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# NEW MINERAL NAMES

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## LISITSYNITE*

A.P. Khomyakov, G.N. Nechelyustov, E.V. Sokolova, F.C. Hawthorne (2000) The new borosilicates malinkoite, $NaBSiO_4$, and lisitsynite, $KBSi_2O_6$, from the alkaline pegmatites of the Khibiny–Lovozero complex (Kola Peninsula). Zapiski Vseross. Mineral. Obshch., 129(6), 35–42 (in Russian, English abs.).

The mineral occurs as a single aggregate of colorless grains, some corroded and irregular, others tabular, 0.2–0.5 mm across, showing pinacoid {010} and rhombic prism {110} faces. The average of electron microprobe analyses of five grains is $SiO_2$ 58.94, $B_2O_3$ 17.17, $K_2O$ 23.50, $Na_2O$ 0.00, sum 99.61 wt%, corresponding to $K_{1.01}B_{1.00}Si_{1.99}O_6$ (no other element with $Z > 8$ was detected). Insoluble in HCl, $HNO_3$, and $H_2SO_4$ at room temperature. Transparent, vitreous luster, good {010} cleavage, stepped fracture, $H = 6$, brittle, $D_{meas} = 2.74(2)$, $D_{calc} = 2.75$ g/cm$^3$ for $Z = 4$. Optically biaxial negative, $\alpha = 1.561(1)$, $\beta = 1.563(1)$, $\gamma = 1.564(1)$, $2V_{meas} = 51(2)°$, $X = a$, $Y = b$, $Z = c$, strong dispersion $r > v$. X-ray structure study (*Can. Mineral.*, 39, p. 159, 2001) indicated orthorhombic symmetry, space group $P2_12_12_1$, $a = 9.9630(4)$, $b = 10.4348(4)$, $c = 4.7044(2)$ Å. Strongest lines of the powder pattern (33 lines given, 114.6 mm Gandolfi, Cu$K\alpha$ radiation) are 3.944(50,111) 3.495(80,021), 3.282(100,121,130), 3.149(40,310), 2.704(40,301,131), and 2.293(40,012,102).

The mineral occurs in the central zone of a hyperagpaitic pegmatite with microcline, pectolite, chkalovite, lomonosovite, thermonatrite, aegirine, and alkali amphibole, near Mt. Koashva, Khibiny massif, Kola Peninsula, Russia. The new name is for the Russian specialist in B deposits, Apollon E. Lisitsyn (1928–1999). Type material is in the Fersman Mineralogical Museum, Moscow, Russia. **E.S.G.**

## MALINKOITE*

A.P. Khomyakov, G.N. Nechelyustov, E.V. Sokolova, F.C. Hawthorne (2000) The new borosilicates malinkoite, $NaBSiO_4$, and lisitsynite, $KBSi_2O_6$, from the alkaline pegmatites of the Khibiny–Lovozero complex (Kola Peninsula). Zapiski Vseross. Mineral. Obshch., 129(6), 35–42 (in Russian, English abs.).

The mineral occurs as a rosette, 3 mm in diameter, of wedge-shaped crystals up to 0.5 mm thick, which are white with creamy rose tint in the specimen from Mt. Karnasurt, the type locality; also occurs at Mt. Alluaiv as pale rose or greenish blue spherulites, 0.5 mm in diameter (rarely to 2 mm). A few crystals in the holotype specimen show hexagonal prism {*h*00} and pinacoid {001} faces. The average of electron microprobe analyses of seven grains is $SiO_2$ 47.83, $B_2O_3$ 26.88, $K_2O$ 0.00, $Na_2O$ 24.36, sum 99.07 wt%, corresponding to $Na_{1.00}B_{0.98}Si_{1.01}O_4$ (no other element with $Z > 8$ was detected). Insoluble in HCl, $HNO_3$, and $H_2SO_4$ at room temperature. Translucent (turbid) to transparent, vitreous luster (spherulites are pearly or silky), moderate {*h*00} and {001} cleavages, stepped to hackly fracture, $H = 7$, brittle, $D_{meas} = 2.90(2)$, $D_{calc} = 2.93$ g/cm$^3$ for $Z = 18$. Optically uniaxial negative, $\varepsilon = 1.582(2)$, $\omega = 1.591(2)$. The infrared spectrum has absorption bands at 1140, 980, 880, 805, 647, 598, 542, 517, 487, and 475 cm$^{-1}$. X-ray structure study (*Can. Mineral.*, 39, p. 159, 2001) indicated hexagonal symmetry, space group $P6_3$, $a = 13.8964(4)$, $c = 7.7001(2)$ Å. Strongest lines of the powder pattern (30 lines given, 114.6 mm Gandolfi, Cu$K\alpha$ radiation) are 3.86(60,002) 3.61(60,012,031), 2.780(100,032), 2.320(70,330), 2.216(90,331), 1.928(50,250) and 1.721(70,333).

