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**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, I. M. A. 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

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.

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

1993 Proposals

IMA No. 93-001

The calcium-analogue of burbankite and
khanneshite.

$\text{Na}_3(\text{Ca},\text{REE},\text{Sr})_3(\text{CO}_3)_5$

Hexagonal: $\text{P}6_3\text{mc}$, $\text{P}6_2\text{c}$ or $\text{P}6_3\text{mmc}$
 $a = 10.447$, $c = 6.318 \text{ \AA}$

Deep orange; vitreous; translucent.
Uniaxial (–), $\omega = 2.00$, $\epsilon = 1.631$.

5.20 (4), 3.68 (3), 3.01 (5), 2.601 (10),
2.130 (6), 1.649 (3).

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

$a = 7.514$, $c = 20.52 \text{ \AA}$

Very dark brown to almost black; submetallic
to vitreous; opaque, but translucent in thin
plates.

Uniaxial (–), $\omega > 2.00$, $\epsilon = 1.97$.

6.84 (10), 4.01 (2), 2.219 (3), 1.884 (2),
1.575 (2).

IMA No. 93-002

The nickel-analogue of chalcophanite.
 $\text{NiMn}_3\text{O}_7 \cdot 3 \text{ H}_2\text{O}$

IMA No. 93-003

The arsenate-analogue of berlinitite.

AlAsO_4

Hexagonal (trigonal): $\text{P}3_1\text{2}1$ or $\text{P}3_2\text{2}1$
 $a = 5.031$, $c = 11.226 \text{ \AA}$

Colourless, white, cream; vitreous; transparent.

Uniaxial (+), ω 1.596, ϵ 1.608.

4.36 (20), 4.06 (31), 3.442 (100), 2.359 (15),
1.873 (16), 1.4202 (11).

IMA No. 93-004

The aluminum-analogue of klyuchevskite.



Monoclinic: I2

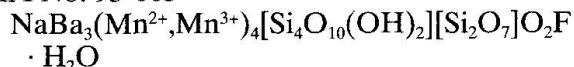
a 18.423, b 5.139, c 18.690 Å, β 101.72°

Dark green; vitreous; transparent.

Biaxial (+), α 1.542, β 1.548, γ 1.641,
2V(meas.) unknown, 2V(calc.) 30°.

9.15 (84), 9.04 (100), 7.20 (52), 3.781 (37),
3.757 (33), 2.786 (21).

IMA No. 93-005



Orthorhombic: Pnma

a 23.42, b 12.266, c 7.181 Å

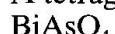
Black with a green shade; vitreous to greasy;
translucent.

Biaxial (+), α 1.767, β 1.793, γ 1.871,
2V(meas.) 60–65°, 2V(calc.) 62°.

4.580 (5), 3.303 (9), 2.999 (10), 2.715 (5),
2.655 (10), 2.156 (4), 1.648 (5).

IMA No. 93-006

A tetragonal polymorph of rooseveltite.



Tetragonal: I4₁/a

a 5.085, c 11.69 Å

White to yellowish white; earthy; opaque.

Uniaxial (+), mean n > 2.0.

4.660 (11), 3.066 (100), 2.546 (12), 1.797 (11),
1.581 (10), 1.551 (17).

IMA No. 93-008



Orthorhombic: Pnma

a 9.0615, b 5.6727, c 7.2672 Å

Colourless to white and yellowish; vitreous;
transparent to translucent.

Biaxial, mean n calculated from Gladstone-Dale is 1.308.

4.472 (75), 3.540 (90), 3.183 (100), 2.8982 (80),
2.5362 (65), 2.2822 (65), 2.1631 (70).

IMA No. 93-009

A tetragonal polymorph of bismite.



Tetragonal: P4₂/n or P4₂2₁2

a 8.08, c 6.46 Å

Green, yellowish; adamantine; translucent.

Uniaxial (+), ω 2.13, ϵ 2.18.

5.73 (7), 3.44 (5), 3.16 (10), 3.01 (4),
2.56 (4dif.), 2.02 (5), 1.902 (6).

IMA No. 93-010

The magnesium analogue of fillowite and
johnsomervilleite.



Hexagonal (trigonal): R̄3
a 14.967, c 42.595 Å

Colourless; vitreous; transparent.

