Görgeyite $K_2Ca_5(SO_4)_6 \cdot H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As crystals, tabular on {001}, to 8.5 cm, showing {001}, {100}, {111}, and {110}.

Physical Properties: *Cleavage*: On {100}, imperfect. *Fracture*: Splintery to hackly.
Hardness = 3.5-4 D(meas.) = 2.90-2.93 D(calc.) = 2.90

Optical Properties: Translucent. *Color*: Colorless, white, pale yellow, greenish yellow.
Luster: Vitreous.
Optical Class: Biaxial (+). α = 1.560 β = 1.569-1.570 γ = 1.584-1.585 2V(meas.) = 79°-80°

Cell Data: *Space Group*: *C*2/*c*. a = 17.51-17.519 b = 6.822-6.840 c = 18.21-18.252
β = 113.3°-113.33° Z = 4

X-ray Powder Pattern: Ischl salt deposit, Austria.
3.005 (100), 3.164 (70), 2.817 (40), 2.756 (30), 1.841 (25), 1.896 (20), 3.029 (15)

Chemistry:	(1)	(2)	(3)
SO_3	54.08	54.45	55.03
R_2O_3	0.18		
CaO	30.04	31.02	32.12
SrO		1.20	
Na_2O	1.77	0.15	
K_2O	10.82	10.77	10.79
Cl	0.06		
H_2O^+	2.82		
H_2O^-	0.34		
H_2O		n.d.	2.06
gangue	0.08		
Total	100.19	97.59	100.00

(1) Ischl salt deposit, Austria. (2) Cesano, Italy; by electron microprobe. (3) $K_2Ca_5(SO_4)_6 \cdot H_2O$.

Occurrence: An uncommon secondary mineral in evaporite deposits; in hydrothermal veins.

Association: Glauberite, halite, polyhalite, anhydrite, gypsum (evaporites); cesanite, pyrite (Cesano, Italy).

Distribution: From the Ischl salt deposit, near Salzburg, Austria [TL]. In drill core at the edge of the Baccano caldera, Cesano geothermal field, east of Lake Bracciano, Lazio, Italy. From Astakós, Greece. At Praid, Romania. Very large crystals from Inder Lake, Kazakhstan. From Nongle, Sichuan Province, and the "Q" Basin [Jianghan Plain] potash deposits, Hubei Province, China.

Name: Honors Rolf von *Görgey* (1886-1915), mineralogist specializing in Austrian salt deposits.

Type Material: Natural History Museum, Vienna, Austria, M474; Harvard University, Cambridge, Massachusetts, USA, 107559.

References: (1) Mayrhofer, H. (1953) Görgeyit, ein neues Mineral aus der Ischler Salzlagerstätte. Neues Jahrb. Mineral., Monatsh., 35-44 (in German). (2) (1954) Amer. Mineral., 39, 403-404 (abs. ref. 1). (3) Braitsch, O. (1965) Zur Gittermetrik des Görgeyit $K_2Ca_5(SO_4)_6 \cdot H_2O$. Neues Jahrb. Mineral., Monatsh., 126-128 (in German). (4) Smith, G.W. and R. Walls (1980) The crystal structure of görgeyite $K_2SO_4 \cdot 5CaSO_4 \cdot H_2O$. Zeits. Krist., 151, 49-60. (5) Mukhtarova, N.N., N.V. Belov, V.R. Kalinin, R.K. Rastsvetaeva, and V.V. Ilyukhin (1980) Crystal structure of gorgeyite $K_2Ca_5(SO_4)_6 \cdot H_2O$. Dokl. Sov. Phys., 25, 323-325 (in Russian). (6) Kloprogge, J.T., L. Hickey, L.V. Dung, W.N. Martens, and R.L. Frost (2004) Synthesis and characterization of $K_2Ca_5(SO_4)_6 \cdot H_2O$, the equivalent of görgeyite, a rare evaporite mineral. Amer. Mineral., 89, 721-724.