Weilite $CaHAsO_4$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$. Powdery, massive, typically pseudomorphous after pharmacolite or haidingerite.

Physical Properties: Hardness = n.d. D(meas.) = 3.48(5); 3.54 (synthetic). D(calc.) = 3.45; 3.541 (synthetic).

Optical Properties: Semitransparent. *Color:* White. *Luster:* Porcelaneous, may be greasy to slightly pearly.
Optical Class: Biaxial (–). *Orientation:* $X \wedge \{001\} = 20(2)°$; $Y \wedge \{001\} = 27(2)°$; $Z \wedge \perp \{001\} = 34(2)°$. $\alpha = 1.664(2)$ (α') $\beta =$ n.d. $\gamma = 1.688(2)$ (γ') 2V(meas.) = 82(1)°

Cell Data: *Space Group:* $P\overline{1}$ (synthetic). $a = 7.0591(8)$ $b = 6.8906(9)$ $c = 7.2006(16)$ $\alpha = 97°26(1)'$ $\beta = 103°33(1)'$ $\gamma = 87°45(1)'$ Z = 4

X-ray Powder Pattern: Gabe-Gottes mine, France.
3.43 (FFF), 3.07 (FFF), 3.42 (F), 2.80 (F), 2.58 (mF), 2.28 (mf), 3.60 (f), 3.21 (f)

Chemistry:

	(1)	(2)	(3)
As_2O_5	64.1	61.7	63.85
CaO	30.7	33.1	31.15
H_2O	5.2	5.2	5.00
Total	[100.0]	[100.0]	100.00

(1) Gabe-Gottes mine, France; recalculated to 100% after deduction of SiO_2 1% and pharmacolite 10% from an original total of 99.7%. (2) Schneeberg, Germany; recalculated to 100% after deduction of pharmacolite 10% from an original total of 100.0%. (3) $CaHAsO_4$.

Occurrence: A rare secondary mineral in the oxidized zone of arsenic-bearing hydrothermal mineral deposits.

Association: Pharmacolite, haidingerite, picropharmacolite.

Distribution: In Germany, from Schneeberg, at the Daniel mine, and at Schlema-Hartenstein, Saxony; from Wittichen, Black Forest; in the Bauhaus district, Richelsdorf Mountains, Hesse. In the Gabe-Gottes mine, Rauenthal, near Sainte-Marie-aux-Mines, Haut-Rhin, and at Duranus, Alpes-Maritimes, France. From the Wanthwaite mine, St. John's in the Vale, Cumbria, England. In the Bou Azzer district, Morocco. From the Getchell mine, Humboldt Co., Nevada, USA.

Name: To honor Professor René Weil (1901–), French mineralogist, University of Strasbourg, Strasbourg, France.

Type Material: National School of Mines, Paris, France, 4073; National Museum of Natural History, Washington, D.C., USA, R5543.

References: (1) Herpin, P. and R. Pierrot (1963) La weilite, $CaH(AsO_4)$, un nouvel arséniate de calcium isomorphe de la monétite. Bull. Soc. fr. Minéral., 86, 368–372 (in French). (2) (1964) Amer. Mineral., 49, 816 (abs. ref. 1). (3) Ferraris, G. and G. Chiari (1970) The crystal structure of $CaHAsO_4$ (weilite). Acta Cryst., 26, 403–410.