Rokühnite $Fe^{2+}Cl_2 \cdot 2H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$, 2, or m. Rarely in thin plates, dominated by {110}, with a number of other forms, to 300 μm; the plates are commonly composed of fibers. *Twinning:* On $\{\overline{2}01\}$, contact twins.

Physical Properties: *Cleavage:* Very good on {110}; good on {010}. *Tenacity:* Fibers are quite flexible. Hardness = n.d. D(meas.) = 2.35 D(calc.) = 2.35 Soluble in H_2O, hydrating topotactically and oxidizing rapidly on exposure to air.

Optical Properties: Semitransparent. *Color:* Light green, turning brown on oxidation; colorless in transmitted light.
Optical Class: Biaxial (+). *Orientation:* $X = b$; $Z \wedge c = -49°$. *Dispersion:* $r \leq v$.
$\alpha = 1.605(2)$ $\beta = 1.633(1)$ $\gamma = 1.703(2)$ 2V(meas.) = 64(2)°

Cell Data: *Space Group:* $C2/m$, $C2$, or Cm. $a = 7.396(1)$ $b = 8.458(2)$ $c = 3.638(1)$ $\beta = 97.68(2)°$ Z = 2

X-ray Powder Pattern: Germany.
5.536 (100), 2.762 (74), 4.228 (62), 2.415 (55), 2.892 (54), 2.744 (30), 2.096 (30)

Chemistry:

	(1)	(2)
FeO	22.46	20.23
MgO	2.94	3.39
CaO	0.11	
Na_2O	13.89	14.56
K_2O	7.89	6.61
Cl	50.05	47.55
H_2O	14.58	17.25
$-O = Cl_2$	11.29	10.73
insol. HNO_3	0.06	0.04
Total	100.69	98.90

(1) Germany; analysis of a mixture, interpreted as: carnallite 8.89%, rinneite 18.47%, halite 23.55%, tachyhydrite 1.02%, and rokühnite 48.14%, of composition $(Fe_{0.88}Mg_{0.12})_{\Sigma=1.00}Cl_2 \cdot 1.95H_2O$. (2) Do.; carnallite 18.76%, rinneite 9.93%, halite 26.04%, and rokühnite 44.17%, of composition $(Fe_{0.94}Mg_{0.06})_{\Sigma=1.00}Cl_{1.98} \cdot 2.02H_2O$.

Occurrence: A secondary mineral in fissures in earlier potassium-rich salt beds.

Association: Carnallite, rinneite, halite, tachyhydrite, sylvite, langbeinite.

Distribution: In the Salzdetfurth potash mine, Hamelyn, and the Siegfried-Giesen and Hope potash mines, Sarstedt, Zechstein basin, south of Hannover, Lower Saxony, Germany.

Name: To honor Professor Dr. Robert Kühn (1911–), German mineralogist, Kaliforschungs-Institut der Kali und Salz AG, Hannover, Germany.

Type Material: Mineralogical Institute, University of Hannover, Hannover; Institute for Sedimentology, University of Heidelberg, Heidelberg, Germany.

References: (1) von Hodenberg, R. and G. von Struensee (1980) Rokühnite, $FeCl_2 \cdot 2H_2O$, a new mineral. Neues Jahrb. Mineral., Monatsh., 125–130. (2) (1981) Amer. Mineral., 66, 219 (abs. ref. 1). (3) von Hodenberg, R. and G. von Struensee (1980) Rokühnite – ein Sekundärmineral im hannoverschen Zechstein. Kali und Steinsalz, 8, 81–91 (in German with English abs.). (4) (1982) Mineral. Abs., 33, 430 (abs. ref. 3).