

**New Minerals recently approved  
by the  
Commission on New Minerals and Mineral Names  
International Mineralogical Association**

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*Some time ago the Commission on New Minerals and Mineral Names decided that we could do a distinct service to the mineralogical community if we published very short descriptions on newly approved mineral species without, of course, their names. The purpose of this is to assist mineralogists who are working on new minerals which may be the same as these approved species, which have not been published yet. The frequency of multiple proposals for the same species is increasing and it is hoped that this service will alert prospective proposers to the existence of these new species and thus save them some time and frustration in coming in second or third with the same mineral.*

J.A. Mandarino, Chairman Emeritus  
J.D. Grice, Chairman  
C.N.M.M.N. - I.M.A.

The information given here is provided by the Commission on New Minerals and mineral names, I.M.A. for comparative purposes.

Each mineral is described in the following format :

I.M.A. No. (any relationship to other minerals)

Chemical formula.

Crystal system, space group

unit cell parameters.

Colour; lustre diaphaneity.

Optical properties.

Strongest lines in the X-ray powder diffraction pattern.

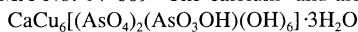
The names of these approved species are considered confidential information until the authors have published their descriptions or released information themselves.

**NO OTHER INFORMATION WILL BE RELEASED BY THE COMMISSION.**

## 1997 PROPOSALS

- IMA No. 97-001 Chemically related to paulkerrite  
 $(\text{Bi,Pb})_2\text{Fe}(\text{O,OH})_3\text{PO}_4$   
 Monoclinic:  $C2/m$   
 $a$  12.278,  $b$  3.815,  $c$  6.899 Å,  $\beta$  111.14°.  
 Black to dark brown; vitreous to adamantine; opaque to translucent.  
 Biaxial (-),  $\alpha$  2.06,  $\beta$  2.15(calc),  $\gamma$  2.19,  $2V(\text{meas.})$  70°.  
 5.726 (54), 3.372 (77), 3.322 (37), 3.217 (46), 3.011 (100), 2.863 (34), 2.750 (62).
- IMA No. 97-002 The boron-dominant analogue of gehlenite (melilite group)  
 $\text{Ca}_2\text{B}_2\text{SiO}_7$   
 Tetragonal:  $P4_2/m$   
 $a$  7.116,  $c$  4.815 Å.  
 Creamy-white; earthy; earthy.  
 Probably uniaxial (-),  $n$  1.67.  
 3.479 (40), 2.862 (55), 2.654 (100), 2.231 (15), 2.129 (20), 1.920 (35), 1.644 (20).
- IMA No. 97-003 The Ti-dominant analogue of nenadkevichite  
 $\text{NaK}_2(\text{Ti,Nb})_2\text{Si}_4\text{O}_{12}(\text{O,OH})_2 \cdot 2\text{H}_2\text{O}$   
 Monoclinic:  $C2/m$   
 $a$  14.39,  $b$  13.900,  $c$  7.825 Å,  $\beta$  117.6°.  
 Colourless; vitreous; transparent to translucent.  
 Biaxial (+),  $\alpha$  1.667,  $\beta$  1.677,  $\gamma$  1.802,  $2V(\text{meas.})$  32°,  $2V(\text{calc.})$  33°.  
 6.94 (61), 6.39 (43B), 3.186 (100), 3.100 (96), 2.600 (28), 2.586 (28), 2.489 (24).
- IMA No. 97-004 A polymorph of miargyrite  
 $\text{AgSbS}_2$   
 Cubic:  $Fm\bar{3}m$   
 $a$  5.650  
 Greyish black; metallic; opaque.  
 In reflected light: grey. R: (34.5 %)470 nm, (33.8 %)546 nm, (32.8 %)589 nm,  
 (28.7 %)650 nm.  
 3.26 (9), 2.83 (10), 1.998 (8), 1.703 (6), 1.630 (5), 1.296 (2), 1.263 (3).
- IMA No. 97-005  
 $(\text{UO}_2)\text{H}(\text{AsO}_3)$   
 Tetragonal: space group unknown  
 $a$  11.00,  $c$  15.96 Å  
 Yellow; dull; translucent.  
 Uniaxial (-),  $\omega$  1.84,  $\epsilon$  1.75  
 5.58 (8), 4.95 (10), 4.40 (6), 3.33 (8), 3.03 (6), 2.91 (5).
- IMA No. 97-007 The  $\text{Mn}^{2+}$ -dominant analogue of nordite-(Ce)  
 $\text{Na}_3\text{SrCeMnSi}_6\text{O}_{17}$   
 Orthorhombic:  $Pcca$   
 $a$  14.449,  $b$  5.187,  $c$  19.849 Å  
 Colourless, pale-brownish, brown; vitreous; transparent.  
 Biaxial (-),  $\alpha$  1.623,  $\beta$  1.636,  $\gamma$  1.642,  $2V(\text{meas.})$  60°,  $2V(\text{calc.})$  68°.  
 7.22 (38), 4.215 (100), 3.326 (67), 2.965 (83), 2.875 (55), 2.597 (54), 2.443 (35).
- IMA No. 97-008 The  $\text{Fe}^{2+}$ -dominant analogue of nordite-(Ce)  
 $\text{Na}_3\text{SrCeFeSi}_6\text{O}_{17}$   
 Orthorhombic:  $Pcca$   
 $a$  14.460,  $b$  5.187,  $c$  19.848 Å  
 Colourless or light coffee-colour; vitreous; transparent.  
 Biaxial (-),  $\alpha$  1.623,  $\beta$  1.636,  $\gamma$  1.642,  $2V(\text{meas.})$  60°,  $2V(\text{calc.})$  68°.  
 7.22 (41), 4.216 (100), 3.325 (67), 2.964 (73), 2.879 (62), 2.595 (46), 2.444 (31).