The mineral occurs in a cavity in the ussingite-rich core of a hyperagpaitic pegmatite at Mt. Karnasurt (type), and in a cavity in "natro-opal" in albitized pegmatoidal rock from Mt. Alluaiv, Lovozero massif, Kola Peninsula, Russia. The new name is for the Russian mineralogist Svetlana V. Malinko (b. 1927), a specialist in B minerals. Type material is in the Fersman Mineralogical Museum, Moscow, Russia.

**Discussion**. The relationship between malinkoite and two unnamed minerals having the composition $NaBSiO_4$ (UK53 and UK53A) from Mont Saint-Hilaire (*Mineral. Record*, 21, p. 365, 1990) remains an open question. **E.S.G.**

## PILLAITE*

P. Orlandi, Y. Moëlo, A. Meerschaut, P. Palvadeau (2001) Lead-antimony sulfosalts from Tuscany (Italy). III. Pillaite, $Pb_9Sb_{10}S_{23}ClO_{0.5}$, a new Pb-Sb oxy-chloro-sulfosalt, from Buca della Vena mine. Eur. J. Mineral, 13, 605–610.

Electron microprobe analysis gave Pb 49.07, Sb 30.36, Cu 0.16, S 18.73, Cl 0.98, O 0.21 (from the structure determination), sum 99.51 wt%, corresponding to $Pb_{9.30}Sb_{9.80}Cu_{0.10}S_{22.94}Cl_{1.06}O_{0.5}$, ideally $Pb_9Sb_{10}S_{23}ClO_{0.5}$. Acicular [010] to 1 cm length and 0.1 mm thickness, black color, metallic luster, opaque, black to dark brown streak, brittle, irregular fracture,

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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.

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no cleavage, $VHN_{50}$ = 175, $D_{calc}$ = 5.77 g/cm$^3$ for $Z$ = 4. In reflected light, nonpleochroic, weakly anisotropic and bireflectant, rare red internal reflection. Reflectance percentages in air and in oil are given in 10 nm steps from 400 to 800 nm for a grain perpendicular to the elongation; representative values in air are 35.7 (470 nm), 34.5 (546), 34.0 (589), and 32.7 (650). Single-crystal X-ray structure study indicated monoclinic symmetry, space group $C2/m$, $a$ = 49.65(3), $b'$ = 4.150(4), $c$ = 21.91(1) Å, β = 99.76(5)°; a weak superstructure shows that $b = 2b'$. Strongest lines of the powder pattern are 4.14(27,205), 3.261(26,$\bar{4}$06,12.0.02), 3.458(40,$\overline{12}$.0.4,$\overline{10}$.0.5), 3.480(100,206), and 2.956(47,$\bar{5}$15, 16.01,$\overline{12}$.0.6,$\bar{9}$14).

The mineral is a member of the zinkenite group and is associated with sphalerite, cinnabar, galena, tetrahedrite, chalcostibite, gersdorffite, barite, and several other minerals, among which are the Pb sulfosalts boulangerite, robinsonite, scainiite, zinkenite, tintinaite, and sorbyite. These occur in calcite veins that cut the Ba-Fe orebody and host rocks at the Buca della Vena mine in the Apuan Alps of northern Tuscany, Italy. The new mineral name is for Italian earth scientist Leopoldo Pilla (1805–1848). Type material is in the Museo di Storia Naturale e del Territorio at the University of Pisa, Italy. **J.L.J.**

## WOODALLITE*

B.A. Gruguric, I.C. Madsen, A. Pring (2001) Woodallite, a new chromium analogue of iowaite from the Mount Keith nickel deposit, Western Australia. Mineral. Mag., 65, 427–435.

