NEW MINERAL NAMES*

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Benyacarite


Electron microprobe analysis gave NaO 0.2, K2O 1.6, Al2O3 0.7, Fe2O3 11.0, FeO 2.8, MnO 11.2, MgO 0.3, CaO 0.1, TiO2 12.3, P2O5 28.1, F 1.5, H2O 28.9 (less O = F 1.3, sum 97.4 wt%); from the microprobe analysis and single-crystal X-ray structure study (R = 0.034) the formula is \([\text{H}_2\text{O})_{0.78}\text{K}_{0.16}\text{Na}_{0.01}\]Ti(Mn_{0.58}Fe_{0.42}Mg_{0.04})_{2-}(Fe_{0.68}Ti_{0.32}Al_{0.07})_{6}(\text{PO}_4)_{(2}\text{O}_6\text{F}_{0.4})_{14}\text{H}_2\text{O}.

The mineral is orthorhombic, space group \(Pmbc\), \(a = 10.561(5), b = 20.585(8), c = 12.516(2)\), \(\text{De}=2.37\) g/cm³ for \(Z = 4\). Occurs with other phosphates and with F-rich minerals such as fluellite and pachnolite in a granitic pegmatite at Cerro Blanco, near Tanti, Cordoba, Argentina. The mineral is the Mn (and \(H_2O\)) analogue of paulkerrite.

Discussion. The authors reported that the status of the mineral and new name “have not been approved yet by the Commission on New Minerals and Mineral Names.” Complete data, however, have not yet been submitted to the CNMMN. J.L.J.

Borodaevite*


Microprobe analyses (average of 3) gave Ag 18.23, Pb 3.22, Fe 0.43, Bi 53.47, Sb 6.42, S 17.92, sum 99.69 wt%, corresponding to \([\text{Ag}_{0.16}(\text{Fe}_{0.23}\text{Pb}_{0.14}\text{Bi}_{0.52})_{0.00}S_{1.85}]\). The mineral forms elongate, platy crystals, some with an angle of \(\sim 94^\circ\) between faces, or irregular grains up to 1.2 \(\times 0.5\) mm. Some crystals have decomposition rims of matildite + aramayoite + galena or matildite + gustavite, and some contain inclusions of these minerals. \(VHN_{5} = 165\). White in reflected light, very weak bireflectance (only on grain boundaries), distinct brown anisotropy, nonpleochroic, no internal reflections. Reflectance percentages (nm, \(R_i\), \(R_p\)): 420, 41.4, 39.9; 460, 42.1, 39.8; 480, 42.3, 39.7; 520, 41.8, 39.1; 546, 41.4, 38.9; 589, 40.8, 37.8; 620, 40.3, 37.7; 650, 39.8, 36.9; 700, 39.3, 36.1. X-ray powder and electron diffraction study showed the mineral to be monoclinic, space group \(C2/m\) or \(Cm\), \(a = 13.515(7), b = 4.098(3), c = 26.000(8)\), \(\beta = 93.00(4)^\circ\), \(Z = 2\), \(D_{calc} = 7.90\) g/cm³. The strongest lines of the powder pattern (47 given) are 3.49(80,113, diffuse), 4.15(90,400, diffuse), 3.24(90,008), 2.82(100, 313), and 1.992(80,023). The mineral, which belongs to the pavinite homologous series, occurs in the Alaskanov deposit, Yakutia, Siberia, Russia, where it is associated with quartz, molybdeneite, triplite, hübertite, pavonite, benjaminite, gustavite-andorite, ramdohrite, teremkovite (owyeheeite), matildite, and aramayoite. The name is for Russian mineralogist Yu. S. Borodaev. Type material is at the Fersman Mineralogical Museum, Moscow, Russia. J.P.

Hennomartinite,* kornite*


Both minerals occur in a coarse-grained sample consisting of about 70% sulphite and 25% serandite-pectolite from the Wessels mine, Kalahari Mn field, Republic of South Africa. The minerals formed as hydrothermal reaction products of primary manganese ore.

