

Retzian-(La)**(Mn²⁺, Mg)₂(La, Ce, Nd)(AsO₄)(OH)₄**

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Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. Crystals are pseudo-hexagonal, flattened on [001], showing large {001}, {110}, {010}, small {150}, to 0.5 mm.

Physical Properties: *Fracture:* Even. Hardness = 3–4 D(meas.) = > 4.2 D(calc.) = 4.49

Optical Properties: Transparent. *Color:* Dark reddish brown. *Streak:* Pale brown.

Luster: Vitreous on {010} and fractures, otherwise dull.

Optical Class: Biaxial (+). *Pleochroism:* Very weak; pale brown to pale violet-brown.

Orientation: X = c; Y = b; Z = a. *Dispersion:* r > v, strong. *Absorption:* Z > Y > X.

$\alpha = 1.766(5)$ $\beta = 1.773(5)$ $\gamma = 1.788(5)$ 2V(meas.) = 82(9)° 2V(calc.) = 69°

Cell Data: *Space Group:* Pbn. a = 5.670(7) b = 12.01(1) c = 4.869(8) Z = 2

X-ray Powder Pattern: Sterling Hill, New Jersey, USA; very similar to retzian-(Ce) and retzian-(Nd).

2.715 (100), 3.51 (80), 1.848 (50), 1.456 (40), 5.98 (30), 4.84 (30), 1.615 (30)

Chemistry:

	(1)
As ₂ O ₅	26.5
Y ₂ O ₃	2.5
La ₂ O ₃	10.6
Ce ₂ O ₃	8.8
Pr ₂ O ₃	5.1
Nd ₂ O ₃	8.2
Sm ₂ O ₃	2.2
MnO	25.2
ZnO	1.2
MgO	3.7
H ₂ O	[7.7]
Total	[101.7]

(1) Sterling Hill, New Jersey, USA; by electron microprobe, total Mn as MnO, H₂O calculated from stoichiometry; corresponds to (Mn_{1.54}Mg_{0.40}Zn_{0.06})_{Σ=2.00}(La_{0.28}Ce_{0.23}Nd_{0.21}Pr_{0.13}Y_{0.10}Sm_{0.05})_{Σ=1.00}(AsO₄)_{1.04}(OH)_{3.70}.

Occurrence: A very rare late phase in fractures in a metamorphosed stratiform zinc orebody.

Association: Willemite, franklinite, calcite, todorokite.

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

Name: For its dominant rare earth, *lanthanum*, and relation to *retzian*-(Ce).

Type Material: National Museum of Natural History, Washington, D.C., USA, 160290.

References: (1) Dunn, P.J., D.R. Peacor, and W.B. Simmons (1984) Retzian-(La), a new mineral from Sterling Hill, Sussex Co., New Jersey. *Mineral. Mag.*, 48, 533-535. (2) (1985) *Amer. Mineral.*, 70, 1332 (abs. ref. 1). (3) Moore, P.B. (1967) Crystal chemistry of the basic manganese arsenate minerals 1. The crystal structures of flinkite, Mn²⁺Mn³⁺(OH)₄(AsO₄) and retzian, Mn²⁺Y³⁺(OH)₄(AsO₄). *Amer. Mineral.*, 52, 1603-1613.