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NEW MINERAL NAMES*

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Haradaite*, Unnamed Ba Analog

TAKEO WATANABE, A. KATO, J. ITO, T. YOSHIMORA, H. MOMOI, AND K. FUKUDA (1974) Haradaite, Sr_2V_2 (O_2) (Si_4O_{12}), a new mineral from the Noda Tamagawa mine, Iwate Prefecture, and the Yamato mine, Kagoshima Prefecture, Japan (abstr.). *Int. Mineral. Assoc., 9th General Meet.*, p. 97.

See *Am. Mineral.* **56,** 1123 (1971). The mineral occurs with quartz in coarse-grained rhodonite ore at the Node-Tamagawa Mine (NT), and as veinlets cutting rhodonite-manganoan goldmanite ore at the Yamato mine (Y). Analysis by Jun Ito (Y) gave SiO_2 38.38, TiO_2 0.06, Al_2O_3 0.36, VO_2 26.16, CaO 1.27, SrO 27.08, BaO 4.90, MnO 0.19, FeO 0.12, Na_2O 0.01, K_2O 0.04, H_2O^+ 1.24, H_2O^- 0.20, PbO 0.02, Cu 0.20, sum 100.23 percent.

The mineral is orthorhombic, space group *Ama2*; unit cell (NT and Y, resp.): *a* 7.001, 7.001; *b* 14.67, 14.64; *c* 5.324, 5.312Å, $Z = 2$, G 3.80 meas, 3.83 calc. Cleavages {010} perfect, {100} and {001} distinct.

Color bright green, luster vitreous. H 4½. Optically biaxial, neg., *ns* α 1.713, β 1.721, γ 1.734 (all ± 0.002), $X = a$, $Y = b$, $r < v$, very strong, pleochroism *X* colorless to very pale green, *Y* colorless to light yellowish-green, *Z* bluish green.

The name is for Dr. Zyunpei Harada, Emeritus Professor, Hokkado University, Sapporo, Japan.

An unnamed Ba analog, (Ba,Sr) V Si_2O_7, from the Tanohata mine, Iwate Prefecture, is mentioned.

Khibinskite*

A. P. KHOMYAKOV, A. A. VORONKOV, S. I. LEBEDEVA, V. P. BYKOV, AND K. V. YURKIVA (1974) Khibinskite, $K_2ZrSi_2O_7$, a new mineral. *Zapiski Vses. Mineral. Obshch.* **103,** 110–116 (in Russian).

The mineral previously described, but not named (*Am. Mineral.* **59,** 1140) is named khibinskite, for the Khibina alkalic massif. New data include a microprobe analysis (V.P.B., K.V.Y., and S.I.L.) that gave SiO_2 33.8, ZrO_2 37.8, TiO_2 0.6, CaO trace, K_2O 27.0, sum 99.2 percent. G 3.40. Monoclinic, unit cell as previously given. H 4.5–5.5. Type material is preserved at the Mineralogical Museum, Acad. Sci. U.S.S.R., and in the museum of IMGRE, both in Moscow.

Mazzite*

E. GALLI, E. PASSAGLIA, D. PONGILUPPI, AND R. RINALDI (1974) Mazzite, a new mineral, the natural counterpart of the synthetic zeolite. *Contrib. Mineral. Petrol.* **45,** 99–105.

Three microprobe analyses give SiO_2 61.13, 57.15, 56.02, av. 58.10; Al_2O_3 18.38, 17.58, 18.45, av. 18.14; MgO 3.10, 2.85, 2.80, av. 2.92; CaO 2.76, 2.83, 2.65, av. 2.75; Na_2O 0.08, 0.0, av. 0.03; K_2O 4.24, 3.13, 2.43, av. 3.27; H_2O (by TGA) 18.42, sum 108.11, 101.96, 100.77, av. 103.63 percent. The high summations are due to loss of H_2O in the vacuum chamber, during analysis. The analysis gives $K_{1.91}Na_{0.03}Ca_{1.35}Mg_{1.99}(Al_{9.77}Si_{26.53})O_{72} \cdot 28.06H_2O$, or nearly $K_2CaMg_2(Al,Si_2)_{36}O_{72} \cdot 28H_2O$.

Weissenberg photographs show the mineral to be hexagonal, space group probably $P6_3/mmc$, perhaps $P\overline{6}2c$ or $P6_3mc$, *a* 18.392, *c* 7.646 Å. The strongest lines (49 given) are 9.20 **60** *110*, 6.02 **53** *210*, 4.729 **50** *211*, 3.824 **94** *311*, *002*, 3.655 **47** *320*, 3.531 **90** *112*, 3.185 **100** *500*, 2.941 **100** *501*, *222*.