Uniaxial, indices of refraction calculated
from reflectance values: n_1 1.60, n_2 1.62.
3.694 (S), 3.558 (M), 2.960 (S), 2.753 (S),
2.500 (M), 2.126 (M), 1.851 (M).

IMA No. 93-011



Orthorhombic: Pnnm

a 8.499, b 12.527, c 6.067 Å

Dark green; adamantine; transparent.

Biaxial (+), α slightly < 1.89, β unknown,
 γ < 1.91, 2V(meas.) 74°.
5.471 (S), 3.754 (S), 3.043 (S), 2.591 (VS),
1.519 (S).

IMA No. 93-013



Monoclinic: P2₁/c

a 8.215, b 11.989, c 6.076 Å, β 96.22°

Colourless; vitreous; transparent.

Biaxial (+), α 1.4240, β 1.4320, γ 1.4415,
2V(meas.) 85.5°, 2V(calc.) 85.6°.
6.758 (7), 4.250 (9), 3.643 (8), 3.148 (7),
3.063 (8), 3.030 (7), 2.840 (7), 2.125 (8).

IMA No. 93-016



Cubic: Pa3

a 6.502 Å

Steel black; metallic; opaque.

In reflected light: bright white with a
yellowish tint, moderate anisotropism, no
bireflectance, nonpleochroic. R: (51.0%)
470 nm, (52.6%) 546 nm, (52.9%) 589 nm,
(49.2%) 650 nm.
2.89 (70), 1.955 (100), 1.735 (80), 1.250 (80),
1.207 (70), 1.148 (70), 1.054 (70).

IMA No. 93-017



Cubic: Pa3

a 6.413 Å

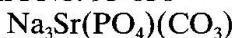
Steel black; metallic; opaque.

In reflected light: bright white with bluish tint,
no anisotropism, no bireflectance,
nonpleochroic. R: (44.3%) 470 nm, (46.0%)
546 nm, (46.9%) 589 nm, (45.5%) 650 nm.