The mineral occurs as platelets, commonly curved or crenulated and up to 100 μm in maximum dimension, that form compact clusters and whorls up to 6 mm across. Purple to deep magenta color, transparent, resinous to waxy luster, pale pink to white streak, $H = 1\frac{1}{2} - 2$, perfect {001} cleavage, lamellae flexible but inelastic, nonfluorescent, $D_{meas}$ = 2.062(5), $D_{calc}$ = 2.023 g/cm$^3$ for the empirical formula and $Z = {}^3/_8$. Readily soluble in dilute acids, with little or no effervesence. Pale pink in transmitted light, violet to pinkish lilac distinct pleochroism, ω = 1.555, ε = 1.535. The range and mean of electron microprobe analyses, with the mean corrected for $H_2O$-OH loss during analysis, are Mg 21.75–28.90, 22.90, Cr 10.32–11.31, 9.56, Fe 4.56–5.19, 4.30, Al 0.54–0.82, 0.60, Cl 4.43–12.86, 8.71, S 0.01–0.05, 0.03, $CO_3$ (Leco carbon analyzer) 1.52, OH (calc.) 41.40, $H_2O$ (calc.) 10.96, sum 100 wt%, which for 16 OH corresponds to $Mg_{6.19}(Cr^{3+}_{1.21}Fe^{3+}_{0.51}Al_{0.15})_{\Sigma 1.87}(OH)_{16}[Cl_{1.62}(CO_3)_{0.17}(SO_4)_{0.01}]_{\Sigma 1.80}\cdot 4H_2O$, ideally $Mg_6Cr_2(OH)_{16}Cl_2\cdot 4H_2O$. DTA showed a two-stage weight loss of 12.7% from 25–300 ºC, and 27.3 wt% from 300–600 ºC. Indexing of the X-ray powder pattern (diffractometer, Cu$K\alpha$ radiation) indicated rhombohedral symmetry, $a$ = 3.103(2), $c$ = 24.11(2) Å, isotructural with the hydrotalcite group ($R\bar{3}m$). Strongest lines are 8.0361(100,003), 4.0205(48,006), 2.3488(5,015), and 2.0072(6,0.1.12).

The mineral occurs abundantly in association with chromite, lizardite, brucite, iowaite, pentlandite, magnetite, and tochilinite in altered dunite at the Mount Keith nickel deposit, about 90 km NNE of Leinster, Western Australia. The new name is for Australian geologist Roy Woodall (b. 1930). Type material is in the South Australian Museum, the Western Australian Museum, and the Museum of Victoria. **J.L.J.**

## Mo, $Fe_3Sn$

O.A. Bogatikov, A.I. Gorshkov, A.V. Mokhov, N.A. Ashikhmina, L.O. Magazina (2001) The first finding of native molybdenum, silver sulfide, and iron-tin alloy in the lunar regolith. Geochem. Internat., 39, 604–608.

Polished thin sections of lunar regolith, which was sampled at Mare Crisium during the Luna-24 mission, contain a Mo-bearing grain, 1 × 0.6 μm, at the margin of a pyroxene fragment. Although the grain is too small for quantitative analysis, an analysis of the pyroxene showed it to be augite; deduction of the elements attributable to beam overlap indicated that the minute grain is native molybdenum.

Equant particles of a Fe-Zn compound, 0.7 to 2.0 μm, occur with plagioclase. Quantitative analysis (not reported) of one grain, about 3 μm across, gave Fe:Sn = ~3, and X-ray maps show the absence of O. The grain may be $Fe_3Sn$, which is known as a synthetic phase. **J.L.J.**

## Cu, Fe SILICIDES

N.S. Rudashevskii, Yu.L. Kretser, L.I. Anikeeva, S.I Andreev, M.P. Torokhov, V.E. Kazakova (2001) Platinum minerals in oceanic ferromanganese crusts. Doklady Earth Sciences, 378(4), 464–467.

