

**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, International Mineralogical Association (IMA), for comparative purposes and as a service to mineralogists working on new species. Each mineral is described in the following format:

IMA Number
Chemical formula (any relationship to other minerals)
Crystal system, space group
unit-cell parameters
Color; luster; diaphaneity
Optical properties
Strongest lines in the X-ray powder-diffraction pattern [*d* in Å(*l*)]

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.

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

1997 PROPOSALS

IMA No. **97-001**
(Bi,Pb)₂Fe(O,OH)₃PO₄ Chemically related to
paulkerrite

Monoclinic: *C2/m*
a 12.278, *b* 3.815, *c* 6.899 Å, β 111.14°
Black to dark brown; vitreous to adamantine; opaque to translucent
Biaxial (-), α 2.06, β 2.15(calc.), γ 2.19, 2*V*(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**
Ca₂B₂SiO₇ The boron-dominant analogue of
gehlenite (melilite group)

Tetragonal: *P4₂m*
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**
NaK₂(Ti,Nb)₂Si₄O₁₂(O,OH)₂•2H₂O The Ti-dominant
analogue of **nenadkevichite**

Monoclinic: *C2/m*
a 14.39, *b* 13.900, *c* 7.825 Å, β 117.6°
Colorless; vitreous; transparent to translucent
Biaxial (+), α 1.667, β 1.677, γ 1.802, 2*V*(meas.) 32°, 2*V*(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**
AgSbS₂ A polymorph of **miargyrite**

Cubic: *Fm3m*
a 5.650 Å
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**
(UO₂)H(AsO₃)
Tetragonal: space group unknown

a 11.00, c 15.96 Å
 Yellow; dull; translucent
 Uniaxial (-), ω 1.84, ϵ 1.75
 5.58(8), 4.95(10), 4.40(6), 3.33(8), 3.03(6), 2.91(5)

IMA No. **97-007**
 $\text{Na}_3\text{SrCeMnSi}_6\text{O}_{17}$ The Mn²⁺-dominant analogue
 of **nordite-(Ce)**

Orthorhombic: *Pcca*
 a 14.449, b 5.187, c 19.849 Å
 Colorless, pale brownish, brown; vitreous; transparent
 Biaxial (-), α 1.623, β 1.636, γ 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**
 $\text{Na}_3\text{SrCeFeSi}_6\text{O}_{17}$ The Fe²⁺-dominant analogue
 of **nordite-(Ce)**

Orthorhombic: *Pcca*
 a 14.460, b 5.187, c 19.848 Å
 Colorless or light coffee color; vitreous; transparent
 Biaxial (-), α 1.623, β 1.636, γ 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**
 $\text{CaCu}_6[(\text{AsO}_4)_2(\text{AsO}_3\text{OH})(\text{OH})_6] \cdot 3\text{H}_2\text{O}$
 The calcium- and arsenate-dominant
 member of the **mixite** group

Hexagonal: *P6₃/m*
 a 13.571, c 5.880 Å
 Pale green; vitreous; transparent
 Uniaxial (+), ω 1.688, ϵ 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**
 $\text{Pb}_4\text{As}_2\text{S}_7$
 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. $R_{\text{min.}}$ & $R_{\text{max.}}$: 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**
 $\text{Ca}(\text{Al,Fe}^{2+},\text{Mg,Mn})_2(\text{AsO}_4)_2(\text{OH})_2$
 Monoclinic: *C2*
 a 8.9252, b 6.1427, c 7.352 Å, β 115.25°
 Light brownish to brownish pink, orange-brown; vitreous; transparent
 Biaxial (sign unknown), n 1.76 parallel to fiber, n 1.70

perpendicular to fiber
 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**
 $\text{Ca}_8\text{Mg}(\text{SiO}_4)_4\text{Cl}_2$
 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**
 $\text{Mg}_2\text{Al}_3\text{B}_2\text{O}_9(\text{OH})$ Chemically and structurally
 related to **sinhalite**

