American Mineralogist, Volume 84, pages 1195–1198, 1999

NEW MINERAL NAMES*

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Brendelite*

W. Krause, H.-J. Bernhardt, C. McCammon, H. Effenberger (1998) Brendelite, $(Bi,Pb)_2Fe^{3+,2+}O_2(OH)(PO_4)$, a new mineral from Schneeberg, Germany: description and crystal structure. Mineral. Petrology, 63, 263–277.

The mean of 15 and 25 electron microprobe analyses of two grains gave, respectively, Bi_2O_3 47.10, 56.12, PbO 26.08, 18.12, FeO 3.12, 5.58, Fe_2O_3 9.44, 6.32 (Fe^{2+}:Fe^{3+} by Mössbauer spectroscopy), P_2O_5 10.71, 10.98, As_2O_5 0.32, 0.20, V_2O_5 0.24, 0.55, H_2O (calc.) 1.46, 1.46, sum 98.47, 99.33 wt%, corresponding to $(Bi_{1.27}Pb_{0.73})_{\Sigma 2.00}(Fe^{3+}_{0.80}Fe^{2+}_{0.23})_{\Sigma 1.03}O_{2.04}(OH)_{0.96}[(PO_4)_{0.95}(AsO_4)_{0.02}(VO_4)_{0.02}]_{\Sigma 0.99}$ and $(Bi_{1.50}Pb_{0.51})_{\Sigma 2.01}(Fe^{3+}_{0.76}Fe^{2+}_{0.21})_{\Sigma 0.99}O_{2.28}(OH)_{0.72}[(PO_4)_{0.96}(AsO_4)_{0.01}(VO_4)_{0.04}]_{\Sigma 1.01}$. Occurs as euhedral crystals to 0.3 mm, and as crystal aggregates to 3 mm, tabular on $\{\bar{2}01\}$ also showing {001}, {010}, and {100}. Black color, dark brown and translucent in small grains, vitreous to adamantine luster, light brown streak, no cleavage, $H = 4^1/_2$, VHN_{15} = 300, nonfluorescent, D_{calc} = 6.83 g/cm³ for $Z = 2$, soluble without effervescence in warm, dilute HCl. Optically biaxial negative, refractive indices from reflectivity measurements are $\alpha = 2.06$, $\beta_{calc} = 2.15$, $\gamma = 2.19$, $2V_{meas} = 70(5)°$, strongly pleochroic, X = light brown to brown, $Y = Z$ = dark brown to opaque, orientation $Z \parallel [010]$, Y nearly parallel to [100]. Single-crystal X-ray structure study indicated monoclinic symmetry, space group $C2/m$, $a = 12.278(2)$, $b = 3.815(1)$, c = 6.899(1) Å, β = 111.14(1)° as refined from a diffractometer powder pattern (Cu$K\alpha$ radiation) with strongest lines of 5.726(54,200), 3.372(77,$20\bar{2}$) 3.217(46,002), 3.011(100,111), and 2.750 (62,$31\bar{1}$).

The mineral is associated with bismutite and bismutoferrite, and commonly forms crusts on eulytite, on specimens from the dumps of the ancient (16th century) Güldener Falk mine near Schneeberg, Saxony, Germany. The new name is for Christian Friedrick Brendel (1776–1861), in recognition of his development and application of mechanized mining technology. Type material is in the Staatliches Museum für Mineralogie und Geologie, Dresden, Germany. **J.L.J.**

Chadwickite*

K. Walenta (1998) Chadwickite, a new uranyl arsenite from Wittichen in the Black Forest. Aufschluss, 49, 253–257 (in German, English abs.).

Electron microprobe analysis gave UO_3 73.0, As_2O_3 25.5, H_2O by difference 1.5, sum 100 wt%, corresponding to $U_{1.03}As_{1.04}H_{0.67}O_5$, ideally $(UO_2)H(AsO_3)$. The mineral occurs as yellow, earthy and scaly crusts in which single grains are partly transparent, up to 20 µm across, and rarely exhibit a rectangular or square form of the tabular face {001}. Yellow streak, dull luster, $H = 2$, uneven fracture, perfect {001} cleavage, nonfluorescent, readily soluble in 1:1 HNO_3 or HCl, D_{calc} = 4.86 g/cm³ for $Z = 14$. Optically uniaxial negative, $\varepsilon = 1.750$, ω = 1.845, pleochroism E = colorless, O = yellow. The X-ray powder pattern (57 mm camera, Fe$K\alpha$ radiation) was indexed with a tetragonal cell of $a = 11.00(1)$, $c = 15.96(2)$ Å; strongest lines are 5.58(80,112), 4.95(100,210), 4.40(60,113), 3.33(80,302), 3.03(60,303), and 2.91(50,313), in good agreement with results for the analog synthesized at room temperature.

