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NEW MINERAL NAMES*

MICHAEL FLEISCHER

Ferrobustamite

P. A. RAPOPORT, AND C. W. BURNHAM (1973) Ferrobustamite: the crystal structures of two Ca, Fe bustamite-type pyroxenoids. *Z. Kristallogr.* **138,** 419–438.

Two samples, one a synthetic crystal of $CaFeSi_2O_6$, the other "iron rhodonite" from Skye, Scotland, are shown to have the structure of bustamite, not of rhodonite. They are triclinic, space group $A1$ or $A\bar{1}$, with unit cells, resp., a 7.691, 7.832; b 7.112, 7.229; c 13.765, 13.925 Å, α 90°22′, 90°1′; β 95°19′, 95°24′; γ 103°58′, 103°21′.

Analyses of the second sample by H. C. G. Vincent (in Tilley, *Am. Mineral.* **33,** 736–738 [1948]) gave SiO_2 50.00, FeO 9.29, MnO 1.22, CaO 38.66, MgO none, insol. 0.45, sum 99.82 percent. It had G. 3.09, α 1.640, γ 1.653, $2V = -60°$, $X' \wedge c = 44°$ in section perpendicular to the zone of cleavages. A new probe analysis gave SiO_2 53.30, FeO 10.44, MgO 0.06, MnO 1.58, CaO 34.63, sum 100.01 percent. These correspond, respectively to $Ca_{1.58}Fe_{0.38}Mn_{0.04}Si_2O_6$.

The limits of solid solution are discussed; the data of Rutstein (*Am. Mineral.* **56,** 2040–2052) indicate that ferrobustamite can take up more Fe than wollastonite.

Ortho-armalcolite, Para-armalcolite

S. E. HAGGERTY (1973) Ortho and para-armalcolite samples in Apollo 17. *Nature Phys. Sci.* **242,** 123–125.

Two paragenetically contrasting forms of armalcolite (*Am. Mineral.* **55,** 2136) are present in basalts from the Apollo 17 landing site. "These differ in optical properties, in crystal habit, and in distribution between coarse and fine-grained rocks."

The name ortho-armalcolite is used for the blue-gray mineral found in fine-grained and vitrophyric basalts. The name para-armalcolite is proposed for tan euhedral crystals occurring in medium- to coarse-grained basalts, strongly anisotropic in reflected light and of a slightly higher reflectivity than ortho-armalcolite.

The two forms are compositionally indistinguishable (ranges and averages of probe analyses are given). The ortho-form is considered to be a primary crystallization product, the para-form to be the result of the decomposition of a pre-existing solid solution. "I do not intend at this stage to suggest that ortho and para-armalcolite are different minerals, although this may indeed turn out to be the case when X-ray crystallographic studies are complete."

Discussion

The proposal is a disservice to mineralogical nomenclature; in the absence of definitive X-ray data, armalcolite, type I and type II, would have been adequate interim terms.

Sapphirine-1Tc

STEFANO MERLINO (1973) Polymorphism in sapphirine. *Contrib. Mineral. Petrol.* **41,** 23–29.

Sapphirine from granulites near Wilson Lake, Labrador, is triclinic, a 10.04, b 10.38, c 8.65 Å, α 107°33′, β 95°07′, γ 123°55′, hence a polymorph of normal sapphirine (= sapphirine — $2M$), which is monoclinic, a 9.783, b 14.401, c 9.1929 Å, β 110°17′.

NEW DATA

Dimorphite

LEAH S. FRANKEL, AND TIBOR ZOLTAI (1973) Crystallography of dimorphites. *Z. Kristallogr.* **138,** 161–166.

Re-examination of a sample of Vesuvian dimorphite showed that crystals of two distinct types are present (see Dana's *System*, 7th ed., v. **1,** p. 197). Dimorphite I (identical with synthetic As_4S_3) has space group $Pnma$ or $Pn2_1a$, a 9.07, b 8.01, c 10.30 Å, strongest lines 6.27 **50** *011,* 5.16 **100** *111,* 4.16 **40** *201,* 3.12 **62** *212,* 2.96 **50** *122.* Dimorphite II has space group $Pnma$ or $Pn2_1a$, a 11.24, b 9.90, c 5.56 Å, $Z = 4$, G 3.60 calc, 3.58 meas, strongest lines 4.89 **100** *111, 210, 020;* 3.91 **40** *211;* 214 **50** *241, 430;* 1.620 **50** *143, 541, 423.*

Garrelsite

H. H. ULBRICH, AND D. GHOSE (1973) A note on the chemical composition of the silicoborate garrelsite. *Schweiz. Mineral. Petrogr. Mitt.* **53,** 199–202.