A massive, steel-gray cobalt-manganese crust with a conchoidal fracture and anthracite-like luster forms a 7.5 cm layer dredged at 2486 m from a guyot within the Mid-Pacific Rise at 19° 38' N, 175° 48' W. A heavy-mineral concentrate from the crust is dominated by apatite and goethite. Native metals and their solid solutions, various sulfides and oxides, barite, and other minerals, including rustenburgite, have been identified. Listed electron microprobe analyses correspond to $(Cu_{3.51}Pt_{0.63}Fe_{0.50}Sn_{0.22}Ni_{0.09}Mn_{0.04}Ag_{0.04})_{\Sigma 5.03}Si_{0.96}$, ideally $(Cu,Pt)_5Si$, and two analyses correspond to $(Cu_{3.14}Pt_{0.68}Fe_{0.18}Mn_{0.04})_{\Sigma 4.04}Si_{0.96}$ and $(Cu_{3.35}Pt_{0.61}Fe_{0.05}Mn_{0.05})_{\Sigma 4.06}Si_{0.95}$, ideally $(Cu,Pt)_4Si$. The grains are <3 μm across, and it suggested that all may be $Cu_4Si$, which is known as an artificial phase. Analyses of Fe silicides gave $(Fe_{1.90}Cu_{0.06}Cr_{0.02}Mn_{0.02})_{\Sigma 2.00}Si_{1.00}$; $(Fe_{2.95}Mn_{0.04}Cu_{0.02}Cr_{0.01})_{\Sigma 3.02}Si_{0.98}$; and $(Fe_{4.64}Cu_{0.18}Ni_{0.05}Cr_{0.05}Mn_{0.04})_{\Sigma 4.96}(Si_{2.96}Ti_{0.07})_{\Sigma 3.03}$, ideally $Fe_2Si$, $Fe_3Si$, and $Fe_5Si_3$, respectively.

**Discussion.** X-ray data are needed to confirm that the various silicides are specific minerals. $Fe_3Si$ may be suessite or gupeiite, and $Fe_5Si_3$ corresponds to xifengite. **J.L.J.**

## $Bi_2Te$, $Bi_4Te_2Se$, $Bi_6(Te,Se)_3$

Xiang-ping Gu, M. Watanabe, K. Hoshino, Y. Shibata (2001) Mineral chemistry and associations of Bi-Te(S,Se) minerals from China. Neues Jahrb. Mineral. Mon., 289–309.

One of three listed electron microprobe analyses has Bi 75.60, Sb 0.16, Ag 0.03, Fe 0.01, Te 24.01, sum 99.81 wt%, giving Bi/(Te+S) = 1.93; for the other two analyses, the ratio is 2.09 and 2.11, ideally $Bi_2Te$. Grains are 2–10 μm in size, occurring as veinlets along the grain boundaries of pilsenite and joseite-B in material from the Huangshaping Pb-Zn polymetallic deposit, about 45 km west of the city of Chengzhou, Hunan Province, China. Bright white color with a yellowish tint in reflected light, distinct bireflectance and anisotropism, optically similar to pilsenite.

An electron microprobe analysis of the mineral corresponding to $Bi_4Te_2Se$ gave Bi 72.21, Sb 0.12, Fe 0.16, Se 6.26, Te 19.90, S 0.57, sum 99.21 wt%. Eight other listed analyses indicate S-Se solid solution to joseite-B, $Bi_4Te_2S$. The samples are from the Datuanshan skarn-type Cu deposit, about 1.5 km southwest of the city of Tongling, Anhui Province, China.

Also in the Datuanshan deposit is a mineral characterized as $Bi_6(Te,Se)_3$. Eleven listed electron microprobe analyses yield Bi/(Te+S) = 1.95 to 2.05 (average 2.01) and Te/(S+Se) = 1.35 to 2.58. The mineral occurs as anhedral to columnar grains, 10–100 μm, associated with selenian hedleyite, selenian joseite-A and -B, native bismuth, and bismuthinite. Bright white with a bluish tint in reflected light, distinct bireflectance and anisotropism.

Comparison of the structural formulas of bismuth tellurides indicates that Bi and Te have specific ratios. On the basis of this theoretical approach, it is suggested that the formula of hedleyite is $Bi_8Te_3$ rather than $Bi_7Te_3$. **J.L.J.**

### Rh-Ni SULFIDE

L.V. Agafonov, Zh. Lkhamsuren, A.S. Borisenko, S.M. Zhmodik (2001) Placer PGE mineralization in Mongolia. Doklady Earth Sci., 378(4), 491–494.

Electron microprobe analysis of >100 grains of PGM from a placer along the Burgustain-Gol River, Uvs district, Mongolia, showed that most grains have compositions in the Ru-Os-Ir system. Isoferroplatinum is also common, and an inclusion within that mineral gave Pt 25.20, Ir 1.50, Ru 0.28, Rh 26.72, Fe 7.82, Ni 2.35, Cu 9.05, S 25.3, sum 98.15 [98.22] wt%.

