

Lehnerite**Mn²⁺(UO₂)₂(PO₄)₂•8H₂O**

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Crystal Data: Monoclinic, pseudotetragonal. *Point Group:* 2/m. As thin pseudotetragonal crystals, tabular on {010} and modified by {101}, { $\bar{1}01$ }, {100}, {001}, to 1 mm; as aggregates of parallel crystals stacked along [010].

Physical Properties: *Cleavage:* Perfect on {010}; good on {101}; less good on { $\bar{1}01$ }; poor on {100}. Hardness = 2–3 D(meas.) = > 3.50 D(calc.) = 3.674 Radioactive.

Optical Properties: Transparent to translucent. *Color:* Bronze-yellow, yellow, ocher-yellow.

Streak: Pale yellow. *Luster:* Vitreous to resinous.

Optical Class: Biaxial (–), some parts uniaxial. *Pleochroism:* X = Y = light yellow; Z = yellow.

Orientation: X = b; Y \wedge a \simeq 8°; Z \wedge c = \approx 8°. *Dispersion:* r \gg v. α = 1.599(2) β = 1.607(2)

γ = 1.607(2) 2V(meas.) = 45°

Cell Data: *Space Group:* P2₁/n. a = 7.04(2) b = 17.16(4) c = 6.95(2) β = 90°18' Z = 2

X-ray Powder Pattern: Hagendorf, Germany.

8.56 (10), 3.50 (8b), 2.23 (7), 4.96 (6), 1.375 (4b), 2.48 (3), 2.17 (3)

Chemistry:

	(1)	(2)
UO ₃	63.0	61.58
P ₂ O ₅	15.1	15.28
FeO	0.2	
MnO	7.5	7.63
H ₂ O	[14.2]	15.51
Total	[100.0]	100.00

(1) Hagendorf, Germany; by electron microprobe, total Fe as FeO, total Mn as MnO, H₂O by difference; corresponding to (Mn_{0.99}Fe_{0.03}) $_{\Sigma=1.02}$ (UO₂)_{2.07}(PO₄)_{2.00}•7.41H₂O.

(2) Mn(UO₂)₂(PO₄)₂•8H₂O.

Mineral Group: Meta-autunite group.

Occurrence: A rare secondary mineral in the oxidized zone of a complex granite pegmatite.

Association: Zwieselite, rockbridgeite.

Distribution: From Hagendorf, Bavaria, Germany.

Name: Honors Ferdinand Lehner (1868–1943), Pleystein, Germany, an early collector of Hagendorf minerals.

Type Material: n.d.

References: (1) Mücke, A. (1988) Lehnerit Mn[UO₂PO₄]₂•8H₂O, ein neues Mineral aus dem Pegmatit von Hagendorf/Oberpfalz. *Aufschluss*, 39, 209–217 (in German with English abs.).

(2) (1990) *Amer. Mineral.*, 75, 1433 (abs. ref. 1).