Hennomartinite

Chemical and crystallographic data were abstracted as unnamed \(\text{SrMn}_2[\text{Si}_2\text{O}_7](\text{OH})_2\cdot\text{H}_2\text{O}\) in \(Am\). Mineral., 77, p. 1307, 1992. The mineral occurs as yellow-brown pseudohexagonal plates \(\sim 1\) mm in diameter; vitreous luster, translucent, \(H = 2\), nonfluorescent, \(D_{calc} = 3.68\) g/cm³ for \(Z = 4\). Optically biaxial, sign uncertain, \(n = > 1.82, 2V' = 63(1)^\circ\), strongly pleochroic from yellowish brown to dark red-brown. The strongest lines of the X-ray powder pattern (Guinier camera, FeK\(\alpha\) radiation) are 4.08(86,111), 3.37(66,113), 2.83(100,202), 2.807(82,114), and 2.401(68,222). The new name is for Henno Martin, German geologist, who has published several papers on the

* Before publication, minerals marked with an asterisk were approved by the Commission on New Minerals and Mineral Names, International Mineralogical Association.
Precambrian geology of Namibia. Type material is in the Museum of Natural History, Bern, Switzerland.

Kornite

Occurs with hennomartinite as dark red to brownish lilac bundles of fibers, commonly bent and 5–20 μm in diameter, with fiber length <200 μm. Electron and ion microprobe analyses gave K 3.56, Na 7.61, Li 1.96, MgO 10.03, MnO 13.17, FeO 4.93, SiO 56.06, H 2O (by difference 2.68), sum 100 wt%, corresponding to (K 0.35Na 0.65)0.096(Na 0.17Na 0.21)0.196(Mg 0.21Mn 0.13Fe 0.61Li 0.96)0.21O 5Si 0.22(OH) 1.3. Translucent, vitreous luster, brittle, elongate [001] and with a cleavage parallel to it, nonfluorescent. D calc 3.15 g/cm 3 for Z = 2. Optically biaxial negative, a = 1.654(4), b = 1.675, c = 1.696(4), 2V = 88–92°, Z = b, Y: c = 60–65° in the obtuse angle β, pleochroic formula X = pink, Y = dark red, Z = orange-red. Various X-ray single-crystal methods gave diffuse diffraction spots from which a pattern was assembled with strong lines at 3.25(240), 3.13(310), and 2.81(320), 2.55 Å (002); of the 13 medium-intensity lines, the first three are 8.890(020), 8.427(110), and 5.077(130). The mineral is an amphibole and, by analogy, a = 9.94(1), b = 17.80(2), c = 5.302(4), β = 105.5(2)°. Thenew nameis for Hermann Korn (d. 1946), German geologist, who was associated with Henno Martin and was co-author of several papers with Martin on the geology of Namibia. Type material is deposited with hennomartinite at Bern. J.L.J.

Mineevite-(Y)*


Microprobe analyses (average of 3) gave Na 2O 38.04, CaO 0.05, MnO 0.39, FeO 2.61, SiO 2.93, TiO 2.35, NbO 0.14, F 1.0, H 2O (by coulometry) 1.6, O = F 2.4, sum 98.82 wt%, corresponding to Na 2Ba(Y,Gd,Dy) 2(PO 4) 3(TF) ·2F·Cl 0.39Na 0.61Ba 0.61(Y,Gd,Dy) 2(PO 4) 3(TF) ·2F·Cl. The mineral occurs in jilotic-urtitic pegmatites as interstitial 0.5–1 mm grains and aggregates up to 3–5 mm in diameter. Yellow, orange-yellow, or orange-brown color, vitreous to adamantine luster, translucent, thin pieces transparent. Fracture conchoidal, no cleavage, nonfluorescent, H = 5, D mean = 3.12(5), D calc = 3.07 g/cm 3 for Z = 4. The infrared pattern shows strong absorptions at 342, 362, 862, 903, and 1003, and a weak one at 3400–3500 cm −1 . Optically biaxial positive, α = 1.740(2), β = 1.741(2), γ = 1.765(2), 2V = 23°, weakly pleochroic with Y = yellow, X = pink, Z = orange-red. Single-crystal X-ray structure study showed the mineral to be orthorhombic, space group Pnma, a = 9.827(3), b = 9.167(2), c = 4.799(2) Å. The strongest lines of the powder pattern are 2.74(800,221), 1.720(30,250), 1.680(30,440), 1.475(33,342), and 1.443(35,360). The mineral occurs at Yukspor Mountain in the Khabin massif, Kola Peninsula, Russia, where it is associated with lepidomelane, aegirine, lorenzenite, shcherbakovite, villiaumite, and hisingerite(?). The name relates to natisite, tetragonal Na 2TiSiO 4. Type material is at the Fersman Mineralogical Museum, Moscow, Russia. J.P.