The mineral occurs on uraninite, and is associated with metakahlerite, abernathyite, erythrite, pitticite, and another uranyl arsenite, in dump material at the Sophia mine, central Black Forest. The new name is for Sir James Chadwick (1891–1974), English physicist. Type material is in the Staatlichen Museums für Naturkunde in Stuttgart, and in the Institute für Mineralogie und Kristallchemie der Universität Stuttgart. **J.L.J.**

Chlorartinite*

L.P. Vergasova, S.K. Filatov, E.K. Serafimova, S.V. Sergeyeva (1998) Chlorartinite $Mg_2(CO_3)ClOH\cdot 3H_2O$—a new mineral from exhalations. Zapiski Vseross. Mineral. Obshch., 127(2), 55–59 (in Russian).

Wet-chemical analysis gave CaO 3.70, MgO 26.26, Na_2O 1.33, K_2O 0.52, Cl 13.65, SO_3 0.25, CO_2 15.35, H_2O^+ 19.52, H_2O^- 8.39, insoluble residue 14.40, O ≡ Cl 3.08, sum 100.29 wt%, corresponding to $(Mg_{1.82}Ca_{0.18})(CO_3)_{0.98}Cl_{0.92}(OH)_{1.11}\cdot 2.5H_2O$. Occurs as white, rounded, fine-grained aggregates that are stable in air, slowly soluble in water, and readily soluble in weak acids. D_{calc} = 1.84 g/cm³ for $Z = 18$; mean $n = 1.503(3)$, Δn = <0.006. The X-ray powder pattern (diffractometer, Cu$K\alpha$ radiation, 35 lines given, including two of halite) has strongest lines at 11.66(100,110), 3.264(21,212), 3.218(21,511,520), 3.000(41,431), and 2.657 Å

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

0003-004X/99/0708–1195$05.00

(22,710), from which a = 23.163(4), c = 7.221(2), in good agreement with the hexagonal synthetic analog, space group $R3c$ or $R\bar{3}c$ (PDF 7–278, 7–279). DTA gave a pair of endothermic peaks at 177 (weak) and 260 °C (strong), and another pair at 465 (strong) and 490 °C (weak); the loss between 20–390 °C was 20 wt% (theoretical H_2O loss 19.52 wt%), and the loss from 390–1000 °C was 28 wt% (theoretical Cl + CO_2 = 29 wt%). The infrared spectrum has absorption bands at 3720, 3680, and 1100 cm^{-1} (OH), 1530, 1445, and 840 cm^{-1} (CO_3), and 705, 510, and 430 cm^{-1} [Mg(OH,Cl)].

The mineral is a product of fumarolic activity at the Great Tolbachik Fissure Eruption of 1976, Kamchatka, Russia. The new name alludes to the similarity of the formula to that of artinite. Type material is in the Mineralogical Museum of Saint Petersburg Mining Institute, Russia. **N.N.P.**

Cuboargyrite*

K. Walenta (1998) Cubargyrite, a new silver mineral from the Schwarzwald. Lapis, 23(11), 21–23 (in German, English abs.).

Energy-dispersion analysis gave Ag 36.1, Sb 41.4, S 22.1, sum 99.6 wt%, corresponding to $Ag_{0.97}Sb_{0.99}S_2$. Occurs as grayish black, anhedral grains, to 0.5 mm across. Metallic luster, black streak, brittle, no cleavage, H = ~3, opaque, D_{calc} = 5.325 g/cm^3 for Z = 2. In reflected light, gray, isotropic, and polishes well; representative reflectance percentages (SiC standard, air) are 35.18 (470 nm), 34.88 (546), 34.72 (589), and 34.26 (650). The X-ray powder pattern (57 mm camera, Fe$K\alpha$ radiation) is in good agreement with data for synthetic cubic $AgSbS_2$ (PDF 17–456), space group $Fm3m$; strongest lines for the mineral (10 lines listed) are 3.26 (90,111), 2.83(100,200), 1.998(80,220), and 1.703(60,311); a = 5.650(5) Å.