2.86 (70), 1.93 (100), 1.235 (80), 1.132 (90), 1.040 (80), 0.9780 (80).	8.64 (100), 6.62 (30), 4.18 (17), 2.868 (26), 2.845 (16), 2.795 (17), 2.587 (15).
IMA No. 93-018 $IrTe_2$ Hexagonal: $P\bar{3}m1$ a 3.933, c 5.390 Å Steel black; metallic; opaque. In reflected light: bright yellowish white with bluish tint, moderate anisotropism with bluish or yellowish tint, no bireflectance, nonpleochroic. R_O & R_E : (41.4, 49.0%) 470 nm, (40.2, 48.2%) 546 nm, (41.1, 49.0%) 589 nm, (45.2, 51.2%) 650 nm. 2.85 (100), 2.10 (80), 1.95 (60), 1.580 (70), 1.160 (60), 1.110 (70).	IMA No. 93-023 $AlCa_2(SO_4)_2F_2Cl \cdot 4 H_2O$ Tetragonal: $I4/m$ a 6.859, c 13.310 Å White; vitreous; transparent. Uniaxial (+), ω 1.509, ϵ 1.526. 6.67 (60), 3.922 (50), 3.729 (40), 3.431 (100), 3.335 (80), 3.052 (40), 2.483 (40).
IMA No. 93-019 $Bi_6Te_2O_{13}$ Orthorhombic: space group unknown a 5.689, b 10.791, c 5.308 Å Yellow green to light green; adamantine; transparent. Biaxial n's > 2. In reflected light, R: (14.8%) 470 nm, (13.0%) 546 nm, (13.2%) 589 nm, (13.6%) 650 nm. 3.146 (100), 2.841 (80), 2.694 (20), 1.956 (10), 1.695 (20), 1.631 (10).	IMA No. 93-024 $NaAlZr(PO_4)_2(OH)_2 \cdot H_2O$ Monoclinic: space group unknown a 20.840, b 9.871, c 11.195 Å, β 104.41° Pale pinkish orange; vitreous; translucent. Biaxial, n's vary from 1.62 (parallel to fibres) to 1.64 (normal to fibres). 8.865 (40), 4.128 (80), 3.711 (65), 3.465 (60), 3.243 (35), 2.603 (100).
IMA No. 93-020 The selenate-dominant analogue of 93-021. $K_6(Na,K)_4Na_6Mg_{10}(IO_3)_{12}(SeO_4,SO_4,CrO_4)_{12} \cdot 12 H_2O$ Hexagonal: $P\bar{3}c1$ a 9.590, c 27.60 Å Pale yellow; vitreous; transparent. Uniaxial (-), ω 1.655, ϵ 1.642. 13.75 (30), 7.10 (20), 3.974 (16), 3.561 (100), 3.082 (32), 3.058 (39), 2.715 (39).	IMA No. 93-025 $TlPb(As,Sb)_3S_6$ Monoclinic: $P2_1/a$ a 8.444, b 23.97, c 5.844 Å, β 113.58° Brilliant black, but dark red in thin fragments; metallic to submetallic; opaque, but translucent in thin fragments. In reflected light: greyish white, clearly visible anisotropism from bluish to very weak reddish, visible bireflectance, nonpleochroic. $R_{min.}$ & $R_{max.}$: (29.7, 35.4%) 470 nm, (28.8, 33.1%) 546 nm, (26.7, 30.3%) 589 nm, (26.6, 29.9%) 650 nm. 5.346 (32), 3.998 (74), 3.816 (54), 3.587 (86), 2.823 (100), 2.778 (84), 2.670 (58).
IMA No. 93-021 The sulfate-dominant analogue of 93-020. $K_6(Na,K)_4Na_6Mg_{10}(IO_3)_{12}(SO_4)_{12} \cdot 12 H_2O$ Hexagonal: $P\bar{3}c1$ a 9.4643, c 27.336 Å Pale yellow; vitreous; transparent. Uniaxial (-), ω 1.622, ϵ 1.615. 13.67 (50), 7.05 (40), 3.927 (100), 3.515 (24), 3.023 (41), 2.681 (33), 2.3273 (21).	IMA No. 93-026 A member of the amphibole group. $NaNa_2[(Fe^{2+},Mn^{2+},Mg)_2Fe_2^{3+}Li]Si_8O_{22}F_2$ Monoclinic: $C2/m$ a 9.792, b 17.938, c 5.3133 Å, β 103.87° Bluish black to black; vitreous; opaque. Biaxial (+), α 1.675, β 1.683, γ 1.694, 2V(meas.) 87°, 2V(calc.) 81°. 8.426 (45), 4.481 (54), 3.404 (57), 2.985 (38), 2.710 (100), 2.585 (38), 2.536 (92).
IMA No. 93-022 $CaNaB_5O_8(OH)_2 \cdot 3 H_2O$ Monoclinic: $P2_1/c$ a 6.50, b 13.280, c 11.462 Å, β 92.97° White; silky to pearly; translucent. Biaxial (-), α 1.540, β 1.554, γ 1.558, 2V(meas.) 60°, 2V(calc.) 56°.	IMA No. 93-028 $AuSn$ Hexagonal: $P6_3/mmc$ a 4.316, c 5.510 Å White, greyish-black to black (when oxidized); metallic; opaque. In reflected light: white with light yellow tint, clear anisotropism light yellow with a

brown tint, faint bireflectance, nonpleochroic. R_O & R_E : (65.4, 65.2 %) 470 nm, (76.7, 74.8%) 546 nm, (80.5, 77.9%) 589 nm, (82.8, 79.5%) 650 nm.
3.726 (34), 3.087 (38), 2.218 (100), 2.159 (57), 1.546 (31), 1.258 (25), 1.256 (26).

IMA No. 93-030



Monoclinic: P_{2_1}

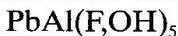
a 9.187, b 6.707, c 5.279 Å, β 89.98°

Colourless to white; vitreous; transparent.

Biaxial (-), α 1.520, β 1.564, γ 1.565, 2V(meas.) 20°, 2V(calc.) 17°.

3.35 (50), 2.708 (100), 2.648 (90), 2.172 (100), 2.080 (50), 1.891 (80), 1.676 (50), 1.415 (70).

IMA No. 93-031



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

a 6.259, b 6.791, c 5.053 Å, α 90.92, β 107.45, γ 104.45°

White to colourless; vitreous; transparent.

Biaxial (-), α 1.629, β 1.682, γ 1.691, 2V(meas.) 41°, 2V(calc.) 44°.

