

## NEW MINERALS RECENTLY APPROVED BY THE COMMISSION ON NEW MINERALS AND MINERAL NAMES, INTERNATIONAL MINERALOGICAL ASSOCIATION

The information given here is provided by the Commission on New Minerals and Mineral Names, IMA, for comparative purposes and as a service to mineralogists working on new species.

Each mineral is described in the following format:

IMA No. (any relationship to other minerals)  
Chemical Formula  
Crystal system, space group  
unit-cell parameters  
Color; luster; diaphaneity  
Optical properties  
Strongest lines in the X-ray powder-diffraction pattern

The names of these approved species are considered confidential information until the authors have published their descriptions or released information themselves. No other information will be released by the Commission.

J.A. Mandarino, Chairman Emeritus, and J.D. Grice, Chairman  
Commission on New Minerals and Mineral Names  
International Mineralogical Association

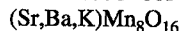
### 1995 PROPOSALS

IMA No. 95-001 A member of the crandallite group  
 $\text{SrFe}_3^{3+}(\text{PO}_4)_2(\text{OH}, \text{H}_2\text{O})_6$   
Hexagonal (trigonal):  $R\bar{3}m$   
 $a$  7.28,  $c$  16.85 Å  
Yellow, brown; vitreous to resinous; transparent to translucent.  
Uniaxial (-),  $\omega$  1.872,  $\epsilon$  1.862  
5.88(10), 3.65(6), 3.06(9), 2.96(5), 2.81(5), 2.53(5), 2.25(6), 1.969(5), 1.820(5).

IMA No. 95-002 The  $\text{Mn}^{2+}$  and (O,F) analogue of paulkerrite  
 $(\text{H}_2\text{O}, \text{K})_2\text{Ti}(\text{Mn}^{2+}, \text{Fe}^{2+})_2(\text{Fe}^{3+}, \text{Ti}^{4+})_2(\text{PO}_4)_4(\text{O}, \text{F})_2 \cdot 14\text{H}_2\text{O}$   
Orthorhombic:  $Pbca$   
 $a$  10.561,  $b$  20.858,  $c$  12.516 Å  
Greenish yellow, in some cases light brown; vitreous; transparent.  
Biaxial (+),  $\alpha$  1.612,  $\beta$  1.621,  $\gamma$  1.649,  $2V(\text{calc.})$  59.9°.  
10.40(90), 7.50(80), 6.28(100), 5.22(40), 3.97(40), 3.77(50), 3.13(100), 2.88(40).

IMA No. 95-003  
 $\text{Cu}(\text{Pt}, \text{Ir})_2\text{S}_4$   
Cubic:  $Fd\bar{3}m$   
 $a$  9.940 Å  
Steel grey; metallic; opaque.  
In reflected light: white with greenish tint, isotropic, no bireflectance or pleochroism. R: (37.3%) 470 nm, (37.7%) 546 nm, (38.1%) 589 nm, (38.6%) 650 nm.  
5.72(4), 2.98(6), 2.48(5), 1.90(7), 1.75(10), 1.29(5), 1.014(5).

## IMA No. 95-005

Monoclinic:  $P2_1/n$  $a$  10.00,  $b$  5.758,  $c$  9.88 Å,  $\beta$  90.64°

Black; submetallic; opaque.

In reflected light: grey, strong anisotropism, grey-blue to white bireflectance, pleochroism strong.  $R_{\text{max}}$  and  $R_{\text{min}}$ : (34.2, 26.0%) 470 nm, (31.7, 24.4%) 546 nm, (30.6, 23.4%) 589 nm, (27.9, 22.3%) 650 nm.

3.15(100), 3.13(80), 2.409(80), 2.229(40), 2.170(60), 2.170(60), 1.556(50).

The strontium end-member of the cryptomelane group

## IMA No. 95-006

Tetragonal:  $I4_2d$  $a$  5.880,  $c$  11.21 Å

Havana brown; metallic; opaque.