**Discussion.** The analysis corresponds to $(Rh,Pt,Ir)_{0.51}(Cu,Fe,Ni)_{0.41}S$ or $(Rh_{0.33}Cu_{0.18}Fe_{0.18}Pt_{0.16}Ni_{0.05}Ir_{0{\cdot}01})_{\Sigma 0.91}S$; minerals of similar composition have been reported previously, but in the absence of additional data no further comparison is possible. **J.L.J.**

### BRACKEBUSCHITE, Fe ANALOG

O.A. Gurbanova, R.K. Rastsvetaeva, N.V. Chukanov (2001) Crystal structure of a new representative of the brackebuschite group. Doklady Akad. Nauk, 378(2), 204–207 (in Russian).

Electron microprobe analysis of a mineral from the Venus deposit, Sierra de Cordoba, Argentina, gave an empirical formula corresponding to $Pb_{1.7–1.9}Mn_{0.1–0.2}Zn_{0.15–0.25}Fe_{0.70–0.75}Al_{0.05–0.2}(VO_4)_2(OH)$. Single-crystal X-ray structure study ($R$ = 0.066) gave monoclinic symmetry, space group $P2_1/m$, $a$ = 8.782(3), $b$ = 6.148(3), $c$ = 7.628(3) Å, β = 111.1(1)°, $D_{calc}$ = 6.2 g/cm$^3$ for $Z$ = 2. The structural formula corresponds to $(Pb_{1.8}Zn_{0.2})(Fe^{3+}_{0.75}Mn^{3+}_{0.15}Al_{0.1})[VO_4]_2(OH)$, which is the Fe analog of brackebuschite. **J.L.J.**

### FERROPARGASITE, Cl ANALOG

A.Y. Barkov, R.F. Martin, M. Tarkian, G. Poirier, Y. Thibault (2001) Pd-Ag tellurides from a Cl-rich environment in the Lukkulaisvaara layered intrusion, northern Russian Karelia. Can. Mineral., 39, 639–653.

Ten of 15 electron microprobe analyses listed for Cl-rich ferropargasite have formula Cl > OH, thus indicating the existence of the Cl analog. The analysis richest in Cl has $K_2O$ 1.19, $Na_2O$ 2.10, CaO 11.47, MgO 4.12, MnO 0.21, FeO 23.84, NiO 0.26, $Al_2O_3$ 16.23, $SiO_2$ 35.04, Cl 4.48, $H_2O$ (calc.) 0.69, O ≡ Cl 1.01, sum 98.62 wt%, corresponding to $(Na_{0.667}K_{0.249}Ca_{0.217})_{\Sigma 1.133}(Ca_{1.797}Fe_{0.188}Mn_{0.029})_{\Sigma 2.00}(Fe_{3.080}Mg_{1.006}Al_{0.879}Ni_{0.034})_{\Sigma 5.000}(Si_{5.743}Al_{2.257})_{\Sigma 8.000}O_{22}Cl_{1.244}(OH)_{0.756}$. The mineral occurs within sulfide- and PGM-enriched pods, <0.5 m across, of altered, coarse-grained gabbronorite in a sill-like body of microgabbronorite in the Lukkulaisvaara intrusion, Karelia, Russia. **J.L.J.**

### LABUNTSOVITE, Ca ANALOG

R.K. Rastsvetaeva, I.V. Pekov, Yu.V. Nekrasov (2001) Crystal structure and microtwinning of a calcium-rich analogue of labuntsovite. Crystallogr. Reports, 46(2), 415–417.

The mineral occurs as pale pink prismatic crystals, up to 0.5 mm long, in cavities in pegmatite at Malyi Mannepakhk mountain, Khibiny alkaline massif, Kola Peninsula, Russia. Single-crystal X-ray structure study ($R$ = 0.058) indicated monoclinic symmetry, space group *Cm*, $a$ = 14.365(7), $b$ = 13.887(7), $c$ = 7.814(2) Å, β = 117.36(5)°, $D_{calc}$ = 2.5 g/cm$^3$ for Z = 1. The crystallochemical formula is $K_{3.2}Ca_{1.2}Ba_{0.2}[Mn_{1.7}Fe_{0.1}(H_2O)_{3.6}][Ti_4(Ti_{3.8}Nb_{0.2})(O,OH)_8][Si_4O_{12}]_4 \cdot 6.1H_2O$. Distinguishing features are the absence of Na, the high Ca content, and the ordering of K, Ba, and Ca in the structure channels, which reduces the symmetry to *Cm*. **J.L.J.**

## New Data

### DAMARAITE

P. Keller, F. Lissner, T. Schleid (2001) Damaraite, $Pb_3O_2(OH)Cl$: Crystal structure and new chemical formula. Neues Jahrb. Mineral. Mon., 326–336.

