

NEW MINERAL NAMES*

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Alazanite

R. V. IVANITSKII, R. A. AKHVLEDIANI, E. I. KAKHADZE, AND A. I. TSEPIN (1973) A new variety, a product of the replacement of pyrrhotite. *Dokl. Akad. Nauk SSSR*, **213**, 688-691 (in Russian).

Microprobe analyses, using FeS₂ as standard, gave Fe 58.87, 51.74, 49.56, 44.99; S 40.57, 42.14, 42.50, 45.53, sum 99.45, 93.88, 92.06, 90.52 percent, ratio S/Fe = 1.20, 1.42, 1.49, 1.76. Spectrographic analysis shows 0.00-0.0x percent Si, Cu, Ca, Al, Mg, etc. The strongest X-ray lines (28 given) are: 2.72 **10 101**; 2.44 **33 111**; 2.35 **33 120**; 1.94 **7 121**; 1.78 **8 211**. These are indexed on a unit cell with *a* 4.506, *b* 5.511, *c* 3.406 Å.

The mineral is abundant in ores of the Kakhetin deposit, replacing pyrrhotite and chalcopyrite, as veins and masses up to 0.2 cm. Color grayish-white, reflectance 41.44 percent, strongly anisotropic with color effects in brown-gray-yellow tones. Hardness high, but crumbles on strong pressure with a needle. Polishes well, shows a cleavage. Diamagnetic.

The mineral is intermediate in composition between pyrrhotite and FeS₂, with X-ray data very close to that of marcasite. Since it might be a new mineral, the authors propose that in that case it be named alazanite for the Alazani River, Georgian S.S.R.

Discussion

The X-ray data differ very slightly from those usually given for marcasite. No explanation is given of the very unsatisfactory summations of the analyses; nor is it stated which analysis corresponds to the X-ray data. The name should not have been given.

Calciouranoite*

V. P. ROGOVA, L. N. BELOVA, G. N. KIZIYAROV, AND N. N. KOZNETSOVA (1974) Calciouranoite, a new hydroxide of uranium. *Zapiski Vses. Mineral. Obshch.* **103**, 103-109 (In Russian).

Analyses of a brown and an orange sample gave, resp., UO₃ 68.02, 71.78; PbO 2.37, 1.18; BaO 2.68, -; CaO 5.86, 6.77; As₂O₅ 0.63, -; Fe₂O₃ 0.71, -; Al₂O₃ 0.34¹, 0.69; Na₂O 0.60, -; K₂O 5.81, 0.06; H₂O⁺ 7.05, 8.00; H₂O⁻ 5.31, 3.03; SiO₂ 0.32, 4.00; sum 99.70, 96.05 percent, leading to the formula (Ca, Ba, Pb, K, Na) U₃O₇·5H₂O. The SiO₂ is present as quartz.

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

¹ Given in original as 20.34, evidently a misprint.

The X-ray patterns of both samples show lines at 3.406 and 3.050 Å; the orange material has lines at 4.00, 2.68, and 2.00 Å. When the material is heated to 900°, the pattern is the same as that obtained by heating metacalcouranoite, with strongest lines at 3.367 **6**; 3.206 **9**; 2.720 **6**; 1.974 **9**; 1.648 **9**; 1.117 **76**; 1.044 **76**.

The mineral occurs in the oxidation zone of a V-Mo deposit with other U oxides, see *Am. Mineral.* **58**, 1111 (1973).

Discussion

The name is transliterated in different places as calciouranoite, calciumuranoite, and caltsuranoite. Calciouranoite seems preferable and metacaltsuranoite should be given as metacalcouranoite.

Chrome Phlogopite

CHANG PAO-KWEI, AND LIN KUO-CHENG (1974) Chrome phlogopite—a new subspecies of phlogopite. *Geochimica (China)*, **1**, 71-74 (in Chinese with English abstract).

The mineral occurs in a metamorphic chromite deposit in Honan, central China. Analysis gave SiO₂ 38.59, Al₂O₃ 17.81, Cr₂O₃ 8.66, Fe₂O₃ 1.50, MgO 21.16, K₂O 10.15, Na₂O 0.05, H₂O 1.97, F 1.22, sum 101.11—(O = F₂) 0.61 = 100.50 percent. Color emerald-green, G 2.78, Optically biaxial, negative, 2V 0-10°, *ns* α 1.530, β = γ = 1.595 (all ±0.003).

Discussion

Unnecessary name for chromian phlogopite.

Kazakovite*

A. P. KHOMYAKOV, E. I. SEMENOV, E. M. ES'KOVA, AND A. A. VORONKOV (1974) *Zapiski Vses. Mineral. Obshch.* **103**, 342-345 (in Russian).