In reflected light: brownish grey; abundant red internal reflections; strong anisotropism in oil from red brick with orange tint to bluish grey and purplish; pleochroism weak, brown to clear brown-grey in oil.  $R_{\text{max}}$  and  $R_{\text{min}}$ : (29.3, 27.8%) 460 nm, (27.5, 25.9%) 540 nm, (27.65, 25.6%) 580 nm, (27.4, 27.5%) 660 nm.

3.351(100), 2.941(80), 2.082(75), 2.030(75), 1.767(80), 1.188(40).

The silver analogue of roquesite in the chalcopyrite group

## IMA No. 95-007



Orthorhombic: space group unknown

 $a$  3.304,  $b$  6.092,  $c$  10.26 Å

White; metallic; opaque.

In reflected light: silver-white, weak to distinct anisotropism, weak bireflectance, nonpleochroic.  $R_2$  and  $R_1$ : (58.2, 55.5%) 470 nm, (56.8, 55.6%) 546 nm, (55.8, 55.5%) 589 nm, (55.0, 55.5%) 650 nm.

2.63(10), 2.53(8), 1.942(10), 1.730(4), 1.640(4), 1.3963(4), 1.1182(8).

Probably belongs to the marcasite group

## IMA No. 95-009

Hexagonal (trigonal):  $P\bar{3}m1$  $a$  3.730,  $c$  5.024 Å

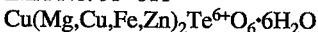
Silvery lead grey; metallic; opaque.

In reflected light: white; anisotropism moderate to strong with tints from pinkish yellow to dark grey – lilac; strong bireflectance; pleochroism:  $R_{\text{max}}$  light yellow,  $R_{\text{min}}$  light lilac.  $R_{\text{max}}$  and  $R_{\text{min}}$ : (48.4, 35.1%) 470 nm, (48.3, 35.0%) 546 nm, (49.1, 35.3%) 589 nm, (50.8, 36.5%) 650 nm.

5.04(3), 2.72(10), 1.983(5), 1.859(5), 1.747(3), 1.360(4).

The natural analogue of synthetic  $\text{PtSe}_2$ 

## IMA No. 95-011

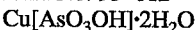
Hexagonal (trigonal):  $P3$  $a$  5.305,  $c$  9.693 Å

Pale yellow to pale orange-yellow; vitreous; transparent to somewhat translucent.

Uniaxial (–),  $\omega$  1.803,  $\epsilon$  1.581 (calc.).

9.70(100), 4.834(80), 4.604(60), 2.655(60), 2.556(70), 2.326(70), 1.789(40).

## IMA No. 95-012

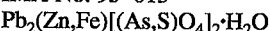
Triclinic:  $P\bar{1}$  $a$  6.020,  $b$  7.632,  $c$  11.168 Å,  $\alpha$  74.43°,  $\beta$  89.32°,  $\gamma$  86.55°

Turquoise blue; vitreous; transparent.

Biaxial (–),  $\alpha$  1.615,  $\beta$  1.660,  $\gamma$  1.700,  $2V(\text{meas.})$  82°,  $2V(\text{calc.})$  84°.

7.35(100), 5.239(50), 4.440(60), 3.936(60), 3.302(40), 3.008(50), 2.840(35).

## IMA No. 95-013

Monoclinic:  $P2_1$  or  $P2_1/m$  $a$  8.973,  $b$  5.955,  $c$  7.766 Å,  $\beta$  112.20°

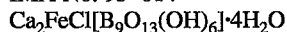
The zinc analogue of arsenbrackebuschite

Pale olive green with streaks of white; adamantine; transparent.

In reflected light: pale brownish grey; abundant colorless to very pale yellow internal reflections; anisotropism not detectable by eye; bireflectance measurable but not noticeable by the eye; nonpleochroic.