The mineral is part of a quartz-arsenopyrite hydrothermal assemblage at Baberast, near Haslach, Central Black Forest, Germany. The new name alludes to the polymorphic relationship with miargyrite. A repository for type material is not given. **J.L.J.**

Mereheadite*

M.D. Welch, A.J. Criddle, R.F. Symes (1998) Mereheadite, $Pb_2O(OH)Cl$: a new litharge-related oxychloride from Merehead Quarry, Cranmore, Somerset. Mineral. Mag., 62, 389–393.

Wet-chemical analysis gave PbO 90.95, Cl 6.8, B_2O_3 0.6, CO_2 1.4, H_2O 1.7, O ≡ Cl 1.5, sum 98.5 wt%; the roles of B and C as essential components are uncertain, and the ideal formula $Pb_2O(OH)Cl$ requires PbO 92.45, Cl 7.34, H_2O 1.87, less O ≡ Cl 1.66 wt%. The mineral typically occurs as polycrystalline aggregates, up to 10 × 30 mm, in which individual grains are anhedral and rarely exceed 2 mm. Pale yellow to reddish orange color, transparent to translucent, vitreous or resinous luster, white streak, uneven to conchoidal to hackly fracture, perfect {001} cleavage, H = $3^1/_2$, VHN_{100} = 171 (151–192), nonfluorescent, D_{meas} = 7.12(10), D_{calc} = 7.72 g/cm^3 for Z = 4 and the ideal formula. Gray in reflected light, n = 2.19–2.28 as calculated from reflectance spectra. Single-crystal X-ray study indicated monoclinic symmetry, space group $C2/c$, a = 5.680(2), b = 5.565(3), c = 13.143(9) Å, β = 90.64(4)° as refined from a diffractometer pattern with strongest lines of 6.581(37,002), 3.785(48,111,$\bar{1}$11), 3.267(35,004), 2.930(100,113,$\bar{1}$13), 2.825 (43,200), 2.780(36,020), and 2.182(37,115,006).

The mineral is associated with mendipite, blixite, cerussite, hydrocerussite, and calcite in lenses and pods within veins of Mn and Fe oxide minerals which cut dolomitic limestone at Merehead, Somerset, UK. The new name is for the locality. Type material is in The Natural History Museum, London.

Discussion. Compositional requirements and D_{calc} for the ideal formula are as provided in a written communication from J.A. Mandarino. **J.L.J.**

Phosphoellenbergerite*

G. Raade, C. Rømming, O. Medenbach (1998) Carbonate-substituted phosphoellenbergerite from Modum, Norway: description and crystal structure. Mineral. Petrology, 62, 89–101.

F. Brunet, C. Chopin, F. Seifert (1998) Phase relations in the MgO–P_2O_5–H_2O system and the stability of phosphoellenbergerite: petrological implications. Contrib. Mineral. Petrology, 131, 54–70.

Electron microprobe analysis gave CaO 0.5, MgO 44.4, FeO 1.0, P_2O_5 37.4, As_2O_5 5.5, SiO_2 0.7, SO_3 1.0, CO_2 (calc.) 2.75, H_2O (calc.) 5.986, sum 99.236 wt%, corresponding to $Mg_{12}(Mg_{1.32}Fe_{0.17}Ca_{0.11}\square_{0.40})_{\Sigma 2.00}[(PO_4)_{4.34}(PO_3OH)_{0.79}(AsO_4)_{0.58}(SO_4)_{0.15}(SiO_4)_{0.14}]_{\Sigma 6.00}[(PO_3OH)_{1.24}(CO_3)_{0.76}]_{\Sigma 2.00}(OH)_6$, simplified as $Mg_{14}(PO_4)_6(PO_3OH,CO_3)_2(OH)_6$. The mineral occurs as blue, anhedral inclusions, up to 0.5 mm long, in heneuite. Vitreous luster, white streak, translucent to transparent, untwinned, no cleavage, H not determinable (est. $6^1/_2$), nonfluorescent, D_{meas} = 3.0, D_{calc} = 2.93 g/cm^3 for Z = 1 and the empirical formula. Optically uniaxial negative, ω = 1.606–1.609, ε = 1.588–1.589, distinct pleochroism, E = blue, O = colorless. Single-crystal X-ray structure study (R = 0.027) indicated hexagonal symmetry, space group $P6_3mc$, a = 12.467(2), c = 5.0437(4) Å. Strongest lines of the powder pattern (9 cm Debye–Scherrer, Fe radiation) are 3.685(100,201), 3.170(95,211), 2.702(80,400), 2.381(70,401), 2.221(80,321), 1.555(80,213), and 1.426(80,522).

