

NEW MINERAL NAMES

Bursaite

RASIT TOLUN, A study on the concentration tests and beneficiation of the Uludağ tungsten ore. *Bull. Mineral Research and Exploration Inst. Turkey, Foreign Ed.*, No. 46-47, pp. 106-127 (1954-55) (in English).

In part of a large contact-metamorphic scheelite deposit, sphalerite is associated with tremolite, pyrite, calcite, garnet, quartz, scheelite, chalcopyrite, native Bi, and a new mineral. Analysis of a concentrate obtained by flotation and superpanner gave S 17.32, Pb 39.62, Bi 37.60, Fe 1.98, Zn 3.18; sum 99.70%, which is interpreted as pyrite 4.24, sphalerite 4.73, native Bi 5.43, and $Pb_5Bi_4S_{11}$ 85.30%. The mineral is metallic gray, prismatic, with "tabular cleavage." Under the ore microscope, it shows a high reflective power, is pleochroic, and anisotropic. It shows oblique extinction, hence is probably monoclinic. $G > 6.2$.

X-ray powder data by D. A. Reelfs, Univ. Geneva, are given. The strongest lines are in Å. 2.88(10), 3.38(9), 2.05(9), 3.55(8), 2.15(8), 2.98(7).

The name is for Bursa Province, Turkey.

DISCUSSION: The x-ray data show many coincidences, but some discrepancies with the published data on two minerals of similar composition, cosalite ($Pb_2Bi_2S_5$)?, and kobellite [$Pb_2(Bi, Sb)_2S_5$]?. For example, Berry, *Univ. Toronto Studies, Geol. Ser. No. 44* (1940) lists 8 strong lines for cosalite, among which are lines at 2.84, 3.44, 2.06, 3.52, 2.17, and 3.02. Comparison with these two minerals must be made before bursaite can be accepted as a valid species.

MICHAEL FLEISCHER

Ferroselite

E. Z. BURYANOVA AND A. I. KOMKOV, A new mineral—ferroselite. *Doklady Akad. Nauk S.S.S.R.*, 105, 812-813 (1955) (in Russian).

Prismatic crystals of the mineral are 0.2-0.5 mm. long and up to 0.1 mm. in cross-section. Color steel-gray to tin-white with a rose shade. Luster metallic. Streak black. Hardness 6-6.2 (microsclerometer). Very brittle.

The form {110} is prominent, commonly striated longitudinally. {011} was noted. Penetration twinning marked. Cleavage perfect parallel to the elongation. Laue, rotation, and oscillation photographs showed ferroselite to be orthorhombic, space group $Pnmm$ or $Pnm2$, $a = 4.78 \pm 0.02$, $b = 5.73 \pm 0.02$, $c = 3.57 \pm 0.02$ kX. These agree well with data on synthetic $FeSe_2$.

Microchemical tests showed the presence of Fe and Se, and the absence of S and Te. Fusibility 2½-3. In the closed tube, it gives a dark-red sublimate and the characteristic selenium odor. Magnetic after being heated. Dissolved by HNO_3 , only slightly by HCl and H_2SO_4 .

In reflected light ferroselite is rosy-cream with high reflecting power. Birefringence weak. Strongly anisotropic, showing greenish-gray to lilac colors under crossed nicols. Easily mistaken for marcasite or loellingite.

Ferroselite occurs with minor chalcopyrite and pyrite cementing sandstones and pelites in the Middle Devonian deposits of the Tuvinsk Autonomous Territory. Partly replaced on edges by a reddish-brown anisotropic mineral of high n and adamantine luster.

The name is for the composition, $FeSe_2$.

DISCUSSION: The name is unfortunate, because it is easily confused with that of the silicate ferrosilite.

M. F.

Galeite

A. PABST, D. L. SAWYER, AND GEORGE SWITZER, Galeite, a new mineral from Searles Lake, California. Abstract in *Bull. Geol. Soc. Am.*, **66**, 1658-1659 (1955).

Analysis gave NaCl 6.27, Na₂SO₄ 75.39, NaF 17.43, loss wt. at 120° 0.10; sum 99.19%, corresponding to Na₂SO₄ · Na(F, Cl). The mineral is therefore dimorphous with schairerite. It is rhombohedral; the space group is $D_{3d}^{132} - P312/m$ or $C_{3v} - P31m$ or $D^3 - P312$; the unit cell has a_0 12.17 ± 0.02, c_0 13.94 ± 0.02 Å, $Z = 15$. Schairerite has a_0 12.17, c_0 19.29 Å, $Z = 21$.

