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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. It is hoped that future lists will be published in the major mineralogical journals on a quarterly or semi-annual basis.

Each mineral is described in the following format:

IMA No.
(any relationship to other minerals)
Chemical Formula
Crystal system, space group
unit cell parameters
Diaphaneity; lustre; colour.
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

THE FOLLOWING MINERALS WERE APPROVED DURING 1990

IMA No. 90-002
$(Ce,La)Al_2B_2O_9$
Hexagonal, $P\bar{6}2m$
a 4.610, c 9.358 Å
Transparent to translucent; vitreous; light yellow.
Uniaxial (+), ω 1.703, ϵ 1.711
3.67(100), 3.04(100), 2.458(75), 2.308(50), 2.020(50), 1.953(50), 1.855(50), 1.835(50)

IMA No. 90-004
the Mg-dominant analogue of allanite-(Ce)
$Ca(Ce,La)MgAl_2Si_3O_{12}(OH)$
Monoclinic, $P2_1/m$
a 8.916, b 5.700, c 10.140 Å, β 114.72°
Transparent; vitreous; pale yellow brown in thin-section.
Biaxial (+), α 1.735, β 1.741, γ 1.758, 2V(meas.) 64°, 2V(calc.) 62°.
9.1(40), 3.50(50), 2.910(90), 2.842(50), 2.698(100), 2.622(60), 2.177(40), 2.137(40).

IMA No. 90-005
$Ca_3Si_6(O,OH)_{18}\cdot 5H_2O$
Monoclinic, Cc or C2/c
a 11.331, b 7.353, c 22.67 Å, β 96.59°
Transparent; vitreous; colourless to white.
Biaxial (-), α 1.575, β 1.580, γ 1.585, 2V(calc.) 89.8°.
11.25(100), 3.745(36), 3.304(51), 3.068(45), 3.034(60), 3.012(37), 2.811(41), 2.794(60).

IMA No. 90-007
the Cu-dominant analogue of braunite and neltnerite
$Cu^{2+}Mn^{3+}_6(O_8/SiO_4)$
Tetragonal, $I4_1/acd$
a 9.409, c 18.600 Å
Opaque; metallic; black.
In reflected light: grey, very weak anisotropism, weak bireflectance, nonpleochroic. R-values: (20.8,21.2%)470nm, (19.6,20.0%)546nm, (19.2,19.7%)589nm, (18.7,19.2%)650nm.
2.703(100), 2.352(14), 2.135(16), 1.6516(30), 1.4167(10), 1.4023(12).

IMA No. 90-008
$Ca(Na,K)_7(Si_6Al_6O_{24})(S^{-2})_{1.5}\cdot H_2O$
Hexagonal (trigonal), P31c
a 12.855, c 10.700 Å
Transparent; vitreous; yellow.
Uniaxial (-), ω 1.584, ϵ 1.660
4.824(70), 3.919(80), 3.720(100), 3.313(90), 2.694(35), 2.676(70), 2.471(35).

IMA No. 90-009
$(Na,Ca,K)_8(Si_6Al_6O_{24})(SO_4)_2Cl\cdot 0.5H_2O$
Hexagonal, $P6_222$
a 12.843, c 32.239 Å
Transparent; vitreous; green to greenish-yellow.
Uniaxial (+), ω 1.528, ϵ 1.543
4.84(40), 3.711(100), 3.314(80), 3.035(20), 2.988(16), 2.687(25), 2.470(16), 2.139(25).

IMA No. 90-010
$Fe_{8-2x}[(As_{1-x}S_x)O_4]_6(OH)_6\cdot 5H_2O$ x is about 0.2
Orthorhombic, Pbcm
a 6.412, b 19.45, c 8.941 Å
Transparent to translucent; greasy; cadmium orange.
Biaxial (-), α 1.94, β 2.05, γ 2.06, 2V(meas.) 5°, 2V(calc.) 32°.
9.75(10), 4.476(4), 3.208(9), 3.047(5), 2.680(4), 2.153(4), 1.604(4).