Paranatisite*


Microprobe analyses (average of 3) gave Na 2O 38.04, CaO 0.05, MnO 0.39, FeO 2.61, SiO 2.93, TiO 2.35, NbO 0.14, F 1.0, H 2O (by coulometry) 1.6, O = F 2.4, sum 98.82 wt%, corresponding to Na 2Ba(Y,Gd,Dy) 2(PO 4) 3(TF) ·2F·Cl. The mineral occurs in jilotic-urtitic pegmatites as interstitial 0.5–1 mm grains and aggregates up to 3–5 mm in diameter. Yellow, orange-yellow, or orange-brown color, vitreous to adamantine luster, translucent, thin pieces transparent. Fracture conchoidal, no cleavage, nonfluorescent, H = 5, D mean = 3.12(5), D calc = 3.07 g/cm 3 for Z = 4. The infrared pattern shows distinct absorptions at 342, 362, 862, 903, and 1003, and a weak one at 3400–3500 cm −1 . Optically biaxial positive, α = 1.740(2), β = 1.741(2), γ = 1.765(2), 2V = 23°, weakly pleochroic with Y = yellow, X = pink, Z = orange-red. Single-crystal X-ray structure study showed the mineral to be orthorhombic, space group Pnma, a = 9.827(3), b = 9.167(2), c = 4.799(2) Å. The strongest lines of the powder pattern are 2.74(800,221), 1.720(30,250), 1.680(30,440), 1.475(33,342), and 1.443(35,360). The mineral occurs at Yukspor Mountain in the Khabin massif, Kola Peninsula, Russia, where it is associated with lepidomelane, aegirine, lorenzenite, shcherbakovite, villiaumite, and hisingerite(?). The name relates to natisite, tetragonal Na 2TiSiO 4. Type material is at the Fersman Mineralogical Museum, Moscow, Russia. J.P.

Petitjeanite*

W. Krause, K. Belendorff, H.-J. Bernhardt (1993) Petitjeanite, Bi 2O(OH)(PO 4) 3, a new mineral, and addi-
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The mean of five electron microprobe analyses gave Bi$_2$O$_3$, 76.04, PbO, 3.39, P$_2$O$_5$, 14.34, As$_2$O$_3$, 2.99, V$_2$O$_5$, 0.01, H$_2$O$_{eq}$, 1.18, sum 97.95 wt%, corresponding to (Bi$_{386-}$Pb$_{0.13-}$O$_{25.95}$P$_{0.85}$ $(OH)_{1.15}[(PO$_4$)$_{0.77}$ (As$_{0.02}$)$_{0.23}$]$_{2.00}$, ideally Bi$_7$O$_{24}$ $(OH)(PO_4)$$_2$. Additional analyses indicate complete solid solution between the AsO$_4$ analogue preisingerite, and the VO analogue schumacherite. Occurs as spherical aggregates or crusts of intergrown crystals to 0.2 mm, tabular on {100}, slightly elongate [001], with distinct {010}, {001}, {011}, and minor {110}; typically twinned by rotation on {010}. Color white to pale pink for V-free samples, yellow for V-bearing material, also dark brown. Transparent to translucent, white streak, vitreous to adamantine luster, conchoidal fracture, $H = 4.5$, nonfluorescent, soluble in dilute HCl, $D_{calc} = 6.99$ g/cm$^3$, at $Z = 2$. Optically biaxial positive, $\alpha = 2.06(2)$, $\gamma = 2.13(2)$, $2V = 75(5)^\circ$, distinct dispersion $r > v$. Cell dimensions calculated from the X-ray powder patterns (diffractometer, CuK$\alpha$ radiation) are triclinic, space group $P1$, $a = 9.798(3)$, $b = 7.250(3)$, $c = 6.866(2)$ Å, $\alpha = 88.28(2)$, $\beta = 115.27(2)$, $\gamma = 110.70(3)^\circ$; the strongest lines are 4.437(46,201,110), 3.247(87,220,202), 3.188(100,221,121), 3.135(95,021,111), 3.026(75,121,210,21), 2.953(47,310), and 2.165(41,310,13). The mineral occurs with bismutite, mixite, reichenbachite, pyromorphite, and malachite in silicified barite veins at Gademiner (type locality) and Reichenbach near Bensheim, Odenthal, Hesse, Germany; also at Schneeberg, Saxony, Germany. The new name is for K. Petijean, mineral collector, who first found the mineral. Type material is in the Institut für Mineralogie, Ruhr-Universität Bochum, Germany. J.I.J.