Monoclinic: *P2₁/c*
 a 7.49, b 4.33, c 9.85 Å, β 110.7°
 Colorless; vitreous; transparent
 Biaxial (-), α 1.691, β 1.713, γ 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**
 $(\text{Na,Ca})_5\text{Ca}(\text{Ti,Nb})_5\text{Si}_{12}\text{O}_{34}(\text{OH,F})_8 \cdot 5\text{H}_2\text{O}$
 A Ca-dominant polymorph of **zorite**

Orthorhombic: *C22a*
 a 7.024, b 23.155, c 6.953 Å
 Pale brown, brown, orange-yellow; vitreous; transparent to translucent
 Biaxial (+), α 1.599, β 1.610, γ 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**
 Sb_2O_4 ($\text{Sb}^{3+}\text{Sb}^{5+}\text{O}_4$, β -phase) A monoclinic
 polymorph of **cervantite**

Monoclinic: *C2/c*
 a 12.061, b 4.836, c 5.383 Å, β 104.60°
 Colorless; vitreous; transparent
 Biaxial (sign unknown), α' 1.72, γ' 2.10
 3.244(VS), 2.920(M), 2.877(S), 1.619(M)

IMA No. **97-018**
 $\text{K}(\text{Ca,Mn,Na})_2(\text{K}_{2-x}\square_x)_2\text{Zn}_3\text{Si}_{12}\text{O}_{30}$ A member of
 the **milarite** group

Hexagonal: *P6/mcc*
 a 10.505, c 14.185 Å
 Colorless, white; vitreous; transparent to translucent
 Uniaxial (+), ω 1.561, ϵ 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**
 $\text{Zn}_4\text{Al}_2(\text{OH})_{12}(\text{CO}_3) \cdot 3\text{H}_2\text{O}$ The zinc-dominant
 member of the **manasseite** group

Hexagonal: $P6_3/mmc$ 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

 $HgBi_2S_4$ Monoclinic: $C2/m$ a 14.164, b 4.053, c 13.967 Å, β 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

 $(Cd,Ca,Mn)KCu_5(AsO_4)_4[As(OH)_2O_2](H_2O)_2$

The cadmium-dominant analogue of 97-023

Monoclinic: $P2_1/m$ a 9.8102, b 10.0424, c 9.9788 Å, β 101.686°

Electric blue; vitreous; transparent

Biaxial (-), α 1.720, β 1.749, γ 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

 $(Ca,Cd,Mn)KCu_5(AsO_4)_4[As(OH)_2O_2](H_2O)_2$

The calcium-dominant analogue of 97-022

Monoclinic: $P2_1/m$ a 9.8102, b 10.0424, c 9.9788 Å, β 101.686°

Electric blue; vitreous; transparent

Biaxial (-), α 1.713, β 1.743, γ 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

 $Cu_4Cd(SO_4)_2(OH)_6 \cdot 4H_2O$ The cadmium-dominant analogue of **campigliaite**Monoclinic: $P2_1/m$ a 5.543, b 21.995, c 6.079 Å, β 92.04°

Bluish green; vitreous; transparent

Biaxial (-), α 1.619, β 1.642, γ 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

 $UO_2CO_3 \cdot H_2O$

Hexagonal: space group unknown

 a 15.79, c 23.93 Å

Canary yellow; silky; translucent

Uniaxial (+), ω 1.588, ϵ 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

 $Ca_{19}(Al,Mg,Fe,Ti)_{13}(B,Al,\square)_5Si_{18}O_{68}(O,OH,F)_{10}$ The boron-dominant analogue of **vesuvianite**Tetragonal: $P4/nnc$ a 15.752, c 11.717 Å

Dark green; vitreous; translucent

Uniaxial (+), ω 1.721, ϵ 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

 $Ca(Co,Fe,Ni)_2(AsO_4)_2(OH,H_2O)_2$ The cobalt-dominant analogue of **lotharmeyerite**Monoclinic: $C2/m$ a 9.024, b 6.230, c 7.421 Å, β 115.15°