IMA No. 90-011
HgAg(Cl,Br,I)S
Orthorhombic, $P2_12_12$
a 6.803, b 12.87, c 4.528 Å
Translucent to opaque; subadamantine to submetallic; black.
Biaxial (probably -), $\alpha \sim 2.2$, $\gamma \sim 2.3$.
6.43(40), 3.762(60), 3.637(60), 3.283(30), 2.664(100), 2.265(40), 2.047(20).

IMA No. 90-012
$Na_6K_2(Si_6Al_6O_{24})(SO_4)\cdot 2H_2O$
Hexagonal, $P6_3$
a 22.121, c 5.221 Å
Transparent; vitreous; colourless.
Uniaxial (-), ω 1508., ϵ 1506.
6.39(S), 4.77(vS), 3.69(m), 3.27(vS), 2.769(m), 2.650(m).

IMA No. 90-013
$Na_7[Al_2Si_7O_{24}]CO_3\cdot 3H_2O$
Hexagonal, $P6_3mc$
a 12.575, c 5.105 Å
Transparent; vitreous; dark- to light-lilac.
Uniaxial (-), ω 1.509, ϵ 1.490
6.30(70), 4.61(50), 3.65(90), 3.22(100), 2.722(50), 2.597(20), 2.402(20), 2.097(20).

IMA No. 90-014
$Na_8[Al_6Si_6O_{24}](OH)_2\cdot 2H_2O$
Hexagonal, $P6_3$
a 12.74, c 5.183 Å
Transparent; vitreous; light blue or colourless.
Uniaxial (+), ω 1.494, ϵ 1.501
6.43(25), 4.70(60), 3.68(70), 3.26(100), 2.756(50), 2.433(30).

IMA No. 90-015
$Na_3(Y,REE)(CO_3)_3\cdot 3H_2O$
Orthorhombic, space group unknown, lattice is primitive
a 10.136, b 17.348, c 5.970 Å
Transparent; vitreous to dull; colourless.
Biaxial (+), α 1.528, β 1.529, γ 1.531, 2V(meas.) 45°, 2V(calc.) 71°.
6.53(55), 5.05(50), 4.85(65), 2.858(70), 2.597(50), 2.229(50), 2.076(100).

IMA No. 90-016
an orthorhombic polymorph of natisite
Na_2TiSiO_5
Orthorhombic, Pmma
a 9.827, b 9.167, c 4.799 Å
Translucent; adamantine; yellow, orange-yellow, orange-brown.
Biaxial (+), α 1.740, β 1.741, γ 1.765, 2V(meas.) 20°, 2V(calc.) 23°.
2.748(100), 2.257(25), 1.720(30), 1.680(30), 1.475(33), 1.443(35).

IMA No. 90-018
a regular 1:1 interstratification of cookeite and paragonite
$Li_{0.5}Na_{0.5}Al_3Si_3AlO_{10}(OH)_5$
Monoclinic, C2/m
a 5.158, b 8.914, c 23.83 Å, β 94.23°
Transparent; pearly; white.
Biaxial (-), α 1.58<<1.59, β 1.58<<1.59, γ 1.59<<1.60, 2V(meas.) 30-50°.
11.89(70), 4.456(90), 4.325(90), 2.547(100), 2.476(70), 1.486(90).

IMA No. 90-019
the Mg-dominant analogue of chalcophanite
$(Mg,Mn,Ca)Mn^{4+}_3O_7\cdot 3H_2O$
Triclinic, $P\bar{1}$
a 7.534, b 7.525, c 8.204 Å, α 89.753°, β 117.375°, γ 120.000°
Opaque; dull; coffee black.
In reflected light: grey, clear anisotropism, weak bireflectance, nonpleochroic. R-values: (23.0%)470nm, (19.9%)546nm, (19.1%)589nm, (18.6%)650nm.
6.965(100), 5.539(3), 4.086(4), 3.522(3), 3.483(11), 2.230(8).