Analysis by M. E. Kazakova gave SiO₂ 52.44, TiO₂ 7.62, Nb₂O₅ 1.40, P₂O₅ 0.70, Al₂O₃ 0.84, Fe₂O₃ 2.30, MgO 0.10, MnO 4.40, CaO 0.40, Na₂O 25.50, K₂O 0.47, H₂O⁺ 3.66, H₂O⁻ 0.14, total 99.97 percent. Spectrographic analysis showed Be, Ta, Pb, Ga, V, Li, La, Cu, Sn, Ba, F. The analysis gives a cell content of (Na_{5.51} K_{0.07} Ca_{0.05} Mg_{0.02} Mn_{0.42})(Ti_{0.64} Fe_{0.19} Al_{0.11} Nb_{0.07}) (Si_{5.84} P_{0.07}) H_{2.73} O_{18.39}, or Na₆H₂TiSi₆O₁₈. The DTA curve shows an endothermic break at 760°C (fusion). The mineral loses 3.5 percent up to 520° (H₂O) and 5.5 percent more at 520-1030° (volatilization of Na?).

X-ray study shows the mineral to be rhombohedral, probable space group *R* $\bar{3}m$, *a* 7.30 ± 0.03 Å, α88°15', or in hexagonal setting *a* 10.18 ± 0.04, *c* 13.06 ± 0.05 Å. The strongest lines (27 given) are: 3.60 **7 20 $\bar{2}$ 2**; 3.28 **6 11 $\bar{2}$ 3**; 3.17 **6 21 $\bar{3}$ 1**; 2.60 **10 02 $\bar{2}$ 4**; 2.52 **8 22 $\bar{4}$ 0**, **01 $\bar{1}$ 5**; 1.816 **8 40 $\bar{4}$ 4**; 1.529 **6 20 $\bar{2}$ 8**; 1.480 **7 24 $\bar{6}$ 4**, **13 $\bar{4}$ 7**.

Color pale yellow, luster vitreous to greasy. Fracture uneven to semi-conchoidal, no cleavages, H 4, G 2.84. Optically uniaxial, negative, ω 1.648, ϵ 1.625. The mineral occurs as small (0.01-2 mm) crystals showing the forms $\{11\bar{2}1\}$ and $\{11\bar{2}4\}$, and shows simple, complex, and polysynthetic twins with twinning axis normal to (1124).

The mineral occurs disseminated in ussingite, occurring in sodalite syenites of Mt. Karnasurt, Lovozero alkalic massif, associated with nordite, belovite, and vuonnemite.

The name is for Maria Efimovna Kazakova, analytical chemist, who has made the chemical analyses of many new minerals. Type material is at the Mineralogical Museum, Acad. Sci. USSR, and at the museum of I.M.G.R.E., Moscow.

Palladoarsenide*

V. D. BEGIZOV, V. I. MESHCHANKINA, AND L. S. DUBAKINA (1974) Palladoarsenide, Pd₂As, a new natural palladium arsenide from the copper-nickel deposits of the Oktyabr deposits. *Zapiski Vses. Mineral. Obshch.* **103**, 104-107 (in Russian).

Microprobe analyses (4), using Pd, Au, Ag, and arsenopyrite as standards, gave (range and average) Pd 67.1-68.0, 67.55; Ag 3.0-3.5; 3.23; Au 1.0-1.8, 1.38; As 25.8-26.1, 25.95, sum 97.8-98.8, 98.11 percent, corresponding to Pd 1.83 Ag 0.09 Au 0.02 As 1.00, or Pd₂As. The mineral is not acted on by dilute HNO₃ or concd HCl or H₂SO₄. With concentrated HNO₃, it turns brown in 5 seconds.

X-ray study showed the mineral to correspond to the low-temperature modification of synthetic Pd₂As, which is monoclinic, space group *P2/m*. Unit cell parameters are a 9.25 ± 0.01, b 8.47 ± 0.02, c 10.44 ± 0.02 Å, β 94.0°, Z = 18, G. calc 10.42. The strongest lines (34 given) are: 2.60 **7** 004, 131; 2.35 **6** 114, 231; 2.31 **6** 400; 2.21 **9** 024, 401; 2.14 **10** 133, 313; 1.955 **7** 332, 042.