IMA No. 97-009 The calcium- and arsenate-dominant member of the mixite group



Hexagonal:  $P6_3/m$

a 13.571, c 5.880 Å

Pale green; vitreous; transparent.

Uniaxial (+),  $\omega$  1.688,  $\epsilon$  1.765.

11.64 (100), 4.431 (41), 3.387 (17), 3.254 (22), 2.9347 (42), 2.6932 (29), 2.5624 (30).

IMA No. 97-010



Orthorhombic:  $Pba2$  or  $Pbam$

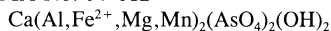
a 15.179, b 38.117, c 4.0428 Å

Silvery lead grey; metallic; opaque.

In reflected light: white with a greenish tint, distinct anisotropism (dark grey to greenish grey, weak bireflectance, weak pleochroism.  $R_{\min.}$  &  $R_{\max.}$ : (33.8, 34.0

%)470 nm, (31.8, 31.9 %)546 nm, (31.2, 31.3 %)589 nm, (30.4, 30.4 %)650 nm. 4.462 (40), 3.699 (37), 3.392 (100), 2.817 (45), 2.735 (31), 2.156 (25), 2.150 (22).

IMA No. 97-012



Monoclinic:  $C2$

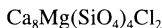
a 8.9252, b 6.1427, c 7.352 Å,  $\beta$  115.25°

Light brownish to brownish pink, orange-brown; vitreous; transparent.

Biaxial (sign unknown), n 1.76 parallel to fibre, n 1.70 perpendicular to fibre.

4.914 (58), 3.376 (65), 3.164 (100), 3.084 (61), 2.945 (72), 2.687 (53), 2.522 (84).

IMA No. 97-013



Cubic:  $Fd\bar{3}$

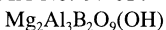
a 15.0850 Å

Orange brown to amber; vitreous; transparent.

Isotropic, n 1.676.

2.901 (40), 2.666 (100), 2.549 (30), 1.9637 (30), 1.8845 (30), 1.7774 (30), 1.5400 (50), 1.4585 (30).

IMA No. 97-014 Chemically and structurally related to sinhalite



Monoclinic:  $P2_1/c$

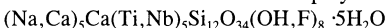
a 7.49, b 4.33, c 9.85 Å,  $\beta$  110.7°

Colourless; vitreous; transparent.

Biaxial (-),  $\alpha$  1.691,  $\beta$  1.713,  $\gamma$  1.730,  $2V(\text{meas.})$  80.0°,  $2V(\text{calc.})$  82°.

3.21 (40), 2.61 (40), 2.14 (100), 2.102 (60), 1.625 (100), 1.607 (40), 1.399 (40).

IMA No. 97-015 A Ca-dominant polymorph of zorite



Orthorhombic:  $C222$

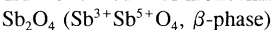
a 7.024, b 23.155, c 6.953 Å

Pale brown, brown, orange-yellow; vitreous; transparent to translucent.

