NEW MINERAL NAMES*

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Belovite-(La)*


Electron microprobe analyses (two given) gave NaO 4.09, CaO 0.50, SrO 40.09, BaO 2.35, Y2O3 0.01, La2O3 13.08, Ce2O3 8.15, Pr2O3 0.30, Nd2O3 0.50, Sm2O3 0.03, Gd2O3 0.01, ThO2 0.43, SiO2 23.80, SO3 0.24, PO4 2.95, Al2O3 3.89, Cr2O3 9.17, FeOtot as FeO 2.50, MnO 0.00, MgO 9.45, CaO 13.66, Na2O 5.72, K2O 0.06, sum 99.31 wt%, corresponding to (Sr 2.86 Ba 0.12 Ca 0.06 )9.647(1), 2.897(100,211), 2.884(100,112), and 2.875(100,302). The mineral occurs as 0.01–0.2 mm, brittle, no cleavage, conchoidal fracture, Dmax and Dmin are 4.19, 4.05 g/cm3 for Z = 2. Optically uniaxial negative, ε = 1.635, ω = 1.653. Rietveld X-ray study (R = 0.029) showed the mineral to be isostructural with belovite-(Ce), space group P3, a = 9.647(1), c = 7.170(1) Å. Strongest lines on the diffractogram (CuKα, 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, spalheterite, galena, molydenite, lamprophyllite, gaidonnayite, cerasimovskite, 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.

Chromomphacite


The most Cr-rich of eight electron microprobe analyses (Cr, range 7.72–9.17 wt%) gave SiO2 54.82, TiO2 0.10, Al2O3 3.89, Cr2O3 9.17, FeOtot as FeO 2.50, MnO 0.00, MgO 9.45, CaO 13.66, Na2O 5.72, K2O 0.06, sum 99.37 wt%, corresponding to (Ca0.34 Na0.24 K0.02)2.20(36) (Mg0.53 Cr0.25 Al1.16)2.077 Ti0.79 K0.31 O3.8 0.22. 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 (CaMgSi2O6)–kosmochlor (NaCrSi2O6) extending from Di13.1Ko3.2 to Di13.1Ko3.2. The proposal and new name have not been submitted to the CNMMN for a vote. J.L.J.

Clerite*


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 Mn13.1(Sb18.23As2.25)2.20S4.00. Occurs as irregular, equant grains 0.01–0.2 mm, brittle, VHN15 = 252 (224–262).Opaque in reflected light, light grey with pale pink-yellow tint, nonpleochroic, distinct birefringence, strong yellow-brown anisotropy. Reflectance percentages are given in 20 nm steps from 420 to 700 nm; representative values for R450 and R700 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 MnSb2S4, orthorhombic symmetry, a = 11.47(2), b = 14.36(3), c = 3.81(1) Å, Dcalc = 4.48 g/cm3 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).

* Before publication, minerals marked with an asterisk were approved by the Commission on New Minerals and Mineral Names, International Mineralogical Association.
The mineral occurs typically as intergrowths with re-
galar in limestones of the Vorontsovskoye gold deposit,
northern Urals, Russia. The limestones also contain As-
bearing pyrite, cinnabar, orpiment, stibnite, greigite, ala-
bandite, sphalerite, tennantite-tetrahedrite, zinkenite,
chalcostibite, aktashite, routhierite, and native gold. The
name is for Onisim Yegorovitsch Kler (1845–1920), hon-
orary member of the Russian Mineralogical Society. Type
material is in the Ural Mineralogical Museum, Ekaterin-
burg, Russia.