Brown; vitreous; translucent

Biaxial (+), α 1.78, β 1.79, γ 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

 $Rh_{17}S_{15}$ The rhodium- and sulfur-dominant analogue of **palladseite**Cubic: $Pm\bar{3}m$, $P\bar{4}3m$ or $P432$ a 10.024 Å

Color 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

 $Rh_{12}As_7$ Hexagonal: $P6_3/m$ a 9.31, c 3.64 Å

Color unknown; metallic; opaque

In reflected light: brownish grey, weak anisotropism from grey to brownish grey, weak birefractance, nonpleochroic. $R_{min.}$ & $R_{max.}$: 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

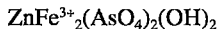
 $(Ca,Cu)_4Fe_6[(As,Si)O_4]_4(OH)_8 \cdot 18H_2O$ The Fe²⁺-dominant analogue of **walkilldellite**Hexagonal: $P6_3/mmc$, $P6_3mc$ or $P62c$ a 6.548, c 23.21 Å

Brown-yellow; vitreous to resinous; translucent

Uniaxial (-), ω 1.750, ϵ 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

Monoclinic: $P2_1/n$

$a 6.629, b 7.616, c 7.379 \text{ \AA}, \beta 91.79^\circ$

Dark green; adamantine; translucent

Biaxial (sign unknown), $n 1.94$; the 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

 $(\text{K}, \text{Na})\text{Ca}_2\text{Fe}^{2+}\text{Fe}^{3+}_2[\text{Si}_5\text{Al}_3\text{O}_{22}](\text{OH})_2$ A member of the amphibole groupMonoclinic: $C2/m$

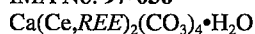
$a 9.94, b 18.08, c 5.38 \text{ \AA}, \beta 105.5^\circ$

Black; vitreous; transparent

Biaxial (-), $\alpha 1.696, \beta$ not determined, $\gamma 1.715, 2V(\text{meas.}) 45^\circ$

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

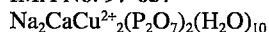
Triclinic: $P\bar{1}$

$a 6.397, b 6.389, c 12.383 \text{ \AA}, \alpha 96.58^\circ, \beta 100.85^\circ, \gamma 100.46^\circ$

Colorless to white; vitreous; translucent

Biaxial (-), $\alpha 1.635, \beta 1.725, \nu 1.750, 2V(\text{calc.}) 53^\circ$
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

Orthorhombic: $Fdd2$

$a 11.938, b 32.854, c 11.017 \text{ \AA}$

Blue-green; vitreous; transparent

Biaxial (+), $\alpha 1.508, \beta 1.511, \gamma 1.517, 2V(\text{meas.}) 76.2^\circ, 2V(\text{calc.}) 71^\circ$

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

 $\text{Na}_2\text{Zn}(\text{SO}_4)_2 \cdot 4\text{H}_2\text{O}$ The zinc-dominant analogue of **blödite**Monoclinic: $P2_1/a$

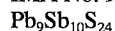
$a 11.077, b 8.249, c 5.532 \text{ \AA}, \beta 100.18^\circ$

Colorless; 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

Triclinic: $P\bar{1}$

$a 24.789, b 8.26, c 21.787 \text{ \AA}, \alpha 90.53^\circ, \beta 99.58^\circ, \gamma 94.78^\circ$

Black; metallic; opaque

In reflected light: black, low anisotropism, low bireflectance, nonpleochroic. R_1 & R_2 : 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

Orthorhombic: $Pnma$

$a 8.8213, b 3.7725, c 14.0053 \text{ \AA}$

Greyish black; metallic; opaque

In reflected light: white, weak anisotropism, weak bireflectance, nonpleochroic. R_1 & R_2 : 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

 $(\text{Mg}, \text{Fe})\text{SiO}_3$ A member of the **ilmenite** groupHexagonal (trigonal): $R\bar{3}$