Biaxial (+),  $\alpha$  1.599,  $\beta$  1.610,  $\gamma$  1.696,  $2V(\text{meas.})$  38°,  $2V(\text{calc.})$  41°.

11.564 (100), 6.932 (90), 5.258 (40), 4.446 (40), 3.052 (75), 2.977 (70), 2.582 (40).

IMA No. 97-017 A monoclinic polymorph of cervantite



Monoclinic:  $C2/c$

a 12.061, b 4.836, c 5.383 Å,  $\beta$  104.60°

Colourless; vitreous; transparent.

- Biaxial (sign unknown),  $\alpha'$  1.72,  $\gamma'$  2.10.  
3.244 (VS), 2.920 (M), 2.877 (S), 1.619 (M).
- IMA No. 97-018 A member of the milarite group  
 $\text{K}(\text{Ca}, \text{Mn}, \text{Na})_2(\text{K}_{2-x}\square_x)_2\text{Zn}_3\text{Si}_{12}\text{O}_{30}$   
Hexagonal: P6/mcc  
a 10.505, c 14.185 Å  
Colourless, white; vitreous; transparent to translucent.  
Uniaxial (+),  $\omega$  1.561,  $\epsilon$  1.562  
7.11 (35), 3.830 (100), 3.345 (60), 3.304 (40), 2.940 (50), 2.795 (85), 2.627 (35).
- IMA No. 97-019 The zinc-dominant member of the manasseite group  
 $\text{Zn}_4\text{Al}_2(\text{OH})_{12}(\text{CO}_3)_3\cdot 3\text{H}_2\text{O}$   
Hexagonal: P6<sub>3</sub>/mmc  
a 3.0725, c 15.1135 Å  
White; vitreous; transparent.  
Optical properties could not be measured.  
7.51 (vs), 3.794 (m), 2.511 (mw), 2.175 (mw), 1.830 (mw), 1.542 (ms), 1.539 (ms).
- IMA No. 97-021  
 $\text{HgBi}_2\text{S}_4$   
Monoclinic: C2/m  
a 14.164, b 4.053, c 13.967 Å,  $\beta$  118.28°  
Grey-black; metallic; opaque.  
In reflected light: creamy-white, distinct anisotropism, low birefractance, nonpleochroic.  $R_1$  &  $R_2$ : (35.7, 37.8 %)470 nm, (35.4, 37.5 %)546 nm, (34.9, 37.0 %)589 nm, (33.9, 35.8 %)650 nm.  
3.86 (m), 3.55 (m), 3.05 (S), 2.914 (mS), 2.865 (mS), 2.644 (m), 1.913 (m), 1.805 (m).
- IMA No. 97-022 The cadmium-dominant analogue of 97-023  
 $(\text{Cd}, \text{Ca}, \text{Mn})\text{KCu}_5(\text{AsO}_4)_4[\text{As}(\text{OH})_2\text{O}_2](\text{H}_2\text{O})_2$   
Monoclinic: P2<sub>1</sub>/m  
a 9.8102, b 10.0424, c 9.9788 Å,  $\beta$  101.686°  
Electric blue; vitreous; transparent.  
Biaxial (-),  $\alpha$  1.720,  $\beta$  1.749,  $\gamma$  1.757, 2V(meas.) 50°, 2V(calc.) 55°.  
9.64 (100), 4.46 (40), 3.145 (50), 3.048 (40), 2.698 (40).
- IMA No. 97-023 The calcium-dominant analogue of 97-022  
 $(\text{Ca}, \text{Cd}, \text{Mn})\text{KCu}_5(\text{AsO}_4)_4[\text{As}(\text{OH})_2\text{O}_2](\text{H}_2\text{O})_2$   
Monoclinic: P2<sub>1</sub>/m  
a 9.8102, b 10.0424, c 9.9788 Å,  $\beta$  101.686°  
Electric blue; vitreous; transparent.  
Biaxial (-),  $\alpha$  1.713,  $\beta$  1.743,  $\gamma$  1.749, 2V(meas.) 50°, 2V(calc.) 48°.  
9.64 (100), 4.46 (40), 3.145 (50), 3.048 (40), 2.698 (40).
- IMA No. 97-024 The cadmium-dominant analogue of campigliaite  
 $\text{Cu}_4\text{Cd}(\text{SO}_4)_2(\text{OH})_6\cdot 4\text{H}_2\text{O}$   
Monoclinic: P2<sub>1</sub>/m  
a 5.543, b 21.995, c 6.079 Å,  $\beta$  92.04°  
Bluish-green; vitreous; transparent.  
Biaxial (-),  $\alpha$  1.619,  $\beta$  1.642,  $\gamma$  1.661, 2V(meas.) 66°, 2V(calc.) 83°.  
11.02 (90), 5.496 (100), 5.322 (25), 4.079 (50), 3.437 (30), 3.243 (40), 2.470 (30).
- IMA No. 97-025  
 $\text{UO}_2\text{CO}_3\cdot \text{H}_2\text{O}$   
Hexagonal: space group unknown  
a 15.79, c 23.93 Å