The mineral occurs in lenses of Precambrian serpentine-magnesite rocks of the Tingelstadtjern deposit, Modum terrane, southern Norway. Associated phosphates are althausite, holtedahlite, heneuite, and an unnamed mineral. The type locality is the Dora-Maira massif, Italian western Alps, where high-pressure metamorphic rocks contain ellenbergerite showing a solid-solution series to phosphoellenbergerite, the latter with the simplified formula $Mg_{14}P_8O_{30}(OH)_8$.

Discussion. The new mineral and name were approved in 1994 as IMA mineral 94–006, but the descriptive paper for the mineral from the type locality has not yet appeared. **J.L.J.**

Pseudosinhalite*

W. Schreyer, N.N. Pertsev, O. Medenbach, M. Burchard, D. Dettmar (1998) Pseudosinhalite: discovery of the hydrous MgAl-borate as a new mineral in the Tayozhnoye, Siberia, skarn deposit. Contrib. Mineral. Petrology, 133, 382–388.

Electron microprobe analysis gave Al_2O_3 46.88, FeO 1.99, MgO 25.12, B_2O_3 (calc.) 21.75, H_2O (calc.) 2.81, sum 98.55 wt%, corresponding to $(Mg_{2.00}Fe_{0.09})_{\Sigma 2.09}Al_{2.94}B_2O_9(OH)$. Colorless, transparent, vitreous luster, white streak, H not reported, no cleavage or parting, conchoidal fracture, nonfluorescent, D_{calc} = 3.508 g/cm^3 for $Z = 2$, polysynthetically twinned on a micrometer scale. Optically, $\alpha < 1.72 < \gamma$; for synthetic material $\alpha = 1.691$, $\beta = 1.713$, $\gamma = 1.730$, $2V_\alpha = 80°$, Z parallels b. Monoclinic symmetry and space group $P2_1/c$ by analogy with the synthetic analog; $a = 7.49(1)$, $b = 4.33(1)$, $c = 9.85(2)$ Å, $\beta = 110.7(1)°$ as calculated from a Gandolfi pattern (57 mm, Cu$K\alpha$ radiation) with strongest lines of 3.21(40,111), 2.61(40,$\bar{1}$13), 2.12(100,$\bar{3}$12,$\bar{1}$14), 2.102(60,212), 1.625(100,$\bar{3}$22,$\bar{1}$24), 1.607(40,222), and 1.399(40,106,500).

The mineral is associated with hydrotalcite and occurs at the Tayozhnoye Fe-B skarn as a topotactic, retrograde replacement of sinhalite in metasomatized marble also containing calcite, dolomite, forsterite, green spinel, ludwigite, warwickite, suanite, clinohumite, and other minerals. The skarn is in the Aldan Shield in southern Sakha-Yakutia Republic, Russian Federation. The new mineral name, initially applied to the synthetic analog, alludes to the optical, chemical, and structural similarity to sinhalite. Type material is in the Institut für Mineralogie, Ruhr-Universität Bochum, Germany. **J.L.J.**

Wilhelmkleinite*

J. Schlüter, K.-H. Klaska, K. Friese, G. Adiwidjaja, G. Gebhard (1998) Wilhelmkleinite, $ZnFe^{3+}_2(AsO_4)_2(OH)_2$, a new mineral from Tsumeb, Namibia. Neues Jahrb. Mineral. Mon., 558–564.

Electron microprobe analysis gave ZnO 13.81, Fe_2O_3 33.60, As_2O_5 46.69, H_2O by difference 5.90, sum 100 wt%, corresponding to $Zn_{0.84}Fe^{3+}_2(AsO_4)_2O_2H_{3.2}$. Occurs as blackish green, spearhead-shaped crystals up to 5 mm long, showing {430}, {43$\bar{0}$}, {100}, {31$\bar{1}$}, and {3$\bar{1}\bar{1}$}. Translucent, green streak, adamantine luster, H = 4.5, {23$\bar{2}$} cleavage, nonfluorescent, interpenetration twinned on (101), D_{calc} = 4.364 g/cm^3 for $Z = 2$. Refractive index ~1.94, strongly pleochroic from olive-green and emerald-green to reddish brown. Single-crystal X-ray structure study ($R = 0.0139$) indicated monoclinic symmetry, space group $P2_1/n$, $a = 6.631(1)$, $b = 7.611(1)$, $c = 7.377(1)$ Å, $\beta = 91.80(1)°$. Strongest lines of the powder pattern (diffractometer, Cu$K\alpha$ radiation) are 3.385(100,021), 3.315(78,200), 2.939(47,112), 1.652(32,240), and 1.62(34,$\bar{1}$24).

