Inderite $MgB_3O_3(OH)_5 \cdot 5H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As long prismatic crystals with nearly square cross-section, to 30 cm, dominated by {110}, {120}, and {001}; may be as aggregates of minute needles; reniform nodular, massive.

Physical Properties: *Cleavage:* {010}, perfect; $\{1\bar{1}0\}$, good. Hardness = 3
D(meas.) = 1.80 D(calc.) = 1.794

Optical Properties: Translucent to transparent. *Color:* Colorless to white; colorless in transmitted light. *Luster:* Vitreous to pearly on cleavages, dull, greasy.
Optical Class: Biaxial (+). *Orientation:* $X \simeq b$; $Z \wedge c = 9°$. *Dispersion:* $r > v$, weak.
$\alpha = 1.488$ $\beta = 1.491$ $\gamma = 1.505$ 2V(meas.) = 37°–43°

Cell Data: *Space Group:* $P2_1/a$. $a = 12.0350(9)$ $b = 13.1145(13)$ $c = 6.8221(3)$
$\beta = 104.552(8)°$ Z = 4

X-ray Powder Pattern: Jenifer mine, Boron, California, USA. (ICDD 36–423).
5.052 (100), 3.357 (68), 5.72 (60), 6.61 (44), 2.662 (44), 2.558 (44), 5.84 (40)

Chemistry:

	(1)	(2)
B_2O_3	37.33	37.32
MgO	14.41	14.40
H_2O	48.28	48.28
insol.	0.08	
Total	100.10	100.00

(1) Jenifer mine, California, USA. (2) $MgB_3O_3(OH)_5 \cdot 5H_2O$.

Polymorphism & Series: Dimorphous with kurnakovite.

Occurrence: Relatively rare as a primary mineral in lacustrine borate deposits.

Association: Hydroboracite (Inder deposit, Kazakhstan); kurnakovite (Sarıkaya, Turkey); borax, ulexite, orpiment, realgar (Boron, California, USA).

Distribution: From Kyzyl Tau Mountain, Inder boron deposit, Kazakhstan. In the USA, in California, large crystals in the Boron open pit, and from the Baker and Jenifer mines, Kramer borate deposit, Kern Co.; at the Hard Scramble claim, Furnace Creek district, Death Valley, Inyo Co. In the Tincalayu borax deposit, Salar del Hombre Muerto, Salta Province, Argentina. From Sarıkaya, near Kirka, Eskiçehir Province, Turkey.

Name: For Inder Lake, Kazakhstan, near which the first specimens were collected.

Type Material: n.d.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 360–361. (2) Frondel, C., V. Morgan, and J.L.T. Waugh (1956) Lesserite [= inderite], a new borate mineral. Amer. Mineral., 41, 927–928. (3) Schaller, W.T. and M.E. Mrose (1960) The naming of the hydrous magnesium borate minerals from Boron, California – a preliminary note. Amer. Mineral., 45, 732–733. (4) Baysal, O. (1973) New hydrous magnesium-borate minerals in Turkey: kurnakovite, inderite, inderborite. Bull. Min. Res. & Explor. Inst. Turkey, Ankara, 80, 93–103. (5) (1974) Mineral. Abs., 25, 133 (abs. ref. 4). (6) Corazza, E. (1976) Inderite: crystal structure refinement and relationship with kurnakovite. Acta Cryst., 32, 1329–1333.