**Qilianshanite**


Wet-chemical analysis gave Na$_2$O 17.92, CaO 0.22, MgO 0.05, B$_2$O$_3$ 20.02, CO$_2$ 16.99, H$_2$O 43.11, sum 98.31 wt%, corresponding to Na$_{0.97}$Ca$_{0.02}$Mg$_{0.03}$B$_{1.04}$O$_{8.11}$, the ideal formula NaHCO$_3·$H$_2$BO$_3·$2H$_2$O requires Na$_2$O 17.04, B$_2$O$_3$ 19.14, CO$_2$ 24.20, H$_2$O 39.63 wt%. The mineral occurs mainly as colorless aggregates to 4 mm in diameter, less commonly as tabular or prismatic crystals to 2 mm. Transparent, white streak, vitreous luster, $H = 2$, perfect {100} and {010} cleavages, $D_{max} = 1.706$, $D_{calc} = 1.639$ g/cm$^3$ for $Z = 4$, polysynthetically twinned, soluble in water, soluble with effervescence in dilute HCl. Optically biaxial negative, $\alpha_{calc} = 1.351$, $\beta = 1.459(2)$, $\gamma = 1.486(2)$, $2V = 50(1)^\circ$, $X = b$, $Z: c = 9^\circ$, moderate dispersion $r < v$. Single-crystal X-ray study showed the mineral to be monoclinic, space group $C2$, $a = 16.119(8)$, $b = 6.928(4)$, $c = 6.730(3)$ Å, $\beta = 100.46(4)^\circ$. The strongest lines (13 given) of the powder pattern (CuK$\alpha$ radiation) are 6.36(25,110), 4.203(6,310), 3.464(100,020), 3.173(59,220), 2.608(5,420), and 1.731(19,040). DTA gave strong endothermic peaks at 100 (double peak), 185, and 960 °C, plus five weaker ones to 960 °C; total loss (H$_2$O + CO$_2$) was 59.5 wt% (theoretical, 63.8 wt%). An infrared spectrum is given.

The mineral is associated with quartz, calcite, tincalconite, and nahcolite at the Juohntou boron deposit on the southwestern border of the Qilian Mountain System, Qinghai Province, China. The new name is for the locality. Type material is in the National Museum of Geology, Beijing, China.

**Discussion.** The large differences between the measured and calculated densities, and between the theoretical and analytical CO$_2$ values (although the total weight on heating gave a reasonable result), suggest that something is wrong with the formula or the aforementioned determinations. J.I.J.