The mineral is associated with scorodite, gerdtremmelite, and adamite on specimens collected from the underground workings of the Tsumeb mine, Namibia. The new name is for Wilhelm Klein, former mine manager in Namibia, who made the first systematic collection of minerals from the Tsumeb mine. Type material is in the Mineralogical Museum of the University of Hamburg, Germany. **J.L.J.**

Zincohögbomite*

E. Ockenga, Ü. Yalçin, O. Medenbach, W. Schreyer (1998) Zincohögbomite, a new mineral from eastern Aegean metabauxites. Eur. J. Mineral., 10, 1361–1366.

Electron microprobe analyses (mean of 10 and range) gave TiO_2 5.71 (5.15–6.34), Al_2O_3 59.90 (58.76–60.51), Cr_2O_3 0.12 (0.05–0.29), FeO 13.85 (11.74–15.16), MnO <0.05 (<0.05–0.07), MgO 0.48 (0.33–0.59), CoO 0.20 (0.17–0.22), NiO 1.01 (0.79–1.14), ZnO 18.87 (17.12–21.26), sum 100.14 wt%, corresponding to $Zn_{0.79}Fe_{0.65}Ni_{0.05}Mg_{0.04}Co_{0.01}Ti_{0.24}Al_{3.98}O_8$, ideally $Zn_{2-2x}Ti_xAl_4O_8$, which is the Zn-dominant member of the högbomite series. Single-crystal size is up to 0.3 mm; the grains form untwinned euhedral pseudotetrahedra, showing{01$\bar{1}$4}and {0001}, that occur as star-like aggregates epitactically overgrown on the octahedral faces of gahnite. Deep brown to black color, adamantine luster, transparent in thin section, brittle, brownish streak, H = 7, VHN_{100} = 1200–1400, conchoidal fracture, no cleavage, nonfluorescent, D_{calc} = 4.36 g/cm^3 for $Z = 4$, insoluble in mineral acids. Optically uniaxial negative, $\omega = 1.878(2)$, $\varepsilon = 1.832(2)$, strongly pleochroic, O = dark brown, E = brown. Single-crystal X-ray study indicated hexagonal symmetry, $a = 5.708(4)$, $c = 18.31(2)$ Å, 8H polytype, probable space group $P6_3mc$. Strongest lines of the powder pattern (57 mm Debye–Scherrer, Cu$K\alpha$ radiation) are 2.85(50,11$\bar{2}$0), 2.60(80,10$\bar{1}$6), 2.42(100,11$\bar{2}$4), 1.592(60,21$\bar{3}$6), 1.470(70,2.0.$\bar{2}$.10), and 1.425(80,22$\bar{4}$0).

The mineral is associated with diaspore, corundum, chloritoid, muscovite, paragonite, margarite, hematite, ilmenite, and gahnite in metabauxites, and was formed at the expense of gahnite during prograde metamorphism. The type locality is the emery deposit at Kerketefs Mountain, Samos Island, Greece, but the new mineral also occurs in metabauxite in the marble envelope of the Menderes massif, southwestern Turkey. Type material is in the Institut für Mineralogie, Ruhr-Universität Bochum, Germany. **J.L.J.**

Unnamed tellurides

J. Vavřín, J. Frýda (1998) Pt-Pd-As-Te mineralization from the Kunratice and Rožany copper-nickel deposits of the Šluknov area. Věstnik Českého geol. ústavu, 73(2), 177–180 (in Czech, English abs.).