4.42 (100), 4.05 (35), 3.221 (40), 2.595 (70), 2.190 (65), 2.030 (50), 2.015 (40).

IMA No. 93-032



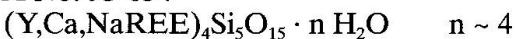
Monoclinic: $C2/c$

a 6.526, b 8.691, c 7.032 Å, β 113.88°

Deep red; adamantine; transparent.

Biaxial (sign unknown), $\alpha \sim 1.95$, β unknown, γ 2.105, 2V(meas.) unknown.
4.90 (W), 3.22 (VS), 2.97 (M), 2.59 (S), 2.271 (W), 1.641 (W).

IMA No. 93-034



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

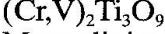
a 9.245, b 9.684, c 5.510 Å, α 97.44°, β 100.40°, γ 116.70°.

White; vitreous; translucent.

Biaxial (-), α 1.602, β 1.607, γ 1.611, 2V(meas.) 73°, 2V(calc.) 83°.
8.44 (80), 8.01 (50), 4.51 (50), 3.76 (70), 2.973 (100), 2.930 (60).

IMA No. 93-035

The chromium-dominant analogue of schreyerite.



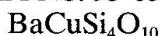
Monoclinic: $C2/c$, Cc , $P2_1/c$, $P2/c$ or Pc
a 7.03, b 5.02, c 18.83 Å, β 119.60°

Black; metallic; opaque.

In reflected light: white, faint anisotropism,

faint bireflectance, faint pleochroism pale brown. R_{\min} & R_{\max} : (18.1, 20.1%) 470 nm, (18.5, 19.9%) 546 nm, (18.4, 19.8%) 589 nm, (18.6, 20.9%) 650 nm.
2.88 (2), 2.75 (3), 2.43 (2), 1.635 (3), 1.386 (2).

IMA No. 93-036



Tetragonal: $P4/ncc$

a 7.441, c 16.133 Å

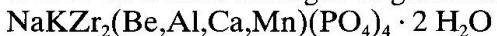
Blue; vitreous; transparent.

Uniaxial (-), ω 1.633, ϵ 1.593.

8.055 (100), 4.031 (35), 3.544 (15), 3.200 (21), 2.688 (18), 2.395 (19), 2.016 (26).

IMA No. 93-037

The K-dominant analogue of gainesite.



Tetragonal: $I4_1/amd$

a 6.570, c 17.142 Å

Intense bluish purple or pale lilac; vitreous; transparent.

Uniaxial (+), ω 1.624, ϵ 1.636.

6.161 (100), 4.291 (25), 3.286 (50), 3.039 (30), 2.895 (20).

IMA No. 93-038



Hexagonal: $P\bar{3}$

a 6.099, c 11.066 Å

Pale pink to colourless; vitreous; transparent.

Uniaxial (+), ω 1.483, ϵ 1.503.

5.29 (70), 3.036 (100), 2.146 (70), 1.757 (80), 1.152 (40), 0.9189 (40).

IMA No. 93-040

The PO_4 -analogue of atelestite and a monoclinic polymorph of petitjeanite.



Monoclinic: $P2_1/c$

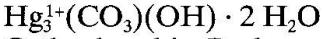
a 6.954, b 7.494, c 10.869 Å, β 107.00°

White to yellow; adamantine; translucent.

Biaxial (+), α 2.05, β 2.06, γ 2.09, 2V(meas.) 45°, 2V(calc.) 61°.

4.268 (17), 3.271 (51), 3.254 (100), 3.145 (34), 2.727 (29), 1.885 (16).

IMA No. 93-041



Orthorhombic: $Pcab$

a 11.130, b 11.139, c 10.725 Å

Black to very dark red-brown; sub-metallic to adamantine; opaque.

In reflected light: grey with slight bluish tinge, weak anisotropism (dull and dark greys and browns), weak to moderate bireflectance, nonpleochroic. R_{\min} & R_{\max} : (11.4, 12.15%)

470 nm, (10.95, 11.6%) 546 nm, (10.85, 11.5%) 589 nm, (10.7, 11.2%) 650 nm.
 4.84 (50), 2.969 (70), 2.786 (70), 2.648 (100),
 2.419 (60), 1.580 (50).

