NEW MINERAL NAMES*

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Arsendescloizite*


Microprobe analysis (H2O by TGA) gave As2O3 26.5, PbO 52.3, ZnO 18.5, FeO 0.3, H2O 2.9, sum 100.5%, corresponding to Pb1.06(Zn1.63Fe6.06)(AsO6)(OH)1.4 or PbZn(AsO6)(OH), the arsenate analogue of descloizite. The mineral is slightly soluble in hot HNO3.

Weissenberg and precession measurements show the mineral to be orthorhombic, space group P212121, a : 6.075, b = 9.358, c = 7.644 Å, Z = 4. D. calc. 6.57. The strongest X-ray lines (31 given) are 4.23(6)(lll); 3.23(l002); 2.88(10)(210,031); 2.60(8)(131); 2.09(6)(231); 1.658(6)(331,143,233); 1.559(8)(313,060,251).

Crystals are tabular on [001], up to 1.0 × 0.4 × 0.3 mm in size, and form rose-like aggregates. Observed forms [001], [110], [111]. Color pale yellow, luster brilliant subadamantine, streak white. H about 4, no cleavage was observed. Optically biaxial, negative, nα = 1.990, β = 2.030, γ = 2.035, 2V about 30°, r > v, X = b, Y = a.

The mineral is associated with willemite, chalcopyrite, mimetite, quartz, and goethite, on a matrix of nantite and chalcocite. The name is for the chemical and crystallographic relationship to descloizite. Type material is at the Univ. Stuttgart, Germany, and the Smithsonian Institution. M.F.

Benavidesite*


Electron microprobe analyses by R. Giraud on 2 samples from Uchucchacua gave Pb 39.9, 39.8; Mn 2.2; Fe 0.8, 1.0; Sb 34.8, 35.8; S 21.1, 21.6, sum 99.8%, 99.8%. Five analyses from Sātra gave (range and average) Pb 39.5-40.2, 39.9; Mn 0.1-0.2, 0.1; Mn 1.7-1.85, 1.8; Fe 0.9-1.2, 1.1; Zn 0.1-0.15, 0.1; Sb 32.2-33.9, 33.0; Bi 2.0-3.6, 2.6; S 21.5-21.9, 21.7; sum 100.3%. These correspond to Pb4(Mn0.69Fe0.31)Sb4S16 (Sb5.74Bi0.26)S14.38, the Mn analogue of jamesonite.

Single crystal study was not possible. The powder pattern was indexed on a monoclinic cell, a = 15.74, b = 19.14, c = 4.06 Å, β = 91.50°, Z = 2. D. calc. 5.60. The strongest lines (34 given) are 4.10(3)(240); 3.45(10)(250); 2.829(4)(431,530); 2.737(4)(213,360).

The mineral is lead-gray, streak brownish-gray. Pleochroism weak. Strongly anisotropically with colors brown to bluish. Internal reflections rarely observed in dull red. Cleavage not observed. Polysynthetic twinning common. Reflectances (max. and min.) are given at 2l wave lengths: 4(X)nm, 42.0, 40.7; 4@, 42.4, 39.5; 540, 42.4, 39.0; 600, 41.3, 38.3; 640, 40.8, 37.9; 680, 38.7, 36.1%.

Microhardness 64 kg/sq. mm at 20 g load, 73 kg/sq. mm at 100 g load. Brittle. Optically biaxial, negative, ns α = 1.810, β = 1.923, γ = 1.933, 2V = 57°, pleochroic, X pale yellow, Y and Z dark orange. Cleavage in one direction.

The mineral occurs at Uchucchacua, Peru, in acicular crystals up to 200 × 20 microns, associated with galena, manganocalcite, pyrite, pyrhotite, and alabandite, with gangue of quartz, chalcopyrite, rhodochrosite, and calcite. Also found at Sātra, Sweden, in a metamorphosed pyrite-pyrhotite deposit in rhyolitic and dacitic rocks; in rounded grains up to 50 μm in diameter, associated with galena, freibergite, gummusedite, manganocalcite, bismuth, and spessartine.

The name is for A. Benavides, for his contribution to the development of mining in Peru. Type material is at the École Nat. Superieure des Mines, Paris (Uchucchacua) and at the Free University, Amsterdam, Netherlands (Sātra). M.F.

