Simmonsite Na_2LiAlF_6

Crystal Data: Hexagonal. *Point Group:* $\overline{3}\ 2/m$. Crystals are hexagonal, commonly flattened on {0001}, or prismatic, may be in parallel, to 1 mm.

Physical Properties: *Cleavage:* {0001}, perfect. Hardness = ∼1.5 D(meas.) = 3.292 D(calc.) = 3.341

Optical Properties: Transparent to translucent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous.
Optical Class: Uniaxial (+). $\omega = 1.657(1)$ $\epsilon = 1.700(1)$

Cell Data: *Space Group:* $R\overline{3}m$. $a = 6.334(2)$ $c = 23.58(1)$ Z = 3

X-ray Powder Pattern: Richelsdorf, Germany.
7.87 (100), 2.672 (60), 2.725 (50), 3.58 (40), 3.16 (40), 2.372 (40), 5.33 (30)

Chemistry:

	(1)	(2)
FeO	1.25	
ZnO	73.63	71.40
Cl	11.73	12.44
H_2O	16.21	18.96
$-O = Cl_2$	2.65	2.80
Total	100.17	100.00

(1) Richelsdorf, Germany; by electron microprobe, average of several determinations; H_2O by Karl Fischer titration, presence established by IR. (2) $Zn_5Cl_2(OH)_8 \cdot H_2O$.

Occurrence: A rare secondary mineral formed by weathering of zinc-bearing slag.

Association: Wülfingite, hydrocerussite, diaboleite, zincite, hydrozincite, zinc.

Distribution: On slag heaps from the foundry at Richelsdorf, Hesse, Germany.

Name: Honors Werner Simon and Kurt Kolle, mineral collectors of Cornberg, near Richelsdorf, Germany.

Type Material: Göttingen University, Göttingen; Heidelberg University, Heidelberg, Germany.

References: (1) Schmetzer, K., G. Schnorrer-Köhler, and O. Medenbach (1985) Wülfingite, $\epsilon-Zn(OH)_2$, and simonkolleite, $Zn_5(OH)_8Cl_2 \cdot H_2O$, two new minerals from Richelsdorf, Hesse, F.R.G. Neues Jahrb. Mineral., Monatsh., 145–154. (2) (1988) Amer. Mineral., 73, 194–195 (abs. ref. 1). (3) Allmann, R. (1968) Verfeinerung der Struktur des Zinkhydrochlorids II, $Zn_5(OH)_8Cl_2 \cdot 1H_2O$. Zeits. Krist., 126, 417–426 (in German with English abs.).