Discussion. A mineral of similar composition, but
apparently not isomorphous with berthierite, was abstracted

Fettelite*

N. Wang, A. Paniagua (1996) Fettelite, a new Hg-sulfo-
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, Ti 0.13, Sb
0.23, Hg 5.21, Pb 0.07, sum 99.88 wt%, corresponding
to Ag₂₄HgAs₅S₂₀. Occurs as clusters consisting of hexagonal
aggregates of hexagonal tablets up to 50
m thick. Dark
violet to scarlet color; dark vermilion streak, submetallic
to adamantine luster, brittle, irregular fracture, perfect
cleavage, stepped fracture, 
\[ D_{\text{meas}} = 2.42, D_{\text{calc}} = 2.42 \text{ g/cm}^3 \]
for the empirical formula and 
\[ Z = 4, \text{ readily soluble in 10\% HCl or HNO}_3. \]
The infrared spectrum has numerous absorption bands,
including those of moderate intensity at 360 and 1658
\[ \text{cm}^{-1}, \text{ and strong bands at 900 and 445 cm}^{-1}. \]
Optically biaxial negative, \( \alpha = 1.536(2), \beta = 1.545(2), \gamma \]
\[ = 1.553(2), 2V_{\text{meas}} = 87(1)^\circ, \text{ strong dispersion } r < v, \]
orientation 
\[ b = Z, c Y \wedge X = 40^\circ \]
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 \( \text{I}\!\!\!\!N, a = 13.03(6), \]
b = 18.717(9), c = 12.264(6) \( \text{A}, \beta = 99.62(6)^\circ. \)
Strongest
lines of the powder pattern (114 mm Debye-Scherrer, Co radiation)
are 10.56(100,110), 6.38(50,200), 5.55(45,1
98), 4.78(40,2
19), 4.25(40,2
22), 3.196(40,321,2
251), and 2.608(50,262).

The mineral is associated with makatite, villiaumite,
aegirine, lomonosovite, serandite, steenstrupine, mangano-
neptide, and a zakharovite-like mineral in hyperagpaitic
pegmatites of the Lovozero alkaline massif at Mount Al-
luai, Kola Peninsula, Russia. The new name alludes to
Krasnovite, Ba(Al,Mg)(PO₄,CO₃)(OH)₂·H₂O—

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

Krasnovite*

S.N. Britvin, Ya.A. Pakhomovskii, A.N. Bogdanova
(1996) Krasnovite, Ba(Al,Mg)(PO₄,CO₃)(OH)₂·H₂O—

Electron microprobe analyses (average of three, H₂O
by Penfield method, CO₂ calculated, Fe²⁺ proved by
K₃[Fe(CN)₆] gave K₃O 0.05, SrO 0.7, BaO 49.1, MgO 1.7,
FeO 0.3, Al₂O₃ 14.3, P₂O₅ 19.8, H₂O 10.5, CO₂ 3.55, sum
100.00 wt%, corresponding to (Ba₉₋₄Sr₀.₀₂)₂(Al₅₋₁₄Mg₁₋₁₆
Fe₀.₀₂)₂(PO₄)₀.₇₅(CO₃)₀.₂₅(OH)₂, \( n = 0.96 \text{H}_₂O. \)
Ideally
Ba(Al,Mg)(PO₄,CO₃)(OH)₂·H₂O. 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 g/cm^3 for Z = 4. Decomposes with effervescence in warm 10% HCl. Colorless in immersion oil, nonpleochroic, straight extinction (wavy after deformation), bi-axial positive, α = 1.616(2), β = 1.629(2), γ = 1.640(2) in Na light, 2V\text{\acute{e}} = 70°-90°, Y \parallel b. Single-crystal X-ray study showed the mineral to be orthorhombic, space group Pnma or Pn\text{\acute{e}}m, a = 8.939(2), b = 5.669(3), c = 11.073(3). 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 carbonate 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**