Canary yellow; silky; translucent.

Uniaxial (+),  $\omega$  1.588,  $\epsilon$  1.612.

7.86 (47), 6.91 (55), 6.56 (77), 4.76 (40), 4.34 (36), 3.39 (33), 3.056 (100).

IMA No. 97-026 The boron-dominant analogue of vesuvianite

$\text{Ca}_{19}(\text{Al}, \text{Mg}, \text{Fe}, \text{Ti})_{13}(\text{B}, \text{Al}, \square)_5\text{Si}_{18}\text{O}_{68}(\text{O}, \text{OH}, \text{F})_{10}$

Tetragonal: P4/nnc

a 15.752, c 11.717 Å

Dark green; vitreous; translucent.

Uniaxial (+),  $\omega$  1.721,  $\epsilon$  1.725.

2.776 (100), 2.617 (61), 2.592 (43), 2.491 (61), 2.121 (20), 1.660 (26), 1.640 (23).

IMA No. 97-027 The cobalt-dominant analogue of lotharmeyerite

$\text{Ca}(\text{Co}, \text{Fe}, \text{Ni})_2(\text{AsO}_4)_2(\text{OH}, \text{H}_2\text{O})_2$

Monoclinic: C2/m

a 9.024, b 6.230, c 7.421 Å,  $\beta$  115.15°.

Brown; vitreous; translucent.

Biaxial (+),  $\alpha$  1.78,  $\beta$  1.79,  $\gamma$  1.85(calc.), 2V(meas.) 48°.

4.955 (38), 3.398 (85), 3.188 (28), 3.115 (33), 2.972 (100), 2.709 (28), 2.545 (34).

IMA No. 97-029 The rhodium- and sulfur-dominant analogue of palladseite

$\text{Rh}_{17}\text{S}_{15}$

Cubic:  $\text{Pm}\bar{3}\text{m}$ ,  $\text{P}\bar{4}3\text{m}$  or P432

a 10.024 Å

Colour unknown; metallic; opaque.

In reflected light: grey with slight bluish tint, isotropic. R: (38.6 %)480 nm,

(39.0 %)540 nm, (39.1 %)580 nm, (38.8 %)660 nm.

3.33 (2), 3.17 (7), 3.02 (9), 2.68 (5), 2.24 (9), 1.931 (8), 1.774 (10).

IMA No. 97-030

$\text{Rh}_{12}\text{As}_7$

Hexagonal: P6<sub>3</sub>/m

a 9.31, c 3.64 Å

Colour unknown; metallic; opaque.

In reflected light: brownish-grey, weak anisotropism from grey to brownish-grey, weak bireflectance, nonpleochroic.  $R_{\text{min}}$  &  $R_{\text{max}}$ : (44.5, 47.8 %)480 nm,

(44.7, 48.3 %)540 nm, (46.4, 49.2 %)580 nm, (48.6, 51.3 %)660 nm.

2.33 (4), 2.03 (2), 1.852 (9), 1.767 (6), 1.755 (10), 1.549 (8).

IMA No. 97-032 The Fe<sup>2+</sup>-dominant analogue of wallkilldellite

$(\text{Ca}, \text{Cu})_4\text{Fe}_6[(\text{As}, \text{Si})\text{O}_4]_4(\text{OH})_8 \cdot 18\text{H}_2\text{O}$

Hexagonal: P6<sub>3</sub>/mmc, P6<sub>3</sub>mc or P62c

a 6.548, c 23.21 Å

Brown-yellow; vitreous to resinous; translucent.

Uniaxial (-),  $\omega$  1.750,  $\epsilon$  could not be determined.

11.6 (100), 5.670 (80), 3.275 (70), 2.850 (10), 2.760 (15), 2.547 (10), 1.641 (25).