$a 4.78, c 13.6 \text{ \AA}$

Colorless; 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

Monoclinic: $P2_1$ or $P2_1/m$

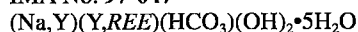
$a 7.5006, b 7.474, c 7.503 \text{ \AA}, \beta 90.847^\circ$

Pale buff-cream; somewhat greasy; transparent to translucent

Almost isotropic (birefringence = 0.0009), biaxial, $n 1.359, 2V(\text{meas.})$ 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

Monoclinic: $P2$ (pseudo-tetragonal)

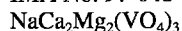
$a 4.566, b 13.018, c 4.566 \text{ \AA}, \beta 90.15^\circ$

White to yellow; vitreous; translucent to transparent

Uniaxial (-), $\omega 1.540, \epsilon 1.40, 2V(\text{meas.}) 0-5^\circ$

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**Cubic: $Ia\bar{3}d$

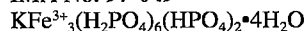
$a 12.427 \text{ \AA}$

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



Monoclinic: $C2/c$ a 16.95, b 9.59, c 17.57 Å, β 90.85°

White; vitreous; translucent

Biaxial (-), α 1.557, β 1.598, γ 1.602, $2V(\text{meas.})$ 32°, $2V(\text{calc.})$ 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** $\text{BaMn}_9[(\text{V,As})\text{O}_4]_6(\text{OH})_2$ Cubic: $Pa\bar{3}$ 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)

IMA No. **97-051** $\text{TlAg}_2(\text{As,Sb})_3\text{S}_6$ Orthorhombic: $Pnmb$ or $P2_1nb$ 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. $R_{\text{min.}}$ & $R_{\text{max.}}$: 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 1997IMA No. **93-029** $\text{Na}_4\text{SrCeTiSi}_8\text{O}_{22}\text{F}\cdot 5\text{H}_2\text{O}$ Monoclinic: $P2/a$ (?) a 23.88, b 14.40, c 7.238 Å, β 91.0°

Yellow, pink-yellow or cream; vitreous and silky; translucent

Biaxial (-), α 1.542, β 1.569, γ 1.571, $2V(\text{meas.})$ 28°, $2V(\text{calc.})$ 30°

12.36(100), 3.232(13), 3.190(29), 3.108(29), 3.087(21), 3.058(13), 2.708(12)

IMA No. **96-016** $\text{Mg}_4\text{Cl}(\text{OH})_7\cdot 6\text{H}_2\text{O}$ Orthorhombic: $Pcmm$, $Pcm2_1$, or $Pc2m$ a 11.215, b 3.124, c 19.21 Å

Yellowish white; vitreous or pearly; translucent

Biaxial (-), α 1.532, $\beta \sim \gamma$ 1.562, $2V(\text{meas.}) \leq 5^\circ$

11.41(29), 9.78(46), 9.60(38), 4.25(20), 3.498(100)

IMA No. **96-018** $\square(\text{LiAl}_2)\text{Al}_6(\text{BO}_3)_3(\text{Si}_6\text{O}_{18})(\text{OH})_4$ A member of
the tourmaline groupHexagonal (trigonal): $R3m$ a 15.770, c 7.085 Å

Pink; vitreous; translucent

Uniaxial (-), ω 1.645, ϵ 1.624

4.181(58), 3.950(100), 3.434(52), 2.924(56), 2.552(93), 1.898(72)

IMA No. **96-061** $\text{Fe}^{3+}\text{AsO}_4\cdot 2\text{H}_2\text{O}$ Hexagonal or trigonal
dimorph of **scorodite**Hexagonal: $P-c-$ (extinction symbol) a 8.9327, c 9.9391 Å

White to light yellow-brown; vitreous; translucent

Uniaxial (sign unknown), ω and $\epsilon > 1.72$

4.973(61), 4.184(44), 4.076(100), 3.053(67), 2.806(68), 2.661(59), 2.520(54), 2.2891(44)