Kolofanite*


Analysis by microprobe (standards diopside for Ca, hematite for Fe, pyrope for Al and Si, synthetic NiAs for As, apatite for P, Sb for Sb) gave: As2O3 43.30, P2O5 0.96, Sb2O3 2.20, CaO 14.97, Fe2O3 32.09, Al2O3 0.05, SiO2 1.20, H2O (by loss of weight when heated) 5.10, sum 99.07%, corresponding to Ca1.95(Fe2.93Al0.01)(As2.72Sb0.10Fe0.10)O14-2.06H2O, or Ca2Fe3+2O2(AsO4)2H2O, corresponding to arsensiderite but with less water.

The X-ray pattern is indexed on a monoclinic cell with a = 17.86, b = 19.66, c = 11.11, β = 96°, D. calc. 3.75, meas. 3.3, very close to the data of Moore and Araki (Inorg. Chem. 16, 1096-1106 (1977)) for arsensiderite. The X-ray pattern, however, has three weak lines that exclude the space group Aa proposed for arsensiderite by Moore and Araki. The strongest lines of kolofanite (32 given) are 8.90(10)(200); 5.64(5)(031); 3.29(9)(402); 2.72(10)(204); 2.216(8)(1000); 1.646(8)(406).

Color red, in thin plates orange to yellow, luster adamantine. Microhardness 64 kg/sq. mm at 20 g load, 73 kg/sq. mm at 100 g load. Brittle. Optically biaxial, negative, ns α = 1.810, β = 1.923, γ = 1.933, 2V = 57°, pleochroic, X pale yellow, Y and Z dark orange. Cleavage in one direction.

The mineral occurs in hydrothermally altered granite pegmatite, Kola Peninsula formed by the alteration of holtite. It is associated with mitridatite, arsensiderite, and laueite. The name is an abbreviation of Kola Filial Akad. Nauk. Type material is at the Fersman Mineralogical Museum, Acad. Sci. USSR, Moscow, and the Mineralogical Museum of the Geol. Inst., Kola Branch, Acad. Sci. USSR. M.F.

Mgriite*


Microprobe analyses of 4 samples gave (range and average): Cu 36.8-37.7, 37.2; Fe 1.8; As 14.5-14.9, 14.7; Se 46.8-47.7.

*Minerals marked with asterisks were approved before publication by the Commission on New Minerals and Mineral Names of the International Mineralogical Association.
Mohite*


Electron microprobe analyses of 7 grains (standards pure Sn and Sb and stoichiometric CuFeS₂ and NiAs) gave (range and av.) Cu 36.79–38.34, 37.69; Sn 32.35–36.55, 35.15; Sb none–3.72, 0.67; S 27.17–28.74, 27.91; sum 100.94–101.61, 101.42%.

X-ray data were indexed on the triclinic cell proposed for synthetic Cu₂SnS₃ by Wang (1974), giving a = 6.64, b = 11.51, c = 19.93 Å, α = 90°, β = 109°45', γ = 90°, Z = 12. The strongest lines (21 given) are 3.13(10)(006,200); 1.92(7)(206,060).

Mohite occurs as small grains, usually elongated (up to 10 × 50–80 µm) in goldfieldite–famatinite–tetrahedrite ores of the Kochubuk deposit, eastern Uzbekistan, associated with kura-
orange grains and granular masses. Luster vitreous, becomes dull on exposure, fracture step-like. H 133–175, av. 154 kg/sq. mm, approx. 3½. D 2.54. Optically biaxial, neg., nα = 1.410, β = 1.535, γ = 1.543 (all ±0.002), 2V 28°. Cleavage (001) perfect, (100), (110) less perfect. Fine polysynthetic twins are found along these planes. Y is close to D.

The mineral occurs in deep zones of the Khibina and Lovozero massif, Kola Peninsula, associated with shortite, pirssonite, gaylussite, villiaumite, etc.


Microprobe analyses, average of 14 by F. Autefage and average of 16 by R. Giraud, gave, respectively, SiO2 10.16, 10.34; CaO 8.94, 8.64; MnO3 78.94, 80.27; Fe2O3 1.29, 1.07, sum 99.33, 100.32%, corresponding respectively to (Ca0.98,Mn0.02)Si1.00O12 and (Ca0.96,Mn2.02)Si1.01O12.

