Lansfordite $MgCO_3 \cdot 5H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Rare crystals, elongated along [001], with principal forms {100}, {110}, {001}, a dozen additional forms, to 4 mm; as stalactites, which may be terminated by crystal faces; in parallel growths, and as efflorescences. *Twinning:* Observed.

Physical Properties: *Cleavage:* {001}, perfect; {100}, less perfect. Hardness = 2.5 D(meas.) = 1.692 D(calc.) = 1.693 Slowly effloresces at room temperature to produce nesquehonite.

Optical Properties: Transparent to translucent, becoming opaque on exposure. *Color:* Colorless to white; colorless in transmitted light. *Luster:* Vitreous if fresh. *Optical Class:* Biaxial (+). *Orientation:* $X = b$; $Z = c$; $Y \perp \{100\}$. $\alpha = 1.456$–1.465 $\beta = 1.468$–1.469 $\gamma = 1.507$–1.508 2V(meas.) = 59°30′ 2V(calc.) = 59°20′

Cell Data: *Space Group:* $P2_1/a$ (synthetic). $a = 12.4758(7)$ $b = 7.6258(4)$ $c = 7.3463(6)$ $\beta = 101.762(6)°$ Z = 4

X-ray Powder Pattern: Synthetic.
2.839 (100), 4.583 (95), 3.237 (55), 1.710 (33), 5.239 (31), 5.110 (31), 7.178 (30)

Chemistry:

	(1)	(2)
CO_2	25.09	25.23
MgO	23.27	23.12
H_2O	51.75	51.65
Total	100.11	100.00

(1) Cogne, Italy. (2) $MgCO_3 \cdot 5H_2O$.

Occurrence: Stalactites pendant from the shale roof of an anthracite coal mine (Nesquehoning, Pennsylvania, USA); in a hydromagnesite deposit (Atlin, Canada); a weathering product of an ultramafic body (Sør-Trøndelag, Norway).

Association: Nesquehonite, hydromagnesite, dypingite.

Distribution: In the USA, from Nesquehoning, near Lansford, Carbon Co., Pennsylvania; near the Robinson Gulch pegmatite, Jefferson Co., Colorado. From Atlin, British Columbia, Canada. At Cogne, Val d'Aosta, Piedmont, Italy. From the Feragen ultramafic body, Sør-Trøndelag, Norway. Found in seafloor precipitates in the Japan Sea.

Name: For its occurrence near Lansford, Pennsylvania, USA.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 228–230. (2) Hill, R.J., J.H. Canterford, and F.J. Moyle (1982) New data for lansfordite. Mineral. Mag., 46, 453–457. (3) Bai-Nian Liu, Xiang-Ting Zhou, Xiu-Shan Cui, and Ji-Gang Tang (1990) Synthesis of lansfordite $MgCO_3 \cdot 5H_2O$ and its crystal structure investigation. Science in China, Series B, 33(11), 1350–1356.