IMA No. 93-042

A regular interstratification of amesite and clinochlore.
 $(Mg,Al,Fe^{2+})_9(Si,Al)_6O_{15}(OH)_{12}$
 Monoclinic: Cm
 a 5.323, b 9.214, c 21.45 Å, β 94.43°
 Colourless to very pale green; nacreous; translucent.
 Biaxial (+), α 1.575, β 1.575, γ 1.581,
 2V(meas.) 0°, 2V(calc.) 0°.
 7.1 (100), 4.61 (60), 3.560 (80), 2.557 (40),
 2.427 (60), 1.536 (70).

IMA No. 93-044

$NaSbO_3$
 Isostructural with ilmenite and geikielite
 Hexagonal: R3
 a 5.301, c 15.932 Å
 Colourless; pearly; transparent.
 Uniaxial (-), ω 1.1.84, e 1.631.
 5.30 (53), 3.00 (55), 2.650 (67), 2.365 (69),
 1.874 (100), 1.471 (69).

IMA No. 93-045

The Fe-analogue of leonite.
 $K_2Fe(SO_4)_2 \cdot 4 H_2O$
 Monoclinic: C2/m
 a 11.843, b 9.552, c 9.945 Å, β 94.89°
 Colourless to light yellow; vitreous; transparent.
 Biaxial (+), α 1.497, β 1.501, γ 1.509,
 2V(meas.) 73°, 2V(calc.) 71°.
 4.776 (30), 3.504 (52), 3.439 (100), 3.330 (48),
 3.051 (29), 2.405 (30), 2.389 (49).

IMA No. 93-046

$(Rh,Ir,Pt)_3S_4$
 Monoclinic: F2/m
 a 13.44, b 10.749, c 10.448 Å, β 118.32°
 Megascopic colour not observed; metallic; opaque.
 In reflected light: pale slightly brownish grey, weak anisotropism in greys and browns, weak bireflectance, pleochroism weak.
 R_1 & R_2 : (47.2, 48.9%) 470 nm, (48.4, 50.3%) 546 nm, (49.1, 50.7%) 589 nm, (49.8, 51.0%) 650 nm.
 3.156 (100), 3.081 (100), 2.957 (90), 2.234 (60),
 1.871 (80), 1.791 (90), 1.532 (70).

IMA No. 93-047

$Cu_2Te^{6+}O_4(OH)_2$

Monoclinic: P2₁/n

a 9.095, b, 5.206, c 4.604 Å, β 98.69°

Medium leaf green; adamantine; transparent. In reflected light: pale grey, weak anisotropism with brown rotation tints, weak bireflectance, nonpleochroic. The mean index of refraction calculated from the reflectances at 589 nm is 2.00.

4.506 (40), 4.337 (60), 3.838 (50), 2.891 (70),
 2.598 (100), 1.834 (40), 1.713 (40),
 1.500 (40).

IMA No. 93-048

$Bi_2(Fe^{3+},Cu)_2O(OH)_3(AsO_4)_2$

Triclinic: P1 or PT

a 4.569, b 6.162, c 8.993 Å, α 94.56, β 99.68,
 γ 94.31°

Brown-yellow; adamantine; transparent to translucent.

Biaxial (-), α 2.04, β 2.10 (calc.), γ 2.11,
 2V(meas.) 45°.

8.822 (62), 3.749 (100), 3.596 (77), 3.468 (58),
 2.903 (69), 2.810 (51), 2.685 (48).

IMA No. 93-049

$Ca_3B_2O_6$

Hexagonal: R3c or R3c
 a 8.638, c 11.850 Å

Greyish white; vitreous; transparent.

Uniaxial (-), ω 1.726, e 1.630.

2.915 (100), 2.756 (61), 2.493 (44), 2.160 (19),
 2.044 (21), 1.976 (18), 1.895 (75).

IMA No. 93-050

$Tl_5Sb_9(As,Sb)_4S_{22}$

Triclinic: PT

a 7.393, b 8.707, c 17.58 Å, α 103.81°,
 β 91.79°, γ 109.50°

Black; metallic; opaque.

In reflected light: white, distinct to strong anisotropism with blue or blue-green colours, weak to medium bireflectance, pleochroism white to white with grey-blue tints. $R_{min.}$ & $R_{max.}$: (34.0, 36.7%) 470 nm, (32.0, 34.9%) 546 nm, (30.5, 33.0%) 589 nm, (28.1, 29.7%) 650 nm.