The mineral occurs in grains 0.005-0.4, av. 0.05 mm. Steel-gray, luster metallic, non-magnetic. In polished section in air grayish-white with light rose tint. Birefractance weak, observed only in immersion. Anisotropy moderate with color effects, in air dark gray with bluish tint to red-brown, in oil dark gray to brownish-gray. The optic sign could not be measured. The max. reflectance was: 460 nm, 47.6; 550 nm, 51.8; 580 nm, 52.6; 640 nm, 55.4; 700 nm, 59.0 percent. Microhardness 277-357, av. 326 kg/sq mm = 4.64 on the Khrushchov scale. The indentations indicated brittleness and perfect cleavages in 2 directions.

The mineral was found in chalcopyrite of the Oktyabr deposit, Talnakh ore field, associated with sperrylite and native gold.

The name is for the composition. Type material is preserved at the Mineralogical Museum, Acad. Sci. USSR, Moscow.

Sazhinite*

E. M. ES'KOVA, E. I. SEMENOV, A. P. KHOMYAKOV, M. E. KAZAKOVA, AND N. G. SHUMYATSKAYA (1974) Sazhinite, a new silicate of sodium and rare earths. *Zapiski Vses. Mineral. Obshch.* **103**, 338-341 (in Russian).

Chemical analysis by M.E.K. gave SiO₂ 46.28, TiO₂ 1.06, Nb₂O₅ 0.65, Al₂O₃ 0.80, Fe₂O₃ 0.26, MnO 0.06, CaO 0.50, Na₂O 11.20, K₂O 1.21, ThO₂ 1.30, TR₂O₃ 21.15, P₂O₅ 1.05, H₂O⁺ 9.58, H₂O⁻ 4.46, sum 99.56 percent. Spectrographic analysis showed the presence of Be, Pb, Mg, Cu, Zn, and Ba. X-ray spectrographic analysis gave for the rare-earth composition La 21.1-22.2, Ce 54.0-56.0, Pr 5.2-5.5, Nd 15.7-16.8, Sm 1.1-1.4, Eu 0.1, 0.2, Gd 0.4 percent. DTA showed a series of endothermic effects at 130-330°C, corresponding to the loss of water. The infra-red spectrum is diffuse, indicating a strongly disordered structure. The formula derived approximately Na₃CeSi₆O₁₅·6H₂O, with Na replacing Ca, and Ce replaced by Th.

X-ray study showed the mineral to be orthorhombic, pseudo-tetragonal, space group *Pmmm*, *Pmm2*, or *P222*, a 7.35 ± 0.03, b 7.50 ± 0.03, c 15.62 ± 0.06 Å, Z = 2, G calc 2.80, meas (by hydrostatic suspension) 2.61. The strongest lines of the X-ray pattern (37 given) are: 7.25 **38** 100; 5.23 **55** 110; 3.37 **75** 022, 202; 3.30 **35** 210; 3.23 **100** 121, 211; 2.552 **37** 124; 2.003 **38** 232, 322, 314, 225; 1.953 **32** 008.

The mineral occurs as light gray tabular crystals up to 5 × 5 × 1 mm., as irregular grains, and as dense fine-grained aggregates. Color white, gray, cream; translucent to transparent, luster vitreous to pearly. Cleavages perfect (100), (010), (001). H 153-258 kg/sq mm (=2.3 Mohs). Optically biaxial, positive, $n_s \alpha$ 1.525, β 1.528, γ 1.544 (all ±0.002), $2V$ 47°, $Z = a$, $Y = b$, $X = c$.

The mineral occurs in a pegmatite of alkalic rocks at Mt. Karnasurt, Lovozero alkalic massif, Kola Peninsula, as disseminations in natrolite and as rims around altered grains of steenstrupite. It is intergrown with neuntinite and a new hydrous silicophosphate of Na, Ce, and Ti.

The name is for Nikolai Petrovich Sazhin (1898-1969), a founder of the Soviet rare-earth industry. Type material is in the Mineralogical Museum, Acad. Sci. USSR, Moscow, and in the museum of IMGRE.

Solongoite*

S. V. MALINKO (1974) The new boron mineral solongoite. *Zapiski Vses. Mineral. Obshch.* **93**, 117-121 (in Russian).

Analysis by N. N. Kuznetsova and T. I. Stolyarova on 150 mg gave B₂O₃ 38.54, CaO 39.54, MgO 0.50, Mn, Fe, Ti. F not found, Cl 7.62, H₂O⁻ none, H₂O⁺ 15.40, sum 101.60—(O = Cl₂) 1.74 = 99.86 percent. Spectrographic analysis gave Zn 20, Ag 50, Fe 1, Cu 1, Ti 1 ppm. The formula is 7CaO·CaCl₂·6B₂O₃·9H₂O; the infra-red spectrum shows no bands of molecular water, hence the formula is Ca₇B₆O₈Cl(OH)₉. The mineral is insoluble in water, readily dissolved by cold HCl or H₂SO₄.