$R_{\min}$  and  $R_{\max}$ : (11.2, 11.5%) 470 nm, (10.8, 10.9%) 546 nm, (10.7, 10.8%) 589 nm, (10.7, 10.8%) 650 nm. 4.85(50), 3.659(30), 3.246(100), 2.988(60), 2.769(60), 2.293(30), 2.107(50), 1.889(30).

IMA No. 95-014



Monoclinic:  $P2_1$

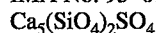
$a$  11.64,  $b$  9.38,  $c$  8.735 Å,  $\beta$  98.40°

Pale yellow; vitreous; transparent.

Biaxial (+),  $\alpha$  1.550,  $\beta$  1.554,  $\gamma$  1.592,  $2V(\text{meas.})$  36.6°,  $2V(\text{calc.})$  32.6°.

8.65(3), 7.29(10), 5.32(2), 4.50(2), 2.958(3), 2.744(2), 2.113(3).

IMA No. 95-015



Orthorhombic:  $Pnma$

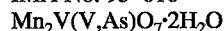
$a$  6.863,  $b$  15.387,  $c$  10.181 Å

Bright blue; vitreous; transparent.

Biaxial (-),  $\alpha$  1.630,  $\beta$  1.637,  $\gamma$  1.640,  $2V(\text{meas.})$  63.3°,  $2V(\text{calc.})$  66.2°.

3.198(27), 3.042(32), 2.853(40), 2.830(100), 2.617(32), 2.565(57), 1.9612(26), 1.8924(27).

IMA No. 95-016



Monoclinic:  $P2_1/n$

$a$  7.809,  $b$  14.554,  $c$  6.705 Å,  $\beta$  93.25°

Orange-red; vitreous; transparent.

Biaxial, mean  $n$  1.82,  $2V$  small.

5.32(80), 3.436(50), 3.260(50), 3.039(100), 2.723(60), 2.573(50b), 2.441(50), 1.592(60).

IMA No. 95-017

The natural analogue of synthetic  $\text{FeNb}_3\text{S}_6$



Hexagonal:  $P6_322$

$a$  5.771,  $c$  12.190 Å

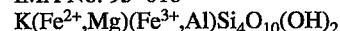
Dark grey to black; metallic; opaque.

In reflected light: grey; distinct to strong anisotropism from blue-grey to dark brown; distinct bireflectance; pleochroism, light grey to grey.  $R_{\max}$  and  $R_{\min}$ : (36.3, 29.5%) 470 nm, (36.6, 29.4%) 546 nm, (36.1, 28.9%) 589 nm, (34.7, 28.1%) 650 nm.

6.11(8), 3.04(6), 2.88(5), 2.606(8), 2.096(10), 1.665(8), 1.524(6).

IMA No. 95-018

A member of the mica group (compare 95-019)



Monoclinic:  $C2/m$

$a$  5.270,  $b$  9.106,  $c$  10.125 Å,  $\beta$  100.27°

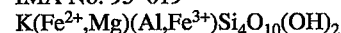
Blue green; earthy; translucent in thin section.

Complete optical data could not be measured, mean  $n$  1.640.

3.65(52), 3.358(86), 3.321(100), 3.090(60), 2.584(50).

IMA No. 95-019

A member of the mica group (compare 95-018)



Monoclinic:  $C2/m$

$a$  5.270,  $b$  9.106,  $c$  10.125 Å,  $\beta$  100.27°

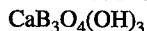
Blue green; earthy; translucent in thin section.

Complete optical data could not be measured, mean  $n$  1.625.

3.65(52), 3.358(86), 3.321(100), 3.090(60), 2.584(50).

NOTE: The minerals represented by 95-018 and 95-019 occur intimately mixed, have the same unit-cell parameters, and give the same X-ray powder-diffraction data. They differ in chemical composition.

## IMA No. 95-020

Monoclinic: *Pc* $a$  7.234,  $b$  8.130,  $c$  8.378 Å,  $\beta$  98.22°

Colorless to white; vitreous; transparent to translucent.

