Siwaqaite $Ca_6Al_2(CrO_4)_3(OH)_{12}\cdot 26H_2O$

Crystal Data: Hexagonal. *Point Group*: 3*m*. As hexagonal prismatic crystals to 250 μm, terminated by a hexagonal pyramid or a pinacoid; commonly in granular aggregates to ~50 μm.

Physical Properties: *Cleavage*: Perfect on $(10\bar{1}\ 0)$. *Fracture*: Uneven or irregular. *Tenacity*: Brittle. Hardness = ~2 D(meas.) = n.d. D(calc.) = 1.819

Optical Properties: Transparent. *Color*: Canary-yellow. *Streak*: Yellowish gray. *Luster*: Vitreous.
Optical Class: Uniaxial (–). ω = 1.512(2) ε = 1.502(2) *Orientation*: $E = c$.

Cell Data: Space Group: *P*31*c*. a = 11.3640(2) c = 21.4485(2) Z = 2

X-ray Powder Pattern: Calculated pattern.
9.8415 (100), 5.682 (65), 4.7086 (38), 2.7984 (33), 3.8998 (29), 3.2805 (17), 5.0208 (16)

Chemistry:

	(1)	(2)
Cr_2O_3	12.80	22.81
SO_3	6.78	
SeO_3	3.80	
SiO_2	0.55	
Al_2O_3	7.14	7.75
CaO	25.20	25.59
H_2O	[42.89]	43.85
Total	99.16	100.00

(1) North Siwaqa complex, Hashem region, Jordan; average of 12 electron microprobe analyses supplemented by Raman and FTIR spectroscopy, H_2O calculated from stoichiometry; corresponds to $Ca_{6.01}(Al_{1.87}Si_{0.12})_{\Sigma=1.99}[(CrO_4)_{1.71}(SO_4)_{1.13}(SeO_4)_{0.40}]_{\Sigma=3.24}(OH)_{11.63}\cdot 26H_2O$.
(2) $Ca_6Al_2(CrO_4)_3(OH)_{12}\cdot 26H_2O$.

Mineral Group: Ettringite group.

Occurrence: In thin veins and small cavities in spurrite marble of a high-temperature low-pressure pyrometamorphic sequence of rocks.

Association: Calcite, fluorapatite, brownmillerite, minerals of the barite-hashemite series, cuspidine, fluormayenite, gehlenite, perovskite, lakargiite.

Distribution: North Siwaqa complex, Lisdan-Siwaqa Fault, Hashem region, 60 km south of Amman, Jordan.

Name: From the name of the locality, *Siwaqa* area, where the mineral was found.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5277/1).

References: (1) Juroszek, R., B. Krüger, I. Galuskina, H. Krüger, Y. Vapnik, and E. Galuskin (2020) Siwaqaite, $Ca_6Al_2(CrO_4)_3(OH)_{12}\cdot 26H_2O$, a new mineral of the ettringite group from the pyrometamorphic Daba-Siwaqa complex, Jordan. Amer. Mineral., 105(3), 409-421.