3.459 (100), 3.388 (64), 3.177 (54), 3.076 (65),
 2.802 (44), 2.287 (57), 1.736 (38).

IMA No. 93-051

Fe_4S_8O

Monoclinic: space group unknown

a 9.717, b 7.280, c 6.559 Å, β 95.00°

Yellow; metallic; opaque.

In reflected light: yellow, strong anisotropism with orange, yellow-orange and greenish grey colours, distinct bireflectance, pleoch-

roism greyish brown, orange, yellow
orange. $R_{\min.}$ & $R_{\max.}$: (19.5, 32.1%) 470 nm,
(23.8, 36.8%) 546 nm, (24.6, 37.4%) 589 nm,
(25.1, 37.3%) 650 nm.
2.709 (10), 2.419 (8), 2.323 (7), 1.92 (6),
1.758 (8), 0.9605 (6), 0.9576 (7).

IMA No. 93-052

CaAl_4O_7
Monoclinic: C2/c
a 12.94, b 8.910, c 5.446 Å, β 107.0°
Colourless to white; vitreous; transparent.
Biaxial (+), α 1.6178, β 1.6184, γ 1.6516,
2V(meas.) 12°, 2V(calc.) 15.5° (synthetic
material).
4.460 (43), 3.609 (13), 3.515 (100), 2.882 (13),
2.605 (36), 2.440 (21), 1.764 (20).

IMA No. 93-053

Pb_2OCo_3
Orthorhombic: P2₁2₁, or P2₁2₁2₁
a 9.294, b 9.000, c 5.133 Å
White; waxy; transparent to opaque.
The mean index of refraction calculated from
the reflectance value at 589 nm is 2.09.
6.49 (30), 4.02 (40), 3.215 (100), 3.181 (90),
2.858 (40), 2.564 (35).

IMA No. 93-054

The Se-analogue of pyrite.
 FeSe_2
Cubic: Pa3
a 5.783 Å
Black; metallic; opaque.
In reflected light: pink-yellow, no anisotropism,
no bireflectance, nonpleochroic.
R: (42.4%) 470 nm, (42.7%) 546 nm,
(45.7%) 589 nm, (49.8%) 650 nm.
2.888 (50), 2.588 (100), 2.364 (80), 2.045 (40),
1.743 (50), 1.546 (60), 1.1131 (40).

IMA No. 93-055

$\text{Na}_3\text{K}_6\text{Ti}_2\text{Al}_2\text{Si}_8\text{O}_{26}\text{Cl}_3$
Monoclinic: C2/m
a 10.37, b 16.32, c 9.16 Å, β 105.6°
Colourless; vitreous; transparent.
Biaxial (+), α 1.601, β 1.625, γ 1.654,
2V(meas.) 85°, 2V(calc.) 86°.
8.22 (71), 3.50 (42), 3.157 (35), 3.049 (100),
2.900 (71), 2.835 (84).

IMA No. 93-056

$\text{Pb}_{18}\text{Ba}_2\text{Ca}_5\text{Mn}_2\text{Fe}^{3+}_2\text{Si}_{30}(\text{O},\text{OH})_{96}\text{Cl}$
Hexagonal: R $\bar{3}$
a 9.863, c 79.45 Å
Colourless; adamantine; transparent.
Uniaxial (-), ω 1.845, ϵ 1.815.

13.4 (50), 4.43 (30), 3.98 (30), 3.32 (100),
3.11 (40), 2.969 (40), 2.671 (80).

IMA No. 93-057

$\text{Pd}_3\text{Ni}_2\text{As}_3$
Hexagonal: P6₃/m, P6₃ or P6₃22
a 8.406, c 6.740 Å

Megascopic colour not observed; metallic;
opaque.

In reflected light: rose, distinct anisotropism
from light grey to greyish-brown, no bireflectance,
nonpleochroic. $R_{\min.}$ & $R_{\max.}$:
(48.4, 50.2%) 470 nm, (51.2, 53.2%) 546 nm,
(53.2, 55.3%) 589 nm, (56.6, 58.7%) 650 nm.
2.626 (10), 2.477 (10), 2.429 (8), 2.283 (7),
1.978 (7), 1.818 (7), 1.781 (7).