**Rosenbergite**


Electron microprobe analyses of two grains gave Al 19.94, F 41.05, H$_2$O (by difference) 39.01, sum 100 wt%, corresponding to Al$_{0.97}$F$_{0.03}$·2.99H$_2$O, simplified as AlF$_5$·3H$_2$O, with the structural formula as given in the title. Occurs as radiating tufts of colorless, transparent, slender tetragonal prisms, elongate [001] to 0.25 mm in length, vitreous luster, good {001} cleavage, $VHN_{15} = 103$ (92–113), $D_{max} = 2.10(1)$, $D_{calc} = 2.11$ g/cm$^3$ for $Z = 2$, nonfluorescent. Optically uniaxial negative, $\epsilon = 1.403$, $\omega = 1.427$. Single-crystal X-ray structure study ($R = 0.0276$) indicated tetragonal symmetry, space group $P4/n$, $a = 7.715(1)$, $c = 3.648(1)$ Å. The strongest lines from a 114-mm Gandolfi powder pattern (CuK$\alpha$ radiation) are 5.474(100,110), 2.439(72,130), 2.027(70,131), 1.775(78,012), 1.725(85,240), and 1.306(70,142), in good agreement with the data from the synthetic analogue.

The new name is for P. E. Rosenberg of Washington State University, who discovered and partly described an occurrence in volcanicogenic encrustations at Mount Erebus, Antarctica. The mineral from the Cetine mine is associated with gypsum, fluorite, epsalolite, ralstonite, and onoratoite in cavities in a highly silicified limestone. Type material is in the Museum of Natural History of the University of Florence, Italy. J.I.J.

**Shomiokite-(Y)**

Electron microprobe analyses (average of 3, with CO₂ by wet chemistry, H₂O by coulometry) gave Na₂O 21.93, CaO 0.01, Y₂O₃ 21.52, CeO₂ 0.09, Gd₂O₃ 1.80, Tb₂O₅ 0.46, Dy₂O₃ 5.03, Ho₂O₃ 0.63, Er₂O₃ 1.24, CO₂ 32.10, H₂O 14.20, sum 99.10 wt%, corresponding to (Na₁.₉₅Ca₀.₀₁)₂₋₃(O₁.₇₀Dy₀.₄₁Gd₀.₀₄Er₀.₀₃Ho₀.₀₁Tb₀.₀₁)₂₋₃O₀.₉₁C₁₈H₃.₂₆Na₂₄. The mineral forms irregular grains and short prismatic pseudo-hexagonal crystals up to 1–2 mm in diameter. Their rosettelike aggregates are up to 3 mm. Distinct {110}, {120}, and {111} faces, dull and uneven. Colorless, translucent, in small pieces transparent, luster dull waxy to silky, parts into needles {110}, {110} cleavage, {001} parting, H = 2–3, D_ave = 2.52(5), D_45° = 2.59 g/cm³ for Z = 4. Soluble with effervescence in dilute acids. Becomes turbid and dehydrates on heating. The infrared spectrum has absorption bands at 763, 730, 880, 1020, 1065, 1385, 1515, and 1560 cm⁻¹. Optically biaxial positive, α = 1.528(2), β = 1.529(2), γ = 1.531(2) (white light), 2V_α = 49° (red), 45° (yellow), 39° (blue); a = Z, b = X, c = Y. Single-crystal X-ray study indicated orthorhombic symmetry, P cell, a = 10.136(2), b = 17.348(4), c = 5.970(2) Å. Strongest lines of the powder pattern (54 lines given) are 6.53(55, 120), 5.05(50, 200), 4.85(65, 210), 2.85(70, 250), 2.229(50, 270), and 2.076(100, 062).

The mineral occurs among the interstices of potassium feldspar crystals in pegmatites of the Allauirov Mountain, Lovozero massif, Kola Peninsula, Russia. Associated minerals are albite, cancrinite, kogarkoite, villiaumite, neptunite, and sidorenkite. The name is derived from the Shomiok River, which is close to the place of occurrence. Type material is at the Fersman Mineralogical Museum, Moscow, Russia. J.P.