IMA No. 90-020
$MnSO_3\cdot 3H_2O$
Orthorhombic, Pnma
a 9.762, b 5.639, c 9.558 Å
Transparent; vitreous; colourless.
Biaxial (+), α 1.590, β 1.596, γ 1.636, 2V(meas.) 41°, 2V(calc.) 43°.
6.83(S), 4.33(VS), 3.43(VS), 2.704(M), 2.666(M), 2.414(M), 1.726(M).

IMA No. 90-021
the Ti-dominant analogue of lavenite
$NaCa(Mn,Fe)(Ti,Nb,Zr)Si_2O_7OF$
Monoclinic, $P2_1/a$
a 10.828, b 9.790, c 7.054 Å, β 108.20°
Translucent to transparent; vitreous; orange-brown, yellow.
Biaxial (-), α 1.743, β 1.785, γ 1.810, 2V(meas.) 72-84°, 2V(calc.) 74°.
3.942(20), 3.234(30), 2.859(100), 2.807(70), 1.762(20), 1.741(20), 1.727(20), 1.688(20), 1.627(20).

IMA No. 90-023
$3UO_3\cdot 2SeO_2\cdot 7H_2O$
Orthorhombic, Pnc2 or Pncm
a 8.025, b 17.43, c 6.935 Å
Translucent to transparent; vitreous; bright yellow.
Biaxial (-), α 1.618, β 1.738, γ 1.765, 2V(meas.) 43°, 2V(calc.) 48°.
8.01(100), 4.01(70), 3.468(60), 3.186(50), 3.119(70), 2.912(80), 2.471(40).

IMA No. 90-024
the Mn-dominant analogue of fenaksite
$NaKMnSi_4O_{10}$
Triclinic, $P\bar{1}$
a 6.993, b 8.219, c 10.007 Å, α 105.11°, β 100.76°, γ 114.79°
Transparent; vitreous; colourless to light pinkish-cream.
Biaxial (-), α 1.540, β 1.551, γ 1.557, 2V(meas.) 73°, 2V(calc.) 72°.
6.89(70), 3.45(100), 3.26(90), 3.05(80), 2.880(70), 2.715(70), 2.463(70).

IMA No. 90-025
$Na_{17}Ca_3Mg(Ti,Mn)_4(Si_2O_7)_2(PO_4)_6O_3F_5$
Triclinic, P$\bar{1}$
a 5.412, b 7.079, c 26.56 Å, α 95.21°, β 93.51°, γ 90.10°
Translucent to transparent; vitreous to pearly; light brown.
Biaxial (-), α 1.600, β 1.658, γ 1.676, 2V(meas.) 56°, 2V(calc.) 57°.
2.937(10), 2.702(9), 2.659(8), 2.048(8B), 1.771(5B), 1.730(5).

IMA No. 90-026
$Na_{14}CaMgTi_4(Si_2O_7)_2(PO_4)_4O_4F_2$
Triclinic, P$\bar{1}$
a 5.415, b 7.081, c 20.34 Å, α 86.85°, β 94.40°, γ 89.94°
Translucent to transparent; vitreous to pearly; light brown.
Biaxial (-), α 1.630, β 1.678, γ 1.697, 2V(meas.) 62°, 2V(calc.) 63°.
2.880(10), 2.702(8B), 2.636(7), 2.050(5), 1.662(4B), 1.600(5).

IMA No. 90-027
$(Ca,Mn)_4Be_3Si_6O_{17}(OH)_4{\cdot}3H_2O$
Orthorhombic, space group unknown
a 8.724, b 23.14, c 4.923 Å
Translucent; vitreous; white to pale grey or beige.
Biaxial, average index of refraction is 1.604.
11.64(93), 5.80(68), 3.87(76), 3.16(74), 2.889(75), 2.837(100), 2.494(58).