S. GHOSE, AND H. H. ULBRICH (1973) The crystal structure of garrelsite, $NaBa_3Si_2B_7O_{16}(OH)_4$. *Naturwissenschaften,* **60,** 349–350.

Analysis by electron microprobe gave BaO 51.52 ± 0.30, Na_2O 3.33 ± 0.20, SiO_2 13.81 ± 0.30 percent. A new analysis by B. Ingram gave Na_2O 3.5 percent. Ca and Mg, reported in the original analysis, were absent in inclusion-free samples. These data lead to the formula $Ba_3NaSi_2B_7O_{16}(OH)_4$.

Garrelsite is monoclinic, space group $C2/c$, a 14.639, b 8.466, c, 13.438 Å, β 114.21°, $Z = 4$. It contains a pentaborate polyanion $(B_5O_{12})^{9-}$.

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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, International Mineralogical Association.

Lovozerite*

Yu. L. Kapustin, A. V. Bykova, and Z. V. Poduvkina (1973) Mineralogy of the lovozerite group. *Izvest. Akad. Nauk. SSSR, Ser. Geol.* no **8,** 106–12 (in Russian).

New occurrences of unaltered material were found in alkalic rocks of the Khiline massif, Kola Peninsula. Two new analyses give the formula $(Na, Ca)_3(Zr, Ti)Si_6(O, OH)_{18}$. X-ray study showed that the mineral was not monoclinic, as previously reported, but rhombohedral, space group *R3m*, *R32*, or $R\bar{3}\bar{m}$, $a_{rh} = 7.32$, $\alpha = 88°04'$, or *a* 10.18, *c* 13.10 Å.

Nuffieldite

Iwao Kohatsu, and B. J. Wuensch (1973) The crystal structure of nuffieldite, $Pb_2Cu(Pb, Bi)Bi_2S_7$. *Z. Kristallogr.* **138,** 343–365.

Nuffieldite was described by Kingston (*Am. Mineral.* **54,** 574) as $Pb_{10}Cu_4Bi_{10}S_{27}$. New study shows the mineral to be orthorhombic, space group *Pbnm* (or $Pbn2_1$), *a* 14.387, *b* 21.011, *c* 4.046 Å. These space groups require 8 or 4 equipoints, resp., so that the formula is modified to $Pb_2Cu(Pb,Bi)Bi_2S_7$.

Tundrite

Z. V. Zhlyukova, E. V. Vlasova, M. E. Kazakova, G. O. Piloyan, N. G. Shumyatskaya, and B. E. Borutskii (1973) New data on tundrite. *Dokl. Akad. Nauk SSSR,* **211,** 426–429 (in Russian).

Infra-red study of tundrite from a new locality in the Khibina massif showed bands of carbonate; this was confirmed by spectra of the Greenland mineral (*Am. Mineral.* **53**, 1780). The mineral is therefore a carbonate-silicate. A new analysis by M. E. K. gave SiO_2 10.21, TiO_2 10.29, Nb_2O_5 4.90, Fe_2O_3 0.24, CaO 1.26, ThO_2 0.20, TR_2O_3 50.96, Na_2O 6.92, K_2O 0.36, H_2O^- none, H_2O^+ 3.75, CO_2 10.85, sum 99.94 percent, corresponding to $(Na_{2.67}K_{0.09})(TR_{3.69}Ca_{0.26}Fe_{0.03}Th_{0.01})(Ti_{1.54}Nb_{0.44})Si_{2.03}O_8(C_{2.95}O_9)O_4(OH)\cdot 2H_2O$, or $(Na, K)_3(TR, Ca)_4(Ti, Nb)_2(SiO_4)_2(CO_3)_3O_4(OH)\cdot 2H_2O$. X-ray study showed the mineral to be triclinic, *a* 7.51, *b* 13.84, *c* 5.04 Å, α 98°00′, β 70°40′, γ 99°00′, close to previous data. DTA and TGA curves are given.

Note

Rare earth compositions are not given, so it is uncertain whether this is tundrite or tundrite-(Nd).

DISCREDITED MINERALS

Khuniite-Hemihedrite

Franz Pertlik (1973) The probable identity of hemihedrite and "khuniite." *Neues Jahrb. Mineral. Monatsh.,* p. 233–235 (in German).

Khuniite was first described in 1970 (*Am. Mineral.* **55,** 1813); new data were published in 1972, when it was pointed out (*Am. Mineral.* **58,** 562) that it was probably identical with hemihedrite. Pertlik has re-examined khuniite from the type locality and finds the unit cell constants to be identical within the limits of error with those of hemihedrite.