**Uranoplycrase**


Electron microprobe analyses gave UO₂ 39.08, TiO₂ 27.36, ThO₂ 4.14, Nb₂O₅ 11.27, Ta₂O₅ 5.98, Y₂O₃ 7.78, Nd₂O₃ 0.37, MnO 0.48, CaO 0.22, sum 96.73 wt%, corresponding to (U₀.₃₂Y₀.₇₁Th₀.₀₁Mn₀.₀₅Ca₀.₀₂Nd₀.₀₁)₂₋₃O₀.₉₁(Nb₀.₃₆Ta₀.₁₂)₂₋₃O₀.₃₁. Occurs as opaque, euhedral, brown-red crystals elongate [001] (to at least 0.15 mm, judging from a SEM photo); crystals are tabular {100}, also showing {010} and {110}. Adamantine luster, brownish streak, good (100) cleavage, VHN₃₀ = 659. In reflected light, pale gray with bluish tones, dark-brown red [sic] internal reflection; reflection percentages (SiC standard) at 470, 546, 589, and 650 nm are, respectively, 23.6, 21.5, 22.3, and 25.1. The mineral is "almost totally metamict": grains heated to 900 °C gave Weissenberg patterns showing orthorhombic symmetry, space group Pbcn, a = 14.51(1), b = 5.558(5), c = 5.173(4) Å. Strongest lines of a 114-mm Gandolfi pattern (FeKα radiation) are 2.99(100, 311), 2.78(25, 020), 1.90(50, 022), 1.77(35, 602), and 1.48(40, 911). Single-crystal X-ray structure study (R = 0.047) confirmed isostructural relationships with AB₂O₆ compounds.

The new mineral contains domains of uranium polycrase-(Y) and is associated with euxenite-(Y), manganese-columbite, titanowodginite, and uranemicrolite in a pegmatic vein at Campo village, Elba Island. Type material is in the Museo di Storia Naturale e del Territorio, Università di Pisa, Pisa, Italy. J.L.J.

(Y, Nd)₄₆(Th, Nb)₆₆


Of the nine electron microprobe analyses listed, those with the highest and lowest Pd values have Pd 30.5, 22.7, Fe 0.5, 0.3, Ni 5.8, 11.4, As 0.3, 0.4, Sb 30.2, 31.2, Bi 1.0, 1.5, Te 31.0, 31.2, sum 99.3, 99.6 wt%, corresponding to (Pd₁₅Ni₂₀Th₀.₀₂Sb₀.₀₂Te₀.₀₂Bi₀.₀₂As₀.₀₂)₀.₉₄(Ti₂₀Sb₀.₀₂Te₀.₀₂Bi₀.₀₂As₀.₀₂)₀.₉₄. Grains are anhedral to six-sided euhedral, and size is up to 30 × 80 μm. Yellowish and slightly anisotropic, with Ni-rich grains strongly anisotropic. Associated mainly as inclusions in gersdorffite, less commonly in nickeline.

**Discussion.** As all except one of the analyses have Sb > Te, the formula should be written as (Pd, Ni)(Sb, Te). The predominance is slight, however, and all analyses also have Sb:Te close to 1:1. Associated sudburyite (PdSb) and testiboppalladite [Pd(Sb, Bi)Te] gave analyses close to their stoichiometric compositions, suggesting that the composition of the unnamed phase is distinct. Data for an isotropic phase of composition Pd(Sb, Te, Bi) are reported in Am. Mineral., 76, 1437–1438, 1991. J.L.J.

(Cu, Fe)(Re, Mo)₄S₄


Three electron microprobe analyses gave an average of Re 55.81, Mo 10.17, Cu 5.73, Fe 1.18, S 26.17, sum 98.85 wt%, corresponding to (Cu₀.₅₀Fe₀.₄₂Re₀.₁₂)₀.₉₁(Mo₀.₃₅S₀.₆₅)₀.₇₇. The twelve grains observed are up to 15 × 25 μm and have mainly hexagonal, square, and triangular outlines. In reflected light, gray with a violet tint, isotropic; reflectance percentages at the four standard wavelengths (470, 546, 589, 650 nm) are, respectively, 35.8, 37.0, 37.2, and 37.8. The mineral occurs in pegmatoidal pyroxenite. As in a previous report for an occurrence in the Stillwater Complex (Am. Mineral., 77, 1117–1118, 1992), X-ray data were not obtainable. J.L.J.
New Data

Cordylite-(Ce)