The DTA curve shows endothermic effects at 414° and 464°C (dehydration) and 985° (fusion) and exothermic effects at 714° and 650°. The loss of weight was 12.76 to 550°, 3.2 percent additional to 650°, and 1.2 percent additional to 780°.

Rotation and Laue patterns showed the mineral to be monoclinic, *P2₁/c*, a 7.93 ± 0.01, b 7.26 ± 0.01, c 12.54 ± 0.02 Å, β 94° ± 15°, Z = 2, G calc 2.526, meas 2.514 (microfloat method). The strongest X-ray lines (49

given) are: 7.84 **9** 100; 2.61 **8** 221; 2.54 **8** 123; 2.196 **10** 313; 1.911 **8** 116; 1.734 **9** 421.

The mineral occurs in colorless transparent crystals up to 0.2 mm long and 0.1 mm in diameter. Luster vitreous H 3.5. Optically biaxial, positive, $2V$ very small, $n_s \alpha = \beta = 1.510 \pm 0.001$, $\gamma = 1.545 \pm 0.001$, $r > v$ very weak, $Z:c = 25^\circ$, elongation positive.

The mineral was found in a drill core at 400 m depth from the Solongo contact-metamorphic boron deposit, Buryat A.S.S.R. It forms nests in veinlets of szaibelyite, associated with carbonate, grossular garnet, and kurchatovite. Many other rare borates occur in the deposit.

The name is for the deposit. Type material is at the Mineralogical Museum, Acad. Sci. USSR, Moscow.

Unnamed Sulfosalt of Ag, Pb, Bi

A. A. GODOVIKOV, AND K. V. KOCHETKOVA (1972) Bismuth—containing minerals of the Skhodnin deposits. *Mater. Genet. Eksp. Mineral.* **7**, 49–65 (in Russian).

Analysis, after deducting FeS_2 0.34 percent, gave Ag 4.61, Cu more, Fe 0.15, Pb 35.47, Sb 4.57, Bi 38.10, S 16.41, sum 99.31 percent, corresponding to $Ag_{1.00}Pb_{4.00}Sb_{0.88}Bi_{4.20}S_{12.17}$, or nearly $Ag_2Pb_8(Bi,Sb)_{10}S_{24}$.

The X-ray pattern (48 lines given) has strongest lines (analyzed sample): 3.42 **10**; 2.92 **7**; 2.77 **5**; 2.12 **7**; 2.05 **4**; this resembles the pattern of cosalite.

Steel-gray on fresh fracture. White in reflected light, no internal reflections. Reflectances were almost constant 400–700 nm, R'_g 38.9–40.4, R'_p 33.0–36.1 percent. Birefringence weak. Polysynthetic twinning. H 176.4–182.5 kg/sq mm with 5–20 g load, 159.2 with 50 g load. Brittle. G 7.08.

The mineral occurs in quartz veins of the Sokhodnin

deposits, along with bismuth jamesonite, molybdenite, and joseite; crystals do not exceed 0.1 mm in length.

NEW DATA

Montesite ($PbSn_4S_5$)

I. YA. NEKRASOV, M. P. KULAKOV, AND ZH. N. SOKOLOVSKAYA (1974) The subsolidus relations in the system PbS-SnS. *Geokhimiya*, **1**, 80–88.

The subsolidus phase relations of the system PbS-SnS was investigated by DTA, X-ray, and appearance of phase studies using both dry and hydrothermal annealing techniques. The appearance of phase data was refined with the electron microprobe. Galena can dissolve up to 2.5, 3, 6, and 15 mole percent SnS at 300°, 400°, 700°, and 836°C respectively. A complete solid solution was found between teallite ($PbSnS_2$) and herzenbergite (α -SnS) which extend to 50, 51, and 56 mole percent PbS at 25°, 400°, and 836°C respectively. The existence of this solid solution in nature was confirmed by microprobe analysis of natural specimens. The solid solution therefore precludes the existence of montesite ($PbSn_4S_5$) as a valid mineral species. Montesite is actually a Pb-bearing variety of herzenbergite. *Abstractor's Note:*

The findings of these authors that a complete solid solution exists between teallite and herzenbergite has been confirmed by Chang and Brice (1971), *Mineral. Mag.*, **38**, 186. Since the solid solution definitely includes montesite, $PbSn_4S_5$ (*Am. Mineral.* **35**, 334, 1950), the name should be discarded, as suggested by these authors.

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