak,  $H = 2$ , two perfect cleavages parallel to [010],  $D_{\text{meas}} = 3.70(5)$ ,  $D_{\text{calc}} = 3.691 \text{ g/cm}^3$  for  $Z = 4$ . Decomposes with effervescence in warm 10% HCl. Colorless in immersion oil, nonpleochroic, straight extinction (wavy after deformation), biaxial positive,  $\alpha = 1.616(2)$ ,  $\beta = 1.629(2)$ ,  $\gamma = 1.640(2)$  in Na light,  $2V_{\text{meas}} = 70\text{--}90^\circ$ ,  $Y \parallel b$ . Single-crystal X-ray study showed the mineral to be orthorhombic, space group  $Pnna$  or  $Pnmm$ ,  $a = 8.939(2)$ ,  $b = 5.669(3)$ ,  $c = 11.073(3) \text{ \AA}$ . Strongest lines of the powder pattern (47 lines given) are 5.54(79,002), 3.479(82,202), 3.345(59,211), 2.768(100,004), and 2.543(61,213).

The mineral occurs in dolomite carbonatite at the Kovdor massif, Kola Peninsula, Russia, in association with manasseite, "carbonate fluorapatite", crandallite, and barite. The name is for Natalia Ivanovna Krasnova, earth scientist at Saint Petersburg University. Type material is in the museums of the Mineralogy Department of Saint Petersburg University and the Saint Petersburg Mining Institute, Russia. **J.P.**

#### Meurigite\*

W.D. Birch, A. Pring, P.G. Self, R.B. Gibbs, E. Keck, M.C. Jensen, E.E. Foord (1996) Meurigite, a new fibrous iron phosphate resembling kidwellite. *Mineral. Mag.*, 60, 787–793.

Electron microprobe and CHN analyses gave  $\text{Na}_2\text{O}$  0.07,  $\text{K}_2\text{O}$  3.37,  $\text{CuO}$  0.16,  $\text{Fe}_2\text{O}_3$  47.40,  $\text{Al}_2\text{O}_3$  0.70,  $\text{P}_2\text{O}_5$  30.71,  $\text{As}_2\text{O}_5$  0.03,  $\text{CO}_2$  0.73,  $\text{H}_2\text{O}$  16.2, sum 99.37 wt%, corresponding to  $(\text{K}_{0.85}\text{Na}_{0.03})_{\Sigma 0.88}(\text{Fe}_{7.01}^{3+}\text{Al}_{0.16}\text{Cu}_{0.02})_{\Sigma 7.19}(\text{PO}_4)_{5.11}(\text{CO}_3)_{0.20}(\text{OH})_{6.7} \cdot 7.25\text{H}_2\text{O}$ , simplified as  $\text{KFe}_7^{3+}(\text{PO}_4)_5(\text{OH})_7 \cdot 8\text{H}_2\text{O}$ . Occurs as spherical and hemispherical clusters up to 2 mm across, and as drusy coatings. Crystals are elongate [010], tabular on {001}, and up to 80  $\mu\text{m}$  wide and 3  $\mu\text{m}$  thick. Color variable from creamy white, to pale yellow, to yellowish brown; luster vitreous to waxy for spheres, silky for fibers,  $H = \sim 3$ , pale yellow to cream streak, perfect {001} cleavage,  $D_{\text{meas}} = 2.96$ ,  $D_{\text{calc}} = 2.86 \text{ g/cm}^3$  for  $Z = 4$ . Optically biaxial positive,  $\alpha = 1.780(5)$ ,  $\beta = 1.785(5)$ ,  $\gamma = 1.800(5)$ ,  $2V_{\text{calc}} = 60^\circ$ , nonpleochroic. Electron diffraction patterns indicated monoclinic symmetry, space group  $C2$ ,  $Cm$ , or  $C2/m$ ;  $a = 29.52(4)$ ,  $b = 5.249(6)$ ,  $c = 18.26(1) \text{ \AA}$ ,  $\beta = 109.27(7)^\circ$  as refined from a powder pattern (100 mm Guinier-Hagg,  $\text{CrK}\alpha_1$ ) with strongest lines of 9.41(60,201), 4.84(90,111), 4.32(70,112), 4.25(50,311), 3.470(60,800), 3.216(100,404), and 3.116(80,205). A distinguishing feature is the presence of a diffraction line at 13.96(25,200), which is absent in kidwellite and phosphofibrite.