Single-crystal X-ray structure study ($R$ = 0.0424) of a type crystal of damaraite gave orthorhombic symmetry, space group $Pmc2_1$, $a$ = 5.813(1), $b$ = 6.921(1), $c$ = 15.192(1) Å, $D_{calc}$ = 7.67 g/cm$^3$ for $Z$ = 4. The formula derived from the structure determination is $Pb_3O_2(OH)Cl$. The structure is similar to that of mendipite, but the partial substitution of Cl by OH causes a reduction in the symmetry of damaraite. **J.L.J.**

### $Pd_6AgTe_4$

A.Y. Barkov, R.F. Martin, M. Tarkian, G. Poirier, Y. Thibault (2001) Pd-Ag tellurides from a Cl-rich environment in the Lukkulaisvaara layered intrusion, northern Russian Karelia. Can. Mineral., 39, 639–653.

Additional data are given for unnamed $Pd_6AgTe_4$ from the Lukkulaisvaara intrusion (*Am. Mineral.*, 78, p. 674, 1993). The mineral typically occurs as anhedral grains, ≤1 mm, within chalcopyrite. Distinctly bireflectant and pleochroic from brownish light gray to light grayish brown; distinct to strong anisotropy, with polarization colors of light bluish gray to brown. Reflectance percentages in air and in oil are given in 20 nm steps from 400 to 700 nm; representative values for $R_1$ and $R_2$ in air are 43.2, 49.9 (470 nm), 48.8, 56.0 (546), 52.0, 58.5 (589), and 55.6, 60.7 (650). $VHN_{20}$ = 346–369. Electron microprobe analyses, listed for five grains, confirm the probable formula $Pd_6AgTe_4$. **J.L.J.**

## ROSENHAHNITE

A.Ye. Zadov, N.V. Chukanov, N.I. Organova, O.V. Kuz'mina, D.I. Belakovskiy, V.G. Nechay, F.S. Sokolovskiy, O.Yu. Kuznetsova (2000) Comparative study of rosenhahnite from California and from the Urals. A more accurate formula. Zapiski Vseross. Mineral. Obshch., 129(2), 85–96 (in Russian, English abs.).

The mineral from a new locality, the Bazhenovskoye deposit, Urals, Russia, forms colorless tabular crystals, up to 1.5 cm long and showing {100}, {010}, {111}, and $\{1\bar{1}1\}$. An energy-dispersion electron microprobe analysis gave $SiO_2$ 47.87 and CaO 47.06, loss on ignition 4.37, sum 99.30 wt%, corresponding to $H_{0.81}Ca_{3.14}[Si_{2.98}O_9(OH)]$. The idealized formula is $HCa_3[Si_3O_9(OH)]$. Contents of F, Mg, Al, Mn, Fe, Sr, and Ba do not exceed the 2σ uncertainties, and thus were not considered significant. Calcium ranges from 2.97 to 3.57 per 3Si in microvolumes 5 μm in diameter, and the Bazhenovskoye mineral is more calcic than holotype material. $D_{meas}$ = 2.920(5) g/cm$^3$. Optically biaxial negative, α = 1.608(2), β = 1.650(2), γ ′ = 1.650(2), $2V_{meas}$ = "large". By analogy with prehnite, which has a band 1399 cm$^{-1}$ in its infrared spectrum, the absorption band at 1332 cm$^{-1}$ in the spectrum of holotype rosenhahnite is cited as evidence for a proton in addition to a Si – OH bond in this mineral. Thermal investigations of 12 to 26 mg samples from Bazhenovskoye and the type locality yield a major endothermic effect near 570 °C, which is most likely associated with the simultaneous loss of the proton and OH bound to Si. Density increases with Ca/Si ratio, whereas a decreases.

**Discussion**. Two contradictory explanations are given for Ca/Si ratio exceeding unity. In the English abstract the authors propose that excess Ca replaces 2H, whereas in the conclusions they suggest the presence of invisible inclusions (size less than 7000 Å) of an organic Ca compound that nonetheless affects density and refractive indices. The presence of $CO_2$ was not detected in the infrared spectra. However, this constituent has been reported in rosenhahnite from Japan (*Bull. National Sci. Museum, Tokyo*, Ser. C, 10(1), p. 1–8, 1984). **E.S.G.**