Biaxial (–),  $\alpha$  1.580,  $\beta$  1.605,  $\gamma$  1.623,  $2V(\text{meas.})$  63°,  $2V(\text{calc.})$  80°.

4.30(64), 3.379(100), 3.169(25), 3.122(31), 2.151(20), 1.919(20), 1.846(45).

## IMA No. 95-021

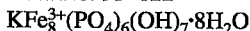
The natural analogue of synthetic  $\text{PbSb}_2\text{O}_6$ Hexagonal (trigonal): *P31m* $a$  5.295,  $c$  5.372 Å

Colorless to pale yellow; resinous; transparent.

Uniaxial (–),  $\omega$  2.092,  $\epsilon$  1.920

3.49(VS), 2.648(M), 2.110(W), 1.887(W), 1.651(W), 1.531(W).

## IMA No. 95-022

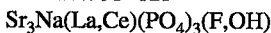
Monoclinic: *C2*, *Cm* or *C2/m* $a$  29.52,  $b$  5.249,  $c$  18.56 Å,  $\beta$  109.27°

Yellowish brown, pale yellow, cream to white; vitreous to silky; translucent.

Biaxial (+),  $\alpha$  1.780,  $\beta$  1.785,  $\gamma$  1.800,  $2V(\text{calc.})$  60°.

9.41(60), 4.84(90), 4.32(70), 4.25(50), 3.470(60), 3.216(100), 3.116(80).

## IMA No. 95-023

Hexagonal (trigonal): *P3* $a$  9.647(1),  $c$  7.170(1) Å

Bright yellow to greenish yellow; vitreous; transparent.

Uniaxial (–),  $\omega$  1.653,  $\epsilon$  1.635.

3.59(87), 3.30(65), 3.17(32), 2.897(100), 2.884(100), 2.790(54), 1.910(36), 1.796(36).

## IMA No. 95-024



The cubic polymorph of lueshite and natroniobite

Cubic: *Pm3* or *P23* $a$  3.911 Å

Brownish black; adamantine; opaque.

In reflected light: bluish; reddish brown internal reflections; isotropic; nonpleochroic. R: (15.75%) 480 nm, (15.00%) 540 nm, (14.70%) 580 nm, (14.35%) 660 nm.

3.915(35), 2.765(100), 1.953(53), 1.747(8), 1.594(30), 1.380(22), 1.234(7).

## IMA No. 95-025

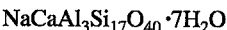
Hexagonal (trigonal): *P3* $a$  3.082,  $c$  11.116 Å

Pale blue; vitreous to waxy, translucent.

Uniaxial (sign unknown),  $\omega$  1.532,  $\epsilon$  unknown.

11.12(100), 5.549(24), 3.704(15), 2.595(6), 2.408(6), 2.167(4), 1.926(4).

## IMA No. 95-026

Orthorhombic: *Cmcm*

A member of the zeolite group

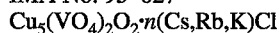
 $a$  9.747,  $b$  23.880,  $c$  20.068 Å

Colorless; vitreous; transparent.

Biaxial (+),  $\alpha$  1.476,  $\beta$  1.478,  $\gamma$  1.483,  $2V(\text{meas.})$  65°,  $2V(\text{calc.})$  65°.

11.94(40), 9.04(33), 8.23(29), 7.69(29), 3.79(100), 3.61(40).

IMA No. 95-027

Hexagonal (trigonal): *P3**a* 6.375, *c* 8.399 Å

Black; resinous to metallic; opaque.

Reflectance measurements could not be made because the material is too fine grained.

3.43(7), 2.810(4), 2.315(10), 2.131(3), 1.598(4).

IMA No. 95-028

An hexagonal polymorph of alabandite

MnS

Hexagonal: *P6<sub>3</sub>mc**a* 3.9817, *c* 6.4447 Å

Dark brown to black; resinous; opaque.

