NEW MINERAL NAMES

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Bideauxite


The average of two microchemical analyses by Jack A. Allen (Pb, Ag) and by Schwarzkopf Microchemical Lab. (Cl, F, Br, I) gave Pb 62.66, Ag 15.74, Cl 14.74, F 3.26, Br none, I none, (OH) 2.78 (calc.), sum 99.18 percent, corresponding to:

\[
Pb_{2.02}Ag_{0.87}Cl_{0.77}F_{1.36}(OH)_{1.69}, \text{ or } Pb_2AgCl_3(F, OH)2.
\]

Readily melts to a brilliant yellow liquid in a Bunsen burner flame. The mineral is readily dissolved by hot or cold, dilute or conc. HNO₃; decomposed by dilute cold HCl, and by warm NH₄OH. Rotation and Weissenberg photographs showed the mineral to be cubic, \(Fd\bar{3}m\), \(a\) 14.117 ± 0.008 Å, \(Z = 16\), \(\rho\) (calc.) 6.256, \(\rho\) ( meas.) 6.274 ± 0.008 (av. of 4, Berman balance). The strongest X-ray lines (45 given) are 4.259 (7)(311), 4.076 (7)(222), 3.530 (9)(400), 3.240 (7)(331), 2.718 (10)(511, 333), 2.497 (9)(440), 1.978 (5)(711, 551), 1.839 (554, 731), 1.366 (5)(551, 773). Crystals show forms in order of decreasing importance: \(\{100\}\) and \(\{111\}\), \(d\) \{011\} and \(m\) \{113\}, \(n\) \{112\}, \(\phi\) \{116\}, and \{029\} (vicinal).

Colorless, luster adamantine, streak white, becomes pale lavender and dull on exposure to strong light. \(H. 3\), brittle, but verges on sectile when pressed or pushed with a needle. No cleavage, fracture conchoidal. Isotropic, \(n 2.178\) in S-Se melts, 2.192 by Brewster's method on a polished crystal.

Bideauxite occurs in the oxidation zone of the Mammoth-St. Anthony mine, Tiger, Pinal County, Arizona, enveloping and replacing boleite and commonly filmed by later cerussite. Associated minerals include leadhillite, matlockite, anglesite, and covellite. The name (pronounced bi-do'-ait) is for Richard A. Bideaux, mineralogist, Tucson, Arizona, who first noted the mineral (labelled cerargyrite) on U. S. Nat. Museum No. 114,583. The mineral and name were approved in advance of publication by the Commission on New Minerals and Mineral Names, IMA.

Ludlockite


Analysis gave PbO 9.32, FeO 17.50, Fe₂O₃ 2.13, As₂O₃ 70.82, sum 99.77 percent, corresponding to a cell content of Fe₂₋₄Pb₁₋₅As₁₋₈O₄₋₁₂ or (Fe, Pb)As₂O₆. Readily dissolved by conc. HCl or HNO₃, more slowly dissolved by dilute acids. Loses As₂O₃ when heated above 500°, the sublimate in a closed tube becoming yellow, then brown and black. Infra-red and Raman spectra show no signs of isolated As₂O₃ or AsO₃ groups nor of As–O bonds. There are close similarities to the As–O–As bonds in the spectra of claudetite and a structure is suggested that is based on As₂O₄ octahedra with all corners shared.
X-ray study showed the mineral to be triclinic, \( a = 10.41, b = 11.95, c = 9.86 \) Å. 
(±0.2 percent), \( \alpha = 112.9^\circ, \beta = 92.7^\circ, \gamma = 92.7^\circ(\pm 0.3^\circ) \), \( V = 1103 \) Å\(^3\), \( \rho \) (meas.) 4.49 ± 0.05, 
(\( \rho \) calc.) 4.55. The strongest lines are 10.90 (m), \( 8.51 (m) \), \( 4.74 (m) \), \( 4.47 (m) \), 
3.69 (m), 2.33 (m), 2.935 (mt), 2.838 (ms). Crystals are elongated [100], 
flattened [011], other prominent form [021], no terminal faces. Cleavage [011] 
micaceous, combines with other easy [0kl] cleavages to give ready fraying of 
crystals into fibers. Lamellar twinning, composition plane [011].

