Parafiniukite $Ca_2Mn_3(PO_4)_3Cl$

Crystal Data: Hexagonal. *Point Group*: 6/*m*. As grains to 250 μm.

Physical Properties: *Cleavage*: None. *Fracture*: Irregular, uneven. *Tenacity*: Brittle. Hardness = 4-5 (by analogy with pieczkaite). D(meas.) = n.d. D(calc.) = 3.614

Optical Properties: Translucent (apparently). *Color*: Dark olive-green. *Streak*: n.d. *Luster*: Vitreous.
Optical Class: n.d. *n*(calc.) = 1.731

Cell Data: Space Group: $P6_3/m$. a = 9.4900(6) c = 6.4777(5) Z = 2

X-ray Powder Pattern: Calculated pattern.
2.740 (100), 2.801 (76), 2.544 (69), 2.801 (55), 2.675 (50), 3.239 (39), 1.914 (31)

Chemistry:

	(1)
P_2O_5	39.20
MgO	0.19
CaO	24.14
MnO	31.19
FeO	2.95
Na_2O	0.05
F	0.39
Cl	3.13
H_2O	[0.68]
$-O = (F_2+Cl_2)$	0.87
Total	101.05

(1) Szklary pegmatite, Lower Silesia, Poland; average of 10 electron microprobe analyses supplemented by Raman spectroscopy, H_2O calculated from stoichiometry; corresponds to $(Mn_{2.39}Ca_{2.34}Fe_{0.22}Mg_{0.03}Na_{0.01})_{\Sigma=4.99}P_{3.00}O_{12}[Cl_{0.48}(OH)_{0.41}F_{0.11}]$.

Mineral Group: Hedyphane group, apatite supergroup.

Occurrence: A primary mineral disseminated in the intensely altered intermediate and central zones of pegmatite of the beryl-columbite-phosphate subtype of the rare element (REL)-Li pegmatite class, crystallized from a highly fractionated melt.

Association: Beusite, Mn-oxide, smectite.

Distribution: From the Szklary LCT pegmatite, ~6 km north of Ząbkowice Śląskie, ~60 km south of Wrocław, Lower Silesia, Poland.

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Type Material: Museum of the University of Wrocław, Faculty of Earth Science and Environmental Management, Institute of Geological Sciences, Wrocław, Poland (MMWr IV80).

References: (1) Pieczka, A., C. Biagioni, B. Gołębiowska, P. Jeleń, M. Pasero, and M. Sitarz (2018) Parafiniukite, $Ca_2Mn_3(PO_4)_3Cl$, a new member of the apatite supergroup from the Szklary Pegmatite, Lower Silesia, Poland: description and crystal structure. Minerals, 8(11), 485. (2) (2020) Amer. Mineral., 105(8), 1281 (abs. ref. 1).