The range for three listed electron microprobe analyses is Pd 1.23–1.34, Ni 22.54–23.35, Fe 1.24–1.33, Bi 0.23–0.52, Sb 23.56–23.78, Te 49.78–50.06, sum 99.18–99.91 wt%, corresponding to $Sb(Ni,Fe,Pd)_2Te_2$. One of two listed analyses of another mineral gave Pd 16.60, Ni 7.60, Fe 1.78, Bi 14.92, Sb 0.85, Cu 0.19, Te 57.77, sum 99.70 wt%, corresponding to $Pd_{2.07}(Ni_{1.72}Fe_{0.42})_{\Sigma 2.14}(Bi_{0.94}Sb_{0.09})_{\Sigma 1.03}Te_{6.00}$, simplified as $Pd_2(Ni,Fe)_2BiTe_6$. Another of two listed analyses gave Pd 17.48, Ni 10.16, Fe 1.72, Bi 10.20, Sb 14.56, Cu 0.42, Te 45.76, sum 100.30 wt%, corresponding to $Pd_{0.92}(Ni_{0.97}Fe_{0.17})_{\Sigma 1.14}(Sb_{0.67}Bi_{0.27})_{\Sigma 0.94}Te_{2.00}$, simplified as $PdNi(Sb,Bi)Te_2$. The minerals occur as 4–10 μm grains associated with pyrrhotite, chalcopyrite, pentlandite, violarite, sperrylite, melonite, and other minerals in one or both of the Kunratice and Rožany Cu-Ni deposits in northern Bohemia. **J.L.J.**

Labuntsovite, Mn analog

N.I. Golovina, G.V. Shilov, N.V. Chukanov, I.V. Pekov (1998) Crystal structure of the manganese-rich analog of labuntsovite. Doklady Akad. Nauk, 362(3), 350–352 (in Russian).

Electron microprobe analysis (not given) of a labunsovite-type mineral from the near-contact zone of the Lovozero alkaline massif, Kola Peninsula, Russia, corresponds to the empirical formula $Na_{0.3}K_{3.2}Ba_{0.2}Ti_{6.8}Nb_{1.0}Fe_{0.35}Mn_{1.3}Mg_{0.2}(Si_4O_{12})_4O_8{\cdot}nH_2O$, where $n = 11.3$. Single-crystal X-ray structure study ($R = 0.041$) gave monoclinic symmetry, space group $C2/m$, $a = 14.369(3)$, $b = 13.906(3)$, $c = 7.212(1)$ Å, $\beta = 117.09(2)°$, $D_{calc} = 2.651$ g/cm^3. The structure is reported to differ from that of labuntsovite in having vacant the position normally occupied by Na, with Mn dominant in the position typically occupied by (Mg,Fe^{2+},Mn). **N.N.P.**

Low-Fe eudialyte

R.K. Rastsvetayeva, A.P. Khomyakov (1998) Crystal structure of a low-iron analog of eudialyte. Doklady Akad. Nauk, 362(6), 784–788 (in Russian).

Electron microprobe analysis (not given) corresponds to the empirical formula $Na_{16.83}K_{0.29}Sr_{0.61}Ba_{0.04}Ca_{4.33}Mn_{1.62}Fe_{0.15}REE_{0.41}Zr_{2.88}Ti_{0.19}Si_{25.29}Nb_{0.35}O_{73.3}Cl_{0.61}{\cdot}nH_2O$. Single-crystal X-ray structure study ($R = 0.0485$) gave trigonal symmetry, space group $R3m$, $a = 14.170(4)$, $c = 30.35(2)$ Å; the structural formula for $Z = 1$ corresponds to $[Na_{36}(Na_{6.3}Sr_{1.8}K_{0.9})_{\Sigma 9.0}][Ca_{12.8}Mn_{3.3}Ce_{1.5}Na_{0.4}]_{\Sigma 18.0}[Na_7(Nb_{0.9}Ti_{0.6}Fe^{2+}_{0.5})_{\Sigma 2.0}][Si_3(Mn_{1.5}Si_{1.2}Al_{0.3})_{\Sigma 3.0}]Zr_9(Si_3O_9)_6(Si_9O_{27})_6(OH)_{10}Cl_2{\cdot}4.9H_2O$. The structure is similar to that of Fe-rich eudialyte, but the Fe position is occupied mainly by Na. The mineral occurs in the Lovozero alkaline massif, Kola Peninsula, Russia. **N.N.P.**

Sr-free lamprophyllite

K.A. Lazebnik, N.V. Zayakina, G.P. Patskevich (1998) Strontium-free lamprophyllite, a new member of the lamprophyllite group. Doklady Akad. Nauk, 361(6), 799–802 (in Russian).