IMA No. 90-028
$NaLiSi_2O_5{\cdot}2H_2O$
Monoclinic, A2/n
a 5.061, b 8.334, c 14.383 Å, β 96.67°
Transparent to opaque; vitreous to earthy; colourless to white.
Biaxial (+), α 1.515, β 1.516, γ 1.518, 2V(meas.) 64°, 2V(calc.) 71°.
7.14(100), 4.24(80), 4.14(100), 4.02(80), 2.847(100), 2.698(50), 1.610(40), 1.557(40).

IMA No. 90-030
$NaLi_2PO_4$
Orthorhombic, Pmnb
a 6.884, b 9.976, c 4.927 Å
Transparent to translucent; vitreous; colourless, white, very pale blue, very pale yellow.
Biaxial (-), α 1.533, β 1.540, γ 1.541, 2V(meas.) 49°, 2V(calc.) 41°.
4.020(100), 3.507(100), 3.441(100), 2.833(40), 2.712(40), 2.493(90), 2.462(90), 1.721(40).

IMA No. 90-031
$Pb_3(Fe^{3+},Mn^{3+})_4Mn^{4+}_3O_{15}$
Hexagonal, $P6_3/mcm$
a 10.037, c 13.67 Å
Opaque; metallic; black.
In reflected light: bright white, strong anisotropism, moderate bireflectance, nonpleochroic. R_O & R_E: (31.0,26.1%)470nm, (29.5,25.1%)546nm, (28.5,24.4%)589nm, (27.2,23.4 %)650nm.
3.42(5), 3.18(8), 2.828(7), 2.663(10), 2.366(6), 1.687(8).

IMA No. 90-032
$Mg_3Ba(PO_4)_4{\cdot}8H_2O$
Orthorhombic, Pmma, $Pmc2_1$ or Pma2
a 12.829, b 8.335, c 18.312 Å
Transparent; vitreous with a silky sheen; yellow-brown to light pink.
Biaxial (+), α 1.552, β 1.552, γ 1.558, 2V(meas.) 23°, 2V(calc.) 0°.
10.51(100), 3.874(32), 3.520(34), 3.081(78), 3.054(41), 2.969(44), 2.839(34).

IMA No. 90-033
$Pb_4Cu_4Si_4O_{12}(HCO_3)_4ClH$
Tetragonal, I4/m
a 14.234, c 6.103 Å
Transparent; vitreous; bright blue.
Uniaxial (+), ω 1.786, ε 1.800
10.2(10), 5.644(7), 4.495(10), 3.333(10), 3.013(9), 2.611(5).

IMA No. 90-036
$Cu_4Al_2[HSbO_4,SO_4](OH)_{10}(CO_3){\cdot}2H_2O$
Monoclinic, $P2_1$
a 10.765, b 2.903, c 12.527 Å, β 95.61°
Transparent; silky; green-blue.
Biaxial (+), α 1.626, β 1.646, γ 1.682, 2V(meas.) 77°, 2V(calc.) 75°.
5.62(50), 5.160(90), 4.276(100), 3.565(40), 2.380(35), 2.326(35).

IMA No. 90-037
$Cu_4(UO_2)(MoO_4)_2(OH)_6$
Monoclinic, A121, A1m1 or A12/m1
a 5.529, b 6.112, c 19.83 Å, β 103.9°
Transparent; vitreous to greasy; dark green to black.
Biaxial (-), α 1.90, β 1.93, γ 1.96, 2V(meas.) 90°, 2V(calc.) 89°.
4.815(80), 4.425(40), 4.276(40), 4.100(100), 3.734(90), 3.254(40), 2.628(40), 2.482(60).

IMA No. 90-040
$Ca_3Cu_5Si_9O_{26}$
Monoclinic, C2/c
a 10.160, b 10.001, c 19.973 Å, β 91.56°
Transparent; vitreous; greenish blue.
Biaxial (+), α 1.722, β 1.723, γ 1.734, 2V(meas.) 73°, 2V(calc.) 34°.
7.13(60), 6.70(70), 3.12(90), 3.00(100), 2.45(60), 2.41(70).

