Moraskoite $Na_2Mg(PO_4)F$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As irregular wedge-shaped to amoeboidal grains to 300 μm; in aggregates to 1.5 mm.

Physical Properties: *Cleavage*: Observed. *Fracture*: Irregular conchoidal. *Tenacity*: n.d. Hardness = 4-5 D(meas.) = n.d. D(calc.) = 2.925 Fluoresces weak blue in UV.

Optical Properties: Transparent. *Color*: Colorless. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial. *n* = 1.550(4) 2V = Small. *Birefringence*: Very low (~ 0.004).

Cell Data: *Space Group*: *Pbcn*. *a* = 5.2117(10) *b* = 13.711(3) *c* = 11.665(2) Z = 8

X-ray Powder Pattern: Calculated.
2.606 (100), 2.571 (96), 2.955 (90), 1.955 (83), 3.909 (75), 2.545 (68), 1.691 (67)

Chemistry:

	(1)
P_2O_5	38.79
MgO	23.51
FeO	0.53
MnO	0.06
Na_2O	31.92
F	10.40
$- O = F_2$	4.38
Total	100.83

(1) The Morasko Meteorite; average of 77 electron microprobe analyses, supplemented by Raman spectroscopy; corresponding to $Na_{1.88}Mg_{1.06}Fe^{2+}_{0.01}P_{1.00}O_{4.00}F_{1.00}$.

Occurrence: A primary mineral in an IAB-MG iron meteorite, in a graphite-troilite inclusion enclosed in a kamacite-taenite matrix.

Association: Chlorapatite, buchwaldite, brianite, merrillite, chromite, enstatite, kosmochlor, kosmochlor-augite, olivine, albite, orthoclase, quartz, cohenite, schreibersite, nickel-phosphide, altaite, pyrrhotite, sphalerite, daubreelite, djerfischerite, whitlockite, native Cu.

Distribution: From the Morasko Meteorite nature reserve, near Poznań, Poland.

Name: For the host meteorite and Morasko village, near the location of the original discovery.

Type Material: Mineralogical Museum, University of Wrocław, Poland (MMUWr IV-7766).

References: (1) Karwowski, Ł., J. Kusz, A. Muszyński, R. Kryza, M. Sitarz and E.V. Galuskin (2015) Moraskoite, $Na_2Mg(PO_4)F$, a new mineral from the Morasko IAB-MG iron meteorite (Poland). Mineral. Mag., 79(2), 387-398. (2) (2016) Amer. Mineral., 101, 2128-2129 (abs. ref. 1).