$G = 2.605 \pm 0.005$ (detd.), 2.611 (calcd.). Optically uniaxial, positive, $\omega = 1.447 \pm 0.002$, $\epsilon = 1.449 \pm 0.002$, $\epsilon - \omega = 0.002$ (direct measurement).

The mineral has been found only in drill cores. It occurs in small nodular aggregates of white crystals of maximum dimension 1 mm., embedded in clay and other salt minerals. In some nodules it is associated with gaylussite and northupite. The crystals are hexagonal, barrel-shaped, rarely tabular, and a rhombohedron with rho 66°25' is the most persistent form.

The name is for W. A. Gale, Director of Research of the American Potash and Chemical Corporation.

DISCUSSION: The name will cause confusion with halite (= galite in Russian).

M. F.

Garrelsite

CHARLES MILTON, J. M. AXELROD AND F. S. GRIMALDI, New mineral, garrelsite (Ba_{0.65}Ca_{0.29}Mg_{0.06})₄H₆Si₂B₆O₂₀, from the Green River formation, Utah.

Abstract in *Bull. Geol. Soc. Am.*, **66**, 1957 (1955).

Analysis (not given) on 27 mg. lead to the formula above. This is compared to those of datolite and bakerite.

Datolite	Ca ₄ B ₄	(SiO ₄ (OH)) ₄
Bakerite	Ca ₄ B ₄ (BO ₄)	(SiO ₄) ₃ (OH) ₃ · H ₂ O
Garrelsite	(Ba, Ca) ₄ B ₄ (BO ₄) ₂	(SiO ₄) ₂ (OH) ₂ · 2H ₂ O

The colorless crystals, a few mm. long, have a characteristic four-sided steep bipyramidal shape, formed by the prismatic faces (110) and (110̄), and the pyramidal faces (21I) and (21Ī). The faces are striated by alternation of prism and pyramid. Monoclinic, space group $C_2^4 - Aa$ or $C_{2v}^6 - A2/a$, $a = 13.42$, $b = 8.45$, $c = 14.61$ Å, beta 114°19', $Z = 4$. $G = 3.68$ (measured), 3.73 (calcd.). Optically biaxial, neg., $\alpha = 16.20$, $\beta = 6.33$, $\gamma = 1.640$ (all ± .003), $2V = 72^\circ$, $\gamma = b$.

Garrelsite was found in a core from the Sun Oil Co. South Ouray No. 1 well, Uintah County, Utah, from a depth of 2139 to 2370 ft., in brown dolomitic shale containing nahcolite, shortite, searlesite, and microscopic wurtzite.

The name is for R. M. Garrels of Harvard University.

M. F.

NEW DATA

E. I. NEFEDOV, Neue Minerale. *Geologie* **4**, No. 5, 526-528 (1955).

Further brief notes are given on some of the minerals previously described (see *Am. Mineral.*, **40**, 551-552 (1955)).

Lodochnikovite

Shown by x-ray study to be orthorhombic with a_0 23.6 ± 0.1, b_0 17.1 ± 0.1, c_0 5.70 ± 0.05 kX. $Z = b$, $X = c$.

Volkovite

Now stated to contain approximately equal amounts of Ca and Sr.

Vladimirite

Monoclinic with a_0 5.80 ± 0.05 , b_0 10.17 ± 0.05 , c_0 22.7 ± 0.1 kX, beta $82^\circ 41'$. Alpha is 1.650, not 1.560.

Shubnikovite

The unit cell has a_0 14.02 ± 0.5 , b_0 14.05 ± 0.05 , c_0 $30 \pm kX$, beta 90° . $Z=b$, $X=c$. $G.=3.38$.

M. F.

Leverrierite

A. SCHÜLLER AND H. GRASSMANN, Leverrierit aus oberkarbonischen Kristallensteinen von St. Etienne, Frankreich. *Chemie der Erde*, **17**, 233-240 (1955).