Electron microprobe and CHN analyses gave Na_2O 0.07, K_2O 3.37, CuO 0.16, FeO 47.40, Al_2O_3 0.70, P_2O_5 30.71, As_2O_3 0.03, CO_2 0.73, H_2O 16.2, sum 99.37 wt%, corresponding to (Na_{0.85} K_{0.03})_2Cu_{1.00}Si_{4.01}O_{10} (PO_4)_{0.11} (CO_3)_{0.03}(OH)_{0.75}H_2O, simplified as KFe^3+(PO_4)(OH). -8H_2O. 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 μm wide and 3 μm thick. Color variable from creamy white, to pale yellow, to yellownish brown; luster vitreous to waxy for fibers, H = ~3, pale yellow to cream streak, perfect [001] cleavage, D_{\text{meas}} = 2.96, D_{\text{calc}} = 2.86 g/cm^3 for Z = 4. Optically biaxial positive, α = 1.780(5), β = 1.785(5), γ = 1.800(5), 2V_{\text{\acute{e}}} = 60°, nonpleochroic. Electron diffraction patterns indicated monoclinic symmetry, space group C2, Cm, or C2/m; a = 29.52(4), b = 5.249(6), c = 18.261(1) Å, β = 109.27(7)^° as refined from a powder pattern (100 mm Guinier-Hagg, CrK\text{\acute{e}}) with strongest lines of 5.94(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 Mahcons pegmatite, South Australia, and at the Sapucaia pegmatite, Minas Gerais, Brazil. Typical associates are dufrenite, cyrilovite, be-raunite, 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)**


Electron microprobe analyses (mean of eleven) gave Na_2O 17.25 (16.8–18.0), K_2O 0.14 (0.1–0.3), Y_2O_3 6.64 (6.2–8.3), L_aO 0.10 (0.0–0.2), CeO_2 0.34 (0.2–0.5), Nd_2O_3 0.60 (0.4–0.8), SmO_2 1.14 (0.5–1.9), EuO 0.54 (0.3–0.9), Gd_2O_3 1.78 (1.2–2.5), TbO_2 0.40 (0.3–0.5), DyO_2 2.39 (2.2–2.6), HoO_2 0.24 (0.2–0.3), ErO_2 0.94 (0.9–1.1), TmO_2 0.08 (0.0–0.1), YbO_2 0.14 (0.1–0.2), THO_2 0.36 (0.1–0.8), SiO_2 42.96 (41.9–43.7), ZrO_2 0.38 (0.1–0.7), TiO_2 8.16 (7.7–8.6), NbO_2 2.68 (2.3–3.1), H_2O (calc. from crystal structure) 12.82, sum 100.08 wt%, corresponding to (Na_{4.70} K_{0.03})_3(Y_{0.50} REE_{0.42})_2(Ti_{0.98} Nb_{0.02} Ti_{0.16})_2Si_{10}O_{13}·6H_2O. Occurs as well-formed rhombohedral crystals, typically 0.2–0.5 mm across, showing {01T2}. Colorless, transparent to slightly turbid, vitreous luster, white streak, H = 4–5, moderate {01T2} cleavage, readily soluble in 10% HCl or HNO_3, D_{\text{meas}} = 2.68(5), D_{\text{calc}} = 2.70 g/cm^3 for Z = 3. Strongest absorption bands in the infrared spectrum are at 1032, 1014, 983, and 911 cm\(^{-1}\). Optically uniaxial negative, ε = 1.607(2), ω = 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) Å. Strongest lines of the powder pattern (57 mm Debye-Scherrer, Fe radiation) are 5.99(60,012), 3.216(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, tetratrolite, aegirine, neptunite, and fluorite in hyperaegpaitic 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 saykinaite-(Y).