The mean and range of five electron microprobe analyses gave CaO 3.09 (2.60–3.32), BaO 22.54 (21.62–23.27), La2O3 15.59 (14.34–16.96), Ce2O3 22.20 (21.28–23.28), Pr2O3 1.40 (1.30–1.56), Nd2O3 5.21 (4.72–6.17), Na2O and F (single determinations, ion chromatography) 1.16 and 2.52, respectively, CO2 (elemental analyzer) 26.64, less O = F 1.06, sum 99.35 wt%, corresponding to (Ca0.398Na0.255)Ba0.95(Ce0.924La0.217Pr0.058)4.843-O1.06F0.906, simplified as (Ca0,D0.5)BaCe2(CO3)4F.

Occurs as colorless to yellowish green, transparent, irregular grains and tablets to 2 mm; white streak, vitreous to oily luster, nonfluorescent, H = 4.5, brittle, perfect {0001} cleavage, irregular fracture, Dmeas = 4.446(6), Dcalc = 4.35 g/cm³ for Z = 2. Optically uniaxial negative, ω = 1.7750(2), ε = 1.5984(2) at 589 nm. DTA gave an endothermic peak at 553 °C (evolution of CO2) and a weaker endothermic peak at 1047 °C. Single-crystal X-ray structure study (R = 0.05) gave hexagonal symmetry, space group P62c, a = 5.093(6), c = 23.017(6) Å. Strongest lines of the powder pattern (diffractometer, CuKα radiation) are 4.341(70,101), 4.127(60,102), 3.846(100,006), 3.511(90,104), and 3.192(90,105). The mineral occurs at the Bayan Obo deposit, Inner Mongolia, where it is interlayered with cebeite-(Ce) and is associated with magnetite, fluorite, sphalerite, ilmenite, and pyrite.

Discussion. The authors note that there are inconsistencies in the assumed formula and structure previously given for cordylite-(Ce), and they suggest that cordylite-(Ce) and baiyuneboite-(Ce) may be the same mineral (see Am. Mineral., 75, p. 240, 1990). The authors suggest that cordylite be used as a group name and that baiyuneboite-(Ce) be defined as the Na member, i.e., NaBaCe2(CO3)4F; the mineral defined here would be the Ca member, i.e., (Ca0.5Ca0.5)BaCe2(CO3)4F. Substitution of Ca is not ordered, but (Ca,Na) occupies a position distinct from that of Ba. The proposal has not been submitted to the nomenclature committee of the CNMMN. J. A. Mandarino, Chairman of the CNMMN, also has pointed out (personal communication) that the analytical data correspond to (Ca0.176Na0.255)Ba1.064(Ce0.034La0.654Nd0.217Pr0.038)2.1848-O1.134F0.906.

Ferrihydrite


X-ray absorption spectroscopy and calculated X-ray diffraction curves for ferrhydrite indicate that it consists of three components: (1) Structural anionic ABA and ACA fragments in which Fe cations occupy only octahedral sites; the cell is hexagonal, space group P31C, a = 2.96, c = 9.40 Å. These fragments alternate in a regular pattern to form a three-dimensional structure. (2) Fragments that alternate completely at random, but within which the Fe atoms have an ordered distribution in a hexagonal supercell with a = 5.126 Å. (3) Ultradispersed hematite in which coherent scattering domains are of the order of 10–20 Å. The hematite accounts for the asymmetry of the X-ray diffraction peak at about 2.7 Å.

Lazurite


Single-crystal X-ray study of lazurite from the Ladzhvardarinskoed deposit, Pamir Mountains, Russia, gave orthorhombic symmetry, space group Pnna, a = aob, b = acob √2, c = 3aco √2, where aob refers to the cubic polymorph (9.072 Å).


Parisite-(Ce)-4H


Quantitative electron microprobe analysis (data given) and electron diffraction study of parisite-(Ce) from Bayan Obo, Inner Mongolia, showed the presence of three different lattices, each with a hexagonal subcell of a = 4.11, c = 4.70 Å. The superlattice reflections showed that, in addition to the previously known 3R and 6R polytypes, a 4H polytype with a = 7.12, c = 56.4 Å is present.