Haigerachite $KFe^{3+}_3(H_2PO_4)_6(HPO_4)_2 \cdot 4H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Forms spherules, to 0.2 mm, consisting of scaly crystals to 0.05 mm; rarely as well-developed, thin tabular, six-sided, pseudohexagonal crystals flattened on (001), showing {100} and {110}.

Physical Properties: *Cleavage*: Good on {001}. *Fracture*: Uneven. Hardness = 2
D(meas.) = 2.44(1) D(calc.) = 2.445 Soluble in dilute HCl.

Optical Properties: Transparent to translucent. *Color*: White. *Streak*: White. *Luster*: Vitreous. *Optical Class*: Biaxial (-). $\alpha = 1.557(2)$ $\beta = 1.598(2)$ $\gamma = 1.602(2)$ 2V(meas.) = 32(2)° 2V(calc.) = 34° *Orientation*: $X \perp (001)$.

Cell Data: *Space Group*: *C*2/*c* [synthetic]. $a = 16.95(3)$ $b = 9.59(2)$ $c = 17.57(3)$ $\beta = 90.85(15)°$ Z = 4

X-ray Powder Pattern: Silberbrünnle mine, central Black Forest, Germany.
8.83 (100), 3.75 (100), 3.02 (90), 3.23 (50), 7.60 (40), 3.30 (40), 3.11 (40)

Chemistry

	(1)
K_2O	3.79
Na_2O	0.34
CaO	0.66
Fe_2O_3	21.66
Al_2O_3	0.66
MnO	0.42
MgO	0.19
P_2O_3	53.39
H_2O	[18.89]
Total	100.00

(1) Silberbrünnle mine, central Black Forest, Germany; electron microprobe analysis, H_2O by difference; corresponds to $K_{0.85}Na_{0.12}Ca_{0.12}Fe_{2.85}Al_{0.14}Mn_{0.06}Mg_{0.05}P_{7.91}H_{22.05}O_{36}$.

Occurrence: A secondary phosphate formed on a mine dump.

Association: Quartz, pyrite, gypsum, jarosite, diadochite, gengenbachite.

Distribution: From the Silberbrünnle mine dump, upper Haigerachtal, near Gengenbach, central Black Forest, Baden-Württemberg, Germany.

Name: For the village and valley near the mine.

Type Material: Institute of Mineralogy and Crystal Chemistry, University of Stuttgart, and the Staatlichen Museum für Naturkunde, Stuttgart, Germany.

References: (1) Walenta, K. and T. Theye (1999) Haigerachite, a new phosphate mineral from the Silberbrünnle mine near Gegenbach in the central Black Forest. Aufschluss, 50, 1-7 (in German, English abs.). (2) (2000) Amer. Mineral., 85, 263-264 (abs. ref. 1).