IMA No. 97-034

$\text{ZnFe}^{3+}_2(\text{AsO}_4)_2(\text{OH})_2$

Monoclinic: P2<sub>1</sub>/n

a 6.629, b 7.616, c 7.379 Å,  $\beta$  91.79°

Dark green; adamantine; translucent.

Biaxial (sign unknown), n 1.94, mineral reacts with liquids of n > 1.9

3.385 (100), 3.315 (78), 2.939 (47), 2.839 (28), 2.381 (29), 2.331 (29), 1.652 (32),

1.621 (34).

IMA No. 97-035 A member of the amphibole group

$(\text{K}, \text{Na})\text{Ca}_2\text{Fe}^{2+}\text{Fe}_2^{3+}[\text{Si}_5\text{Al}_3\text{O}_{22}](\text{OH})_2$

Monoclinic: C2/m

a 9.94, b 18.08, c 5.38 Å,  $\beta$  105.5°

Black; vitreous; transparent.

Biaxial (-),  $\alpha$  1.696,  $\beta$  not determined,  $\gamma$  1.715, 2V(meas.) 45°.

8.44 (90), 3.405 (25), 3.285 (30), 3.145 (100), 2.823 (26), 2.722 (52), 2.606 (27), 2.579 (25).

IMA No. 97-036

Ca(Ce,REE)<sub>2</sub>(CO<sub>3</sub>)<sub>4</sub>·H<sub>2</sub>O

Triclinic: P $\bar{1}$

a 6.397, b 6.389, c 12.383 Å,  $\alpha$  96.58°,  $\beta$  100.85°,  $\gamma$  100.46°

Colourless to white; vitreous; translucent.

Biaxial (-),  $\alpha$  1.635,  $\beta$  1.725,  $\gamma$  1.750, 2V(calc.) 53°.

5.901 (59), 5.049 (72), 4.695 (37), 4.468 (36), 4.006 (110), 3.899 (45), 3.125 (39), 3.0051 (448).

IMA No. 97-037

Na<sub>2</sub>CaCu<sub>2</sub><sup>2+</sup>(P<sub>2</sub>O<sub>7</sub>)<sub>2</sub>(H<sub>2</sub>O)<sub>10</sub>

Orthorhombic: Fdd2

a 11.938, b 32.854, c 11.017 Å

Blue-green; vitreous; transparent.

Biaxial (+),  $\alpha$  1.508,  $\beta$  1.511,  $\gamma$  1.517, 2V(meas.) 76.2°, 2V(calc.) 71°.

8.23 (30), 6.52 (100), 4.05 (40), 3.255 (40), 2.924 (40), 2.807 (25), 2.614 (20).

IMA No. 97-041 The zinc-dominant analogue of blödite

Na<sub>2</sub>Zn(SO<sub>4</sub>)<sub>2</sub>·4H<sub>2</sub>O

Monoclinic: P2<sub>1</sub>/a

a 11.077, b 8.249, c 5.532 Å,  $\beta$  100.18°.

Colourless; vitreous; transparent.

Biaxial (-),  $\alpha$  1.507,  $\beta$  1.512,  $\gamma$  1.516 (all for synthetic material).

4.550 (58), 4.245 (32), 3.325 (25), 3.289 (100), 3.262 (35), 3.245 (25), 2.631 (27).

IMA No. 97-042

Pb<sub>9</sub>Sb<sub>10</sub>S<sub>24</sub>

Triclinic: P $\bar{1}$

a 24.789, b 8.26, c 21.787 Å,  $\alpha$  90.53°,  $\beta$  99.58°,  $\gamma$  94.78°.

Black; metallic; opaque.

In reflected light: black, low anisotropism, low bireflectance, nonpleochroic. R<sub>1</sub> & R<sub>2</sub>:

(38.95, 37.64 %)470 nm, (42.35, 38.26 %)546 nm, (41.67, 37.63 %)589 nm,

(37.43, 36.53 %)650 nm.

3.47 (vs), 3.35 (ms), 3.24 (ms), 2.986 (s), 2.947 (s), 2.229 (ms).

IMA No. 97-043

PbSn<sub>3</sub>

Orthorhombic: Pnma

a 8.8213, b 3.7725, c 14.0053 Å.

Greyish black; metallic; opaque.

In reflected light: white, weak anisotropism, weak bireflectance, nonpleochroic.