The mineral occurs at the Santa Rita porphyry Copper deposit near Silver City, New Mexico (designated the type locality), at the Gold Quarry Au mine, Nevada, in granite pegmatite veins at Wycheproof, Victoria, Australia, and in the Hagendorf-Sud pegmatite, Bavaria, Germany; probably also at McMahons pegmatite, South Aus-

tralia, and at the Sapucaia pegmatite, Minas Gerais, Brazil. Typical associates are dufrenite, cyrilovite, beaunite, rockbridgeite, and leucophosphite. The new name is for crystal chemist Sir John Meurig Thomas (b. 1932). A repository for type material is not stated. **J.L.J.**

#### Pyatenkoite-(Y)\*

A.P. Khomyakov, G.N. Nechelyustov, R.K. Rastsvetaeva (1996) Pyatenkoite-(Y),  $\text{Na}_5(\text{Y,Dy,Gd})\text{TiSi}_6\text{O}_{18} \cdot 6\text{H}_2\text{O}$ —A new mineral. *Zapiski Vseross. Mineral. Obshch.*, 125(4), 72–79 (in Russian, English abs.).

Electron microprobe analyses (mean of eleven) gave  $\text{Na}_2\text{O}$  17.25 (16.8–18.0),  $\text{K}_2\text{O}$  0.14 (0.1–0.3),  $\text{Y}_2\text{O}_3$  6.64 (6.2–8.3),  $\text{La}_2\text{O}_3$  0.10 (0.0–0.2),  $\text{Ce}_2\text{O}_3$  0.34 (0.2–0.5),  $\text{Nd}_2\text{O}_3$  0.60 (0.4–0.8),  $\text{Sm}_2\text{O}_3$  1.14 (0.5–1.9),  $\text{Eu}_2\text{O}_3$  0.54 (0.3–0.9),  $\text{Gd}_2\text{O}_3$  1.78 (1.2–2.5),  $\text{Tb}_2\text{O}_3$  0.40 (0.3–0.5),  $\text{Dy}_2\text{O}_3$  2.39 (2.2–2.6),  $\text{Ho}_2\text{O}_3$  0.24 (0.2–0.3),  $\text{Er}_2\text{O}_3$  0.94 (0.9–1.1),  $\text{Tm}_2\text{O}_3$  0.08 (0.0–0.1),  $\text{Yb}_2\text{O}_3$  0.14 (0.1–0.2),  $\text{ThO}_2$  0.36 (0.1–0.8),  $\text{SiO}_2$  42.96 (41.9–43.7),  $\text{ZrO}_2$  0.38 (0.1–0.7),  $\text{TiO}_2$  8.16 (7.7–8.6),  $\text{Nb}_2\text{O}_5$  2.68 (2.3–3.1),  $\text{H}_2\text{O}$  (calc. from crystal structure) 12.82, sum 100.08 wt%, corresponding to  $(\text{Na}_{4.70}\text{K}_{0.03})_{\Sigma 4.73}(\text{Y}_{0.50}\text{REE}_{0.42})_{\Sigma 0.92}(\text{Ti}_{0.86}\text{Nb}_{0.17}\text{Ta}_{0.03})_{\Sigma 1.06}\text{Si}_{6.03}\text{O}_{18} \cdot 6\text{H}_2\text{O}$ . Occurs as well-formed rhombohedral crystals, typically 0.2–0.5 mm across, showing {01 $\bar{1}$ 2}. Colorless, transparent to slightly turbid, vitreous luster, white streak,  $H = 4\text{--}5$ , moderate {01 $\bar{1}$ 2} cleavage, readily soluble in 10% HCl or  $\text{HNO}_3$ ,  $D_{\text{meas}} = 2.68(5)$ ,  $D_{\text{calc}} = 2.70 \text{ g/cm}^3$  for  $Z = 3$ . Strongest absorption bands in the infrared spectrum are at 1032, 1014, 983, and 911  $\text{cm}^{-1}$ . Optically uniaxial negative,  $\epsilon = 1.607(2)$ ,  $\omega = 1.612(2)$ , nonpleochroic. Single-crystal X-ray structure study ( $R = 0.037$ ) indicated trigonal symmetry, space group  $R32$ ,  $a = 10.696(5)$ ,  $c = 15.728(6) \text{ \AA}$ . Strongest lines of the powder pattern (57 mm Debye-Scherrer, Fe radiation) are 5.99(60,012), 3.21(100,122), 3.093(40,300), 2.990(85,024), 2.661(40,220,033), 1.998(55,306), and 1.481(44, broad, 520,603,336).

The mineral is associated with lomonosovite, albite, natrolite, tetranatrolite, aegirine, neptunite, and fluorite in hyperagpaitic pegmatites at Mount Alluaiv, Lovozero alkaline massif, Kola Peninsula, Russia. The new name is for Russian crystal chemist Yu.A. Pyatenko (b. 1928). Type material is in the Fersman Mineralogical Museum, Moscow. The mineral is the Ti analog of sazykinaite-(Y). **J.L.J.**

#### Wesselsite\*

G. Giester, B. Rieck (1996) Wesselsite,  $\text{SrCu}[\text{Si}_4\text{O}_{10}]$ , a further new gillespite-group mineral from the Kalahari Manganese Field, South Africa. *Mineral. Mag.*, 60, 795–798.

