**Crystal Data:** Triclinic, pseudomonoclinic. *Point Group:*  $\overline{1}$  or 1. As radiating tufts and bundles of crystals, to 2 mm; crystals elongated  $\parallel$  [101] and flattened on  $\{001\}$ . Forms observed are  $\{100\}$  and  $\{001\}$ , also (110). *Twinning:* Always, by rotation about [101].

**Physical Properties:** Hardness = n.d. D(meas.) = 2.86 D(calc.) = 2.89

**Optical Properties:** Transparent to translucent. *Color:* White to colorless. *Streak:* White. *Luster:* Vitreous.

Optical Class: Biaxial (+). Orientation:  $X \simeq b; Z \wedge c = 10(5)^{\circ}$ .  $\alpha = 1.411(2)$   $\beta = 1.416(2)$   $\gamma = 1.422(2)$   $2V(\text{meas.}) = 77(2)^{\circ}$   $2V(\text{calc.}) = 78^{\circ}$ 

**Cell Data:** Space Group:  $C\overline{1}$  or C1. a = 9.48(5) b = 6.98(3) c = 9.30(5)  $\alpha = 91.14(10)^{\circ}$   $\beta = 104.85(10)^{\circ}$   $\gamma = 90.0(10)^{\circ}$  Z = 4

X-ray Powder Pattern: Hagendorf, Germany. 3.48 (100), 4.56 (70), 3.69 (60), 2.852 (40), 1.460 (40), 2.277 (30), 2.242 (30)

Chemistry:

$$\begin{array}{cccc} & (1) & (2) \\ \text{Ca} & 29.86 & 31.05 \\ \text{Al} & 10.27 & 10.45 \\ \text{F} & 52.1 & 51.52 \\ \text{H}_2\text{O} & 7.0 & 6.98 \\ \hline \text{Total} & 99.23 & 100.00 \\ \end{array}$$

(1) Hagendorf, Germany; by electron microprobe, average of two analyses,  $H_2O$  by DTA–TGA; corresponds to  $Ca_{1.90}Al_{0.97}F_7 \cdot 0.96H_2O$ . (2)  $Ca_2AlF_7 \cdot H_2O$ .

Occurrence: Formed by hydrothermal alteration of triphyllite in a pegmatite.

Association: Rockbridgeite, pyrite, strengite, apatite.

**Distribution:** Originally noted on a museum specimen, labelled only "Hagendorf", the matrix of which resembles that of pegmatites in the Hagendorf area, Bavaria, Germany. Since found in the Hagendorf-Süd pegmatite.

Name: For Dr. Carl Hintze (1851–1916), Professor of Mineralogy, Univerity of Breslau, Breslau, Germany, noted for his compilation of the famous *Handbuch der Mineralogie*.

**Type Material:** Royal Ontario Museum, Toronto, Canada, M35498; National Museum of Natural History, Washington, D.C., USA, B20119.

References: (1) Dunn, P.J., D.R. Peacor, and B.D. Sturman (1979) Carlhintzeite, a new calcium aluminum fluoride hydrate from the Hagendorf pegmatites, Bavaria, Germany. Can. Mineral., 17, 103–105. (2) (1980) Amer. Mineral., 65, 205–206 (abs. ref. 1). (3) Mücke, A. (1981) The parageneses of the phosphate minerals of the Hagendorf pegmatite - a general view. Chem. Erde, 40, 217–234.