IMA No. 90-041
$Ca_3(SO_3)_2SO_4{\cdot}12H_2O$
Hexagonal, R3m
a 11.350, c 28.321 Å
Transparent; vitreous; colourless.
Uniaxial (+), ω 1.4941, ε 1.4960
8.11(80), 5.73(100), 3.63(60), 3.28(40), 2.69(80), 2.11(40).

IMA No. 90-042
$Mn(Mg,Mn)_2Zn_2(OH)_{10}{\cdot}4H_2O$
Monoclinic, C2/m
a 15.47, b 6.369, c 5.576 Å, β 101.29°
Mostly opaque but also translucent; vitreous to dull to earthy; dark brown.
In reflected light: gray, weak anisotropism, very weak bireflectance, nonpleochroic. R(min., max.): (8.54,8.65%)470nm, (8.07,8.23%)546nm, (8.00,8.19%)589nm, (7.89,8.18%)650nm.
7.61(10), 3.96(5), 3.45(3), 2.997(4), 2.745(6), 2.673(3).

IMA No. 90-043
the monoclinic dimorph of mimetite
$Pb_5(AsO_4)_3Cl$
Monoclinic, $P2_1/b$
a 10.189, b 20.372, c 7.46 Å, β 119.88°
Translucent; resinous; yellowish-white.
Biaxial (-), α, β and γ > 1.8, 2V(meas.) 8°.
3.342(50), 3.048(100), 3.008(70), 2.947(70), 2.106(60), 1.961(50), 1.903(50).

IMA No. 90-044
$NaVO_3$
Orthorhombic, Pnma
a 14.134, b 3.648, c 5.357 Å
Transparent; silky; colourless.
Biaxial (+), α 1.780, β 1.800, γ > 1.85, 2V(meas.) 30-40°.
7.07(11), 5.05(100), 3.530(25), 3.241(18), 3.016(13), 2.957(35), 2.685(12).

IMA No. 90-045
$Bi_2Cu_3(OH)_2O_2(PO_4)_2{\cdot}2H_2O$
Monoclinic, C2/m
a 12.358, b 6.331, c 9.060 Å, β 122.70°
Translucent; vitreous; sky blue to dark azure blue.
Biaxial (-), β 1.89, 2V(meas.) 68°.
7.623(8), 6.093(6), 5.405(6), 5.201(7), 3.039(10), 2.921(9), 2.197(6).

IMA No. 90-047
Pt_5Se_4
Monoclinic, $P2_1/c$
a 6.61, b 4.60, c 11.10 Å, β 101.4°
Opaque; metallic; dark bronze to black.
In reflected light: white with a brownish hue, very strong anisotropism, very strong bireflectance, weak pleochroism. R (max. & min.): (54.8,35.2%)470nm, (58.6,38.6%)546nm, (60.8,40.2%)589nm, (63.2,42.4%)650nm.
5.45(60), 3.27(60), 2.93(80), 2.78(60), 2.648(60B), 2.465(60), 1.875(100B), 1.812(70).

IMA No. 90-048
PdBiSe
Cubic, $P4_132$ or $P4_332$
a 6.448 Å
Opaque; metallic; light yellow.
In reflected light: pinkish-yellow, no anisotropism, no bireflectance, nonpleochroic. R: (47.5%)470nm, (48.3%)546nm, (46.8%)589nm, (45.6%)650nm.
2.89(10), 2.63(9), 1.943(9), 1.724(5), 1.376(4).

IMA No. 90-049
$CaBe_3(OH)_2(PO_4)_2{\cdot}4H_2O$
Monoclinic, Cc
a 11.897, b 9.707, c 9.633 Å, β 95.76°
Translucent; vitreous; colourless.
Biaxial (+), α 1.5203, β 1.5205, γ 1.5300, 2V(meas.) <10°, 2V(calc.) 17°.
5.92(60), 4.33(50), 3.421(70), 2.959(60), 2.945(45), 2.5130(100).