In reflected light: steel grey; brown-red internal reflections; anisotropism, 2.62 to 2.77; bireflectance, 0.15; nonpleochroic. *R*<sub>max</sub> and *R*<sub>min</sub>: (24.5, 22.1%) 470 nm, (22.6, 20.5%) 546 nm, (22.1, 20.0%) 589 nm, (21.6, 19.6%) 650 nm.

3.445(89), 3.217(72), 3.036(66), 1.988(82), 1.820(100), 1.691(63).

IMA No. 95-029

The Mn-analogue of berthierite

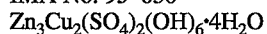
MnSb<sub>2</sub>S<sub>4</sub>Orthorhombic: *Pnam**a* 11.47, *b* 14.36, *c* 3.81 Å

Black; submetallic; opaque.

In reflected light: light grey; distinct anisotropism; faint bireflectance; nonpleochroic. *R*<sub>max</sub> and *R*<sub>min</sub>: (35.0, 24.0%) 470 nm, (36.1, 23.9%) 546 nm, (36.9, 24.9%) 589 nm, (35.6, 25.7%) 650 nm.

4.46(40), 3.69(90), 3.23(70), 3.05(40), 2.90(80), 2.65(100), 2.18(40), 1.906(40), 1.813(50).

IMA No. 95-030

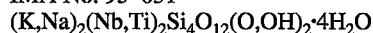
Triclinic: *P1**a* 5.415, *b* 6.338, *c* 10.475 Å,  $\alpha$  94.38°,  $\beta$  90.08°,  $\gamma$  90.24°

Greenish blue; vitreous; transparent.

Biaxial (+),  $\alpha$  1.629,  $\beta$  1.630,  $\gamma$  1.637, 2*V*(meas.) 60°, 2*V*(calc.) 42°.

10.459(61), 5.230(74), 3.486(40), 3.157(6), 2.728(6), 2.493(7), 2.355(7), 1.743(9).

IMA No. 95-031

Monoclinic: *Cm**a* 14.692, *b* 14.164, *c* 7.859 Å,  $\beta$  117.87°

White; vitreous; translucent.

Biaxial (+),  $\alpha$  1.649,  $\beta$  1.655,  $\gamma$  1.759, 2*V*(meas.) 20°, 2*V*(calc.) 28°.

7.10(9), 4.98(6), 3.262(10), 3.151(8b), 2.956(6), 2.549(4), 1.723(4), 1.591(4b), 1.451(4b).

IMA No. 95-032

(Fe,Os,Ru,Ir)

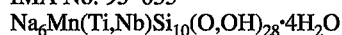
Hexagonal: *P6<sub>3</sub>/mmc**a* 2.591, *c* 4.168 Å

Megascopic color unknown; metallic; opaque.

In reflected light: white; weak anisotropism. *R*: (57.4%) 470 nm, (53.4%) 546 nm, (53.3%) 589 nm, (54.4%) 650 nm.

2.246(5), 2.087(6), 1.976(10), 1.297(6b), 1.180(6b), 1.100(5b).

IMA No. 95-033

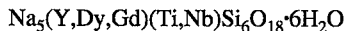
Monoclinic: *I2/m**a* 13.033, *b* 18.717, *c* 12.264 Å,  $\beta$  99.62°

Yellow, pinkish yellow or pink; vitreous to greasy; translucent to transparent.

Biaxial (-),  $\alpha$  1.536,  $\beta$  1.545,  $\gamma$  1.553, 2*V*(meas.) 87°, 2*V*(calc.) 86°.

10.56(100), 6.38(50), 5.55(45), 4.78(40), 4.253(40), 3.196(80), 2.608(50).

## IMA No. 95-034

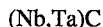
Hexagonal (trigonal):  $R\bar{3}2$  $a$  10.696,  $c$  15.728 Å

Colorless; vitreous; transparent or cloudy.

Uniaxial (–),  $\omega$  1.612,  $\epsilon$  1.607.

5.99(60), 3.21(100), 3.093(40), 2.990(85), 2.61(40), 1.998(55), 1.481(44b).