IMA No. 93-058

$\text{Na}_{10}(\text{Mn,Ca,Sr})\text{Ti}_3\text{Nb}_3(\text{Si}_2\text{O}_7)_6(\text{OH})_2\text{F}$
· 12 H₂O

Monoclinic: Pm, P2 or P2/m
a 5.468, b 7.18, c 31.1 Å, β 94.0°

Colourless, white, silvery, pale pink or cream;
greasy to pearly; transparent to translucent.

Biaxial (+), α 1.608, β 1.630, γ 1.660,
2V(meas.) 82°, 2V(calc.) 83°
15.56 (9), 5.16 (6), 3.11 (10), 2.850 (7),
2.665 (7), 2.627 (7), 2.217 (6), 1.795 (6).

IMA No. 93-059

$\text{Sb}_2\text{O}_3 \cdot \text{WO}_3$ or Sb_2WO_6
Orthorhombic: probably P2₁2₁
a 8.59, b 9.58, c 6.12 Å

Green to dark green; pearly to dull; translucent to opaque.

Biaxial (+), α 2.285, β 2.40, γ 2.58,
2V(meas.) large, 2V(calc.) 82°.
3.32 (10), 3.06 (10), 2.98 (4), 2.73 (6), 2.46 (5),
1.919 (4).

IMA No. 93-060

A monoclinic polymorph of atacamite, botallackite and paratacamite.

$\text{Cu}_2(\text{OH})_2\text{Cl}$

Monoclinic: P2₁/n
a 6.157, b 6.814, c 9.104 Å, β 99.65°

Green to dark greenish black; adamantine;
translucent to transparent.

Biaxial (-), indices of refraction could not be
measured because mineral reacts with
immersion liquids, 2V(meas.) 75°.
5.44 (100), 2.887 (40), 2.767 (60), 2.742 (70),
2.266 (60), 2.243 (50), 1.704 (50).

IMA No. 93-061

$(\text{Ba,Pb})_6(\text{Cu,Fe,Ni})_{25}\text{S}_{27}$
Cubic: Pm3m

a 10.373 Å

Megascopic colour unknown; metallic; opaque.
In reflected light: pale brownish grey, no anisotropism, no bireflectance, nonpleochroic. R: (22.0%) 470 nm, (24.85%) 546 nm, (26.2%) 589 nm, (27.55%) 650 nm. 3.460 (40), 3.281 (40), 2.996 (90), 2.378 (90), 1.835 (100), 1.779 (40).

IMA No. 93-062

$(Pd,Ag)_2Te$
Tetragonal: P4₂22, P4₂/m or P4₂

a 8.913, c 6.098 Å

Megascopic colour unknown; metallic; opaque.
In reflected light: brownish-rose, distinct to strong anisotropism from white to rose-brown, distinct bireflectance, pleochroic from brownish-grey to violet-rose. R_{min.} & R_{max.}: (38.7, 48.7%) 470 nm, (44.0, 55.5%) 546 nm, (47.3, 58.2%) 589 nm, (50.7, 60.7%) 650 nm. 3.051 (6), 2.825 (10), 2.553 (4), 2.231 (6), 2.042 (5), 1.326 (3).

Notice

Dr. J. A. Mandarino retires as Chairman of the Commission on New Minerals and Mineral Names (CNMMN) of the International Mineralogical Association on 31 December 1994. After that date, all proposals for new minerals should be sent to the new Chairman:

Dr. J. D. Grice
Mineral Sciences Division
Canadian Museum of Nature
P.O. Box 3443
Station 'D'
Ottawa, Ontario
K1P 6P4 CANADA

Dr. E. H. Nickel remains the Vice-chairman of the CNMMN and will continue to handle redefinitions, discreditations and revalidations. Proposals of these kinds should be sent to:

Dr. E. H. Nickel
Division of Mineral Products
CSIRO
Private Bag
P. O. Wembley
Western Australia 6014
AUSTRALIA

Dr. C. E. S. Arps retires as Secretary of the CNMMN on 31 December 1994. The new Secretary is:

Dr. W. D. Birch
Department of Mineralogy and Petrology
Museum of Victoria
285 Russell Street
Melbourne
Victoria 3000
AUSTRALIA