Color red, streak light brown, luster sub-adamantine. \( H = 1^{\frac{1}{2}}-2 \), sectile and flexible. 
Optically biaxial, positive, \( \alpha = 1.96, \beta = 2.055, \gamma = 2.11 \), \( Z \) near \( a \), optic axial plane 
perpendicular to [011]. Pleochroic, X yellow, Y deep yellow, Z orange yellow.

Ludwigite occurs associated with zirconian sidereite in a cavity of ore from the 
"germanite section" at Tsumeb, S.W. Africa.

The name is for the New Jersey mineral collectors and dealers Frederick Ludlow 
Smith, III, and Charles Leo Keck, who supplied specimens, that they had found, 
for investigation. The mineral and name were approved prior to publication by the 
Commission on New Minerals and Mineral Names, IMA.

Unnamed complex oxide of Ti, V, Cr, Fe

CARL O. MATHIESSEN (1970). An occurrence of unusual minerals at Bidjovagge, 

The mineral occurs in an area of a few sq. meters in albite fels in a hydrothermal 
chloropyrite-pyrite-pyrrhotite-carbonate ore as 1-2 mm grains, surrounded by 
friable material. One of these showed a center portion with octahedral outlines. 
The center part was isotropic and homogeneous; the outer part was banded, predominantly anisotropic but with isotropic bands similar to the center.

Chemical and spectrographic analyses gave TiO\(_2\) 54, ZrO\(_2\) 0.4, V\(_2\)O\(_5\) 17.7, Cr\(_2\)O\(_3\)
7.4, Al\(_2\)O\(_3\) 1, Fe\(_2\)O\(_3\) 0.6, FeO 4.5, MgO 0.5, MnO 0.06, U 0.5-2, rare earths 0.91
(mainly Ce 0.6, Y 0.2), Pb 0, x, Sr 0.2, Cu 0.2, S 1.5, SiO\(_2\) 1.5 percent and traces of 
Ni, Zn, Th, Sc. Electron microprobe of the anisotropic and isotropic phases gave, 
respectively, TiO\(_2\) 50.29, 51.17; V\(_2\)O\(_5\) 14.42, 13.15; Cr\(_2\)O\(_3\) 8.91, 9.43; FeO (total Fe)
8.58, 10.19; Al\(_2\)O\(_3\) 0.60, 0.86; MgO 0.05, 0.26; CeO\(_2\) 0.70, 4.12; Sc\(_2\)O\(_3\) 1.00, 2.89;
Y\(_2\)O\(_3\) 0.36, not detected; SiO\(_2\) 2.39, not detected.

X-ray study gave for the anisotropic phase (14 lines given) the strongest lines
3.80 (6), 3.47 (10), 2.81 (6), 2.61 (7), 2.14 (6), 1.89 (5), 1.66 (8); for the isotropic
phase 3 lines, 2.46 (4), 2.17 (7), 1.69 (10).

The mineral is black, luster metallic-adamantine, streak black-brown. Brittle.
\( \rho \) 4.0-4.2. DTA showed endothermal reactions at 470° (perhaps due to sulfides) and
690°, and an exothermal reaction at 900°; sintering began at 1000°.

Associated minerals are thortveitite, gadolinite, vanadinite rutile (V\(_2\)O\(_5\) 3.8,
Cr\(_2\)O\(_3\) 0.6 percent), vanadinite chromian magnetite (V\(_2\)O\(_5\) 16.98, Cr\(_2\)O\(_3\) 15.09 percent).
Analyses of these are given.

Unnamed copper aluminum sulfate

221.

The mineral occurs as sky-blue radiating tufts perched on and intermixed
with chalcoalumite. Electron microprobe analysis indicates that it is a copper
aluminum sulfate of unknown hydration state. Biaxial, negative, 2V rather large, \( \beta = 1.625, \gamma = 1.645 \), strongly pleochroic. X-ray powder data showed strongest lines at 9.60 (8), 6.22 (10), 5.26 (8), 3.95 (10), 2.81 (6), 2.28 (7). Occurs with brochantite and chalcoaldumite at the Grandview Mine, Grand Canyon National Park, Coconino County, Arizona.