Electron microprobe analyses (H_2O, F by wet chemistry) gave SiO_2 28.75, TiO_2 27.80, Al_2O_3 0.44, Fe_2O_3 and FeO 0.71, MnO 1.10, MgO 0.34, CaO 0.36, BaO 24.12, SrO 0.65, Na_2O 11.14, K_2O 0.94, H_2O 1.83, F 1.18, O ≡F 0.50, sum 98.86 wt%, corresponding to $(Na_{0.94}Ca_{0.06})_{\Sigma 1.00}(Na_{1.66}Mn_{0.13}Mg_{0.07}Al_{0.07})_{\Sigma 1.95}(Ba_{1.33}Na_{0.44}K_{0.17}Sr_{0.06})_{\Sigma 2.00}(Ti_{0.94}Fe^{3+}_{0.06})_{\Sigma 1.00}Ti_2O_2[Si_{4.05}O_{14}][(OH)_{1.72}F_{0.52}O_{0.30}]_{\Sigma 2.54}$. Occurs as prismatic crystals, some >10 cm long, rectangular in cross section, and showing {001}, {010}, and {031}. Micaceous {001} cleavage, color of crystals variable from light yellow edges to brown cores; luster vitreous, to pearly on cleavage faces, $H = 3$, transparent in thin plates, $D_{meas} = 3.65$, $D_{calc} = 3.68$ g/cm^3 for $Z = 2$. Optically biaxial positive, $\alpha' = 1.750$, $\gamma' = 1.779$, $2V = 40(5)°$, dispersion $r > v$ strong, $a \wedge Z$ = up to 10°, $X \parallel b$, OAP ⊥ (010). Single-crystal X-ray study indicated monoclinic symmetry, space group $C2/m$, $a = 5.43(1)$, $b = 7.12(1)$, $c = 19.80(2)$ Å, $\beta = 96.4(1)°$. Strongest lines of the X-ray powder pattern (diffractometer, Cu$K\alpha$ radiation) are 9.87(96,002), 3.75(65,$11\bar{3}$), 3.45(90,015,104), 3.275(78,006), 2.797(100,122), and 2.610(43,$12\bar{4}$,017); intensities may have been affected by the micaceous cleavage. Heating to 1000 °C gave a gradual loss of H_2O and F, and an endothermal peak at 900 °C may indicate structural breakdown. The mineral occurs with albite, natrolite, and aegirine in eckermannite-orthoclase pegmatites that cut diopside-phlogopite-orthoclase metasomatites which surround the Inagli alkaline massif in the Aldan shield, Sakha-Yakutia Republic, Russian Federation. **N.N.P.**

New Data

Lewisite

R.C. Rouse, P.J. Dunn, D.R. Peacor, L. Wang (1998) Structural studies of the natural antimonian pyrochlores 1. Mixed valency, cation site splitting, and symmetry reduction in lewisite. J. Solid State Chem., 141, 562–569.

Electron microprobe analysis of type material from Tripuhy, Brazil, gave CaO 14.4, Na_2O 0.1, FeO 3.4, MnO 1.2, TiO_2 15.0, Al_2O_3 0.7, Sb_2O_5 65.8, sum 100.6 wt%. Single-crystal X-ray structure study ($R = 0.014$) indicated cubic symmetry, space group $F\bar{4}3m$, $a = 10.277(1)$ Å, with Fe present as Fe^{3+}, Sb as 60.3% Sb^{5+} and 39.7% Sb^{3+}, and 7.28 (OH) per unit cell. The recalculated analysis is CaO 14.4, Na_2O 0.1, Fe_2O_3 3.8, MnO 1.2, TiO_2 15.0, Al_2O_3 0.7, Sb_2O_3 23.5, Sb_2O_5 39.7, H_2O 2.0, sum 100.4 wt%, corresponding to $[(Ca_{1.04}Mn^{2+}_{0.07}Na_{0.01})(Sb^{3+}_{0.65})]_{\Sigma 1.77}(Sb^{5+}_{0.99}Ti^{4+}_{0.76}Fe^{3+}_{0.19}Al_{0.06})_{\Sigma 2.00}O_6(OH)_{0.91}$. $D_{meas} = 4.950$, $D_{calc} = 4.966$ g/cm^3 for $Z = 8$. A previous study in which lewisite was concluded to be a mixture of roméite and a phase structurally related to pyrochlore (*Am. Mineral.*, 83, p. 403, 1998) is suggested to be in error. **J.L.J.**