The name leverrierite was given by Termier in 1889 to a clay mineral occurring in vermicular aggregates in carbonaceous shales at several localities near St. Etienne, France. The early work, summarized in Dana's System, 6th Ed., p. 687, showed considerable variation in chemical composition. An analysis published by Termier, *Bull. soc. franc. min.*, **22**, 27-31 (1899), gave SiO_2 49.90, Al_2O_3 37.02, Fe_2O_3 3.65, MgO 0.30, CaO traces, K_2O 1.13, ignition loss 8.65; sum 100.65%. Some of the material had $\alpha=1.554$, $\gamma=1.582$, β very nearly identical with γ ; other samples including those originally described, had birefringences ranging from 0.008 to 0.030. In 1931, Ross and Kerr, *U. S. Geol. Survey Prof. Paper 165-E*, found that material from the type locality had the optical properties of kaolinite ($\alpha=1.559$, $\beta=1.565$, $\gamma=1.566$) and also gave the x-ray diffraction pattern of kaolinite. They gave a photomicrograph of a vermicular crystal from St. Etienne and noted the presence of lenses of a second mineral along cleavage cracks.

On the basis of this work, the name leverrierite was generally dropped from the mineralogical literature as being synonymous with kaolinite.

In these papers published 1951-1953, A. Schüller and his co-workers described under the name leverrierite clays from several localities. Their use of the name was apparently based solely on the vermicular habit. They showed that its properties were those of a member of the illite group and pointed out that the name leverrierite had priority over the name illite.

In the present paper, material from Destival, St. Etienne is described. Analysis of a dried sample gave: SiO_2 48.99, TiO_2 0.25, Al_2O_3 37.64, FeO 0.35, CaO 0.72, MgO 0.57, K_2O 2.85, Na_2O 0.48, ignition loss (including 0.37% organic) 8.24; sum 100.09%. The original sample contained 0.95% H_2O^- . X-ray powder data and a *D.T.A.* curve agree with those given by members of the illite group. The conclusion is drawn that leverrierite was the first well-defined mineral of the illite group.

DISCUSSION: This new work proves that an illite clay, as well as kaolinite, occurs in the St. Etienne region. In spite of that, the previous descriptions of leverrierite from the type locality show clearly that what was described was mostly kaolinite with a slight admixture of an illite group mineral. It is therefore highly desirable that the term leverrierite be dropped completely. Its continued use has no advantage and only serves to cause confusion.

M. F.

Dillnite

JIRI KONTA, Dillnit—ein spezifisches Tonmineral. *Chemie der Erde*, **17**, 223-232 (1955). The name dillnite was given in 1849 to a clay mineral later considered to be a mixture

of diaspore (known to occur in the deposit) with kaolinite. New study of type material from Banska Bela, Slovakia(= Dilln, near Schemnitz, Hungary, of old descriptions) shows the mineral to be a valid species. A new analysis gave: SiO_2 23.64, Al_2O_3 55.80, Fe_2O_3 0.04, CoO 0.12, MgO 0.28, $\text{H}_2\text{O}+$ 20.56; sum 100.44%. This agrees well with 6 previous analyses and corresponds to $11 \text{ Al}_2\text{O}_3 \cdot 8 \text{ SiO}_2 \cdot 22$ (or 23) H_2O . Differential thermal analysis gave a strong endothermic reaction with a peak at 860°C . Dehydration study (heating 15 minutes at each temperature at 50° intervals) showed a loss of about 2% below 700° and complete dehydration at 800° .

The mineral occurs in gray-white earthy masses with conchoidal to even fracture. Inclusions of pyrite, diaspore, and fluorite have been found. Hardness about 2. $G. = 2.675$. Triangular crystals have been observed (electron microscope photographs given), 2 to 15 microns in size. n (Na) 1.559 ± 0.001 , birefringence very weak, apparently less than that of kaolinite.

X-ray powder data are given. Spacings and intensities of the strongest lines are: 8.1, 10; 4.21, 10; 2.69, 10; 1.63, 9; 2.01, 7; 1.403, 7.

DISCUSSION: The dehydration curve is remarkable for a mineral of such high water content. Further investigation is promised.

M. F.

The Fourteenth Annual Pittsburgh Diffraction Conference will be held on October 31, November 1 and 2, 1956, at the Mellon Institute in Pittsburgh, Pennsylvania.

This year it is the desire of the Conference Committee to emphasize

1. Small Angle Scattering
2. High and Low Temperature Diffraction Studies
3. Structural Aspects of Solid State Physics
4. Instrumentation and Methods
5. Neutron Diffraction

and papers on these subjects will be particularly welcome.

Titles of contributed papers should be sent to the Program Chairman, Dr. A. Taylor, Westinghouse Research Laboratories, Beulah Road, Pittsburgh 35, Pennsylvania, before September 1, 1956. Abstracts should be submitted by September 20.