The means of microprobe analyses of three samples are  $\text{SrO}$  24.0,  $\text{CuO}$  18.8,  $\text{SiO}_2$  56.9, sum 99.7 wt%, corresponding to  $\text{Sr}_{0.98}\text{Cu}_{1.00}\text{Si}_{4.01}\text{O}_{10}$ . Analyses of other samples showed Ba substitution of up to 50 mol%. Occurs as blue,

untwinned, subhedral plates, up to  $5 \times 50 \times 50 \mu\text{m}$ , with some clusters to  $200 \mu\text{m}$ ; white to light blue streak, brittle, perfect {001} cleavage,  $H$  not determinable, nonfluorescent,  $D_{\text{meas}} = 3.2(1)$ ,  $D_{\text{calc}} = 3.32 \text{ g/cm}^3$  for  $Z = 4$ . Optically uniaxial negative,  $\omega = 1.630(2)$ ,  $\epsilon = 1.590$ ; strongly pleochroic, with  $O = \text{blue}$ ,  $E = \text{pale blue to pale pink}$ . By analogy with the synthetic analog, tetragonal symmetry, space group  $P4/ncc$ . Cell dimensions refined from a 114 mm Gandolfi pattern ( $\text{CuK}\alpha$  radiation) are  $a = 7.366(1)$ ,  $c = 15.574(3) \text{ \AA}$ , and strongest lines are 7.79(35,002), 3.444(40,104), 3.330(100,202), 3.119(55,114), and 3.033(50,212).

The mineral is associated with hennomartinite, embedded in a matrix of sugilite, xonotlite, quartz, and pectolite, at the Wessels mine, Kalahari Manganese Field, north-western Cape province, South Africa. The new name is for the locality. Type material is in the Institut für Mineralogie und Kristallographie, University of Vienna, Austria. **J.L.J.**

#### $\eta\text{-Al}_2\text{O}_3$

D.B. Tilley, R.A. Eggleton (1996) The natural occurrence of eta-alumina ( $\eta\text{-Al}_2\text{O}_3$ ) in bauxite. *Clays Clay Minerals*, 44, 658–664.

Approximately 20 wt% of the bauxite from Andoom, northern Queensland, Australia, consists of poorly diffracting material that occurs at the cores of pisoliths and that has the properties of  $\eta\text{-Al}_2\text{O}_3$ . After subtraction of sharp diffraction peaks attributable to gibbsite, hematite, kaolinite, anatase, and rutile, broad diffraction maxima on the diffractogram remain at 4.62(10,111), 2.82(30,220), 2.45(80,311), 2.29(20,222), 2.01(90,400), 1.55(20,333), and 1.41  $\text{Å}$  (100,440), in good agreement with electron diffraction results and with data for synthetic  $\eta$ -alumina. The mineral occurs as grains approximately 9 nm across; isometric symmetry,  $a = 7.98 \text{ \AA}$ . TEM—energy dispersion analyses of four grains gave  $\text{Al}_2\text{O}_3$  95.1–96.4,  $\text{SiO}_2$  0.6–1.4,  $\text{TiO}_2$  0.7–1.1,  $\text{Fe}_2\text{O}_3$  2.2–3.1 after recalculation to 100 wt%; the results correspond to about 97 mol%  $\text{Al}_2\text{O}_3$ . **J.L.J.**

#### Na-dominant loparite

R.H. Mitchell, A.R. Chakhmouradian (1996) Compositional variation of loparite from the Lovozero alkaline complex, Russia. *Can. Mineral.*, 34, 977–990.

Fifty-one electron microprobe analyses of a perovskite-group mineral from various rock types of the Lovozero complex are listed. In terms of the general formula for the perovskite group,  $\text{ABO}_3$ , all analyses indicate that the formula contents for A have  $\text{Na} > \text{Ce}$ , with lesser La and Ca, and that Ti predominates in B. The mineral is referred to as loparite-(Ce).

**Discussion.** The composition of loparite-(Ce) is  $(\text{Ce,Na,Ca})(\text{Ti,Nb})\text{O}_3$ . Therefore, either the Na-dominant

mineral is new or a redefinition of loparite-(Ce) is required. See also the abstract on nioboloparite. **J.L.J.**

#### $\text{Al}_2\text{Cl}(\text{OH})_5 \cdot 2\text{H}_2\text{O}$ , $\text{Al}_5\text{Cl}_3(\text{OH})_{12} \cdot 7.5\text{H}_2\text{O}$

T. Witzke (1996) The minerals of the burning dump of the “Deutschlandschacht” coal mine in Oelsnitz near Zwickau, Saxony. *Aufschluss*, 47, 41–48 (in German).