**Wesselsite**


The means of microprobe analyses of three samples are SrO 24.0, CuO 18.8, SiO_2 56.9, sum 99.7 wt%, corresponding to Sr_{0.93}Cu_{1.00}Si_{4.01}O_{13}. Analyses of other samples showed Ba substitution of up to 50 mol%. Occurs as blue,
untwinned, subhedral plates, up to 5 × 50 × 50 μm, with some clusters to 200 μm; white to light blue streak, brittle, perfect {001} cleavage, H not determinable, nonfluorescent, \(D_{\text{max}} = 3.2(1)\), \(D_{\text{calc}} = 3.32\ g/cm^3\) for \(Z = 4\). Optically uniaxial negative, \(\omega = 1.630(2)\), \(\epsilon = 1.590\); strongly pleochroic, with \(O = \) blue, \(E = \) pale blue to pale pink. By analogy with the synthetic analog, tetragonal symmetry, space group \(P4/nnc\). Cell dimensions refined from a 114 mm Gandolfi pattern (Cu Kα radiation) are \(a = 7.366(1)\), \(c = 15.574(3)\) Å, 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, northern Queensland, Australia, consists of poorly diffracting material that occurs at the cores of pisoliths and some clusters to 200 μm; white to light blue streak, brittle, perfect {001} cleavage, H not determinable, nonfluorescent, \(D_{\text{max}} = 3.2(1)\), \(D_{\text{calc}} = 3.32\ g/cm^3\) for \(Z = 4\). Optically uniaxial negative, \(\omega = 1.630(2)\), \(\epsilon = 1.590\); strongly pleochroic, with \(O = \) blue, \(E = \) pale blue to pale pink. By analogy with the synthetic analog, tetragonal symmetry, space group \(P4/nnc\). Cell dimensions refined from a 114 mm Gandolfi pattern (Cu Kα radiation) are \(a = 7.366(1)\), \(c = 15.574(3)\) Å, 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, northern Queensland, Australia. The new name is for the locality. Type material is in the Institut für Mineralogie and Kristallographie, University of Vienna, Austria. J.L.J.

\[\eta-\text{Al}_2\text{O}_3\]


Approximately 20 wt% of the bauxite from Andoom, northern Queensland, Australia, consists of poorly diffracting material that occurs at the cores of pisoliths and 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 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, space group \(P\overline{4}/m\). D\(_{\text{meas}}\) = 3.32 g/cm\(^3\) for \(Z = 4\). TEM—energy dispersive X-ray analysis of four grains gave Al\(_2\)O\(_3\) 95.1±96.4, SiO\(_2\) 0.6±1.4, TiO\(_2\) 0.7±1.1, Fe\(_2\)O\(_3\) 2.2±3.1 after recalculation to 100 wt%; the results correspond to about 97 mol% Al\(_2\)O\(_3\). J.L.J.

Na-dominant loparite


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, ABO\(_3\), all analyses indicate that the formula contents for A have Na > 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 (Ce,Na,Ca)(Ti,Nb)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.

**Al\(_2\)Cl(OH)\(_2\)·2H\(_2\)O, Al\(_2\)Cl\(_4\)(OH)\(_2\)·7.5H\(_2\)O**


Electron microprobe and thermogravimetric analyses (not given) indicate that, among the various minerals formed on the burning dump, a compound exists with composition Al\(_{1.89}\)Fe\(_{0.11}\)Cl\(_{1.03}\)(OH)\(_{4.98}\)·2.25H\(_2\)O, ideally Al\(_2\)Cl\(_4\)(OH)\(_2\)·2H\(_2\)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, \(a = 19.841(2)\) Å, \(D_{\text{meas}} = 1.986, D_{\text{calc}} = 1.998\ g/cm\(^3\). Also present are crusts and aggregates for which the X-ray powder pattern (not given) yields a trigonal cell with \(a = 17.81(1)\), \(c = 11.14(1)\) Å, in good agreement with data for synthetic Al\(_2\)Cl\(_4\)(OH)\(_2\)·7.5H\(_2\)O (ICDD X-ray pattern 27–11). As is noted by the author, the CNMMN no longer accepts as minerals the compounds that have been formed by mine fires or burning dumps. J.L.J.

**New Data**

**Deloryite**


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. \(D_{\text{calc}} = 4.78\ g/cm^3\) for \(Z = 2\). J.L.J.

**Liottite**


Single-crystal X-ray structure study (\(R = 0.027\)) of liottite established its space group as \(P6_2\). J.L.J.

**Schoepite**


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
Synchysite-(Y)


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, \( \beta = 102.45(2) \)°.

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

J.L.J.

Discredited Mineral

Nioboloparite*  

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.