X-ray study showed the mineral to be tetragonal, space group I41ad, a = 9.464, c = 18.854 Å, Z = 8, Dc calc. 4.65, meas. 4.63±0.05. The strongest lines (35 given) are 2.728(10)(224); 1.056(5) (264,22-12); 1.085(5).


The mineral occurs at Tachagalt, Morocco, in small grains, rarely in dioppyramidal crystals up to 1 mm with predominant faces. (131), (311), (311), (311), (110), (011). Associated minerals are braunite and a calcian braunite, mariokite, and cedernite. The name is for Louis Neltner, a pioneer student of the geology of the High Atlas in Monaco. Type material is at the Ecole Nationale Supérieure des Mines, Paris. M.F.

Suzukiite*  
Satoshi Matsubara, Akira Kato, and Shunzo Yui (1982) Suzukiite, Ba4V2Si2O7, the barium analogue of haradaite (60, 310 (1975)). The corresponding to (Ba1.76Sr2.24)Ti62V7O13 or (Ba,Sr)TiO2.56, VO2.43, BaO 38.38, SrO 3.21, sum 98.94 Vo, corresponding closely to the formula Cu4Zn3

(X. M. U. 0.45(11)Mn1.55,Fe2.00(96)Si1.00O12 and (Ca0.96,Mn2.02)Si1.01O12.

X-ray study showed the mineral to be tetragonal, space group I41ad, a = 9.464, c = 18.854 Å, Z = 8, Dc calc. 4.65, meas. 4.63±0.05. The strongest lines (35 given) are 2.728(10)(224); 1.056(5) (264,22-12); 1.085(5).


The mineral occurs at Tachagalt, Morocco, in small grains, rarely in dioppyramidal crystals up to 1 mm with predominant faces. (131), (311), (311), (311), (110), (011). Associated minerals are braunite and a calcian braunite, mariokite, and cedernite. The name is for Louis Neltner, a pioneer student of the geology of the High Atlas in Monaco. Type material is at the Ecole Nationale Supérieure des Mines, Paris. M.F.

Yafsoanite*  

Electron microprobe analyses (standards synthetic ZnS and PbS, diopside, metallic Te, and TeO2 for O) were made. The average of 6 analyses on crystals plus radiating-fibrous materials and of 4 analyses of concentric-zoned deposits, respectively, were: ZnO 24.56, 27.38; PbO 12.82, 8.88; CaO 16.79, 18.47; SiO2 0.21, 1.56; TeO3 42.11, 39.91; excess O 2.02, 2.77; sum 98.60, 99.97%, corresponding to (Zn1.32Ca1.30Pb0.26)Te1.0,02O6 and (Zn1.41Ca4.43Pb0.026)Te0.6. The mineral lost 2.54% by weight when heated at 500° for 3 hours; the X-ray pattern was unchanged. Dissolved by acids, not reactive with KOH or FeCl2.

X-ray study showed the mineral to be cubic, space group Pm3n or P4n3, a = 6.315±0.002 Å. The strongest lines (21 given) are 3.168(7)(200); 2.8219(210); 2.5(810)(211); 1.683(10)(211); 1.024(5)(232,611).

The mineral occurs as intergrowths, single crystals (0.1–0.5 mm), and as radiating-concentric material. Color light to dark brown, luster vitreous. Faces shown include cube, octahedron, and rhombohedral. Isotropic, n = 1.800±0.005. Hardness rather variable, mostly around 696 kg/sq. mm.

The mineral occurs in a gold deposit, central Aldan. The name is for the Yakut Filial, Siberian Branch, Academy of Sciences.
(Yafsoan in Russian). Type material is at the Fersman Mineralogical Museum, Acad. Sci., Moscow and the Inst. of Geology, Yakut Filial, Siberian Branch, Acad. Sci. USSR. M.F.

Discredited Minerals
\[ \alpha-\text{MnSiO}_3 \ (\text{Hausmannite}) \]


**BOOK REVIEWS**

**METEORITES: A PETROLOGIC-CHEMICAL SYNTHESIS.**


Meteorites are the most important source of data for our understanding of the origin, early history and evolution of solids and, indeed, the planets, in our solar system. This is not only because meteorites, besides lunar samples, are the only extraterrestrial material available in abundance for study in the laboratory, but because many meteorites are the most ancient rocks, dating back to the time of formation of the solar system. Many are also texturally, chemically and isotopically primitive, reflecting the make-up of matter 4.55 billion years ago, and some even contain pre-solar and extra-solar system material. Meteorites further contain a record of the origin, evolution and properties of their parent bodies (the asteroids), namely of their accretion, structure, break-up and reassembly; their melting, differentiation, cooling and solidification; and their regolith history.