Electron microprobe and thermogravimetric analyses (not given) indicate that, among the various minerals formed on the burning dump, a compound exists with composition  $\text{Al}_{1.89}\text{Fe}_{0.11}\text{Cl}_{1.03}(\text{OH})_{4.98} \cdot 2.25\text{H}_2\text{O}$ , ideally  $\text{Al}_2\text{Cl}(\text{OH})_5 \cdot 2\text{H}_2\text{O}$ . The compound forms crusts in which the grains are 0.5–1 mm, optically isotropic,  $n = 1.5632$ . The X-ray powder pattern (not given) was indexed with a cubic cell,  $a = 19.841(2) \text{ \AA}$ ,  $D_{\text{meas}} = 1.986$ ,  $D_{\text{calc}} = 1.998 \text{ g/cm}^3$ .

Also present are crusts and aggregates for which the X-ray powder pattern (not given) yields a trigonal cell with  $a = 17.81(1)$ ,  $c = 11.14(1) \text{ \AA}$ , in good agreement with data for synthetic  $\text{Al}_5\text{Cl}_3(\text{OH})_{12} \cdot 7.5\text{H}_2\text{O}$  (ICDD X-ray pattern 27–11). As is noted by the author, the CNMNM no longer accepts as minerals the compounds that have been formed by mine fires or burning dumps. **J.L.J.**

### New Data

#### Deloryite

D.Yu. Pushcharovsky, R.K. Rastsvetaeva, H. Sarp (1996) Crystal structure of deloryite,  $\text{Cu}_4(\text{UO}_2)[\text{Mo}_2\text{O}_8](\text{OH})_6$ . *J. Alloys Compounds*, 239, 23–26.

Single-crystal X-ray structure study ( $R = 0.064$ ) of deloryite confirmed its monoclinic symmetry and cell dimensions, and established the space group as  $C2/m$ .  $D_{\text{calc}} = 4.78 \text{ g/cm}^3$  for  $Z = 2$ . **J.L.J.**

#### Liottite

P. Ballirano, S. Merlino, E. Bonaccorsi, A. Maras (1996) The crystal structure of liottite, a six-layer member of the cancrinite group. *Can. Mineral.*, 34, 1021–1030.

Single-crystal X-ray structure study ( $R = 0.027$ ) of liottite established its space group as  $P\bar{6}$ . **J.L.J.**

#### Schoepite

R.J. Finch, M.A. Cooper, F.C. Hawthorne (1996) The crystal structure of schoepite,  $[(\text{UO}_2)_8\text{O}_2(\text{OH})_{12}](\text{H}_2\text{O})_{12}$ . *Can. Mineral.*, 34, 1071–1088.

Single-crystal X-ray structure study ( $R = 0.058$ ) of a museum specimen of schoepite from an unstated locality confirmed the orthorhombic symmetry, established the space group as  $P2_1ca$ , and led to the new formula as given above. The data have not been submitted to the

CNMMN for a vote on the redefinition of the mineral.

**J.L.J.**

#### **Synchysite-(Y)**

Liben Wang, Kangjing Zhou (1995) The crystal structure of synchysite-(Y),  $YCa(CO_3)F$ . *Acta Petrologica Mineralogica*, 14(4), 336–344 (in Chinese, English abs.).

Single-crystal X-ray structure study ( $R = 0.086$ ) of synchysite-(Y) gave monoclinic symmetry, space group  $C2/c$ ,  $a = 12.039(3)$ ,  $b = 6.950(1)$ ,  $c = 18.436(6)$  Å,  $\beta = 102.45(2)^\circ$ .

**Discussion.** The results are similar to those obtained for synchysite-(Ce) (*Am. Mineral.*, 80, p. 1077, 1995).

**J.L.J.**

#### **Discredited Mineral**

##### **Nioboloparite\***

R.H. Mitchell, A.R. Chakhmouradian, V.N. Yakovenchuk (1996) "Nioboloparite": A re-investigation and discreditation. *Can. Mineral.*, 34, 991–999.

Nioboloparite is an unapproved name introduced in 1957 for a variety of loparite-(Ce) that occurs in the Khibina massif, Kola Peninsula, Russia, and in which substitution of Nb for Ti is relatively high relative to that in most samples; nevertheless,  $Ti > Nb$ . Re-examination of specimens from the massif, including material from the well-specified type pegmatite vein, confirms that electron microprobe compositions and the X-ray powder pattern are of those of a loparite-type mineral in which  $Ti > Nb$ . The discreditation has been approved by the CNMMN.

**Discussion.** The formula ratios, in addition to showing  $Ti > Nb$ , also have  $Na > Ce$ . See the discussion for Na-dominant loparite. **J.L.J.**