**Unnamed copper iron arsenate-sulfate**


The mineral occurs in two habits: (a) green radiating tufts or frothy masses of intergrown crystals, (b) micaceous, more blue-green. Both give tests for arsenate and sulfate. Microprobe analysis of (a) gave in atomic-weight percent (?) Cu 73, Fe 13.5, As 8, S + Pb, U, Al 5.5 percent; (b) contains less iron. Hydration state unknown. Material of (b) is probably biaxial, negative, 2V 60–65°, \( \beta = 1.603, \gamma = 1.710 \); (a) is length-slow, 2V rather large, strongly pleochroic. Both gave identical X-ray patterns, with strongest lines 13.50 (10), 10.28 (8), 3.07 (4), 2.58 (5), 2.55 (5), 1.50 (4). Occurs with metazeunerite at the Grandview Mine, Grand Canyon National Park, Coconino County, Arizona.

Discussion: The optical data and some, but not all, of the X-ray lines, are close to those in the literature for tyrolite.

**New Data**

**Bafertisite**


Previous descriptions are summarized in *Amer. Mineral.* 45, 754, 1317 (1960). The mineral was found in small amounts in a dike of microclined granite-plitite near the center of the Burpala alkaline massif. Analysis by GVL on 85 mg. gave SiO\(_2\) 25.18, TiO\(_2\) 14.27, Nb_2O_5 0.32, Al_2O_3 1.00, Fe_3O_3 3.67, FeO 10.82, MnO 12.77, MgO nonme, CaO 0.30, BaO 26.59, K_2O 0.33, Na_2O 0.38, H_2O_\(_2\) 2.16, F 3.50, sum 101.29--

\[ \text{Ba(Fe}^{3+}_{3.78} \text{Fe}^{2+}_{1.32} \text{Mn}_{0.80})_2 \text{Ti}_4 \text{O}_9(O, \text{OH, } F)_{3.8} \]

Color orange. Cleavage [001] perfect, ns \( \alpha = 1.786 \) (calc.), \( \beta = 1.813, \gamma = 1.852, 2V 80^\circ \).

Discussion: This differs from previous analyses in the high Mn content. Mn exceeds Fe\(^{3+}\) but not Fe\(^{2+}\) + Fe\(^{3+}\). In view of possible oxidation and the very small amount of material analyzed, a new name should not be given until material closer to the probably existing Mn-end member is found.

**Bisbeeite (= Planchite + Chrysocolla?)**

New determinations on a sample from Pinal County, Arizona (RG 10, 772)
showed that fibers with \( \gamma = 1.65 \) consisted of rod-like assemblages of chrysocolla
fibers, those with \( \gamma = 1.7 \) were plancheite-like. The authors propose to discredit
bisbeeite.

Discussion: These determinations were not made on type material, which
was from Bisbee, Cochise Co., Ariz. (\textit{Dana’s System}, 6th Ed., App. 3, p. 14). The
fibers, with \( \gamma = 1.7 \) were plancheite-like. The authors propose to discredit bisbeeite.

\textbf{Leifite (new data)}

\textbf{Karpinskyite (discredited)}

\textsc{Harry Michelsen and O. V. Petersen} (1971) Leifite, revised, and karpinskyite,

New analyses (not given) of leifite from the type locality, Narsarsuak,
Greenland, lead to the formula:

\[
[\text{Na}_{5.5}(\text{H}_{2}\text{O})_{0.5}](\text{Si}_{18.6}\text{Al}_{1.4}\text{Be}_{2.3}\text{B}_{0.3})(\text{O}_{12}\text{F}_{0.6}(\text{OH})_{0.4}),
\]

or

\[
(\text{Na, H}_{2}\text{O})_{2}(\text{Si, Al, Be, B})\gamma(\text{O, OH, F})_{18}, Z = 3.
\]

Leifite is trigonal, \( P321 \) or \( P312, a 14.351, c 4.854 \text{ Å. Uniaxial, positive, } \omega 1.516,
\epsilon 1.520\)

X-ray data on karpinskyite [\textit{Amer. Mineral. 42, 119–120 (1957)}] show that
it is a mixture of leifite and a zinc-bearing clay of the montmorillonite group.

The redefinition of leifite and the discrediting of karpinskyite were approved
before publication by the Commission on New Minerals and Mineral Names,
IMA.