It is therefore not surprising that for many years and, particularly, since the late fifties, meteorites have become the treasured objects of studies by scientists from many different fields. This interdisciplinary nature of meteoritics has resulted in major contributions from diverse scientific fields and publication in many different journals and, thus, there has always been a real need for up-to-date syntheses. Although some excellent texts on meteorites have been published in the past, none have concentrated on a synthesis of mineralogic, petrographic and chemical data. The book by R. T. Dodd is an excellent attempt for just such a synthesis and, therefore, is exceedingly timely and fills a major gap in the literature. The author is very well known in the field and has made major contributions over many years to the petrology of stone meteorites, particularly chondrites, and their origin and evolution. Although the author’s biases show through in places, I do not find this to be too much of a problem, since the book generally has abundant literature references to papers representing diverse points of view.

As the title implies, the emphasis of the book is on mineralogic, petrologic and chemical aspects of meteorites. Hence, considerable space is devoted to classification of meteorites on the basis of mineralogic, petrographic and chemical parameters. Chondrites in general and ordinary, carbonaceous and enstatite chondrites specifically are treated in detail, and the enstatite chondrite—enstatite achondrite association is delineated. Time and processes in the evolution of chondrites are reviewed and differentiated meteorites (iron, pallasites, and their associates) are described. The eucrite association, a group of differentiated, genetically related achondrites is reviewed, and so are the “unassociated” differentiated meteorites, i.e., rocks that cannot now be clearly related to other meteorite groups (e.g., the pyroxene—maskelynite, augite—olivine, olivine—olivine—pigeonite and fassaite achondrites, as well as the siderophyre and lodranite). Finally, source objects and parent bodies are discussed.

The book is remarkably free of typsetting and factual errors. A few, which the author may wish to correct in a second edition, are noted here. The jacket photo is not the Salta but the Thiel Mountains pallasite. p. 10: The description of Antarctic meteorite nomenclature is incomplete and should state that the capital letters A, B, C etc. stand for field parties A, B, C etc. at that particular locality and during that field season, such as Allan Hills A77005. p. 16, Table 2.3: Some chondrites classified by Dodd as type 7 are not simply the most highly recrystallized chondrites but clearly were partly or totally melted and should not be called type 7. p. 19, 20, Tables 2.1, 2.2: These tables would be more useful if the LL-group chondrites had been separated from those of the L-group. p. 22, 1.1: Figure 2.3 (not 2.2); in the text, chondrites are discussed in terms of Ni/Fe ratios, whereas in the associated Figure 2.3, data are plotted as Fe/Ni. This is confusing. Furthermore, the meteorite Segowlie (SE) is not indicated in Fig. 2.3. p. 25: Although ordinary chondrites of types 3–6 are related by recrystallization, this is clearly not the case for the carbonaceous chondrites of types 1–3 (e.g., type 2 carbonaceous chondrites are mechanical mixtures of low- and high-temperature phases). It is high time that this erroneous aspect of the otherwise useful van Schmus-Wood petrologic chondrite classification is recognized and acknowledged. p. 50: The CAIs were first identified by both Christophe (1969) in Lancel, and Keil (1969) in Leoville (Keil et al. reported at the same meeting and published in the same book). p. 77: The ordinary chondrites are not necessarily the most abundant meteorites in the vicinity of the earth, only among those that survive entry and are found on earth. p. 119, 1. 10t: Bovedy is a L-group chondrite, not H; 1. 11t: delete L.

Although the book presents an encyclopedic amount of data, it is exceedingly well-written and very readable and should be useful to specialists and non-specialists alike. Graduate students should find it to be an outstanding supplementary text to courses dealing with cosmochemistry, planetary sciences, and meteoritics. This is simply an outstanding monograph that presents a comprehensive, authoritative, modern treatment of the mineralogy, petrology and chemistry of meteorites to which the author is to be congratulated. No meteorite researcher can afford not to read this book from cover to cover, and the only thing that may prevent him from doing so is the exorbitant price of the book.

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