The mineral occurs as bundles of needles up to 1.5 mm long but only 20 microns across. G. calc 2.108. Optically uniaxial, neg., *n*0 1.5062, *n*E 1.4990.

The mineral occurs in cavities in olivine basalt at Mont Semiol (formerly called Mont Semiouse), Montbrison, France, associated with phillipsite, offretite, chabazite, calcite, and siderite.

The name is for Fiorenzo Mazzi, Professor of Mineralogy, University of Pavia, Italy.

Paravariscite, Parastrengite

S. V. GEVORKYAN, L. N. EGOROVA, AND A. S. POVARENNYKH (1974) Polymorphic modifications of phosphates with the general formula $R(H_2O_2)XO_4$. *Geol. Zhurn.* **34,** No. 3, 27–32 (in Russian).

It was shown by Cech and Slansky (1965, 1968) and by Salvador and Fayos (*Am. Mineral.* **57,** 36–44, 1972) that two orthorhombic forms of orthorhombic variscite ("Lucin" type and "Messbach" type) differ slightly in unit cell and infrared spectra.

In the present paper the authors indicate that orthorhombic strengite has two forms that give infrared patterns analogous to those of the two types of orthorhombic variscite. No X-ray structural data are given.

The name paravariscite is proposed for the "Messbach" type of orthorhombic variscite and the name parastrengite for the analogous iron phosphate.

Discussion

Data inadequate for parastrengite, nor is it clear that separate names are desirable for either of these until the structures have been completely deciphered.

Penkvilksite*

I. V. BUSSEN, YU. P. MEN'SHIKOV, A. M. MER'KOV, A. P. NEDOREZOVA, E. I. USPENSKAYA, AND A. P. KHOMYAKOV (1974) Penkvilksite, a new hydrous silicate of titanium and sodium. *Dokl. Akad. Nauk S. S. S. R.* **217,** 1161–1164 (in Russian).

Analyses of dense, porcelain-like and of porous varieties of the mineral gave, resp. (E. I. U. and M. E. Kazakova, analysts): SiO_2 54.69, 54.20; TiO_2 15.91, 16.06; ZrO_2 2.17, 4.67; Nb_2O_5 1.08, 0.93; Ta_2O_5 0.06, none; Al_2O_3 0.76, none; Fe_2O_3 0.19, 0.30; MgO trace,

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* Minerals marked with an asterisk after the name were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association.

trace; MnO 0.01, 0.01; CaO 1.60, none; SrO 0.01, none; Na_2O 13.13, 13.92; K_2O 0.09, –; P_2O_5 0.02, –; H_2O^+ 7.43, 5.25; H_2O^- 2.84, 4.20; F 0.05, –; sum 100.04, 99.54 – (O = F_2) = 100.02, 99.54 percent. The first gives $(Na_{3.7}Ca_{0.3})$ $(Ti_{1.7}Zr_{0.2}(Nb,Fe,Al)_{0.1})$ $(Si_{7.9}Al_{0.1})O_{22}\cdot 5H_2O$, or $Na_4Ti_2Si_8O_{22}\cdot 5H_2O$, *i.e.*, a hydrated narsarsukite. Spectrographic analysis showed traces of Be, Sn, Cu, Ba, Hf, and rare earths. The DTA curve shows endothermic breaks at 220° (dehydration) and 720° (fusion). A TGA curve shows gradual loss of water at 100–400°. Material heated to 600° takes up water on standing in air and then gives DTA and infrared absorption curves identical with those of the original material. Slowly gels with cold 5 percent HCl or HNO_3, or with warm H_2SO_4. Fuses B.B. to a dark brown glass.

X-ray powder data (Y. P. M.) showed strongest lines (59 given) (Fe radiation): 8.2 **10**, 3.42 **6**, 3.37 **9**, 3.32 **7**, 3.10 **7**, 3.07 **7**, 2.84 **8**, 2.674 **6**, 1.713 **7**. From electron diffraction patterns, A. D. Khalilov deduced unit cell dimensions *a* 7.48 ± 0.05, *b* 8.77 ± 0.05 Å, γ 90°. Monoclinic or orthorhombic.