## IMA No. 95-035

Cubic:  $Fm\bar{3}m$  $a$  4.45 Å

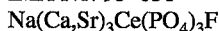
Bronze-yellow; metallic; opaque.

In reflected light: yellowish to rose-cream; no anisotropism, bireflectance or pleochroism. R: (33.9%) 480 nm, (38.5%) 540 nm, (45.1%) 580 nm, (52.8%) 660 nm.

2.56(10), 2.22(9), 1.574(8), 1.343(8), 1.289(7), 1.115(3).

## IMA No. 95-036

The calcium-dominant analogue of belovite-(Ce)

Hexagonal (trigonal):  $P\bar{3}$  $a$  9.51,  $c$  7.01 Å

Bright yellow; vitreous; transparent.

Uniaxial (–),  $\omega$  1.682,  $\epsilon$  1.660.

3.51(30), 3.12(40), 2.84(100b), 2.753(40), 1.967(30), 1.870(30).

## IMA No. 95-037

The natural analogue of synthetic  $\text{Fe}_3^{3+}\text{PO}_7$ Hexagonal (trigonal):  $R\bar{3}m$  $a$  7.994,  $c$  6.855 Å

Brown to red brown; greasy; nontranslucent.

Optical data could not be obtained because of the small size of the domains.

4.86(10), 3.09(100), 2.446(16), 2.078(20), 1.997(13), 1.845(11), 1.623(23), 1.545(12), 1.440(16).

## IMA No. 95-038

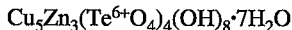
The natural analogue of synthetic  $\text{Fe}_3^{3+}\text{PO}_4$ Hexagonal (trigonal):  $P\bar{3}_121$  $a$  5.048,  $c$  11.215 Å

Brown to red-brown; greasy; nontranslucent.

Optical data could not be obtained because of the small size of the domains.

4.360(19), 3.445(100), 2.518(7), 2.362(14), 2.298(7), 2.180(10), 1.8846(12), 1.5814(8), 1.4214(10).

## IMA No. 95-039

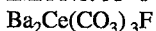
Triclinic:  $P1$  or  $P\bar{1}$  $a$  8.794,  $b$  9.996,  $c$  5.660 Å,  $\alpha$  104.10°,  $\beta$  90.07°,  $\gamma$  96.34°

Pale blue to deeper blue-green; vitreous to pearly; transparent to translucent.

In reflected light: very pale light brown; light emerald green internal reflections; anisotropism unknown; slight bireflectance. R values could not be measured with certainty.

9.638(100), 8.736(50), 4.841(100), 2.747(60), 2.600(45).

## IMA No. 95-040

Monoclinic:  $P2_1/m$  or  $P2_1$  $a$  13.396,  $b$  5.067,  $c$  6.701 Å,  $\beta$  106.58°

Yellow; vitreous; transparent.

Biaxial (–),  $\alpha$  1.584,  $\beta$  1.724,  $\gamma$  1.728,  $2V(\text{meas.})$  16°,  $2V(\text{calc.})$  18°.

4.000(10), 3.269(100), 2.535(20), 2.140(40), 2.003(40), 1.635(10), 1.373(10).

IMA No. 95-041

 $\text{In}_2\text{Pt}$ Cubic:  $Fm\bar{3}m$ ,  $F4\bar{3}2$  or  $F4\bar{3}m$  $a$  6.364 Å

Bright white; metallic; opaque.

In reflected light: bright white with yellowish tint; no anisotropism, bireflectance or pleochroism. R: (49.3%) 470 nm, (60.6 %) 550 nm, (68.5%) 590 nm, (80.1%) 650 nm.

2.25(100), 1.92(60), 1.59(60), 1.299(80), 1.125(60), 1.076(60), 1.006(60).

IMA No. 95-042

 $\text{InPt}_3$ Cubic:  $Pm\bar{3}m$  $a$  3.988 Å

Bright white; metallic; opaque.

