Qatranaite $CaZn_2(OH)_6(H_2O)_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As doubly terminated crystals flattened on (010), with striations along [001] to 0.3 mm.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Irregular. Hardness = ~3.5 VHN = 163-178, 171 average (25 g load). D(meas.) = n.d. D(calc.) = 2.598

Optical Properties: Transparent. *Color*: Colorless to white. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-). α = 1.545(2) β = 1.552(2) γ = 1.554(2) 2V(meas.) = 45(5)° 2V(calc.) = 50° *Orientation*: $Z \approx b$, $X \wedge c \approx 13°$. *Dispersion*: Weak, $r > v$.

Cell Data: *Space Group*: $P2_1/c$. a = 6.3889(8) b = 10.9692(14) c = 5.7588(8) β = 101.949(14)° Z = 2

X-ray Powder Pattern: Daba-Siwaqa region, 70 km southeast of Amman, Jordan.
2.881 (100), 3.124 (47), 6.25 (33), 2.723 (28), 3.992 (23), 1.575 (20), 5.002 (14)

Chemistry:

	(1)
CaO	17.69
ZnO	52.66
H_2O	[28.91]
Total	99.26

(1) Daba-Siwaqa region, 70 km southeast of Amman, Jordan; average of 10 electron microprobe analyses supplemented by Raman spectroscopy, H_2O calculated from stoichiometry; corresponds to $Ca_{0.98}Zn_{2.02}(OH)_6 \cdot 2H_2O$.

Occurrence: In altered pyrometamorphic spurrite marbles in secondary low-temperature (<70 °C) veins exclusively in cuspidine zones with large spurrite crystal relics.

Association: Se-bearing thaumasite, calcite, afwillite, barite, sometimes replaces sphalerite.

Distribution: From the Daba-Siwaqa region, Um Al-Rasas Sub-district, 70 km southeast from Amman, Jordan.

Name: For Al *Qatrana* village, on the Amman-Aqaba highway, 15 km southeast of the type locality.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4855/1).

References: (1) Vapnik, Y., E.V. Galuskin, I.O. Galuskina, J. Kusz, M. Stasiak, T. Krzykawski, and M. Dulski (2019) Qatranaite, $CaZn_2(OH)_6 \cdot 2H_2O$: a new mineral from altered pyrometamorphic rocks of the Hatrurim Complex, Daba-Siwaqa, Jordan. Eur. J. Mineral., 31(3), 575-584. (2) (2021) Amer. Mineral., 106, 163-164 (abs. ref. 1).