Indialite $(Mg, Fe^{2+})_2Al_4Si_5O_{18}$

Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$. As small hexagonal grains and clusters of spiral-shaped grains, some with tentacles or multiple terminations.

Physical Properties: Hardness = 7–7.5 D(meas.) = 2.512 (synthetic $Mg_2Al_4Si_5O_{18}$). D(calc.) = 2.59

Optical Properties: Transparent. *Color:* Colorless in thin section. *Luster:* Vitreous. *Optical Class:* Uniaxial (–). $\epsilon = 1.532–1.535$ $\omega = 1.537–1.539$

Cell Data: *Space Group:* $P6/mcc$. $a = 9.800(3)$ $c = 9.345(3)$ $Z = 2$

X-ray Powder Pattern: Synthetic $Mg_2Al_4Si_5O_{18}$.
8.48 (100), 3.027 (85), 3.138 (65), 3.379 (55), 4.094 (50), 4.89 (30), 1.6882 (30)

Chemistry:

	(1)	(2)
SiO_2	48.6	47.33
Al_2O_3	34.7	32.96
FeO	7.8	12.30
MnO		0.35
MgO	9.3	5.64
Na_2O		0.36
Total	100.4	98.94

(1) Bokaro coalfield, India; by electron microprobe, corresponding to $(Mg_{1.40}Fe_{0.66})_{\Sigma=2.06}Al_{4.11}Si_{4.89}O_{18}$. (2) Unazuki, Japan; by electron microprobe, corresponding to $(Fe_{1.07}Mg_{0.88}Na_{0.07}Mn_{0.03})_{\Sigma=2.05}Al_{4.06}Si_{4.95}O_{18}$.

Polymorphism & Series: Dimorphous with cordierite.

Occurrence: Formed by fusion and recrystallization of sedimentary rocks as a result of the burning of underlying coal seams (Bokaro coalfield, India); in cordierite veins in a polymetamorphosed pelitic rock (Unazuki, Japan).

Association: Enstatite, magnetite, labradorite, corundum, glass (Bokaro coalfield, India); cordierite, andalusite, sillimanite, biotite, quartz (Unazuki, Japan).

Distribution: In the Bokaro coal seam, southwest of Hazaribagh, Bihar, India. From the Unazuki area, Toyama Prefecture, Japan. At Pyramid Lake, Washoe Co., Nevada, USA. From the Bellerberg volcano, two km north of Mayen, Eifel district, Germany.

Name: For the country of first occurrence, India.

Type Material: n.d.

References: (1) Miyashiro, A. and T. Iiyama (1954) A preliminary note on a new mineral, indialite, polymorphic with cordierite. Proc. Japan Acad., 30, 746–751. (2) (1955) Amer. Mineral., 40, 787 (abs. ref. 1). (3) Miyashiro, A., T. Iiyama, M. Yamasaki, and T. Miyashiro (1955) The polymorphism of cordierite and indialite. Amer. J. Sci., 253, 185–208. (4) Meagher, E.P. and G.V. Gibbs (1977) The polymorphism of cordierite: II. The crystal structure of indialite. Can. Mineral., 15, 43–49. (5) Venkatesh, V. (1952) Development and growth of cordierite in para-lavas. Amer. Mineral., 37, 831–847. (6) Daniels, P. (1990) What is the true space group of high-cordierite? Zeits. Krist., 190, 271–276. (7) (1961) NBS Mono. 25, 1, 29.