In reflected light: bright white with yellowish tint; no anisotropism, bireflectance or pleochroism. R: (56.1%) 470 nm, (62.5%) 550 nm, (65.7%) 590 nm, (71.3%) 650 nm.

2.30(100), 1.99(60), 1.411(40), 1.203(80), 1.151(40), 0.997(20).

IMA No. 95-043

 $\text{Fe}_2(\text{Ta},\text{Nb})$ Hexagonal:  $P6_3/mmc$ ,  $P6_3mc$  or  $P\bar{6}2c$  $a$  4.87,  $c$  7.76 Å

Greyish yellow; metallic; opaque.

In reflected light: greyish white; no anisotropism, bireflectance or pleochroism. R: (55.4%) 460 nm, (60.8%) 540 nm, (65.7%) 590 nm, (71.3%) 660 nm.

2.84(7), 2.46(6), 2.22(9), 2.00(3), 1.92(4), 1.41(3), 1.34(8).

IMA No. 95-044

 $\text{Bi}_{16}\text{CrO}_{27}$ The natural analogue of synthetic  $\text{Bi}_{16}\text{CrO}_{27}$ Tetragonal:  $I4$ ,  $I\bar{4}$  or  $I4/m$  $a$  8.649,  $c$  17.24 Å

Orange-brown; adamantine; translucent.

Uniaxial (+),  $\omega$  2.50,  $\epsilon$  2.55.In reflected light: greyish white to light orange; orange internal reflections; weak anisotropism; weak bireflectance; very weak pleochroism.  $R_F$  and  $R_O$ : (21.46, 19.40%) 470 nm, (27.46, 25.22%) 546 nm, (29.80, 26.22%) 589 nm, (29.98, 25.96%) 650 nm.

3.19(100), 2.730(40), 1.980(40), 1.715(30), 1.655(55), 1.124(25), 1.054(25).

IMA No. 95-045

 $\text{Li}_2(\text{Mg},\text{Fe}^{2+})_3\text{Fe}_2^{3+}\text{Si}_8\text{O}_{22}(\text{OH})_2$ 

A member of the amphibole group

Monoclinic:  $C2/m$  $a$  9.474,  $b$  17.858,  $c$  5.268 Å,  $\beta$  101.88°

Black; vitreous; translucent.

Biaxial (+),  $\alpha$  1.699,  $\beta$  1.703,  $\gamma$  1.708,  $2V(\text{meas.})$  72°,  $2V(\text{calc.})$  84°.

8.222(61), 4.458(19), 3.044(100), 2.741(53), 2.712(14), 2.341(14), 1.433(46), 1.392(14).

IMA No. 95-046

 $\text{Na}_2(\text{Sr},\text{Ba})_{14}\text{Na}_2\text{Al}_{12}\text{F}_{64}(\text{F},\text{OH})_4$ Monoclinic:  $C2/m$  $a$  16.046,  $b$  10.971,  $c$  7.281 Å,  $\beta$  101.734°

Colorless to white; vitreous; translucent.

Biaxial (-),  $\alpha$  1.436,  $\beta$  1.442,  $\gamma$  1.442,  $2V(\text{meas.})$  0-5°,  $2V(\text{calc.})$  0°.

7.844(8), 3.643(9), 3.453(10), 3.193(10), 3.112(9), 2.989(9), 2.220(8), 2.173(9), 2.001(8).

IMA No. 95-047

 $\text{IrBiS}$ Cubic:  $P2_13$  $a$  6.164 Å

Steel black; metallic; opaque.

In reflected light: bright white with yellowish tint, isotropic. R: (46.2%) 470 nm, (47.2%) 550 nm, (47.6%) 590 nm, (47.4%) 650 nm.  
2.75(70), 2.51(60), 1.860(100), 1.090(50), 1.090(50).

IMA No. 95-048

A polymorph of geminite

$\text{Cu}^{2+}(\text{AsO}_3\text{OH})\cdot\text{H}_2\text{O}$

Triclinic:  $P1$  or  $P\bar{1}$

$a$  6.435,  $b$  11.257,  $c$  18.662 Å,  $\alpha$  79.40°,  $\beta$  86.48°,  $\gamma$  83.59°

Very light green to colorless; vitreous; transparent.

