Chlorophoenicite $(Mn, Mg)_3Zn_2(AsO_4)(OH, O)_6$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As stout to acicular prismatic crystals, elongated and striated parallel [010], to 1 cm, generally with etched and dull terminations, and prism faces uneven or warped; in divergent sprays, dense masses of acicular crystals, microcrystalline, chalky pulverulent coatings.

Physical Properties: *Cleavage:* Good on {100}. *Tenacity:* Brittle. Hardness = 3.5 D(meas.) = 3.46–3.53 D(calc.) = 3.47

Optical Properties: Translucent. *Color:* Light grayish green in natural light, pink to light purplish red in artificial light, typically white in aggregates; nearly colorless in transmitted light. *Luster:* Vitreous, silky, pearly on cleavages.
Optical Class: Biaxial (–). *Orientation:* $Y = b$. *Dispersion:* $r > v$, strong. $\alpha = 1.682$ $\beta = 1.690$ $\gamma = 1.697$ $2V(meas.) = 83(2)^\circ$

Cell Data: *Space Group:* $C2/m$. $a = 22.98(4)$ $b = 3.32(1)$ $c = 7.32(1)$ $\beta = 106^\circ00(10)'$ $Z = 2$

X-ray Powder Pattern: Franklin, New Jersey, USA; nearly identical to magnesium-chlorophoenicite. (ICDD 25-1159).
2.642 (100), 3.71 (70), 6.87 (50), 3.11 (50), 2.990 (40), 1.758 (30), 1.822 (20)

Chemistry:

	(1)
P_2O_5	0.1
As_2O_5	20.3
FeO	0.0
MnO	33.0
ZnO	30.3
MgO	1.6
CaO	0.1
H_2O	14.9
Total	100.3

(1) Franklin, New Jersey, USA; by electron microprobe, H_2O by DTA–TGA, corresponding to $(Mn_{2.65}Mg_{0.23}Zn_{0.12})_{\Sigma=3.00}Zn_{2.00}(AsO_4)(OH, O)_6$.

Occurrence: Along secondary cracks through franklinite ores in a metamorphosed stratiform zinc orebody.

Association: Leucophoenicite, hodgkinsonite, hetaerolite, tephroite, gageite, chlorophoenicite, sclarite, pyrochroite, willemite, zincite, calcite, barite, franklinite.

Distribution: From Franklin and Sterling Hill, Ogdensburg, Sussex Co., New Jersey, USA.

Name: From the Greek for *green* and *purple-red*, alluding to the mineral's colors in natural and artificial light.

Type Material: The Natural History Museum, London, England, 1925,501–502; National Museum of Natural History, Washington, D.C., USA, 94964.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 778–780. (2) Moore, P.B. (1968) The crystal structure of chlorophoenicite. Amer. Mineral., 53, 1110–1119. (3) Dunn, P.J. (1981) Magnesium-chlorophoenicite redefined and new data on chlorophoenicite. Can. Mineral., 19, 333–336. (4) Dunn, P.J. (1995) Franklin and Sterling Hill, New Jersey. No publisher, n.p., 663–666.