The mineral occurs as white clotted masses up to 3 cm. Luster dull but pearly or silky on fresh fracture. H of aggregates 5, G 2.58. Under the electron microscope it is seen to consist of radiating-fibrous material and hexagonal very thin crystal plates up to 7 microns wide. Probably a perfect basal cleavage. Optically biaxial, positive, *ns* α 1.637, β 1.640, γ 1.662, $2V$ calc 42°. The plates have parallel extinction and are elongated on *Z*.

The mineral occurs in the "Jubilee" pegmatitic deposit, Lovozero alkalic massif, Kola Peninsula, in the central natrolite zone, associated with mountainite, aegirine, and raite (*Am. Mineral.* **58**, 1113, 1973). The name is from the Lapp words "penk" (curly) and "vilkis" (white). Type material is at the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow.

Umbozerite*

E. M. ES'KOVA, E. I. SEMENOV, A. P. KHOMYAKOV, A. N. MER'KOV, S. I. LEBEDEVA, AND L. S. DUBAKINA (1974) Umbozerite, a new mineral. *Dokl. Akad. Nauk S.S.S.R.* **216,** 169–174 (in Russian).

The average of 6 microprobe analyses by L.S.D. and S.I.L. gave SiO_2 37.1, TiO_2 0.3, Fe_2O_3 1.8, MnO 2.2, ThO_2 17.6, U_3O_8 0.4, Ce_2O_3 0.3, CaO 0.2, SrO 27.7, BaO 2.0, Na_2O 6.13, K_2O 0.74 (flame photometry), loss or ignition 0.43, sum 96.8 percent. Partial analyses gave SiO_2 36.13, Al_2O_3 0.43, P_2O_5 0.40, $(Nb,Ta)_2O_5$ 0.43, TiO_2 1.30, Fe_2O_3 2.06, Ce_2O_3 0.41, MgO 0.07, MnO 1.80, ThO_2 16.2, SrO 23.7, CaO 2.16, Na_2O 5.76, K_2O 0.86 percent. This corresponds to the formula $(Na_{2.56}K_{0.19})(Sr_{3.46}Ba_{0.17}Ca_{0.05}Mn_{0.40})(Th_{0.86}U_{0.02}Ce_{0.02}Fe_{0.30}Ti_{0.05})Si_8O_{23.35}(OH)_{0.68}$, or $Na_3Sr_4ThSi_8(O,OH)_{24}$.

The mineral is metamict, amorphous to X-rays. After being heated for 1 hour at 900°, it gave a complex X-ray pattern, the strongest lines of which correspond to those of thorianite (*a* ~ 5.6 Å), but showing many additional lines.

The color ranges from bottle-green to greenish-brown, mottled. Translucent, clear in five fragments. Luster vitreous. Fracture conchoidal. H 470-535, av. 506 kg/sq mm, about 5 on the Mohs scale. Brittle. H 3.60, Optically isotropic, *n* 1.640.

The mineral occurs as irregular masses and poorly formed tetragonal crystals up to 3 × 1 mm in ussingite veinlets, cutting alkalic rocks of the upper part of the differentiated complex, near Umbozera, Kola Peninsula, USSR. Associated minerals include sphalerite, belovite, schizolite, and Nb minerals of the lomonosovite group.

The name is for the locality. Type material is in the Mineralogical Museum, Acad. Sci. USSR, and in the Institute of Mineralogy, Geochemistry, and Crystal Chemistry of Rare Elements, both in Moscow.

NEW DATA

Zirkelite, Zirconolite = Zirkelite

Z. V. PUDOVKINA, L. S. DUBAKINA, S. I. LEVEDEVA, AND YU. A. PYATENKO (1974) Study of Brazilian zirkelite. *Zap. Vses. Mineral. Obshch.* **103,** 368–372 (in Russian).

Zirkelite was described from Jacupiranga, Brazil, by Hussak and Prior (1895) as $(Ca,Fe,Th,U)_2(Zr,Ti)_2O_5$. In 1913, Blake and Smith described zirkelite (?) from Ceylon (see *Dana's System,* 7th Ed., vol. 1, p. 740–742). Zirconolite, $CaZrTi_2O_7$, was described in 1956 (*Am. Mineral.* **42,** 581, 1957) as a new mineral and the zirkelite of Blake and Smith was considered to be zirconolite. A niobium-rich variety was described in 1960 (*Am. Mineral.* **46,** 465, 1961).

There has been much confusion in the literature as to these minerals, including the varieties from the moon, rich in Y and lanthanides.

New analyses and X-ray studies of type material show that all these are a single mineral species of composition (Ca,Th,RE) Zr $(Ti,Nb,Fe)_2O_7$. The name zirkelite has priority.