R<sub>1</sub> & R<sub>2</sub>: (33.9, 36.0 %)470 nm, (31.3, 32.9 %)546 nm, (30.0, 31.4 %)589 nm,

(28.8, 29.9 %)650 nm.

4.128 (100), 3.730 (30), 3.1085 (28), 2.8081 (51), 2.7421 (41), 2.6692 (51),

1.9335 (54).

IMA No. 97-044 A member of the ilmenite group

(Mg,Fe)SiO<sub>3</sub>

Hexagonal (trigonal): R $\bar{3}$

a 4.78, c 13.6 Å.

Colourless; vitreous; transparent.

Uniaxial, no other data could be determined.

3.509 (61), 2.616 (100), 2.366 (52), 2.097 (45), 1.755 (45), 1.636 (65), 1.366 (50).

IMA No. 97-045

$\text{Na}_7\text{LiAlF}_6$

Monoclinic:  $P2_1$  or  $P2_1/m$

a 7.5006, b 7.474, c 7.503 Å,  $\beta$  90.847°.

Pale buff-cream; somewhat greasy; transparent to translucent.

Almost isotropic (biref. = 0.0009), biaxial n 1.359, 2V(meas.) up to 27°.

4.33 (100), 2.65 (60), 2.25 (70), 2.18 (50), 2.158 (40), 1.877 (90).

IMA No. 97-047

$(\text{Na}, \text{Y})(\text{Y}, \text{REE})(\text{HCO}_3)(\text{OH})_2 \cdot 5\text{H}_2\text{O}$

Monoclinic: P2 (pseudo-tetragonal)

a 4.566, b 13.018, c 4.566 Å,  $\beta$  90.15°.

White to yellow; vitreous; translucent to transparent.

Uniaxial (-),  $\omega$  1.540,  $\epsilon$  1.40, 2V(meas.) 0-5°.

12.97 (10), 6.52 (3), 4.57 (3), 4.32 (5), 3.223 (3), 3.133 (5), 2.016 (4).

IMA No. 97-048 The magnesium-dominant analogue of palenzonaite

$\text{NaCa}_2\text{Mg}_2(\text{VO}_4)_3$

Cubic:  $Ia\bar{3}d$

a 12.427 Å

Red; adamantine; transparent.

Isotropic, n 1.94.

3.108 (44), 2.779 (100), 2.652 (20), 2.535 (39), 1.723 (26), 1.662 (40).

IMA No. 97-049

$\text{KFe}_3^+(\text{H}_2\text{PO}_4)_6(\text{HPO}_4)_2 \cdot 4\text{H}_2\text{O}$

Monoclinic: C2/c

a 16.95, b 9.59, c 17.57 Å,  $\beta$  90.85°

White; vitreous; translucent.

Biaxial (-),  $\alpha$  1.557,  $\beta$  1.598,  $\gamma$  1.602, 2V(meas.) 32°, 2V(calc.) 34°.

8.83 (10), 7.60 (4), 3.75 (10), 3.30 (4), 3.23 (5), 3.11 (4), 3.02 (9).

IMA No. 97-050

$\text{BaMn}_9[(\text{V}, \text{As})\text{O}_4]_6(\text{OH})_2$

Cubic:  $\text{Pa}\bar{3}$

a 12.845 Å

Dark red; adamantine; transparent.

Isotropic, n > 2.0.

3.01 (87), 2.790 (100), 2.608 (100), 2.332 (44), 2.134 (53), 1.510 (99), 1.0020 (35).

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$\text{TlAg}_2(\text{As}, \text{Sb})_3\text{S}_6$

Orthorhombic:  $\text{Pnmb}$  or  $\text{P2}_1\text{nb}$

a 12.479, b 15.522, c 5.719 Å.

Dark grey; metallic; opaque.

In reflected light: pure white, extremely weak anisotropism, no birefractance, nonpleochroic.  $R_{\min.}$  &  $R_{\max.}$ : (31.43, 33.43 %)470 nm, (28.31, 30.52 %)546 nm, (27.10, 29.11 %)589 nm, (25.57, 27.44 %)650 nm.

3.655 (16), 3.363 (50), 3.290 (23), 3.210 (26), 3.118 (27), 2.822 (100), 2.540 (17), 2.070 (15).

#### Proposals from Previous Years Approved in 1997

IMA No. 93-029

$\text{Na}_4\text{SrCeTiSi}_8\text{O}_{22}\text{F} \cdot 5\text{H}_2\text{O}$