Biaxial (+),  $\alpha$  1.602,  $\beta$  1.642,  $\gamma$  1.725,  $2V(\text{meas.})$  70°,  $2V(\text{calc.})$  73°.

18.3(25), 11.00(100), 3.171(30), 2.952(50), 2.920(60), 2.816(50), 2.492(25).

IMA No. 95-049

The Pt-dominant analogue of taimyrite

$(\text{Pt,Pd,Cu})_9\text{Cu}_3\text{Sn}_4$

Orthorhombic:  $Pmmm$ ,  $Pmm2$  or  $P222$

$a$  7.89,  $b$  4.07,  $c$  7.73 Å

Pinkish lilac; metallic; opaque.

In reflected light: pinkish lilac, distinct to moderate anisotropism, weak to distinct birefractance, pleochroic from brownish pink to pinkish lilac.  $R_{\text{max}}$  and  $R_{\text{min}}$ : (44.1, 42.8%) 470 nm, (50.0, 49.5%) 546 nm, (54.6, 51.8%) 589 nm, (56.8, 55.6%) 650 nm.

2.283(10), 2.163(4), 2.030(2), 1.369(3), 1.218(2), 1.143(2).

IMA No. 95-050

The vanadium analogue of atelestite

$\text{Bi}_2\text{O}(\text{OH})\text{VO}_4$

Monoclinic:  $P2_1/c$

$a$  6.973,  $b$  7.539,  $c$  10.881 Å,  $\beta$  107.00°

Light brown; adamantine; transparent to translucent.

Biaxial (+),  $\alpha$  2.26,  $\beta$  2.27,  $\gamma$  2.30,  $2V(\text{meas.})$  65°,  $2V(\text{calc.})$  61°.

6.667(23), 6.102(22), 4.279(38), 3.267(100+), 3.150(62), 2.734(36), 2.549(21), 1.889(21).

IMA No. 95-051

A member of the zeolite group

$\text{Ca}_4(\text{Ca,Sr,K,Ba})_3\text{Cu}_3\text{Al}_{12}\text{Si}_{12}\text{O}_{48}(\text{OH})_8\sim\text{H}_2\text{O}$

Cubic:  $Fm\bar{3}m$

$a$  31.62 Å

Light blue; vitreous; transparent.

Isotropic:  $n$  1.505.

18.34(100), 15.82(50), 9.69(5), 4.43(5), 3.87(5), 3.47(5).

IMA No. 95-052

A member of the mica group;  
the Cr-dominant analogue of muscovite

$\text{KCr}_2[\text{AlSi}_3\text{O}_{10}](\text{OH,F})_2$

Monoclinic:  $C2/c$

$a$  5.32,  $b$  9.07,  $c$  20.20 Å,  $\beta$  95.6°

Emerald green; vitreous; transparent.

Biaxial (-),  $\alpha$  1.619,  $\beta$  1.669,  $\gamma$  1.673,  $2V(\text{meas.})$  31°,  $2V(\text{calc.})$  31°.

9.94(6), 4.52(8), 2.60(10), 2.40(6), 2.15(6), 1.519(10).

IMA No. 95-053

The lanthanum-dominant analogue of ancylite-(Ce)

$\text{SrLa}(\text{CO}_3)_2(\text{OH})\cdot\text{H}_2\text{O}$

Orthorhombic:  $Pmcn$

$a$  5.072,  $b$  8.589,  $c$  7.276 Å

Light yellow to yellowish brown; vitreous; transparent.

Biaxial (+),  $\alpha$  1.640,  $\beta$  1.668 (calc.),  $\gamma$  1.731,  $2V(\text{meas.})$  70°.

4.36(92), 3.738(88), 3.705(90), 2.955(100), 2.664(89), 2.358(87), 2.092(80).