IMA No. 90-050
the Mn-dominant analogue of stilpnomelane
$(K,Na)_4(Mn,Zn,Mg,Fe^{3+})_{48}(Si,Al)_{72}(O,OH)_{216}\cdot nH_2O$ (n about 6)
Triclinic, P1 or P$\bar{1}$
a 5.521, b 9.560, c 36.57 Å (orthohexagonal cell)
Transparent to translucent; vitreous; dark brown.
Biaxial (-), α 1.545, β 1.583, γ 1.583, 2V(meas.) 10°, 2V(calc.) 0°.
12.3(100), 2.737(30), 2.583(40), 2.362(30), 1.594(30), 1.580(30).

IMA No. 90-051
a member of the aenigmatite group
$(Ca,Na)_2(Fe^{2+},Fe^{3+},Ti)_6(Si,Be,Al)_6O_{20}$
Triclinic, P1 or P$\bar{1}$
a 10.385, b 10.751, c 8.959 Å, α 104.76°, β 97.03°, γ 125.47°
Opaque to subtranslucent; vitreous; black.
Biaxial (-?), α 1.78, γ 1.82, 2V(meas.) large
8.029(90), 3.122(46), 2.9243(59), 2.6756(48), 2.5291(100), 2.0993(63), 2.0758(47).

IMA No. 90-052
the indium-dominant analogue of scorodite and mansfieldite
$In(AsO_4)\cdot 2H_2O$
Orthorhombic, Pcab
a 10.45, b 10.32, c 9.09 Å
Transparent; vitreous; pale green to yellowish-green.
Biaxial (-), mean n about 1.65, 2V(meas.) 55-76°.
5.719(70), 4.537(100), 4.162(40), 3.2461(80), 3.1073(80), 2.6568(50), 2.5426(45).

IMA No. 90-054
$[(Na,K)_6Cl_2](Ca_2Cl_2)(Si_6Al_6O_{24}$
Hexagonal, $P6_3$ or $P6_3/m$
a 25.771, c 5.371 Å
Transparent; vitreous; colourless.
Uniaxial (+), ω 1.529, ϵ 1.532
4.85(S), 3.71(vS), 3.31(vS), 2.788(S), 2.677(m), 2.474(m), 2.147(m), 1.804(m), 1.380(m).

IMA No. 90-055
$(Pd,Cu,Fe)_9SnTe_2S_2$
Tetragonal, space group unknown
a 9.044, c 4.937 Å
Opaque; metallic; megascopic colour unknown.
In reflected light: yellowish-rose, strong anisotropism, distinct to strong bireflectance, pronounced pleochroism. R_{min},R_{max}: (33.7,41.6%)470nm, (38.5,48.7%)546nm, (40.4,51.8%)589nm, (42.0,54.9%)650nm.
2.472(10), 2.260(9), 2.022(6), 1.361(4), 1.213(5), 1.205(5), 1.129(5).

IMA No. 90-056
the Fe^{3+}-analogue of surite
$(Pb,Ca)_{2-3}(CO_3)_{1.5-2}(OH,F)_{0.5-1}[(Fe,Al)_2Si_4O_{10}(OH)_2]\cdot nH_2O$
Monoclinic, $P2_1$ or $P2_1/m$
a 5.241, b 9.076, c 16.23 Å, β 90.03°
Transparent; silky; light yellow green to dark forest green.
Biaxial (+), α 1.757, β 1.763, γ 1.773, 2V(calc.) 76°.
16.1(40), 4.53(100), 3.727(35), 3.240(90), 2.612(80), 2.272(50).

IMA No. 90-057
$(Sr_{1.5}Ca_{1.2})Ca_2(Ca_{2.2}Na_{1.8})K_{1.4}Al_{17}Si_{19}O_{72}\cdot 34H_2O$
Hexagonal, $P6_3/mmc$
a 13.244, c 15.988 Å
Transparent; vitreous; colourless.
Uniaxial (-), ω 1.522, ϵ 1.507
6.58(80), 3.80(100), 2.95(70), 2.70(50), 2.50(50), 2.21(70), 1.83(50).